

# 1. iglidur®



Polymer bearings: oil-free solutions for all industries

# ...plastics



Exciting applications can be viewed online at ► [www.igus.co.uk/en/iglidur-applications](http://www.igus.co.uk/en/iglidur-applications)

## SIX FLAGS THEME PARKS

(Rollercoaster)

Here iglidur® Z bearings led to significant reduction of the costs. This was achieved by eliminating the

maintenance work completely during the season. With iglidur® Z bearings it is not necessary to check or relubricate the units and shafts. Also it was possible to reduce the weight.



## SURGICAL LIGHT

The motor-powered swiveling LED wings are adjusted with the aid of iglidur® JVFM bearings. Lubrication- and maintenance-free.  
(Trumpf iLED Medical Systems Inc.)



## WASHING CHAIN BEARINGS

Reduction of the drive power for bottle washing machines by using iglidur® under the most difficult conditions in a 2-3 % caustic soda and temperature of +80 °C. (Krones AG)



## SPREADERS

Main reasons for iglidur® bearings: The special design to complement the centrifugal arm results in a significant reduction of manufacturing costs. It is also maintenance-free and has high wear resistance.  
(Fella Werke GmbH & Co. KG)



## TOOL CHANGER CHAIN

Main reasons for iglidur® bearings: Enormous cost advantages in comparison to standard metallic rolled bearings as well as low coefficient of friction also with soft shaft materials.  
(Deckel Maho Seebach GmbH)



## AXLE BOX ARRANGEMENT

The edge load is usually a deciding factor for or against the use of bearings. iglidur® G bearings solve this, also giving high wear resistance, low costs, resistance to corrosion and dirt.  
(Zunhammer GmbH Gülletechnik)



## TUBULAR BAG MACHINES

The continuous operating temperature in the bonding arms frequently reach +160 °C and higher. These requirements are met by iglidur® Z bearings which also offer particularly high resistance to wear.  
(Affeldt Verpackungsmaschinen GmbH)



## iglidur® – Best Sellers from stock

### Best Sellers

► from page 77



The most sold iglidur® bearing worldwide  
iglidur® G  
► page 81



Low friction, low wear  
iglidur® J  
► page 109



Excellent vibration dampening  
iglidur® M250  
► page 127



Low wear on all shafts  
iglidur® W300  
► page 151



High temperatures, chemical resistance  
iglidur® X  
► page 173

## iglidur® for all kind of applications – Standards and Specialists from stock

## iglidur® Specialists on request

### General Purpose

► from page 191



The most sold iglidur® bearing worldwide  
iglidur® G  
► page 81



Excellent vibration dampening  
iglidur® M250  
► page 127



Low water absorption  
iglidur® P  
► page 195



Flexible, wear resistant & more  
iglidur® P210  
► page 207



Versatile  
iglidur® K  
► page 215



Low-cost material for high quantities  
iglidur® GLW  
► page 225

### For Long Service Life

► from page 232



Low friction, low wear  
iglidur® J  
► page 109



Low wear on all shafts  
iglidur® W300  
► page 151



Ideal for plastic shafts  
iglidur® J260  
► page 237



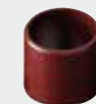
Runs up to three times longer than iglidur® J  
iglidur® J3  
► page 247



High temperatures, versatile  
iglidur® J350  
► page 257



For high speeds  
iglidur® L250  
► page 267



Low-cost  
iglidur® R  
► page 277



Low-cost material with silicone  
iglidur® D  
► page 287



Specially for aluminum shafts  
iglidur® J200  
► page 295

### High Temperatures

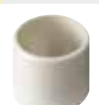
up to +250 °C  
► from page 302



High temperatures, chemical resistance  
iglidur® X  
► page 173



Runs up to six times longer than iglidur® X  
iglidur® X6  
► page 307



For soft shafts, up to +200 °C  
iglidur® V400  
► page 317



For high dynamic loads, wear resistant  
iglidur® Z  
► page 327



For hot liquids  
iglidur® UW500  
► page 341

### High Media Resistance

temperatures up to +200 °C  
► from page 348



High temperatures, chemical resistance  
iglidur® X  
► page 173



Universal  
iglidur® H  
► page 353



Long life operation  
iglidur® H1  
► page 365



For under water  
iglidur® H370  
► page 375



Up to 250 °C, wear resistant  
iglidur® C500  
► page 389



Low-cost  
iglidur® H2  
► page 399

### Applications with Food Contact

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FDA-compliant general purpose material  
iglidur® A180  
► page 411



The food grade material, FDA-compliant  
iglidur® A181  
► page 421



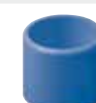
FDA-compliant  
iglidur® A200  
► page 431



Temperature and wear resistant, FDA-compliant  
iglidur® A350  
► page 447



Temperature and chemical resistance, FDA-compliant  
iglidur® A500  
► page 457



Chemicals & Food, FDA-compliant  
iglidur® A160  
► page 429



Robust  
iglidur® A290  
► page 477



KTW-compliant  
iglidur® UW160  
► page 487



For the tobacco industry  
iglidur® T220  
► page 497

### Special Application Areas

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Electrically conductive  
iglidur® F  
► page 509



ESD compatible  
iglidur® F2  
► page 521



The automotive standard  
iglidur® H4  
► page 531



For high loads  
iglidur® Q  
► page 541



For extreme loads  
iglidur® Q2  
► page 555



For fast rotation under water  
iglidur® UW  
► page 565



The biopolymer  
iglidur® N54  
► page 575



V0 rating according to UL94, universal  
iglidur® G V0  
► page 585



PFOA-free  
iglidur® J2  
► page 595



High elasticity  
iglidur® B  
► page 605



Free from PTFE and silicone  
iglidur® C  
► page 613



## iglidur® | Selection According To Main Criteria



|                                |                | Standard catalog range | Stock Bar | speed-igus material | Long life dry running | For high loads | For high temperatures | Low friction/high speed | Dirt resistant | Page |  |
|--------------------------------|----------------|------------------------|-----------|---------------------|-----------------------|----------------|-----------------------|-------------------------|----------------|------|--|
| Best Sellers                   | iglidur® G     | ●                      |           | ●                   | ●                     | ●              |                       |                         | ●              | 81   |  |
|                                | iglidur® J     | ●                      | ●         | ●                   | ●                     |                |                       | ●                       |                | 109  |  |
|                                | iglidur® M250  | ●                      |           | ●                   | ●                     |                |                       |                         | ●              | 127  |  |
|                                | iglidur® W300  | ●                      | ●         | ●                   | ●                     |                |                       | ●                       | ●              | 151  |  |
|                                | iglidur® X     | ●                      | ●         | ●                   | ●                     | ●              | ●                     |                         |                | 173  |  |
| General purpose                | iglidur® P     | ●                      |           | ●                   | ●                     |                |                       |                         | ●              | 195  |  |
|                                | iglidur® P210  | ●                      | ●         |                     | ●                     |                |                       |                         | ●              | 207  |  |
|                                | iglidur® K     | ●                      |           |                     | ●                     |                |                       | ●                       |                | 215  |  |
|                                | iglidur® GLW   |                        |           |                     |                       |                |                       |                         | ●              | 225  |  |
| Long service life              | iglidur® J260  | ●                      |           |                     | ●                     |                |                       | ●                       |                | 237  |  |
|                                | iglidur® J3    | ●                      |           |                     | ●                     |                |                       | ●                       |                | 247  |  |
|                                | iglidur® J350  | ●                      | ●         |                     | ●                     | ●              | ●                     | ●                       |                | 257  |  |
|                                | iglidur® L250  | ●                      |           |                     | ●                     |                |                       | ●                       |                | 267  |  |
|                                | iglidur® R     | ●                      |           |                     | ●                     |                |                       | ●                       |                | 277  |  |
|                                | iglidur® D     |                        |           |                     |                       |                |                       | ●                       |                | 287  |  |
|                                | iglidur® J200  |                        |           |                     | ●                     |                |                       | ●                       | ●              | 295  |  |
| High temperatures              | iglidur® X6    | ●                      |           |                     | ●                     | ●              | ●                     | ●                       |                | 307  |  |
|                                | iglidur® V400  | ●                      |           |                     | ●                     |                | ●                     | ●                       |                | 317  |  |
|                                | iglidur® Z     | ●                      |           |                     | ●                     | ●              | ●                     | ●                       |                | 327  |  |
|                                | iglidur® UW500 |                        |           |                     |                       |                | ●                     |                         |                | 341  |  |
| High media resistance          | iglidur® H     | ●                      |           | ●                   |                       |                | ●                     |                         |                | 353  |  |
|                                | iglidur® H1    | ●                      |           |                     | ●                     | ●              | ●                     | ●                       |                | 365  |  |
|                                | iglidur® H370  | ●                      |           |                     |                       |                | ●                     | ●                       |                | 375  |  |
|                                | iglidur® C500  | ●                      |           |                     | ●                     | ●              | ●                     |                         |                | 389  |  |
|                                | iglidur® H2    |                        |           | ●                   |                       |                | ●                     |                         |                | 399  |  |
| Applications with food contact | iglidur® A180  | ●                      | ●         | ●                   | ●                     |                |                       | ●                       |                | 411  |  |
|                                | iglidur® A181  | ●                      |           |                     | ●                     |                |                       | ●                       |                | 421  |  |
|                                | iglidur® A200  | ●                      |           |                     |                       |                |                       |                         | ●              | 431  |  |
|                                | iglidur® A350  | ●                      | ●         |                     | ●                     |                | ●                     | ●                       |                | 447  |  |
|                                | iglidur® A500  | ●                      |           |                     |                       | ●              | ●                     |                         |                | 457  |  |
|                                | iglidur® A160  | ●                      |           |                     |                       |                |                       |                         |                | 429  |  |
|                                | iglidur® A290  | ●                      |           |                     |                       | ●              |                       |                         |                | 477  |  |
|                                | iglidur® UW160 | ●                      |           |                     |                       |                |                       |                         |                | 487  |  |
|                                | iglidur® T220  |                        | ●         |                     |                       |                |                       |                         |                | 497  |  |
| Special application areas      | iglidur® F     | ●                      |           |                     |                       | ●              |                       |                         |                | 509  |  |
|                                | iglidur® F2    | ●                      |           |                     | ●                     |                |                       |                         | ●              | 521  |  |
|                                | iglidur® H4    | ●                      |           |                     | ●                     | ●              | ●                     | ●                       |                | 531  |  |
|                                | iglidur® Q     | ●                      |           |                     | ●                     | ●              |                       | ●                       |                | 541  |  |
|                                | iglidur® Q2    | ●                      |           |                     | ●                     |                |                       |                         | ●              | 555  |  |
|                                | iglidur® UW    | ●                      |           |                     |                       |                |                       |                         |                | 565  |  |
|                                | iglidur® N54   | ●                      |           |                     |                       |                |                       |                         |                | 575  |  |
|                                | iglidur® G V0  | ●                      |           |                     | ●                     |                |                       |                         | ●              | 585  |  |
|                                | iglidur® J2    | ●                      |           |                     |                       |                |                       |                         |                | 595  |  |
|                                | iglidur® B     |                        |           |                     |                       |                |                       |                         |                | 605  |  |
|                                | iglidur® C     |                        |           |                     |                       |                |                       |                         |                | 613  |  |

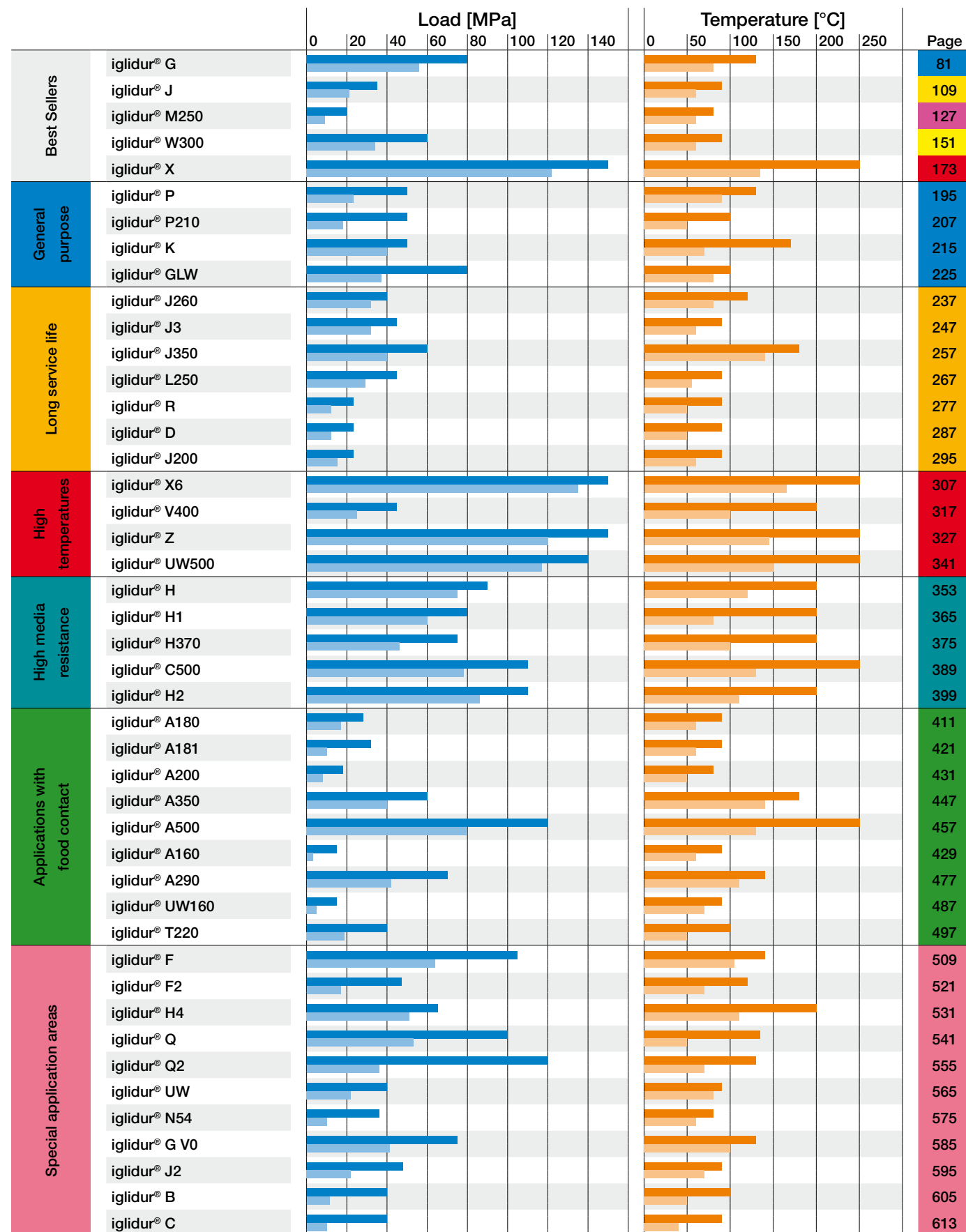
## iglidur® | Selection According To Main Criteria



|                                |                | Chemical resistant | Low water absorption | Food suitable | Vibrations dampening | Edge pressure | For under water use | Economic | Page |  |
|--------------------------------|----------------|--------------------|----------------------|---------------|----------------------|---------------|---------------------|----------|------|--|
| Best Sellers                   | iglidur® G     |                    |                      |               |                      |               |                     | ●        | 81   |  |
|                                | iglidur® J     |                    | ●                    |               |                      | ●             |                     | ●        | 109  |  |
|                                | iglidur® M250  |                    |                      |               | ●                    | ●             |                     | ●        | 127  |  |
|                                | iglidur® W300  |                    |                      |               |                      | ●             |                     | ●        | 151  |  |
|                                | iglidur® X     | ●                  | ●                    |               |                      |               | ●                   |          | 173  |  |
| General purpose                | iglidur® P     |                    | ●                    |               |                      |               |                     | ●        | 195  |  |
|                                | iglidur® P210  |                    | ●                    |               |                      | ●             |                     | ●        | 207  |  |
|                                | iglidur® K     |                    | ●                    |               |                      |               |                     | ●        | 215  |  |
|                                | iglidur® GLW   |                    |                      |               |                      |               |                     | ●        | 225  |  |
| Long service life              | iglidur® J260  |                    | ●                    |               |                      |               |                     | ●        | 237  |  |
|                                | iglidur® J3    |                    | ●                    |               |                      | ●             |                     |          | 247  |  |
|                                | iglidur® J350  | ●                  | ●                    |               |                      | ●             |                     |          | 257  |  |
|                                | iglidur® L250  |                    |                      |               |                      | ●             |                     |          | 267  |  |
|                                | iglidur® R     |                    | ●                    |               |                      | ●             |                     | ●        | 277  |  |
|                                | iglidur® D     |                    | ●                    |               |                      | ●             |                     | ●        | 287  |  |
|                                | iglidur® J200  |                    | ●                    |               |                      | ●             |                     |          | 295  |  |
| High temperatures              | iglidur® X6    | ●                  | ●                    |               |                      |               |                     |          | 307  |  |
|                                | iglidur® V400  | ●                  | ●                    |               |                      | ●             |                     |          | 317  |  |
|                                | iglidur® Z     | ●                  | ●                    |               |                      | ●             |                     |          | 327  |  |
|                                | iglidur® UW500 | ●                  | ●                    |               |                      |               | ●                   |          | 341  |  |
| High media resistance          | iglidur® H     | ●                  | ●                    |               |                      |               | ●                   |          | 353  |  |
|                                | iglidur® H1    | ●                  | ●                    |               |                      |               | ●                   |          | 365  |  |
|                                | iglidur® H370  | ●                  | ●                    |               |                      |               | ●                   |          | 375  |  |
|                                | iglidur® C500  | ●                  | ●                    |               |                      | ●             | ●                   |          | 389  |  |
|                                | iglidur® H2    | ●                  | ●                    |               |                      |               | ●                   |          | 399  |  |
| Applications with food contact | iglidur® A180  |                    | ●                    | ●             |                      | ●             |                     | ●        | 411  |  |
|                                | iglidur® A181  |                    | ●                    | ●             |                      | ●             |                     | ●        | 421  |  |
|                                | iglidur® A200  |                    |                      | ●             | ●                    | ●             |                     |          | 431  |  |
|                                | iglidur® A350  | ●                  | ●                    | ●             | ●                    | ●             | ●                   |          | 447  |  |
|                                | iglidur® A500  | ●                  | ●                    | ●             |                      | ●             | ●                   |          | 457  |  |
|                                | iglidur® A160  | ●                  | ●                    | ●             |                      |               |                     |          | 429  |  |
|                                | iglidur® A290  |                    |                      |               |                      |               |                     |          | 477  |  |
|                                | iglidur® UW160 | ●                  | ●                    |               |                      |               | ●                   | ●        | 487  |  |
|                                | iglidur® T220  |                    |                      |               |                      |               |                     |          | 497  |  |
| Special application areas      | iglidur® F     |                    |                      |               |                      |               |                     |          | 509  |  |
|                                | iglidur® F2    |                    | ●                    |               |                      | ●             |                     |          | 521  |  |
|                                | iglidur® H4    | ●                  | ●                    |               |                      | ●             | ●                   | ●        | 531  |  |
|                                | iglidur® Q     |                    |                      |               |                      |               |                     |          | 541  |  |
|                                | iglidur® Q2    |                    |                      |               | ●                    | ●             |                     | ●        | 555  |  |
|                                | iglidur® UW    |                    | ●                    |               |                      |               | ●                   | ●        | 565  |  |
|                                | iglidur® N54   |                    |                      |               |                      |               |                     |          | 575  |  |
|                                | iglidur® G V0  |                    |                      |               |                      |               |                     | ●        | 585  |  |
|                                | iglidur® J2    |                    | ●                    |               |                      | ●             |                     | ●        | 595  |  |
|                                | iglidur® B     |                    |                      |               | ●                    | ●             |                     |          | 605  |  |
|                                | iglidur® C     |                    |                      |               |                      | ●             |                     |          | 613  |  |



## iglidur® | Selection According To Main Criteria



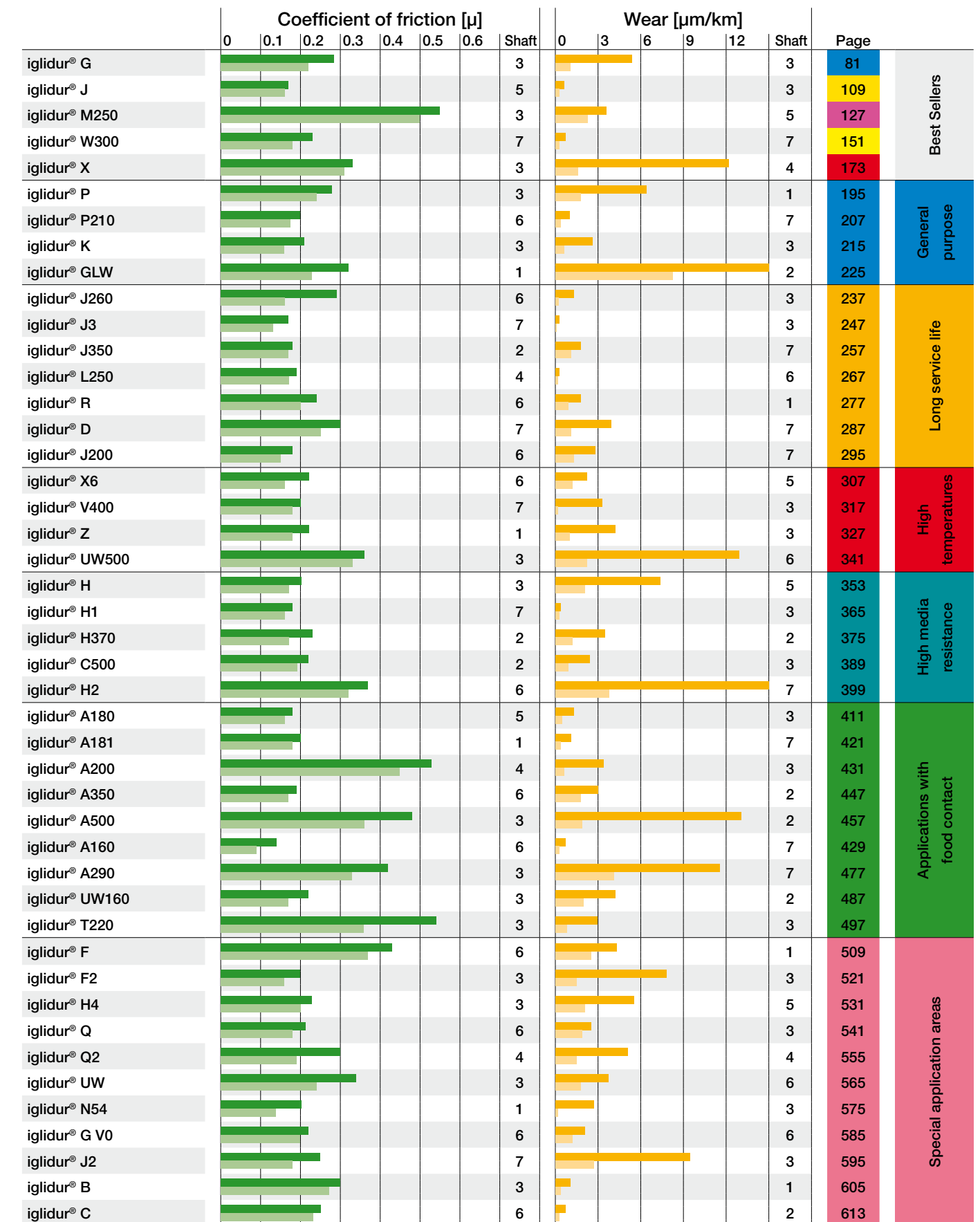
Maximum permissible radial load of iglidur® bearings at

■ +20 °C  
■ +80 °C

Important temperatur limits of iglidur® bearings

■ Maximum permissible application temperature, continuous  
■ Temperature where bearings need to be secured against radial or axial movement in the housing

## iglidur® | Selection According To Main Criteria



Coefficients of friction of iglidur® bearings sliding against steel, p = 1 MPa, v = 0.3 m/s

■ Average coefficient of all the seven sliding combinations tested  
■ Coefficient of friction of best combination

Wear of iglidur® bearings sliding against steel, p = 1 MPa

■ Average wear of all the seven sliding combination tested  
■ Wear of best combination

Shaft material:

1 = Cf53  
2 = Cf53, Hard chromed  
3 = Alu. hc  
4 = Free-cutting Steel  
5 = St37  
6 = V2A  
7 = X90

|                                 |                                                                                 | Best Sellers                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   | General purpose                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                 |                                                                                 | G                                                                                 | J                                                                                 | M250                                                                              | W300                                                                              | X                                                                                 | P                                                                                 | P210                                                                                | K                                                                                   | GLW                                                                                 | J260                                                                                |
| General properties              | Density [g/cm³]                                                                 | 1.46                                                                              | 1.49                                                                              | 1.14                                                                              | 1.24                                                                              | 1.44                                                                              | 1.58                                                                              | 1.40                                                                                | 1.52                                                                                | 1.36                                                                                | 1.35                                                                                |
|                                 | Colour*                                                                         |  |  |  |  |  |  |  |  |  |  |
|                                 | Max, moisture absorption at +23°C/50% r, h, [% weight]                          | 0.7                                                                               | 0.3                                                                               | 1.4                                                                               | 1.3                                                                               | 0.1                                                                               | 0.2                                                                               | 0.3                                                                                 | 0.1                                                                                 | 1.3                                                                                 | 0.2                                                                                 |
|                                 | Max, moisture absorption [% weight]                                             | 4.0                                                                               | 1.3                                                                               | 7.6                                                                               | 6.5                                                                               | 0.5                                                                               | 0.4                                                                               | 0.5                                                                                 | 0.6                                                                                 | 5.5                                                                                 | 0.4                                                                                 |
|                                 | Coefficient of sliding friction, dynamic against steel [μ]                      | 0.08–0.15                                                                         | 0.06–0.18                                                                         | 0.18–0.40                                                                         | 0.08–0.23                                                                         | 0.09–0.27                                                                         | 0.06–0.21                                                                         | 0.07–0.19                                                                           | 0.06–0.21                                                                           | 0.10–0.24                                                                           | 0.06–0.20                                                                           |
|                                 | pv value, max, (dry) [MPa · m/s]                                                | 0.42                                                                              | 0.34                                                                              | 0.12                                                                              | 0.23                                                                              | 1.32                                                                              | 0.39                                                                              | 0.4                                                                                 | 0.3                                                                                 | 0.3                                                                                 | 0.35                                                                                |
| Mechanical properties           | Modulus of elasticity [MPa]                                                     | 7,800                                                                             | 2,400                                                                             | 2,700                                                                             | 3,500                                                                             | 8,100                                                                             | 5,300                                                                             | 2,500                                                                               | 3,500                                                                               | 7,700                                                                               | 2,200                                                                               |
|                                 | Tensile strenght at +20 °C [MPa]                                                | 210                                                                               | 73                                                                                | 112                                                                               | 125                                                                               | 170                                                                               | 120                                                                               | 70                                                                                  | 80                                                                                  | 235                                                                                 | 60                                                                                  |
|                                 | Compressive strength [MPa]                                                      | 78                                                                                | 60                                                                                | 52                                                                                | 61                                                                                | 100                                                                               | 66                                                                                | 50                                                                                  | 60                                                                                  | 74                                                                                  | 50                                                                                  |
|                                 | Max, permissible static surface pressure (+20 °C) [MPa]                         | 80                                                                                | 35                                                                                | 20                                                                                | 60                                                                                | 150                                                                               | 50                                                                                | 50                                                                                  | 50                                                                                  | 80                                                                                  | 40                                                                                  |
|                                 | Shore-D-hardness                                                                | 81                                                                                | 74                                                                                | 79                                                                                | 77                                                                                | 85                                                                                | 75                                                                                | 75                                                                                  | 72                                                                                  | 78                                                                                  | 77                                                                                  |
| Physical and thermal properties | Max, long term application temperature [°C]                                     | +130                                                                              | +90                                                                               | +80                                                                               | +90                                                                               | +250                                                                              | +130                                                                              | +100                                                                                | +170                                                                                | +100                                                                                | +120                                                                                |
|                                 | Max, short term application temperature [°C]                                    | +220                                                                              | +120                                                                              | +170                                                                              | +180                                                                              | +315                                                                              | +200                                                                              | +160                                                                                | +240                                                                                | +160                                                                                | +140                                                                                |
|                                 | Min, application temperature [°C]                                               | –40                                                                               | –50                                                                               | –40                                                                               | –40                                                                               | –100                                                                              | –40                                                                               | –40                                                                                 | –40                                                                                 | –40                                                                                 | –100                                                                                |
|                                 | Thermal conductivity [W/m · K]                                                  | 0.24                                                                              | 0.25                                                                              | 0.24                                                                              | 0.24                                                                              | 0.60                                                                              | 0.25                                                                              | 0.25                                                                                | 0.25                                                                                | 0.24                                                                                | 0.24                                                                                |
|                                 | Coefficient of thermal expansion (+23 °C) [K <sup>-1</sup> · 10 <sup>-5</sup> ] | 9                                                                                 | 10                                                                                | 10                                                                                | 9                                                                                 | 5                                                                                 | 4                                                                                 | 8                                                                                   | 3                                                                                   | 17                                                                                  | 13                                                                                  |
| Electrical properties           | Specific volume resistance [Ωcm]                                                | > 10 <sup>13</sup>                                                                | > 10 <sup>13</sup>                                                                | > 10 <sup>13</sup>                                                                | > 10 <sup>13</sup>                                                                | < 10 <sup>5</sup>                                                                 | > 10 <sup>13</sup>                                                                | > 10 <sup>12</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>11</sup>                                                                  | > 10 <sup>12</sup>                                                                  |
|                                 | Surface resistance [Ω]                                                          | > 10 <sup>11</sup>                                                                | > 10 <sup>12</sup>                                                                | > 10 <sup>11</sup>                                                                | > 10 <sup>12</sup>                                                                | < 10 <sup>3</sup>                                                                 | > 10 <sup>12</sup>                                                                | > 10 <sup>11</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>11</sup>                                                                  | > 10 <sup>10</sup>                                                                  |
| Page                            |                                                                                 | 81                                                                                | 109                                                                               | 127                                                                               | 151                                                                               | 173                                                                               | 195                                                                               | 207                                                                                 | 215                                                                                 | 225                                                                                 | 237                                                                                 |

If you are unsure which material you need, please go back to relevant selection tables, or call us,  
According to main properties, ► page 52; According to performance, ► page 54  
\* Similar colour, please refer to the individual materials tables in each chapter ► from page 81

| Long service life                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | High temperatures                                                                   |                                                                                     |                                                                                     |                                                                                     | High media resistance                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| J3                                                                                  | J350                                                                                | L250                                                                                | R                                                                                   | D                                                                                   | J200                                                                                | X6                                                                                  | V400                                                                                | Z                                                                                   | UW 500                                                                              | H                                                                                   | H1                                                                                  | H370                                                                                | C500                                                                                | H2                                                                                  |
| 1.42                                                                                | 1.44                                                                                | 1.5                                                                                 | 1.39                                                                                | 1.4                                                                                 | 1.72                                                                                | 1.53                                                                                | 1.51                                                                                | 1.4                                                                                 | 1.49                                                                                | 1.71                                                                                | 1.53                                                                                | 1.66                                                                                | 1.37                                                                                | 1.72                                                                                |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.3                                                                                 | 0.3                                                                                 | 0.7                                                                                 | 0.2                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.3                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.3                                                                                 | 0.1                                                                                 |
| 1.3                                                                                 | 1.6                                                                                 | 3.9                                                                                 | 1.1                                                                                 | 1.1                                                                                 | 0.7                                                                                 | 0.5                                                                                 | 0.2                                                                                 | 1.1                                                                                 | 0.5                                                                                 | 0.3                                                                                 | 0.3                                                                                 | 0.1                                                                                 | 0.5                                                                                 | 0.2                                                                                 |
| 0.06–0.20                                                                           | 0.10–0.20                                                                           | 0.08–0.19                                                                           | 0.09–0.25                                                                           | 0.08–0.26                                                                           | 0.11–0.17                                                                           | 0.09–0.25                                                                           | 0.15–0.20                                                                           | 0.06–0.14                                                                           | 0.20–0.36                                                                           | 0.07–0.20                                                                           | 0.06–0.20                                                                           | 0.07–0.17                                                                           | 0.07–0.19                                                                           | 0.07–0.30                                                                           |
| 0.5                                                                                 | 0.45                                                                                | 0.4                                                                                 | 0.27                                                                                | 0.27                                                                                | 0.3                                                                                 | 1.35                                                                                | 0.5                                                                                 | 0.84                                                                                | 0.35                                                                                | 1.37                                                                                | 0.80                                                                                | 0.74                                                                                | 0.7                                                                                 | 0.58                                                                                |
| 2,700                                                                               | 2,000                                                                               | 1,950                                                                               | 1,950                                                                               | 2,000                                                                               | 2,800                                                                               | 16,000                                                                              | 4,500                                                                               | 2,400                                                                               | 16,000                                                                              | 12,500                                                                              | 2,800                                                                               | 11,100                                                                              | 3,000                                                                               | 10,300                                                                              |
| 70                                                                                  | 55                                                                                  | 67                                                                                  | 70                                                                                  | 72                                                                                  | 58                                                                                  | 290                                                                                 | 95                                                                                  | 95                                                                                  | 260                                                                                 | 175                                                                                 | 55                                                                                  | 135                                                                                 | 100                                                                                 | 210                                                                                 |
| 60                                                                                  | 60                                                                                  | 47                                                                                  | 68                                                                                  | 70                                                                                  | 43                                                                                  | 190                                                                                 | 47                                                                                  | 65                                                                                  | 140                                                                                 | 81                                                                                  | 78                                                                                  | 79                                                                                  | 110                                                                                 | 109                                                                                 |
| 45                                                                                  | 60                                                                                  | 45                                                                                  | 23                                                                                  | 23                                                                                  | 23                                                                                  | 150                                                                                 | 45                                                                                  | 150                                                                                 | 140                                                                                 | 90                                                                                  | 80                                                                                  | 75                                                                                  | 110                                                                                 | 110                                                                                 |
| 73                                                                                  | 80                                                                                  | 68                                                                                  | 77                                                                                  | 78                                                                                  | 70                                                                                  | 89                                                                                  | 74                                                                                  | 81                                                                                  | 86                                                                                  | 87                                                                                  | 77                                                                                  | 82                                                                                  | 81                                                                                  | 88                                                                                  |
| +90                                                                                 | +180                                                                                | +90                                                                                 | +90                                                                                 | +90                                                                                 | +90                                                                                 | +250                                                                                | +200                                                                                | +250                                                                                | +250                                                                                | +200                                                                                | +200                                                                                | +200                                                                                | +250                                                                                | +200                                                                                |
| +120                                                                                | +220                                                                                | +180                                                                                | +110                                                                                | +110                                                                                | +120                                                                                | +315                                                                                | +240                                                                                | +310                                                                                | +300                                                                                | +240                                                                                | +240                                                                                | +240                                                                                | +300                                                                                | +240                                                                                |
| –50                                                                                 | –100                                                                                | –40                                                                                 | –50                                                                                 | –50                                                                                 | –50                                                                                 | –100                                                                                | –50                                                                                 | –100                                                                                | –100                                                                                | –40                                                                                 | –40                                                                                 | –40                                                                                 | –100                                                                                | –40                                                                                 |
| 0.25                                                                                | 0.24                                                                                | 0.24                                                                                | 0.25                                                                                | 0.25                                                                                | 0.24                                                                                | 0.55                                                                                | 0.24                                                                                | 0.62                                                                                | 0.6                                                                                 | 0.6                                                                                 | 0.24                                                                                | 0.5                                                                                 | 0.24                                                                                | 0.24                                                                                |
| 13                                                                                  | 7                                                                                   | 10                                                                                  | 11                                                                                  | 11                                                                                  | 8                                                                                   | 1.1                                                                                 | 3                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 6                                                                                   | 5                                                                                   | 9                                                                                   | 4                                                                                   |
| > 10 <sup>12</sup>                                                                  | > 10 <sup>13</sup>                                                                  | > 10 <sup>10</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>14</sup>                                                                  | > 10 <sup>8</sup>                                                                   | < 10 <sup>5</sup>                                                                   | > 10 <sup>12</sup>                                                                  | > 10 <sup>11</sup>                                                                  | < 10 <sup>9</sup>                                                                   | < 10 <sup>5</sup>                                                                   | > 10 <sup>12</sup>                                                                  | < 10 <sup>5</sup>                                                                   | > 10 <sup>14</sup>                                                                  | > 10 <sup>15</sup>                                                                  |
| > 10 <sup>12</sup>                                                                  | > 10 <sup>10</sup>                                                                  | > 10 <sup>11</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>14</sup>                                                                  | > 10 <sup>8</sup>                                                                   | < 10 <sup>3</sup>                                                                   | > 10 <sup>12</sup>                                                                  | > 10 <sup>11</sup>                                                                  | < 10 <sup>9</sup>                                                                   | < 10 <sup>2</sup>                                                                   | > 10 <sup>11</sup>                                                                  | < 10 <sup>5</sup>                                                                   | > 10 <sup>13</sup>                                                                  | > 10 <sup>14</sup>                                                                  |
| 247                                                                                 | 257                                                                                 | 267                                                                                 | 277                                                                                 | 287                                                                                 | 295                                                                                 | 307                                                                                 | 317                                                                                 | 327                                                                                 | 341                                                                                 | 353                                                                                 | 365                                                                                 | 375                                                                                 | 389                                                                                 | 399                                                                                 |

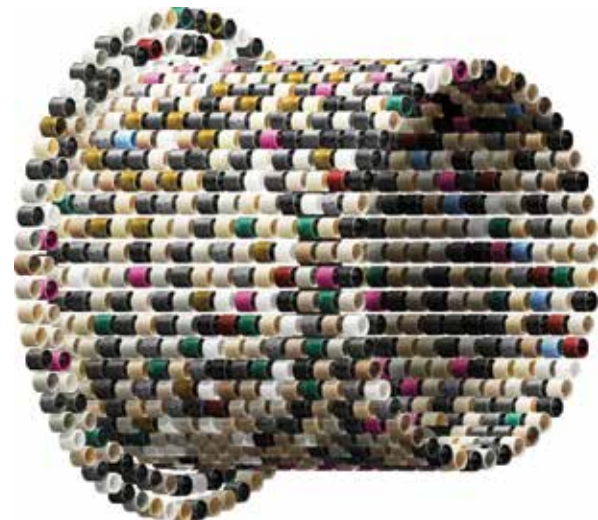


|                                 |                                                                                 | Applications with food contact                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                 |                                                                                 | A180                                                                              | A181                                                                              | A200                                                                              | A350                                                                              | A500                                                                              | A160                                                                               | A290                                                                                | UW160                                                                               | T220                                                                                |
| General properties              | Density [g/cm³]                                                                 | 1.46                                                                              | 1.38                                                                              | 1.14                                                                              | 1.42                                                                              | 1.28                                                                              | 1.00                                                                               | 1.41                                                                                | 1.04                                                                                | 1.28                                                                                |
|                                 | Colour*                                                                         |  |  |  |  |  |  |  |  |  |
|                                 | Max, moisture absorption at +23°C/50% r, h, [% weight]                          | 0.2                                                                               | 0.2                                                                               | 1.5                                                                               | 0.6                                                                               | 0.3                                                                               | 0.1                                                                                | 1.7                                                                                 | 0.1                                                                                 | 0.3                                                                                 |
|                                 | Max, moisture absorption [% weight]                                             | 1.3                                                                               | 1.3                                                                               | 7.6                                                                               | 1.9                                                                               | 0.5                                                                               | 0.1                                                                                | 7.3                                                                                 | 0.1                                                                                 | 0.5                                                                                 |
|                                 | Coefficient of sliding friction, dynamic against steel [μ]                      | 0.05–0.23                                                                         | 0.10–0.21                                                                         | 0.10–0.40                                                                         | 0.10–0.20                                                                         | 0.26–0.41                                                                         | 0.09–0.19                                                                          | 0.13–0.40                                                                           | 0.17–0.31                                                                           | 0.20–0.32                                                                           |
|                                 | pv value, max, (dry) [MPa · m/s]                                                | 0.31                                                                              | 0.31                                                                              | 0.09                                                                              | 0.40                                                                              | 0.28                                                                              | 0.25                                                                               | 0.23                                                                                | 0.22                                                                                | 0.28                                                                                |
| Mechanical properties           | Modulus of elasticity [MPa]                                                     | 2,300                                                                             | 1,913                                                                             | 2,500                                                                             | 2,000                                                                             | 3,600                                                                             | 1,151                                                                              | 8,800                                                                               | 1,349                                                                               | 1,800                                                                               |
|                                 | Tensile strenght at +20 °C [MPa]                                                | 88                                                                                | 48                                                                                | 116                                                                               | 110                                                                               | 140                                                                               | 19                                                                                 | 250                                                                                 | 22                                                                                  | 65                                                                                  |
|                                 | Compressive strength [MPa]                                                      | 78                                                                                | 60                                                                                | 54                                                                                | 78                                                                                | 118                                                                               | 37                                                                                 | 91                                                                                  | 32                                                                                  | 55                                                                                  |
|                                 | Max, permissible static surface pressure (+20 °C) [MPa]                         | 28                                                                                | 31                                                                                | 18                                                                                | 60                                                                                | 120                                                                               | 15                                                                                 | 70                                                                                  | 15                                                                                  | 40                                                                                  |
|                                 | Shore-D-hardness                                                                | 76                                                                                | 76                                                                                | 81                                                                                | 76                                                                                | 83                                                                                | 60                                                                                 | 88                                                                                  | 60                                                                                  | 76                                                                                  |
| Physical and thermal properties | Max, long term application temperature [°C]                                     | +90                                                                               | +90                                                                               | +80                                                                               | +180                                                                              | +250                                                                              | +90                                                                                | +140                                                                                | +90                                                                                 | +100                                                                                |
|                                 | Max, short term application temperature [°C]                                    | +110                                                                              | +110                                                                              | +170                                                                              | +210                                                                              | +300                                                                              | +100                                                                               | +180                                                                                | +100                                                                                | +160                                                                                |
|                                 | Min, application temperature [°C]                                               | –50                                                                               | –50                                                                               | –40                                                                               | –100                                                                              | –100                                                                              | –50                                                                                | –40                                                                                 | –50                                                                                 | –40                                                                                 |
|                                 | Thermal conductivity [W/m · K]                                                  | 0.25                                                                              | 0.25                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.30                                                                               | 0.24                                                                                | 0.50                                                                                | 0.24                                                                                |
|                                 | Coefficient of thermal expansion (+23 °C) [K <sup>-1</sup> · 10 <sup>-6</sup> ] | 11                                                                                | 11                                                                                | 10                                                                                | 8                                                                                 | 9                                                                                 | 11                                                                                 | 7                                                                                   | 18                                                                                  | 11                                                                                  |
| Electrical properties           | Specific volume resistance [Ωcm]                                                | > 10 <sup>12</sup>                                                                | > 10 <sup>12</sup>                                                                | > 10 <sup>13</sup>                                                                | > 10 <sup>11</sup>                                                                | > 10 <sup>14</sup>                                                                | > 10 <sup>12</sup>                                                                 | > 10 <sup>11</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>10</sup>                                                                  |
|                                 | Surface resistance [Ω]                                                          | > 10 <sup>11</sup>                                                                | > 10 <sup>12</sup>                                                                | > 10 <sup>12</sup>                                                                | > 10 <sup>11</sup>                                                                | > 10 <sup>13</sup>                                                                | > 10 <sup>12</sup>                                                                 | > 10 <sup>11</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>10</sup>                                                                  |
| Page                            |                                                                                 | 411                                                                               | 421                                                                               | 431                                                                               | 447                                                                               | 457                                                                               | 429                                                                                | 477                                                                                 | 487                                                                                 | 497                                                                                 |

If you are unsure which material you need, please go back to relevant selection tables, or call us,  
According to main properties, ► page 52; According to performance, ► page 54  
\* Similar colour, please refer to the individual materials tables in each chapter ► from page 81

| Special application areas                                                           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| F                                                                                   | F2                                                                                  | H4                                                                                  | Q                                                                                   | Q2                                                                                  | UW                                                                                  | N54                                                                                 | GV0                                                                                 | J2                                                                                  | B                                                                                   | C                                                                                   |
| 1.25                                                                                | 1.52                                                                                | 1.79                                                                                | 1.4                                                                                 | 1.46                                                                                | 1.52                                                                                | 1.13                                                                                | 1.53                                                                                | 1.44                                                                                | 1.15                                                                                | 1.1                                                                                 |
|  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                 | 0.2                                                                                 | 0.1                                                                                 | 0.9                                                                                 | 1.1                                                                                 | 0.2                                                                                 | 1.6                                                                                 | 0.7                                                                                 | 0.2                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| 8.4                                                                                 | 0.4                                                                                 | 0.2                                                                                 | 4.9                                                                                 | 4.6                                                                                 | 0.8                                                                                 | 3.6                                                                                 | 4.0                                                                                 | 1.3                                                                                 | 6.3                                                                                 | 6.9                                                                                 |
| 0.10–0.39                                                                           | 0.16–0.22                                                                           | 0.08–0.25                                                                           | 0.05–0.15                                                                           | 0.22–0.42                                                                           | 0.15–0.35                                                                           | 0.15–0.23                                                                           | 0.07–0.20                                                                           | 0.11–0.27                                                                           | 0.18–0.28                                                                           | 0.17–0.25                                                                           |
| 0.34                                                                                | 0.31                                                                                | 0.70                                                                                | 0.55                                                                                | 0.7                                                                                 | 0.11                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.23                                                                                | 0.15                                                                                | 0.10                                                                                |
| 11,600                                                                              | 7,418                                                                               | 7,500                                                                               | 4,500                                                                               | 8,370                                                                               | 9,600                                                                               | 1,800                                                                               | 7,900                                                                               | 3,605                                                                               | 1,800                                                                               | 1,900                                                                               |
| 260                                                                                 | 93                                                                                  | 120                                                                                 | 120                                                                                 | 240                                                                                 | 90                                                                                  | 70                                                                                  | 140                                                                                 | 101                                                                                 | 55                                                                                  | 60                                                                                  |
| 98                                                                                  | 61                                                                                  | 50                                                                                  | 89                                                                                  | 130                                                                                 | 70                                                                                  | 30                                                                                  | 100                                                                                 | 77                                                                                  | 20                                                                                  | 30                                                                                  |
| 105                                                                                 | 47                                                                                  | 65                                                                                  | 100                                                                                 | 120                                                                                 | 40                                                                                  | 36                                                                                  | 75                                                                                  | 46                                                                                  | 40                                                                                  | 40                                                                                  |
| 84                                                                                  | 72                                                                                  | 80                                                                                  | 83                                                                                  | 80                                                                                  | 78                                                                                  | 74                                                                                  | 80                                                                                  | n.b.                                                                                | 69                                                                                  | 72                                                                                  |
| +140                                                                                | +120                                                                                | +200                                                                                | +135                                                                                | +130                                                                                | +90                                                                                 | +80                                                                                 | +130                                                                                | +90                                                                                 | +100                                                                                | +90                                                                                 |
| +180                                                                                | +165                                                                                | +240                                                                                | +155                                                                                | +200                                                                                | +110                                                                                | +120                                                                                | +210                                                                                | +110                                                                                | +130                                                                                | +130                                                                                |
| –40                                                                                 | –40                                                                                 | –40                                                                                 | –40                                                                                 | –40                                                                                 | –50                                                                                 | –40                                                                                 | –40                                                                                 | –50                                                                                 | –40                                                                                 | –40                                                                                 |
| 0.65                                                                                | 0.61                                                                                | 0.24                                                                                | 0.23                                                                                | 0.24                                                                                | 0.6                                                                                 | 0.24                                                                                | 0.25                                                                                | 0.25                                                                                | 0.24                                                                                | 0.24                                                                                |
| 12                                                                                  | 5                                                                                   | 5                                                                                   | 5                                                                                   | 8                                                                                   | 6                                                                                   | 9                                                                                   | 9                                                                                   | 7                                                                                   | 12                                                                                  | 15                                                                                  |
| < 10 <sup>3</sup>                                                                   | < 10 <sup>9</sup>                                                                   | > 10 <sup>13</sup>                                                                  | > 10 <sup>15</sup>                                                                  | > 10 <sup>13</sup>                                                                  | < 10 <sup>5</sup>                                                                   | > 10 <sup>13</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>13</sup>                                                                  | > 10 <sup>10</sup>                                                                  | > 10 <sup>10</sup>                                                                  |
| < 10 <sup>2</sup>                                                                   | < 10 <sup>9</sup>                                                                   | > 10 <sup>12</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>11</sup>                                                                  | < 10 <sup>5</sup>                                                                   | > 10 <sup>11</sup>                                                                  | > 10 <sup>11</sup>                                                                  | > 10 <sup>12</sup>                                                                  | > 10 <sup>9</sup>                                                                   | > 10 <sup>9</sup>                                                                   |
| 509                                                                                 | 521                                                                                 | 531                                                                                 | 541                                                                                 | 555                                                                                 | 565                                                                                 | 575                                                                                 | 585                                                                                 | 595                                                                                 | 605                                                                                 | 613                                                                                 |





Picture 01: iglidur® plain bearings, the right solution for every application

### iglidur® – Plain Bearings Made of High Performance Polymers

Highly wear-resistant tribopolymers improved by precisely harmonized additions of strengthening materials and solid lubricants, tested a thousand times and proved a million times – that is iglidur®. igus® engineers develop and test more than 100 new plastic compounds every year. The finely harmonized combination of plastic matrix, strengthening components and solid lubricants in every single tribopolymer results in an individual properties profile in each case. In more than 10,000 individual tests a year on over 200 test stands in the igus® test laboratory, all existing and potential iglidur® materials, as well as other materials, are thoroughly tested. The findings go into a unique knowledge database on the tribology of maintenance-free plastic plain bearings. This database enables us to select the ideal iglidur® plain bearing for our customers depending on the application and to calculate its anticipated service life. If necessary, it is also possible to develop an application-specific material, exactly adapted to the thermal, mechanical and tribological requirements, which goes beyond the existing iglidur® range. In addition, freely accessible online tools simply to use enable every user to select his personal sliding bearing from iglidur® programme. Whether iglidur® product finder or iglidur® lifetime calculation, piston ring or bar stock configurator: with few clicks and applications related information a suitable bearing is quickly found.

► page 1270 or [www.igus.co.uk/en/online-tools](http://www.igus.co.uk/en/online-tools)



Picture 02: Example of a tribological test in the igus® laboratory



Picture 03: igus® polymer bearings, over 40 years of knowledge and progressive innovation for longer life solutions in all industries

### General Properties of iglidur® Plain Bearings

- Lubrication-free
- Corrosion resistance
- Good media resistance
- High compressive strength
- High mechanical dampening
- Low coefficients of friction
- Maintenance-free
- Low weight
- High wear resistance
- very good price-performance ratio

Over and above the general properties, each iglidur® bearing material possesses a series of special properties and strengths, which make it specially suitable for certain applications and requirements. You can find a comprehensive description of the materials in the respective chapters before the dimensions tables.

### The Traditional Solution

Hard shells with soft coating. Every lubricated bearing works according to this principle, and also a number of maintenance-free bearings that are equipped with special slide layers. However, this soft slide layer is not strong enough. For high loads, edge pressure or oscillations, it is easily removed.

### The iglidur® Solution: The Self-Lubricating Effect

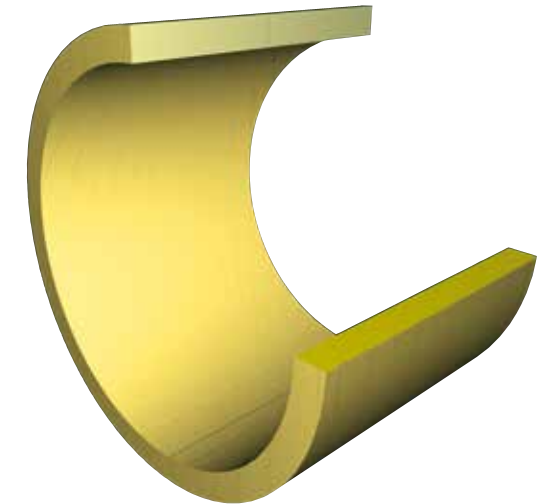
The high performance polymers of the iglidur® plain bearing are composed of:

- Base polymer
- Solid lubricants
- Fibres and filling materials

These components **are not applied in layers**, but instead are mixed together homogeneously. The advantage of this design is clear when the requirements on the bearings surface are studied:

1. The coefficient of friction, which is determined especially by the surface of the bearing, should be as low as possible.
2. The surface cannot be removed by forces that act on the bearing.
3. The wearing force acts especially on the surface of the bearing, for this the bearing must be capable of high resistance.

One universal material, which can fulfill all these tasks equally well, unfortunately does not exist yet. That is why iglidur® plain bearings work differently. Each task fulfilled by the bearing is represented by a component in the iglidur® materials:



Picture 04: Injection molded iglidur® plain bearings are homogeneously structured. Base polymer, bonding materials and solid lubricants mutually complement each other.

- The **base polymers** are responsible for the resistance to wear.
- **Fibres and filling materials** reinforce the bearing so that high forces or edge loads are possible.
- **Solid lubricants** lubricate the bearing independently and prevent friction of the system.

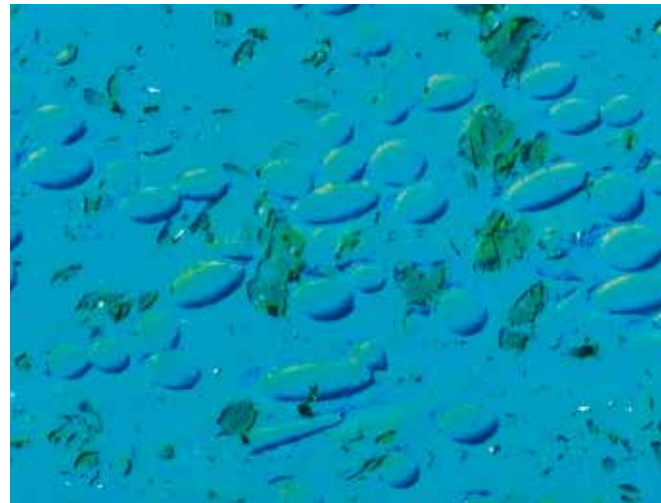
### Base Polymers and Technical Fibres

The radial pressure with which the bearings are loaded is received by the polymer base material. In the contact area, this material provides a support to the shaft. The polymer base material ensures that the lubricants do not receive a surface pressure that is too high. The base material is also reinforced by technical fibres or filling materials. These additional materials stabilize the bearing especially in cases of continuous load.



Picture 05: Polymer granulate, basis compound of the lubrication-free and predictable iglidur® bearings





Picture 06: Base polymers with fibres and solid lubricants, magnified 200 times, dyed.

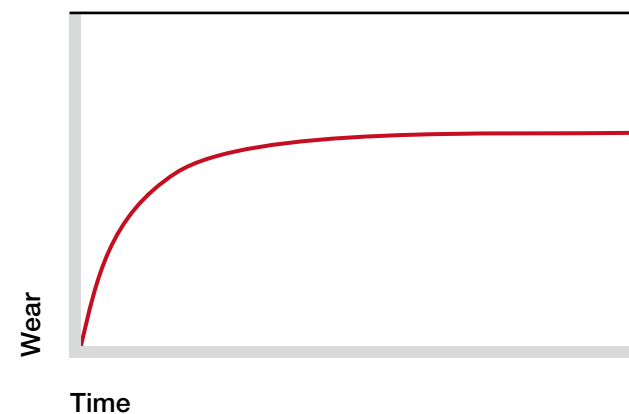


Diagram 01: During the start-up phase, the wear rate drops significantly, and then stabilises.



Picture 07: iglidur® expert – lifetime calculation only with 7 clicks

## Incorporated Self-Lubrication

The solid lubricants are, as microscopically small particles, embedded in millions of tiny chambers of the mostly fibre reinforced material. From these chambers, the plain bearings release tiny amounts of solid lubricants during movement. The solid lubricants help to lower the coefficient of friction of the iglidur® bearing. Since they are embedded in the tiny chambers, they cannot be pressed out. They are always there as soon as the bearing or the shaft is set in motion.

## The Start-Up Phase

In the starting phase, the shaft and the iglidur® plain bearing engage with each other. During this phase, the surfaces of both materials are adjusted to each other. The specific pressure of the system drops since the contact surfaces of the shaft and bearing expand during the start-up. At the same time, the rate of wear decreases and approaches a linear curve. In this phase, the coefficients of friction are changing until finally reaching a value that to a large extent is constant.

## Predictable service life – online

The proven iglidur® lifetime expert in a completely updated version with lots of new features and even easier and faster product selection. Only 7 clicks and 4 entries generate a service life result.

Reliable information on the service life of iglidur® polymer plain bearings can be made on the basis of the igus® database. With the iglidur® expert system you can easily calculate the service life of the iglidur® maintenance-free bearings in your application.

Select the measuring unit and the bearing type ①. Select the required dimensions ② or enter the part number. Please enter the relevant information page for page ③. You will find instructions at the bottom of each page ④. The results are specified as service life in hours ⑤.

► [www.igus.co.uk/iglidur-expert](http://www.igus.co.uk/iglidur-expert)

## Surface Pressure

The load of a plain bearing is expressed by the surface pressure [p] in MPa. For this purpose, the radial load is determined on the projected surface of the bearing.

Radial bearing: 
$$p = \frac{F}{d1 \cdot b1}$$

For thrust bearings, the load is produced accordingly.

Thrust bearing: 
$$p = \frac{F}{(d2^2 - d1^2) \cdot \frac{\pi}{4}}$$

In these equations:

**F** load in N

**d1** bearing inner diameter in mm

**b1** bearing length in mm

**d2** outer diameter of the bearing in mm

## Max. Recommended Surface Pressure

A comparative value of the iglidur® material is the recommended maximum static surface pressure [p] at +20 °C. The values of the individual iglidur® plain bearings differ greatly on this point. The value [p] indicates the pressure limit of a plain bearing. The plain bearing can carry this pressure permanently without damage. The given value applies to static operation; only very slow speeds up to 0.01 m/s are tolerated under this pressure. Higher pressures than those indicated are possible if the duration of the load is short. Please call us if you have questions.

► Material Table, page 56

## Load and Temperature

Diagram 02 and 03 shows the recommended maximum static surface pressure [p] of the iglidur® plain bearing as a function of temperature. When using the plain bearing, the bearing temperature can be higher than the ambient temperature, due to friction. Take advantage of the opportunity presented by the predictability of the iglidur® plain bearing to record these effects in advance, or determine the effective temperatures in the test.

## Pressure and Speed

With decreasing radial load on the plain bearing, the permissible surface speed increases. The product of the pressure [p] and speed [v] can be understood as a measurement for the frictional heat of the bearing. This relationship is shown by the pv diagram that is the first in the respective chapter for each iglidur® material.

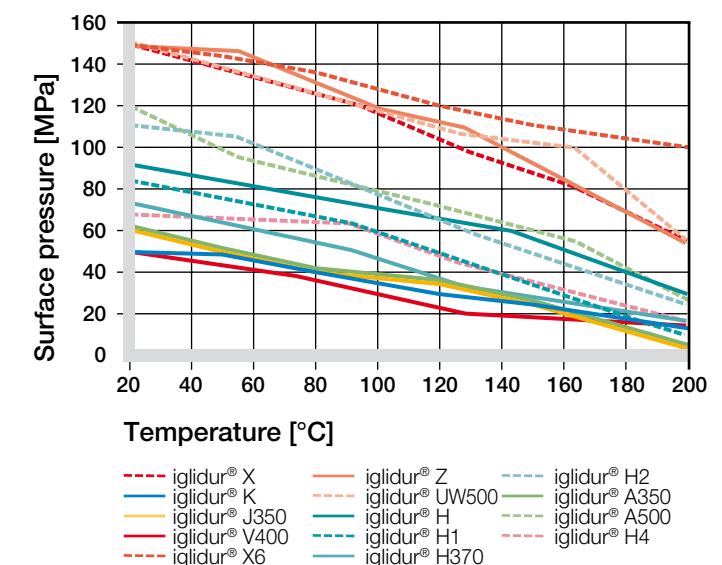
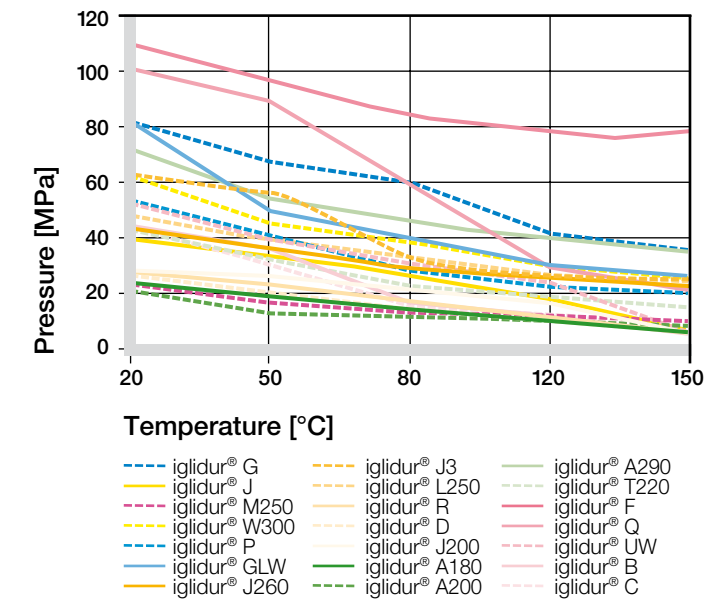


Diagram 02 and 03: Recommended maximum surface pressure of iglidur® plain bearings as a function of temperature

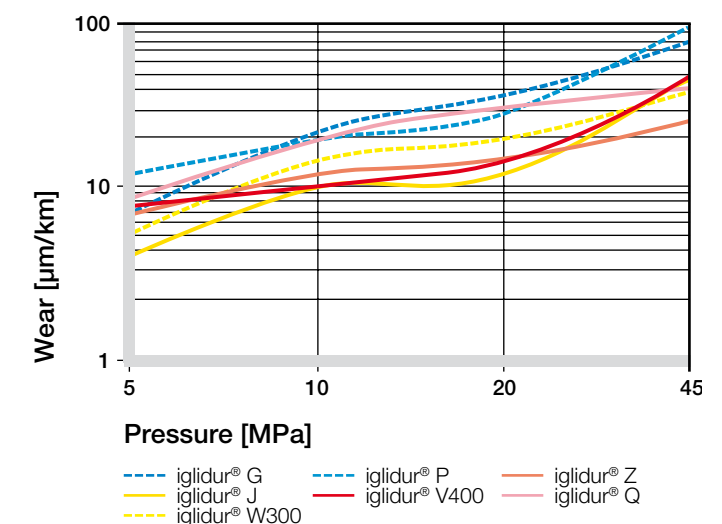
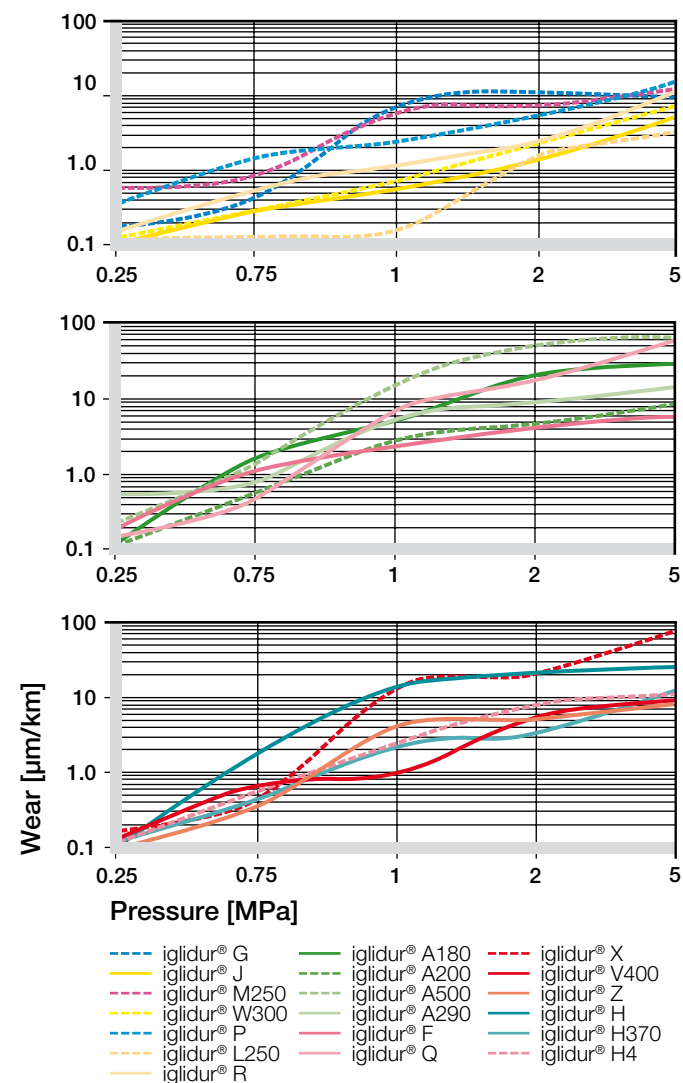


Diagram 04: Wear of iglidur® plain bearings under medium and high pressures

## Pressure and Wear

The load of the plain bearing has an effect on the wear of the bearing. The following diagrams show the wear behaviour of the iglidur® bearing materials. It is easily recognized that for each pressure, there is an optimal plain bearing available. The wear is shown as a wear rate in [µm/km].



Diagrams 05–07: Wear of iglidur® plain bearings under low pressures

## Pressure and Coefficient of Friction

With increasing load, the coefficient of friction of the plain bearing typically decreases. In this context, shaft materials and the surface finish are also significant.

► Coefficient of Friction, page 68

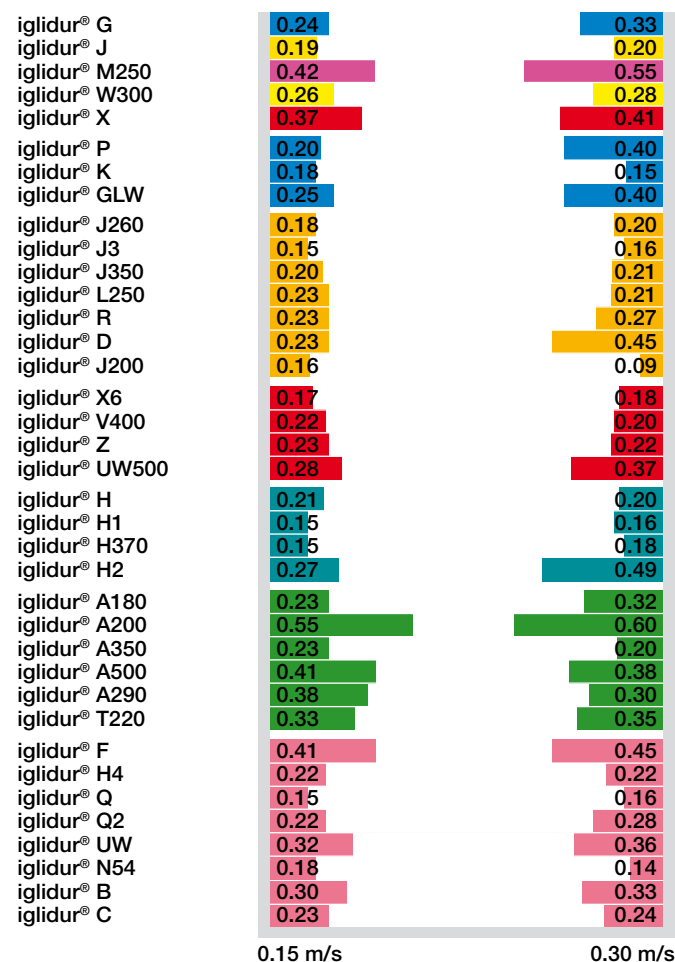


Diagram 08: Coefficients of friction of iglidur® materials for different surface speeds (shaft Cf53)

## Surface Speed

With increasing load, the coefficient of friction of the plain bearing typically decreases. In this context, shaft materials and the surface finish are also significant.

$$\text{Rotational motion } v = \frac{n \cdot d1 \cdot \pi}{60 \cdot 1.000} \left[ \frac{\text{m}}{\text{s}} \right]$$

$$\text{Oscillating motion } v = d1 \cdot \pi \cdot \frac{2 \cdot \beta}{360} \cdot \frac{f}{1.000} \left[ \frac{\text{m}}{\text{s}} \right]$$

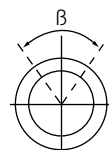
In these equations

**d1** = Shaft diameter [mm]

**f** = frequency in Hertz

**β** = angle of motion per cycle [°]

**n** = rpm



With varying speed like seen for example with oscillating movements, the value needed is the average speed (see above formula)

## Permissible Surface Speeds

iglidur® plain bearings were primarily developed for low to average running speeds in continuous operation. Table 01 shows the permissible surface speed of iglidur® plain bearings for rotating, oscillating, and linear movements. These surface speeds are limit values assuming minimum pressure loading of the bearing. In practice, these limit values are rarely reached due to an inverse relationship between load and speed. All increases of the pressure leads unavoidably to a reduction of the allowable surface speeds and vice versa. The speed limit is determined by the thermal properties of the bearing. This is also the reason why different running speeds can occur for the different movement types. For linear movements, more heat can be dissipated via the shaft, since the bearing uses a longer surface area on the shaft.

## Surface Speed and Wear

Considerations regarding the permissible surface speeds should also include the wear resistance of the plain bearing. High running speeds automatically bring correspondingly high wear rates with them. With higher sliding speed, not only the wear rate rises but also the absolute wear.

## Surface Speed and Coefficient of Friction

In practice the coefficient of friction of plain bearings is a result of the surface speed. High surface speeds have a higher coefficient of friction than low surface speeds. Diagram 08 shows this relationship by using the example of a Cold Rolled Steel shaft (Cf53) with a load of 0.7 MPa.

## pv Value

For plain bearings, the product is given a new value depending on the pressure [p] and the surface speed. The pv value can be considered a measure of the frictional heat and can be used as an analytical tool to answer questions concerning the proper application of a plain bearing. For this purpose, the actual pv value is a function of the shaft material of the ambient temperature and the operating time.

| Material                              | Rotating        |               | Oscillating     |               | Linear          |               |
|---------------------------------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|
|                                       | Conti-<br>nuous | Short<br>term | Conti-<br>nuous | Short<br>term | Conti-<br>nuous | Short<br>term |
| <b>Standards</b>                      |                 |               |                 |               |                 |               |
| iglidur® G                            | 1               | 2             | 0.7             | 1.4           | 4               | 5             |
| iglidur® J                            | 1.5             | 3             | 1.1             | 2.1           | 8               | 10            |
| iglidur® M250                         | 0.8             | 2             | 0.6             | 1.4           | 2.5             | 5             |
| iglidur® W300                         | 1               | 2.5           | 0.7             | 1.8           | 4               | 6             |
| iglidur® X                            | 1.5             | 3.5           | 1.1             | 2.5           | 5               | 10            |
| <b>General purpose</b>                |                 |               |                 |               |                 |               |
| iglidur® P                            | 1               | 2             | 0.7             | 1.4           | 3               | 4             |
| iglidur® K                            | 1               | 2             | 0.7             | 1.4           | 3               | 4             |
| iglidur® GLW                          | 0.8             | 1             | 0.6             | 0.7           | 2.5             | 3             |
| <b>Long service life</b>              |                 |               |                 |               |                 |               |
| iglidur® J260                         | 1               | 2             | 0.7             | 1.4           | 3               | 4             |
| iglidur® J3                           | 1.5             | 3             | 1.1             | 2.1           | 8               | 10            |
| iglidur® J350                         | 1.3             | 3             | 1               | 2.3           | 4               | 8             |
| iglidur® L250                         | 1               | 1.5           | 0.7             | 1.1           | 2               | 3             |
| iglidur® R                            | 0.8             | 1.2           | 0.6             | 1             | 3.5             | 5             |
| iglidur® D                            | 1.5             | 3             | 1.1             | 2.1           | 8               | 10            |
| iglidur® J200                         | 1               | 1.5           | 0.7             | 1.1           | 10              | 15            |
| <b>High temperatures</b>              |                 |               |                 |               |                 |               |
| iglidur® X6                           | 1.5             | 3.5           | 1.1             | 2.5           | 5.4             | 10            |
| iglidur® V400                         | 0.9             | 1.3           | 0.6             | 0.9           | 2               | 3             |
| iglidur® Z                            | 1.5             | 3.5           | 1.1             | 2.5           | 5               | 6             |
| iglidur® UW500                        | 0.8             | 1.5           | 0.6             | 1.1           | 2               | 3             |
| <b>High media resistance</b>          |                 |               |                 |               |                 |               |
| iglidur® H                            | 1               | 1.5           | 0.7             | 1.1           | 3               | 4             |
| iglidur® H1                           | 2               | 2.5           | 1               | 1.5           | 5               | 7             |
| iglidur® H370                         | 1.2             | 1.5           | 0.8             | 1.1           | 4               | 5             |
| iglidur® H2                           | 0.9             | 1             | 0.6             | 0.7           | 2.5             | 3             |
| <b>Applications with food contact</b> |                 |               |                 |               |                 |               |
| iglidur® A180                         | 0.8             | 1.2           | 0.6             | 1             | 3.5             | 5             |
| iglidur® A200                         | 0.8             | 1.5           | 0.6             | 1.1           | 2               | 3             |
| iglidur® A350                         | 1               | 1.2           | 0.8             | 0.9           | 2.5             | 3             |
| iglidur® A500                         | 0.6             | 1             | 0.4             | 0.7           | 1               | 2             |
| iglidur® A290                         | 1               | 2             | 0.7             | 1.4           | 3               | 4             |
| iglidur® T220                         | 0.4             | 1             | 0.3             | 0.7           | 1               | 2             |
| <b>Special application areas</b>      |                 |               |                 |               |                 |               |
| iglidur® F                            | 0.8             | 1.5           | 0.6             | 1.1           | 3               | 5             |
| iglidur® H4                           | 1               | 1.5           | 0.7             | 1.1           | 1               | 2             |
| iglidur® Q                            | 1               | 2             | 0.7             | 1.4           | 5               | 6             |
| iglidur® Q2                           | 1               | 2             | 0.7             | 1.4           | 4               | 5             |
| iglidur® UW                           | 0.5             | 1.5           | 0.4             | 1.1           | 2               | 3             |
| iglidur® N54                          | 0.8             | 1.5           | 0.6             | 1.1           | 1               | 2             |
| iglidur® B                            | 0.7             | 1             | 0.5             | 0.7           | 2               | 3             |
| iglidur® C                            | 1               | 1.5           | 0.7             | 1.1           | 2               | 3             |

Table 01: Surface speeds of iglidur® bearings in m/s; continous and short term



$$pv_{perm.} = \left( \frac{[K1 \cdot \pi \cdot \lambda_k \cdot \Delta T]}{\mu \cdot s} + \frac{[K2 \cdot \pi \cdot \lambda_s \cdot \Delta T]}{\mu \cdot b1 \cdot 2} \right) \cdot 10^{-3}$$

where

- K1, K2** = constant for heat dissipation  
(K1 = 0,5, K2 = 0,042)
- s** = bearing wall thickness [mm]
- b1** = bearing length [mm]
- μ** = coefficient of friction
- λs** = thermal conductivity of the shaft
- λk** = thermal conductivity of the bearing
- ΔT** = (T<sub>a</sub> – T<sub>u</sub>)
- T<sub>u</sub>** = ambient temperature [°C]
- T<sub>a</sub>** = max. application temperature [°C]

| Material       | Thermal conductivity [W/m · k] |
|----------------|--------------------------------|
| Steel          | 46                             |
| Aluminum       | 204                            |
| Grey cast iron | 58                             |
| 303 Stainless  | 16                             |
| Ceramics       | 1.4                            |
| Plastics       | 0.24                           |

Table 02: Heat conductivity values of shaft or housing materials

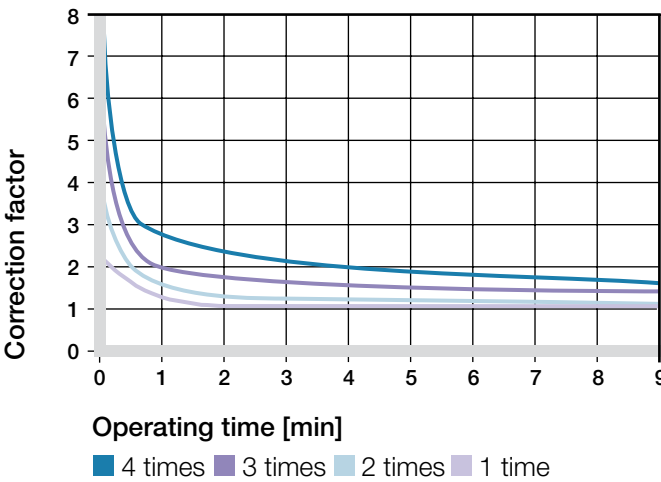


Diagram 09: Correction factor for p · v

| Type of lubrication | Correction factor |
|---------------------|-------------------|
| Dry run             | 1                 |
| During installation | 1.3               |
| Continuous, grease  | 2                 |
| Continuous, water   | 4                 |
| Continuous, oil     | 5                 |

Table 03: Correction of the tolerated p · v value by means of lubrication

Correction Factor

The permissible pv value can be increased in practical operation if the bearing temperature never reaches the maximum limit because of the short operating time. Tests have shown that this is true for operating times below 10 minutes. An important qualifier here is the ratio of the operating time and dwell times. It is known that a longer dwell time makes a greater contribution to re-cooling. The different curves of diagram 09 represent different ratios (3 x means that the dwell time is three times longer than the operating time).

Lubrication

Although iglidur® plain bearings are designed to run dry, they are quite compatible with standard oils and greases. A single lubrication during the installation improves the start-up behaviour and the coefficient of friction, thus reducing the frictional heat. Due to this effect, the permissible loads for plain bearings can be increased by lubrication. For further information, please contact us. Table 03 shows the correction factors for pv value using lubrication

Temperatures

The temperature resistance of high performance polymer plain bearings is usually underestimated. Who would believe that plastic bearings can be used over +300°C Data is often found in the literature about the continuous use temperature. The continuous use temperature is the highest temperature, which the plastic can withstand for a period of time without a reduction in the tensile strength of the material above or below a prespecified value. Please note, these standard test results have limited applications, since bearings are almost always under load.

Application Temperatures

The minimum application temperature is the temperature below which the material is so rigid and hard that it becomes too brittle for standard applications. The maximum continuous application temperature is the temperature which the material can endure without the properties changing considerably. The maximum, short-term application temperature is the temperature above which the material becomes so soft, that it can only withstand small external loads.

“Short term” is defined as a period of a few minutes. If the plain bearings are moved axially or axial forces occur, there is more opportunity for the bearing to lose pressfit. In these cases, axial securing of the bearing is necessary in addition to the pressfit.

Temperature and Load

The diagrams 02 and 03 (► page 63) show the maximum recommended pressure [p] of the iglidur® plain bearings as a function of temperature. With increasing temperature, this value rises continuously.

With plain bearings it is important to note that, due to the friction, the bearing temperature may be higher than the ambient temperature.

Coefficient of Thermal Expansion

The thermal expansion of polymers is approximately 10 to 20 times higher than metals. In contrast to metal, this expansion is non linear in plastics. The coefficient of thermal expansion of the iglidur® plain bearing is a significant reason for the required play in the bearing. At the given application clearance, seizing of the bearing to the shaft does not occur at high temperatures. The coefficient of thermal expansion of iglidur® plain bearings was examined for significant temperature ranges and the results are given in the individual materials tables, at the start of each chapter.



Picture 08: Material tests are possible up to +250 °C

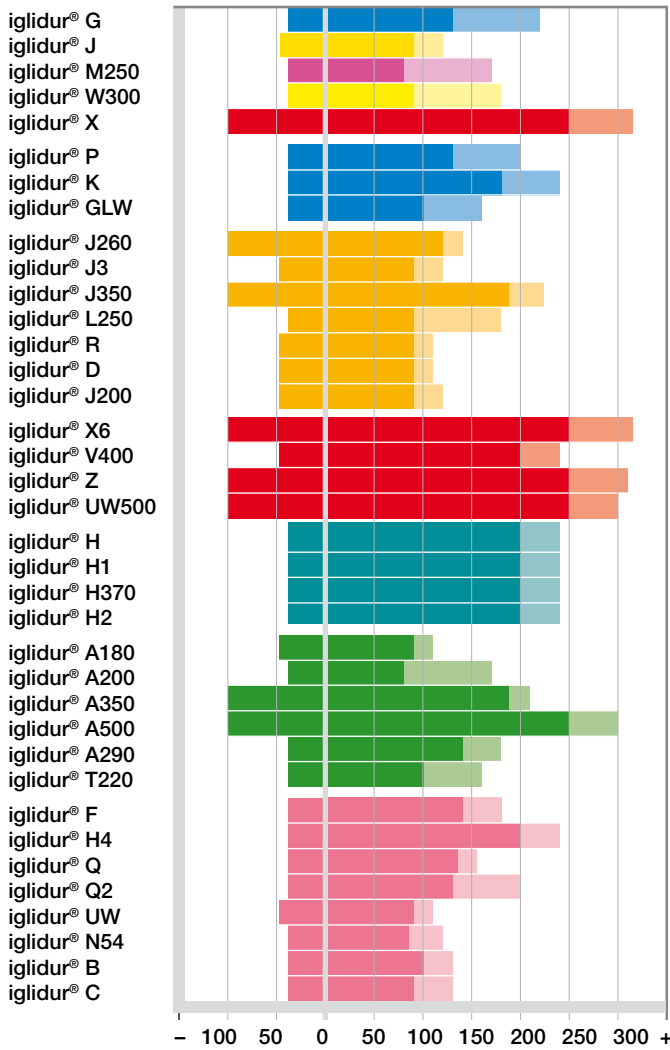


Diagram 10: Comparison of the continuous and short term upper application temperature limits [°C]

| Material       | Temp. [°C] | Material      | Temp. [°C] |
|----------------|------------|---------------|------------|
| iglidur® G     | +80        | iglidur® H    | +120       |
| iglidur® J     | +60        | iglidur® H1   | +80        |
| iglidur® M250  | +60        | iglidur® H370 | +100       |
| iglidur® W300  | +60        | iglidur® H2   | +110       |
| iglidur® X     | +135       | iglidur® A180 | +60        |
| iglidur® P     | +90        | iglidur® A200 | +50        |
| iglidur® K     | +70        | iglidur® A350 | +140       |
| iglidur® GLW   | +80        | iglidur® A500 | +130       |
| iglidur® J260  | +80        | iglidur® A290 | +110       |
| iglidur® J3    | +60        | iglidur® T220 | +50        |
| iglidur® J350  | +140       | iglidur® F    | +105       |
| iglidur® L250  | +55        | iglidur® H4   | +110       |
| iglidur® R     | +50        | iglidur® Q    | +50        |
| iglidur® D     | +50        | iglidur® Q2   | +70        |
| iglidur® J200  | +60        | iglidur® UW   | +80        |
| iglidur® X6    | +165       | iglidur® N54  | +60        |
| iglidur® V400  | +100       | iglidur® B    | +50        |
| iglidur® Z     | +145       | iglidur® C    | +40        |
| iglidur® UW500 | +150       |               |            |

Table 04: Temperature at which additional securing of the iglidur® plain bearing is required

Coefficient of Friction

iglidur® plain bearings are self-lubricating by the addition of solid lubricants. The solid lubricants lower the coefficient of friction of the plain bearings and thus increase the wear resistance. The coefficient of friction  $\mu$  is proportional to the normal force and describes which force is needed to move a body in relation to another.

Depending on whether an application is starting from a stationary position or the movement is in progress and needs to be maintained, a choice is made between static friction coefficient and the dynamic friction coefficient.

Coefficients of Friction and Surfaces

At study here is the relationship between coefficients of friction and surface roughness of shaft materials. It is clearly shown that the amount of friction is composed of different factors. If the shaft is too rough, abrasion levels play an

important role. Small areas of unevenness that can interlock with each other must be worn off the surface. When the surfaces are too smooth, however, higher adhesion results, i. e. the surfaces stick to each other. Higher forces are necessary to overcome the adhesion, which results from an increased coefficient of friction. Stick-slip can be the result of a large difference between static and dynamic friction and of a higher adhesive tendency of mating surfaces. Stick-slip also occurs due to intermittent running behaviour and can result in loud squeaking. Stick slip thus represents a cause for malfunction of plain bearings. Over and over again, it is observed that these noises do not occur or can be eliminated with rough shafts. Thus for applications that have a great potential for stick slip – slow movements, large resonance of the housing – attention must be paid to the optimal roughness of the shafts.

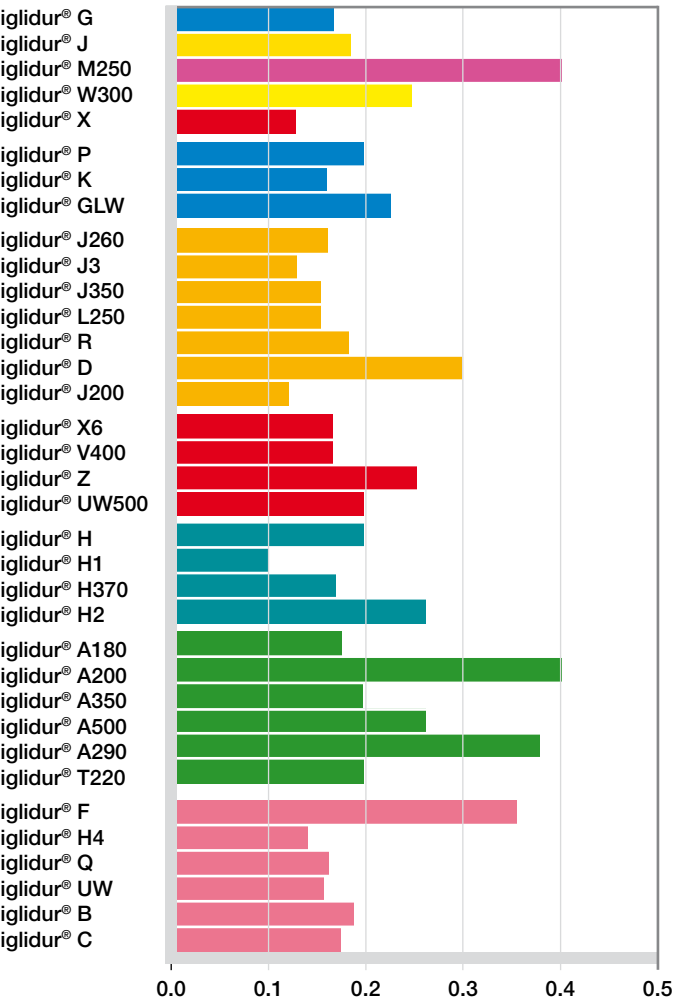


Diagram 11: Coefficients of friction of the iglidur® plain bearings at the recommended shaft surface roughness and low load,  $p = 0,75 \text{ MPa}$

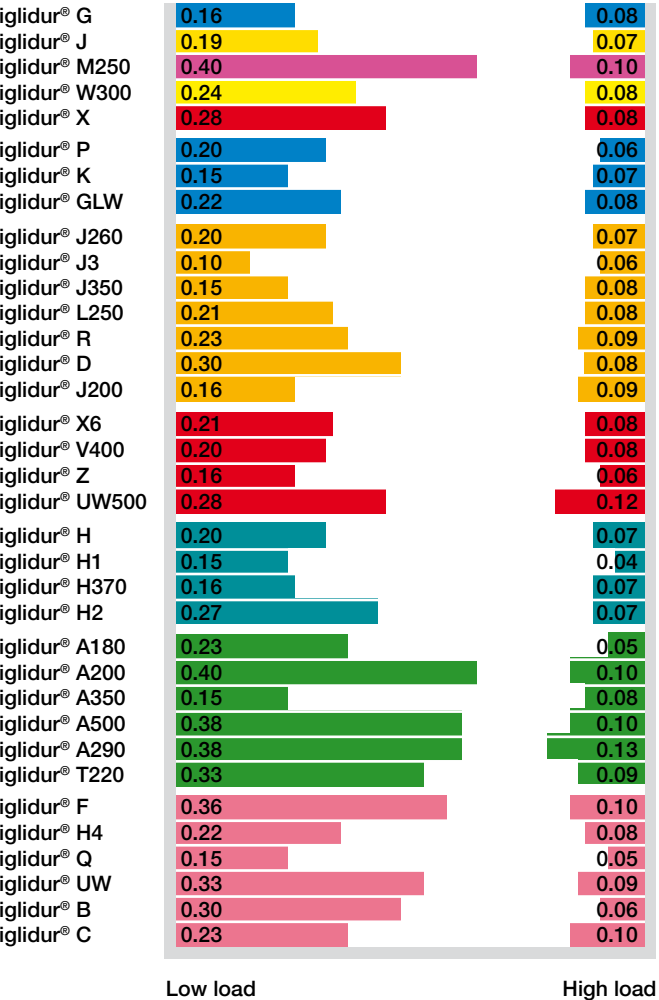


Diagram 12: Frictional values of iglidur® materials under different loads

Wear Resistance

The wear of components depends on many different factors, therefore it is difficult to make general statements about the wear behaviour. In many experiments and tests, the measurement of the wear is a primary factor. In testing, it has become clear what variances are possible between different material pairings. For given loads and surface speeds, the wear resistance can easily vary by a factor of 10 between materials pairings that run well together.

► Shaft Materials, page 71

Wear and Pressure

Different loads greatly influence the bearing wear. Among the iglidur plain bearings, certain materials are optimized for low loads, while others are better suited for high or extremely high loads.

Wear and Temperature

Within wide temperature ranges, the wear resistance of the iglidur® plain bearings shows little change. In the maximum temperature range, however, the temperature increases and the wear of the plain bearing increases. Table 05 compares the “wear limits”. One particular exception is represented by iglidur® X. The wear resistance of iglidur® X increases greatly as temperature increases and reaches the optimum wear resistance at a temperature of +160 °C. Then resistance decreases again, gradually.

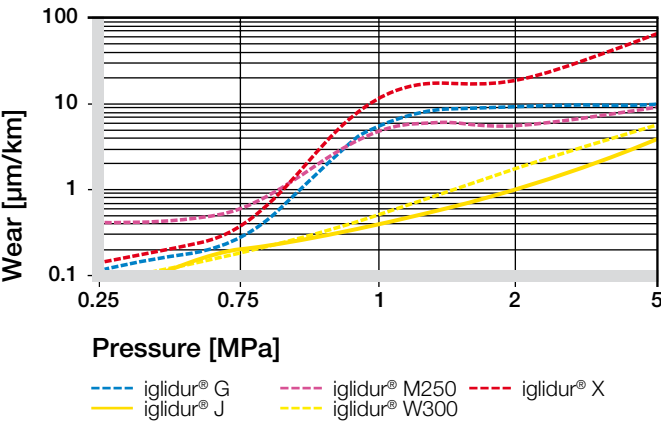


Diagram 13: Wear of iglidur® plain bearings under low pressures

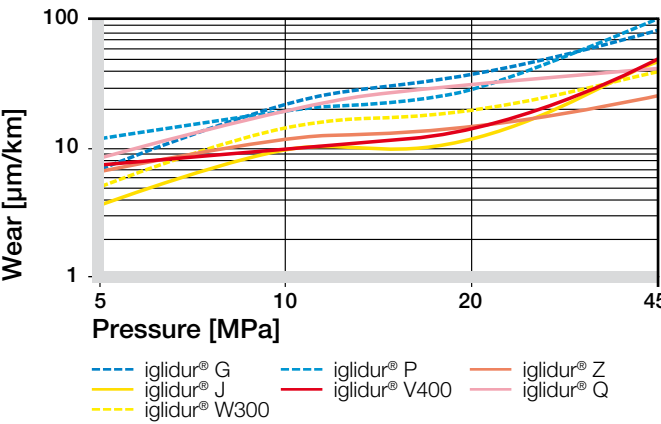


Diagram 14: Wear of iglidur® plain bearings, shaft: Cf53,  $v = 0,1 \text{ m/s}$

| Material       | Wear limit [°C] | Material      | Wear limit [°C] |
|----------------|-----------------|---------------|-----------------|
| iglidur® G     | +120            | iglidur® H1   | +170            |
| iglidur® J     | +70             | iglidur® H370 | +150            |
| iglidur® M250  | +80             | iglidur® H2   | +120            |
| iglidur® W300  | +120            | iglidur® A180 | +70             |
| iglidur® X     | +210            | iglidur® A200 | +80             |
| iglidur® P     | +100            | iglidur® A350 | +120            |
| iglidur® K     | +90             | iglidur® A500 | +190            |
| iglidur® GLW   | +100            | iglidur® A290 | +120            |
| iglidur® J260  | +80             | iglidur® T220 | +90             |
| iglidur® J3    | +70             | iglidur® F    | +130            |
| iglidur® J350  | +140            | iglidur® H4   | +120            |
| iglidur® L250  | +120            | iglidur® Q    | +80             |
| iglidur® R     | +70             | iglidur® Q2   | +120            |
| iglidur® X6    | +210            | iglidur® UW   | +70             |
| iglidur® V400  | +130            | iglidur® N54  | +80             |
| iglidur® Z     | +200            | iglidur® B    | +70             |
| iglidur® UW500 | +190            | iglidur® C    | +70             |
| iglidur® H     | +120            |               |                 |

Table 05: Wear limits of iglidur® plain bearings

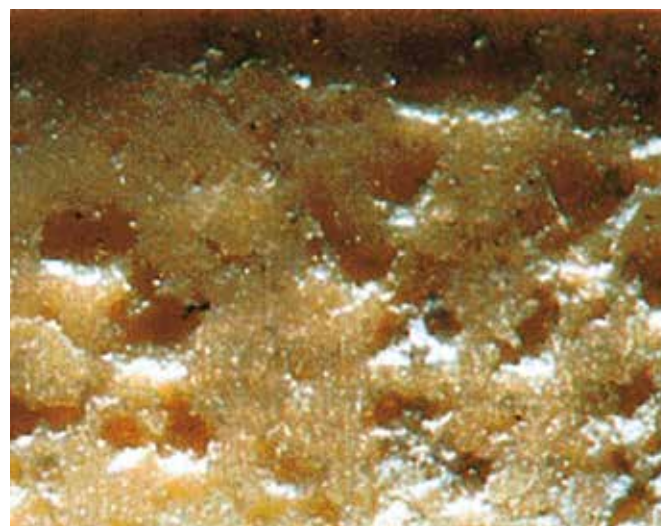




Picture 09: High wear resistance: Plain bearing in contact with sand



Picture 10: Wear experiments with aluminum shafts



Picture 11: Erosion damage due to shafts that are too smooth

### Wear During Abrasive Dirt Accumulation

Special wear problems frequently occur if abrasive dirt particles get into the bearing. iglidur® plain bearings can clearly improve the operating time of machines and systems in these situations. The high wear resistance of the materials and the self lubrication process result in the highest service life time. As no oil or grease is on the bearing, dirt particles can not penetrate as easily into the bearing. Most debris simply falls away from the bearing thus limiting potential damage. If however, a hard particle penetrates into the bearing area, then an iglidur® plain bearing can absorb this particle. The foreign body becomes embedded in the wall of the bearing. Up to a certain point, operation can be maintained at optimal levels even when there is extreme dirt accumulation.

However, it is not just hard particles that can damage bearings and shafts. Soft dirt particles such as for example, textile or paper fibres, are frequently the cause for increased wear. In this instance, the dry run capability and the dust resistance of the iglidur® plain bearings go into action. In the past, this helped save costs in many applications.

### Wear and Surfaces

Shaft surfaces are important for the wear of bearing systems. Similar to the considerations for coefficients of friction, a shaft can be too rough in regard to the bearing wear, but it can also be too smooth. A shaft that is too rough acts like a file and during movement separates small particles from the bearing surface. For shafts that are too smooth, however, higher wear can also occur. An extreme increase in friction results due to adhesion. The forces that act on the surfaces of the sliding face can be so large that regular material blow-outs occur. It is significant to note that wear by erosion is non linear. Moreover, it is random and can not be accurately predicted.

### Wear and Shaft Materials

The shaft is, next to the plain bearing itself, the most important parameter in a bearing system. It is in direct contact with the bearing, and like the bearing, it is affected by relative motion. Fundamentally, the shaft is also worn, however, modern bearing systems are designed in a way that the wear of the shafts is so small that it can not be detected with traditional methods of measurement technology. Shafts can be distinguished and classified according to their hardness and according to the surface roughness.

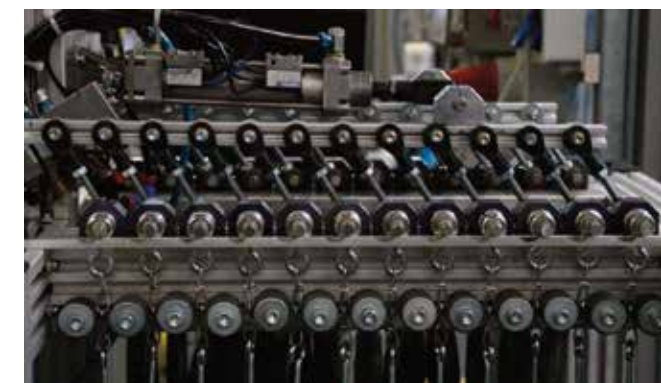
► Coefficient of Friction, [page 68](#)

► Wear Resistance, [page 69](#)

The hardness of the shaft also plays an important role. When the shafts are less hard, the shaft is worn smooth during the break-in phase. Abrasive points are worn off and the surface is rebuilt. For some materials, this effect has positive influences, and the wear resistance of the polymer bearing increases.

In the following diagrams, the most common shaft materials are listed and the iglidur® materials that are best suited are compared.

For easier comparison, the scaling of the wear axis is the same in all diagrams. The small wear results of the systems with hard-chromed shafts are especially impressive. This very hard, but also smooth shaft gives excellent results on the wear behaviour in many bearing pairs. The wear of many iglidur® plain bearings is lower on this shaft than on any other shaft material tested. However, it should be pointed out that because of the typically small surface roughness, the danger of stick slip on hard chromed shafts is especially high.



Picture 12: Oscillating wear test rig for testing the wear in oscillating movements at low loads

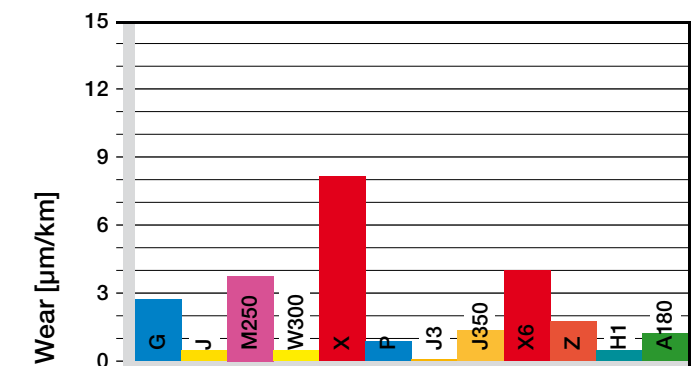


Diagram 15: Wear with Cf53 shaft,  
 $p = 1 \text{ MPa}$ ,  $v = 0.30 \text{ m/s}$   $Ra = 0.20 \text{ µm}$

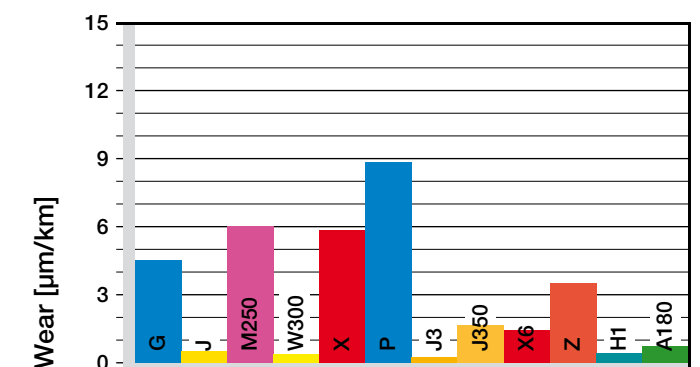


Diagram 16: Wear with V2A shaft,  
 $p = 1 \text{ MPa}$ ,  $v = 0.30 \text{ m/s}$   $Ra = 0.20 \text{ µm}$

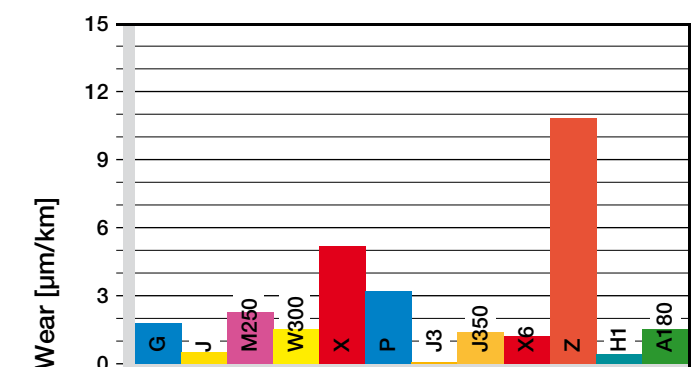


Diagram 17: Wear with St37 shaft,  
 $p = 1 \text{ MPa}$ ,  $v = 0.30 \text{ m/s}$   $Ra = 0.20 \text{ µm}$

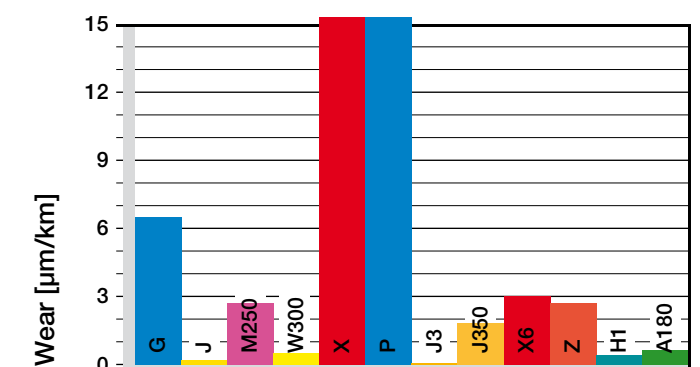


Diagram 18: Wear with hard chromed Cf53 shaft,  
 $p = 1 \text{ MPa}$ ,  $v = 0.30 \text{ m/s}$   $Ra = 0.20 \text{ µm}$

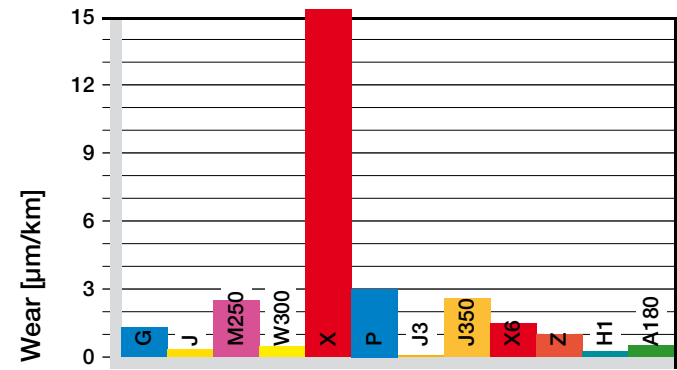


Diagram 19: Wear with hard chromed aluminium shaft, p = 1 MPa, v = 0.30 m/s Ra = 0.20 µm

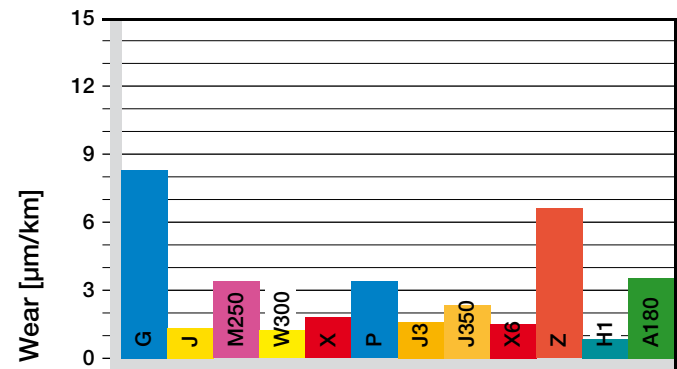


Diagram 20: Wear with a machine steel shaft, p = 1 MPa, v = 0.30 m/s Ra = 0.20 µm

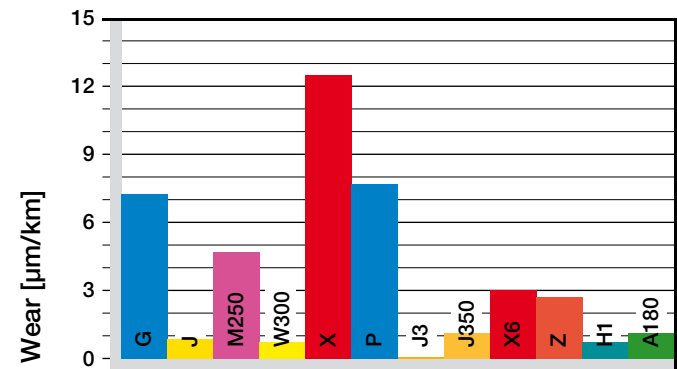


Diagram 21: Wear with X90 shaft, p = 1 MPa, v = 0.30 m/s Ra = 0.20 µm

With high-grade stainless steel 1.4112, a similarly good result is obtained. Case-hardened steel shafts (material key 1.1213) give very good results, too. With other shaft materials, the wear results vary considerably. For example, in tests with soft stainless steel (1.4301) at low load, good to very good results can be found with the right bearing material. It must be said on the other side, that no other shaft material shows a bigger variation of wear results with different bearing materials. Therefore, the choice of the most suitable bearing material is particularly important with the shaft materials soft stainless steel (1.4301) and soft standard steel (1.0037).

The test results give only a sample of the existing data. All of the results shown were made with same loads and speeds.



Picture 13: Oscillating wear test rig for testing the wear in oscillating movements at medium loads

Chemical Resistance

iglidur® plain bearings can come into contact with many chemicals during their use. This contact can lead to changes of the structural properties. The behaviour of plastics towards a certain chemical is dependent on the temperature, the length of exposure, and the type and amount of the mechanical loading. If iglidur® plain bearings are resistant against a chemical, they can be used in these media. Sometimes, the surrounding media can even take on the role of a lubricant.

With the most resistant iglidur® material iglidur® X the lubricant can even be hydrochloric acid. All iglidur® plain bearings can be used in diluted acids and diluted alkalines. Differences can result at higher concentrations or higher temperatures. For all iglidur® plain bearings, the resistance against traditional lubricants applies in the same way. Therefore plain bearings may also be used lubricated. However, in dirty environments, a traditional lubricant can decrease the wear resistance when compared to running dry. The following overview should quickly assist you: If it is not completely clear in a design application which of the different chemicals can occur or in which concentration, plain bearings made out of iglidur® X should be used. This has the best resistance and is only attacked by a few concentrated acids. You'll find a detailed list of chemical resistances in the rear of the catalogue.

► Table of Chemicals, page 1258

Applications in the Food Industry

The iglidur® program with 5 specially developed bearing materials is prepared for the special requirements in machines and equipment for the food industry. iglidur® A180, A200, A350 and A500 materials are made according to the requirements of the American Food and Drugs Administration (FDA). iglidur® A290 material is according to the requirements of the BfR.

| Material                      | Hydro-carbon | Greases, oils without additives | Weak acids | Weak alkaline |
|-------------------------------|--------------|---------------------------------|------------|---------------|
| Standards                     |              |                                 |            |               |
| iglidur® G                    | +            | +                               | 0 to –     | +             |
| iglidur® J                    | +            | +                               | 0 to –     | +             |
| iglidur® M250                 | +            | +                               | 0 to –     | +             |
| iglidur® W300                 | +            | +                               | 0 to –     | +             |
| iglidur® X                    | +            | +                               | +          | +             |
| General purpose               |              |                                 |            |               |
| iglidur® P                    | –            | +                               | 0          | –             |
| iglidur® K                    | +            | +                               | 0 to –     | +             |
| iglidur® GLW                  | +            | +                               | 0 to –     | +             |
| Long service life             |              |                                 |            |               |
| iglidur® J260                 | +            | 0 to –                          | –          | + to 0        |
| iglidur® J3                   | +            | +                               | 0 to –     | +             |
| iglidur® J350                 | + to 0       | +                               | +          | +             |
| iglidur® L250                 | +            | +                               | 0 to –     | +             |
| iglidur® R                    | +            | +                               | 0 to –     | +             |
| iglidur® D                    | +            | +                               | 0 to –     | +             |
| iglidur® J200                 | +            | +                               | 0 to –     | +             |
| High temperatures             |              |                                 |            |               |
| iglidur® X6                   | +            | +                               | +          | +             |
| iglidur® V400                 | +            | +                               | +          | +             |
| iglidur® Z                    | +            | +                               | +          | +             |
| iglidur® UW500                | +            | +                               | +          | +             |
| High media resistance         |              |                                 |            |               |
| iglidur® H                    | +            | +                               | + to 0     | +             |
| iglidur® H1                   | +            | +                               | + to 0     | +             |
| iglidur® H370                 | +            | +                               | 0 to +     | +             |
| iglidur® H2                   | +            | +                               | + to 0     | +             |
| Application with food contact |              |                                 |            |               |
| iglidur® A180                 | +            | +                               | 0 to –     | +             |
| iglidur® A200                 | +            | +                               | 0 to –     | +             |
| iglidur® A350                 | + to 0       | +                               | +          | +             |
| iglidur® A500                 | +            | +                               | +          | +             |
| iglidur® A290                 | +            | +                               | 0 to –     | +             |
| iglidur® T220                 | –            | +                               | 0          | –             |
| Special application areas     |              |                                 |            |               |
| iglidur® F                    | +            | +                               | 0 to –     | +             |
| iglidur® H4                   | +            | +                               | + to 0     | +             |
| iglidur® Q                    | +            | +                               | 0 to –     | +             |
| iglidur® Q2                   | +            | +                               | 0 to –     | +             |
| iglidur® UW                   | +            | +                               | 0 to –     | +             |
| iglidur® N54                  | +            | +                               | 0 to +     | +             |
| iglidur® B                    | –            | –                               | 0 to –     | –             |
| iglidur® C                    | +            | +                               | 0 to –     | +             |

+ resistant 0 conditionally resistant – not resistant  
All data given concerns the chemical resistance at room temperature [+20 °C]

Table 06: Chemical resistance of iglidur®



| Material                                                                                                       | Radiation resistance   |
|----------------------------------------------------------------------------------------------------------------|------------------------|
| iglidur® X, Z, UW500, A160                                                                                     | 1 · 10 <sup>5</sup> Gy |
| iglidur® X6, A500                                                                                              | 2 · 10 <sup>5</sup> Gy |
| iglidur® M250, J3, A200, N54                                                                                   | 1 · 10 <sup>4</sup> Gy |
| iglidur® L250                                                                                                  | 3 · 10 <sup>4</sup> Gy |
| iglidur® V400, C                                                                                               | 2 · 10 <sup>4</sup> Gy |
| iglidur® P, K                                                                                                  | 5 · 10 <sup>2</sup> Gy |
| iglidur® G, J, W300, P210, J260, J200, R, D, C500, A180, A290, UW160, T220, F, F2, Q, Q2, UW, G V0, J2, B, GLW | 3 · 10 <sup>2</sup> Gy |
| iglidur® J350, H, H1, H370, H2, H4, A181, A350                                                                 | 2 · 10 <sup>2</sup> Gy |

Table 07: Radiation resistance of iglidur® plain bearings

| Material       | UV resistance | Material      | UV resistance |
|----------------|---------------|---------------|---------------|
| iglidur® G     | +++++         | iglidur® H1   | ++            |
| iglidur® J     | +++           | iglidur® H370 | +++++         |
| iglidur® M250  | ++++          | iglidur® H2   | +             |
| iglidur® W300  | +++           | iglidur® A180 | +++           |
| iglidur® X     | +++++         | iglidur® A200 | ++++          |
| iglidur® P     | +++++         | iglidur® A350 | ++++          |
| iglidur® K     | ++++          | iglidur® A500 | +++           |
| iglidur® GLW   | +++++         | iglidur® A290 | ++++          |
| iglidur® J260  | +             | iglidur® T220 | ++            |
| iglidur® J3    | +++           | iglidur® F    | +++++         |
| iglidur® J350  | ++            | iglidur® H4   | +             |
| iglidur® L250  | +++           | iglidur® Q    | ++            |
| iglidur® R     | ++++          | iglidur® Q2   | +++++         |
| iglidur® X6    | +++++         | iglidur® UW   | +++           |
| iglidur® V400  | +++           | iglidur® N54  | ++++          |
| iglidur® Z     | +++           | iglidur® B    | +             |
| iglidur® UW500 | +++++         | iglidur® C    | +             |
| iglidur® H     | ++            |               |               |

Table 08: UV resistance of iglidur® plain bearings  
+ low resistance    +++++ high resistance

| Material       | Surface resistance [Ω] |
|----------------|------------------------|
| iglidur® X     | < 10 <sup>3</sup>      |
| iglidur® X6    | < 10 <sup>3</sup>      |
| iglidur® UW500 | < 10 <sup>9</sup>      |
| iglidur® H     | < 10 <sup>2</sup>      |
| iglidur® H370  | < 10 <sup>5</sup>      |
| iglidur® F     | < 10 <sup>2</sup>      |
| iglidur® UW    | < 10 <sup>5</sup>      |

Table 09: Electrical properties of conductive iglidur® plain bearings

Radioactive Radiation

A comparison of the resistance to radioactive radiation is shown in table 07. By a wide margin iglidur® X, UW500, A500 and Z are the most resistant materials.

UV Resistance

Plain bearings can be exposed to constant weathering when they are used outside. The UV resistance is an important measurement and indicates whether a material is attacked by UV radiation. The effects can extend from slight changes in colour to brittleness of the material. A comparison of the materials to each other is shown in the following table. The results show that iglidur® plain bearings are suitable for outside use. Only for a few iglidur® materials are any changes expected.

Vacuum

iglidur® plain bearings can be used in a vacuum to a limited extent. Only a small amount of outgassing takes place. In most iglidur® plain bearings, the outgassing does not change the material properties.

Electrical Properties

In the product range of the maintenance-free, self lubricating iglidur plain bearings, there are both insulating as well as electrically conductive materials. The most important electrical properties are given in detail in the individual material descriptions. The adjacent table compares the most important electrical properties of conductive iglidur® plain bearings. The iglidur® plain bearings not mentioned here are usually electrically insulating. Please observe that for some materials the properties can be changed by the absorption of moisture. In experiments, it should be tested whether the desired properties are also stable when the conditions are changing.

Tolerances and Measurement System

The installation dimensions and tolerances of the iglidur® plain bearings are a function of the material and wall thicknesses. For each material, the moisture absorption and the thermal expansion are imperative. Plain bearings with low moisture absorption can be designed with a minimal amount of tolerance. For wall thickness, the rule is: The thicker the bearings are, the larger the tolerances must be. Thus, different tolerance classes exist for iglidur® plain bearings: Within these tolerances, iglidur® plain bearings can operate in the permissible temperature range and in humidity conditions up to 70 % according to the installation recommendations. Should higher air moisture levels be present, or the bearing is used under water, we provide advice with regard to applications, in order to help you use your bearings correctly.

Testing Methods

iglidur® plain bearings are pressfit bearings for bores machined to our recommendations. This pressfitting of the bearing fixes the bearing in the housing, and the inner diameter of the plain bearing is also formed upon pressfit. The bearing test is performed when the bearing is installed in a bore with the minimum specified dimension; both using an 3 point probe and a Go No-Go gauge.

- The "Go-Side" of the Go-No-Go gauge, pressed into the bore, must pass easily through the bearing
- With the 3 point probe, the inner diameter of the bearing after pressfit must lie within the prescribed tolerance on the measurement plane.

Troubleshooting

In spite of careful manufacturing and assembly of the bearings, differences and questions regarding the recommended installation dimensions and tolerances can result. For this reason, we have compiled a list of the most frequent reasons for differences. In many cases, with this troubleshooter, the reasons for the differences can be found quickly.

- The bore is not chamfered correctly, so the bearing material is removed upon press-fitting. The correct chamfer should be 25 to 30 degrees.
- A centering pin was used which expanded the inside diameter of the bearing during pressfit.
- The bore does not meet the recommended housing bore specifications (usually H7).
- The housing is made out of a soft material that was expanded by the bearing installation.

- The shaft is not within recommended tolerances.
- The bearing is being measured by a different method than the igus® standard.



Picture 14: Measurement of the inner diameter of a pressfit plain bearings

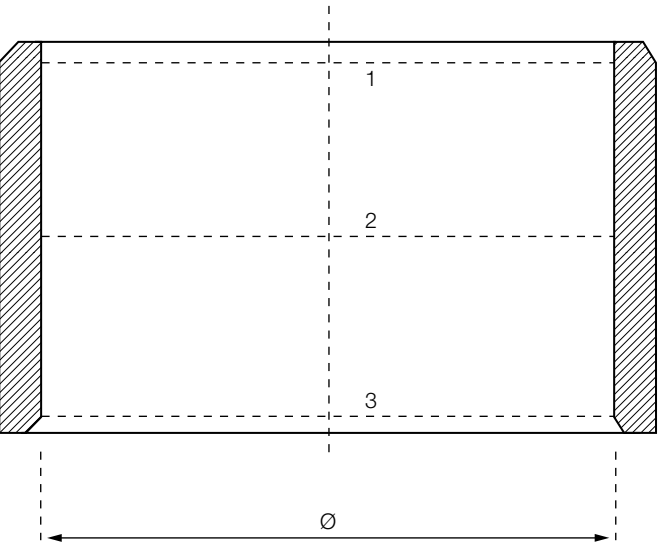


Diagram 22: Positions of the measurement planes



Picture 15: The bearing should be press fitted using a flat press.

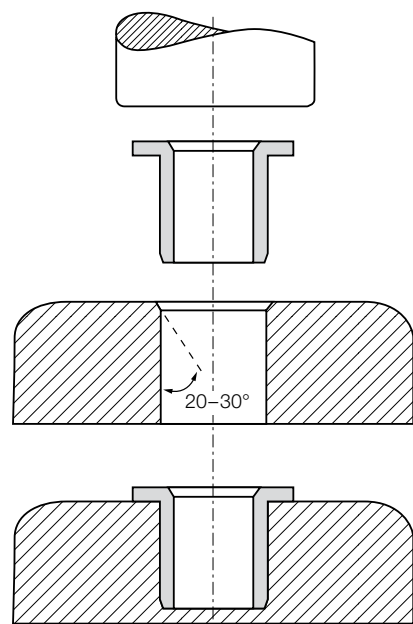


Diagram 23: Section view: pressfit of the bearing

| Process               | Turning   | Boring    | Milling  |
|-----------------------|-----------|-----------|----------|
| Tool material         | SS        | SS        | SS       |
| Feed [mm]             | 0.1...0.5 | 0.1...0.5 | to 0.5   |
| Tool relief angle     | 5...15    | 10...12   | 3        |
| Tool rake angle       | 0...10    | 3...5     |          |
| Cutting speed [m/min] | 200...500 | 50...100  | to 1,000 |

Table 10: Guidelines for machining



Picture 16: New igus® press-fit tool

## Installation

iglidur® plain bearings are produced oversized as standard. The inner diameter adjusts only after pressfit in the proper housing bore with a recommended tolerance. The before pressfit oversized dimension can be up to 2% of the inner diameter. In this manner, the secure pressfitting of the bearing is achieved. Axial or radial shifts in the housing are also prevented. The bore in the housing should be finished in the recommended tolerance (usually H7) for all bearings and be as smooth, flat, and chamfered when possible with an angle of 25 to 30 degrees.

The bearing should be press fitted using a flat press. The use of centering or calibrating pins can cause damage to the bearing and create a larger amount of clearance.

## Adhesion

Using an adhesive to fit an iglidur® bearing is not usually necessary. If the pressfit of the bearing could be lost because of high temperatures, the use of a plain bearing having a higher temperature resistance is recommended. If however, the securing of the bearing by adhesives is planned, individual tests are necessary in each case. The transfer of successful results to other application cases is not possible.

## Machining

iglidur® plain bearings are delivered ready to fit. The extensive product line makes it possible to use a standard dimension in most cases. If for some reason, a subsequent machining of the plain bearing is necessary, table 10 shows the machining standard values. The subsequent machining of the running surfaces is to be avoided if possible. Higher wear rate is most often the result. An exception is the iglidur® M250 which is very suitable for secondary machining. In other iglidur® plain bearings, disadvantages of a sliding surface machining can be counteracted by lubrication during installation. Please also remember that igus® manufacture a range of bar stock materials which are designed for machining.

## Press-fitting plain bearings made easy

iglidur® plain bearings are press-fit bearings, which are dimensionally oversized and pressed into a housing with H7 tolerance. This is not always done in an assembly line using suitable tools. The new igus® assembly aid flexibly and reliably accepts plain bearings for shaft diameters from 13 mm to 50 mm and even permits assembly using a hammer – simple and fast.



The General Purpose Bearing, iglidur® G  
the most sold iglidur® bearing worldwide

► from page 81



The Fast and Slow Motion Specialist, iglidur® J  
low friction, low wear

► from page 109



Thick and Tough, iglidur® M250  
excellent vibration dampening

► from page 127



The Marathon Runner, iglidur® W300  
low wear on all shafts

► from page 151



The High-Tech Problem Solver, iglidur® X  
high temperature and chemical resistance

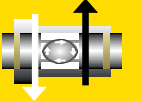
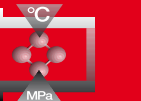
► from page 173



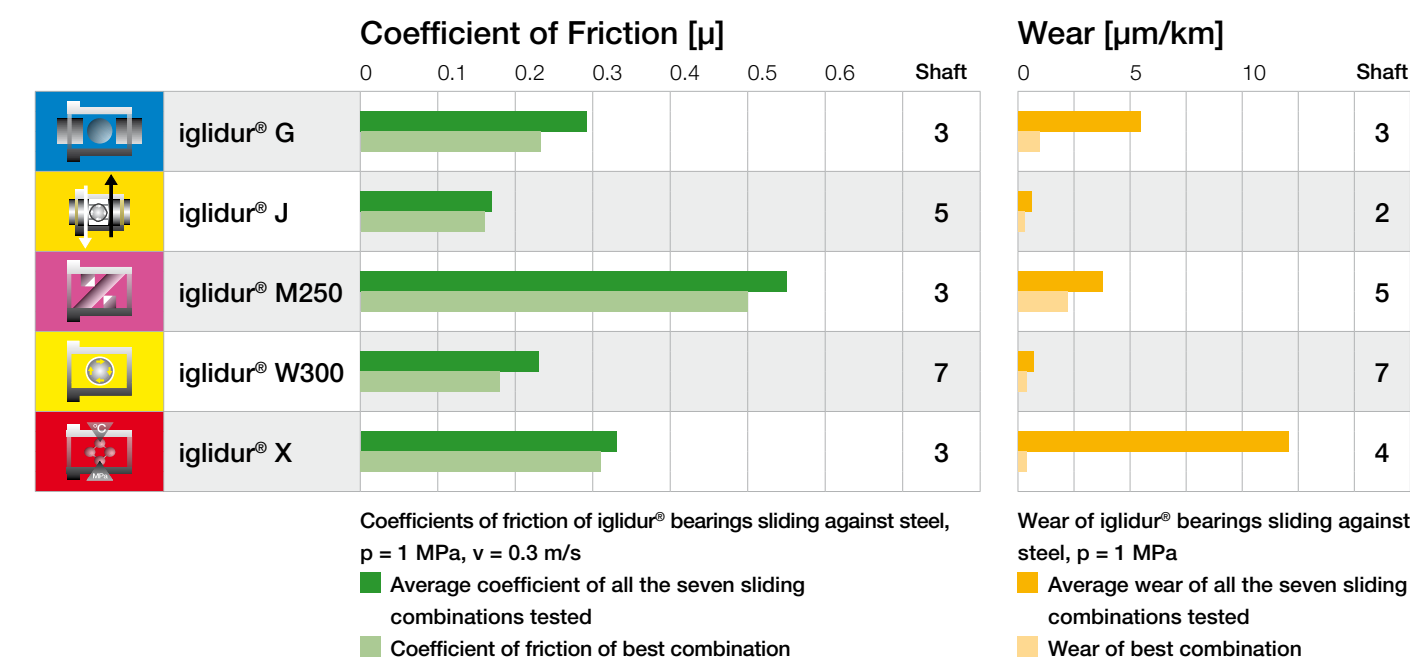
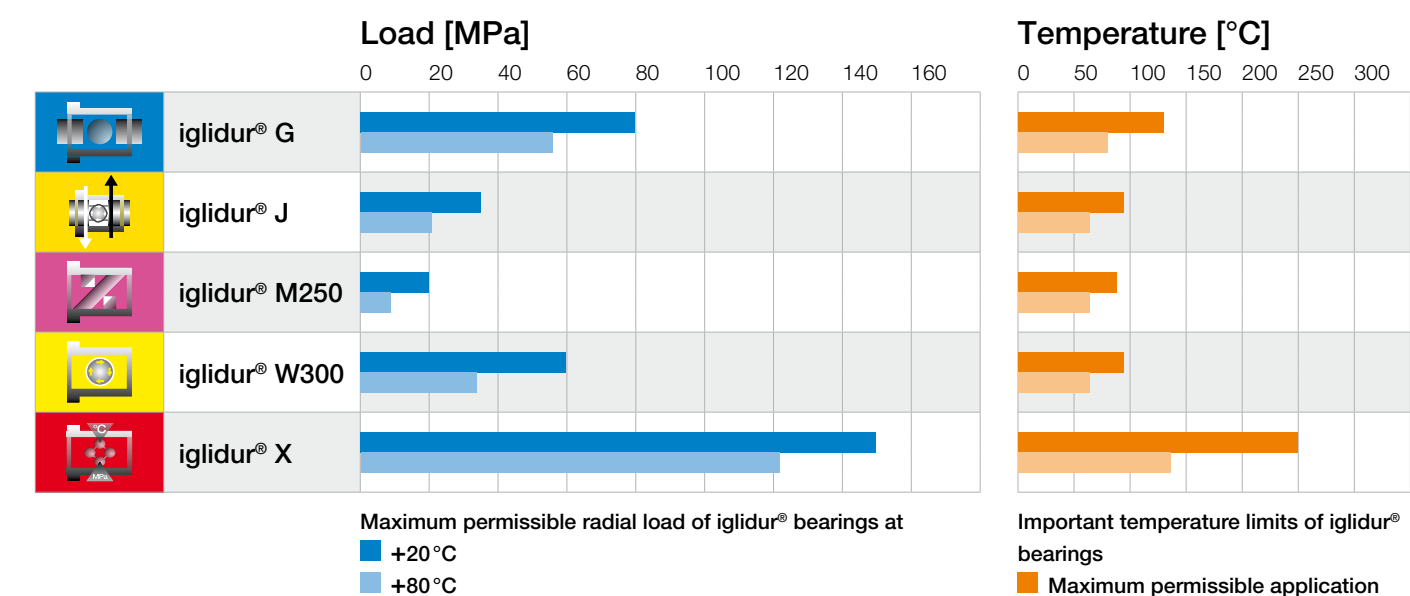
## iglidur® Best Sellers | Selection According to Main Criteria

Standard  
Plain bearings,  
available  
from stock

-  Long life dry running
-  For high loads
-  For high temperatures
-  Low friction/high speed
-  Dirt resistant
-  Chemicals resistant
-  Low water absorption
-  Food-suitable
-  Vibration-dampening
-  Edge pressure
-  For under water use
-  Cost-effective

|                         |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         | iglidur® G                                                                        | iglidur® J                                                                        | iglidur® M250                                                                     | iglidur® W300                                                                       | iglidur® X                                                                          |
| Long life dry running   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   |
| For high loads          | ●                                                                                 |                                                                                   |                                                                                   |                                                                                     | ●                                                                                   |
| For high temperatures   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | ●                                                                                   |
| Low friction/high speed |                                                                                   | ●                                                                                 |                                                                                   | ●                                                                                   |                                                                                     |
| Dirt resistant          | ●                                                                                 |                                                                                   | ●                                                                                 | ●                                                                                   |                                                                                     |
| Chemicals resistant     |                                                                                   |                                                                                   |                                                                                   |                                                                                     | ●                                                                                   |
| Low water absorption    |                                                                                   | ●                                                                                 |                                                                                   |                                                                                     | ●                                                                                   |
| Food-suitable           |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Vibration-dampening     |                                                                                   |                                                                                   | ●                                                                                 |                                                                                     |                                                                                     |
| Edge pressure           |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                   |                                                                                     |
| For under water use     |                                                                                   |                                                                                   |                                                                                   |                                                                                     | ●                                                                                   |
| Cost-effective          | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   |                                                                                     |
| from page               | 81                                                                                | 109                                                                               | 127                                                                               | 151                                                                                 | 173                                                                                 |

## iglidur® Best Sellers | Selection According to Main Criteria



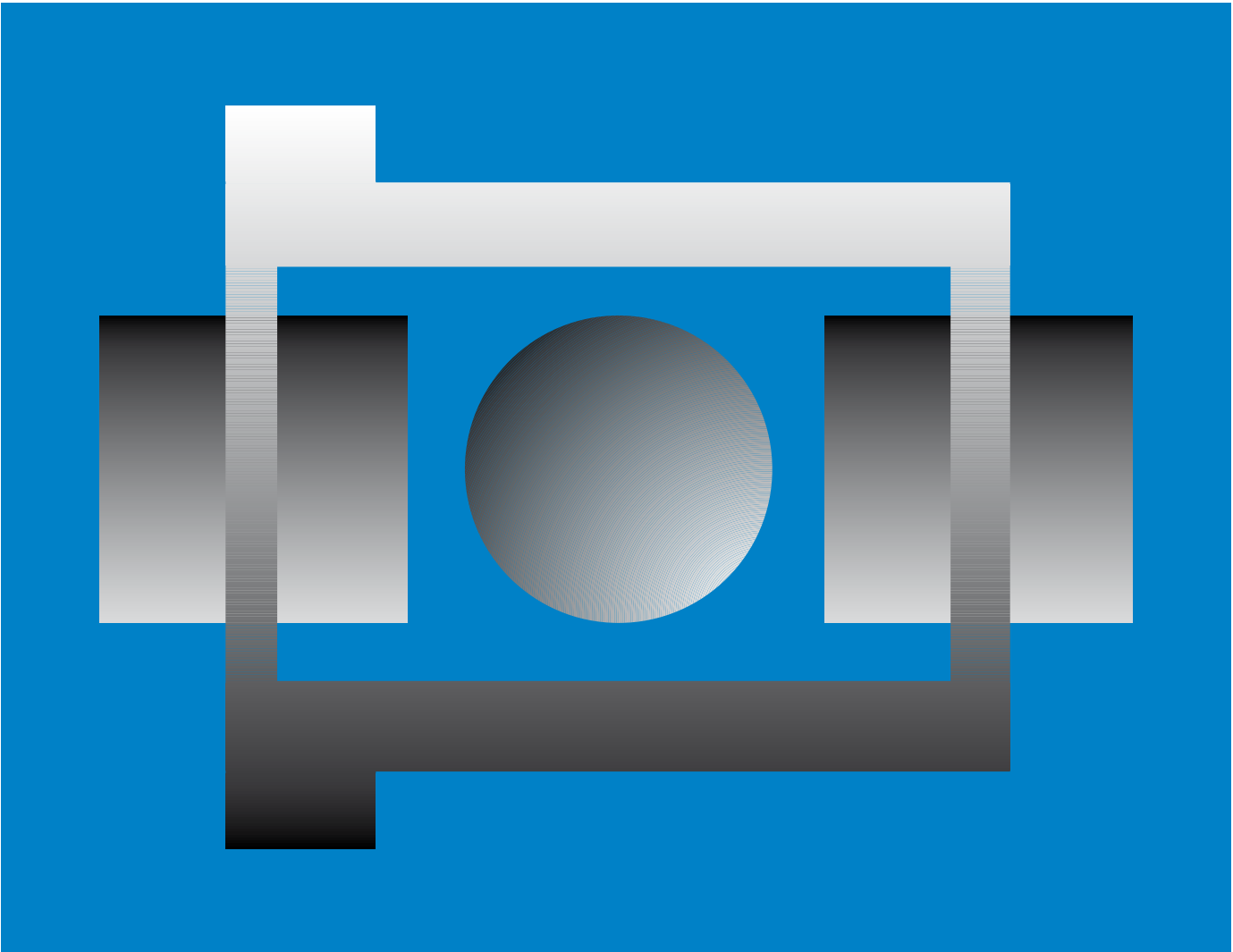
Shaft material:

- 1 = Cf53
- 2 = Cf53, hard chromed
- 3 = Aluminum, hc
- 4 = Automatic screw steel
- 5 = HR carbon steel
- 6 = 304 SS
- 7 = High grade steel

| Material properties table                              |                                    |                    |                    |                    |                    |                   |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|--------------------|--------------------|-------------------|
| General properties                                     | Unit                               | iglidur® G         | iglidur® J         | iglidur® M250      | iglidur® W300      | iglidur® X        |
| Density                                                | g/cm³                              | 1.46               | 1.49               | 1.14               | 1.24               | 1.44              |
| Colour                                                 |                                    | dark grey          | yellow             | anthracite         | yellow             | black             |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.7                | 0.3                | 1.4                | 1.3                | 0.1               |
| Max. water absorption                                  | % weight                           | 4.0                | 1.3                | 7.6                | 6.5                | 0.5               |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.08–0.15          | 0.06–0.18          | 0.18–0.40          | 0.08–0.23          | 0.09–0.27         |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.42               | 0.34               | 0.12               | 0.23               | 1.32              |
| Mechanical properties                                  |                                    |                    |                    |                    |                    |                   |
| Modulus of elasticity                                  | MPa                                | 7,800              | 2,400              | 2,700              | 3,500              | 8,100             |
| Tensile strength at +20 °C                             | MPa                                | 210                | 73                 | 112                | 125                | 170               |
| Compressive strength                                   | MPa                                | 78                 | 60                 | 52                 | 61                 | 100               |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 80                 | 35                 | 20                 | 60                 | 150               |
| Shore D hardness                                       |                                    | 81                 | 74                 | 79                 | 77                 | 85                |
| Physical and thermal properties                        |                                    |                    |                    |                    |                    |                   |
| Max. long term application temperature                 | °C                                 | +130               | +90                | +80                | +90                | +250              |
| Max. short term application temperature                | °C                                 | +220               | +120               | +170               | +180               | +315              |
| Min. application temperature                           | °C                                 | –40                | –50                | –40                | –40                | –100              |
| Thermal conductivity                                   | W/m · K                            | 0.24               | 0.25               | 0.24               | 0.24               | 0.6               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 9                  | 10                 | 10                 | 9                  | 5                 |
| Electrical properties                                  |                                    |                    |                    |                    |                    |                   |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | > 10 <sup>13</sup> | > 10 <sup>13</sup> | > 10 <sup>13</sup> | < 10 <sup>5</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> | > 10 <sup>12</sup> | < 10 <sup>3</sup> |

| Material resistance (at +20 °C) |                     |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Chemical resistance             | iglidur® G          | iglidur® J          | iglidur® M250       | iglidur® W300       | iglidur® X          |
| Alcohol                         | + to 0              | +                   | + to 0              | + to 0              | +                   |
| Hydrocarbons                    | +                   | +                   | +                   | +                   | +                   |
| Greases, oils without additives | +                   | +                   | +                   | +                   | +                   |
| Fuels                           | +                   | +                   | +                   | +                   | +                   |
| Diluted acids                   | 0 to –              | 0 to –              | 0 to –              | 0 to –              | +                   |
| Strong acids                    | –                   | –                   | –                   | –                   | +                   |
| Diluted alkalines               | +                   | +                   | +                   | +                   | +                   |
| Strong alkalines                | 0                   | + to 0              | 0                   | 0                   | +                   |
| Radiation resistance [Gy] to    | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 1 · 10 <sup>4</sup> | 3 · 10 <sup>2</sup> | 1 · 10 <sup>5</sup> |

+ resistant   0 conditionally resistant   – not resistant



# The General Purpose Bearing – iglidur® G: the most sold iglidur® bearing worldwide



- Over 650 sizes available ex stock
- Maintenance-free, dry running
- High wear resistance
- Resistance to dust and dirt
- Cost-effective



**Most popular iglidur® material worldwide.** iglidur® G bearings cover an extremely wide range of different requirements – they are truly “all round”. Typical applications include medium to high loads, medium sliding speeds and medium temperatures.



## When to use it?

- Economical all-round performance bearing
- Maintenance-free, dry running
- Vibration dampening
- High wear resistance
- Resistance to dust and dirt
- Over 900 sizes available from stock
- Cost-effective
- For above average loads
- For low to average running speeds
- When the bearing needs to run on different shaft materials
- For oscillating and rotational movements



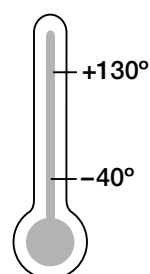
## When not to use it?

- When mechanical reaming of the wall surface is necessary  
▶ iglidur® M250, page 127
- When the highest wear resistance is required  
▶ iglidur® W300, page 151
- When universal chemical resistance is required iglidur®X, page 173
- If temperatures are constantly greater than +130 °C  
▶ iglidur® H, page 353  
▶ iglidur® X, page 173  
▶ iglidur® H370, page 375
- For underwater use  
▶ iglidur® H370, page 375

## Product range

3 types  
> 650 dimensions  
Ø 1.5–195 mm

## Temperature



## Typical sectors of industry and application areas

- Agricultural machines
- Construction machinery
- Machine building
- Sports and leisure
- Automotive etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/hay-spreader](http://www.igus.co.uk/hay-spreader)



▶ [www.igus.co.uk/vehicle-construction](http://www.igus.co.uk/vehicle-construction)



▶ [www.igus.co.uk/swing-arm](http://www.igus.co.uk/swing-arm)



▶ [www.igus.co.uk/veneer-assembling](http://www.igus.co.uk/veneer-assembling)



| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® G         | Testing method |
| Density                                                | g/cm³                              | 1.46               |                |
| Colour                                                 |                                    | dark grey          |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.7                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 4.0                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.08–0.15          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.42               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 7,800              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 210                | DIN 53452      |
| Compressive strength                                   | MPa                                | 78                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 80                 |                |
| Shore D hardness                                       |                                    | 81                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +130               |                |
| Max. short term application temperature                | °C                                 | +220               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 9                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

Table 01: Material properties table

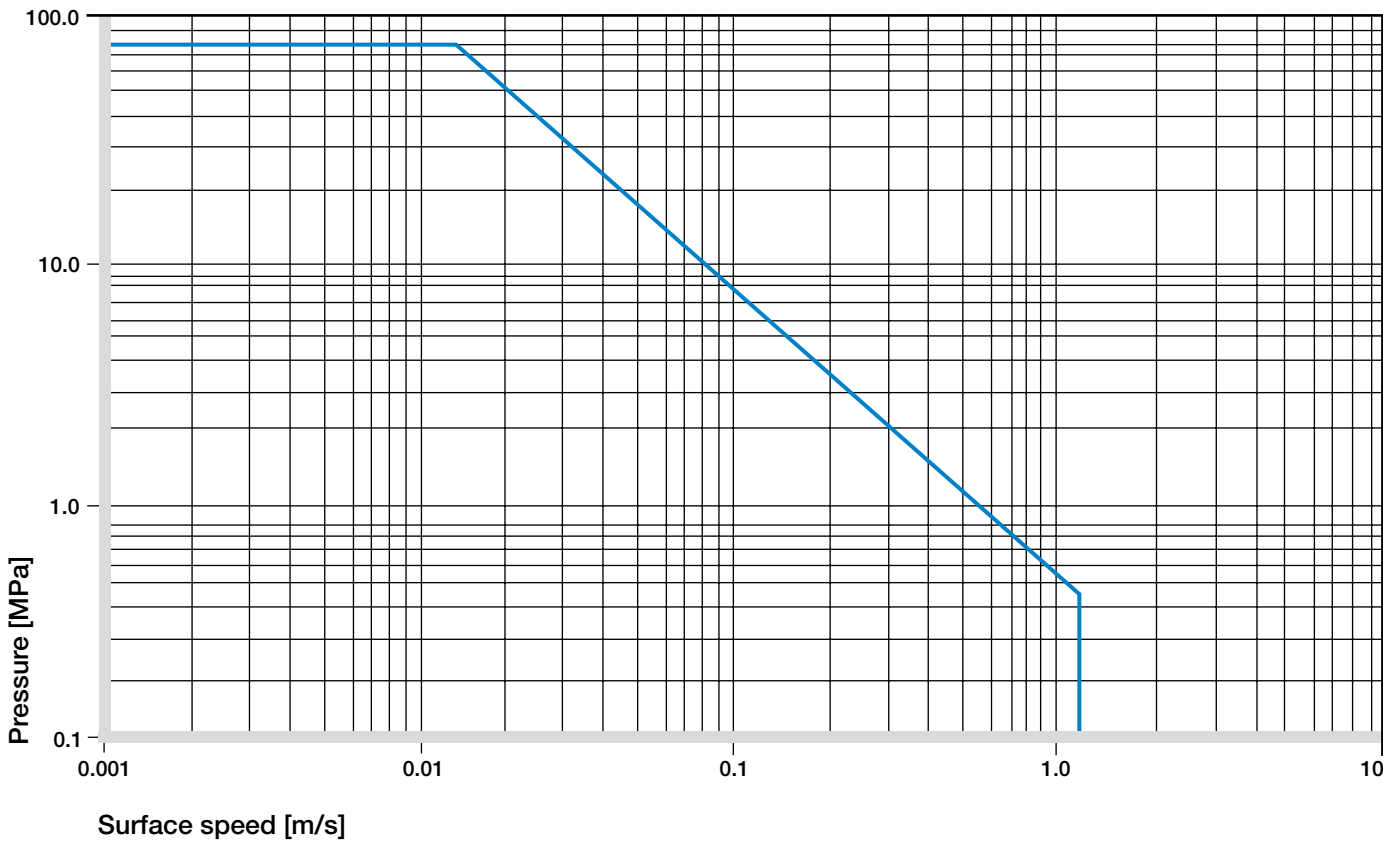


Diagram 01: Permissible pv values for iglidur® G with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® G is the decathlete among iglidur® materials. It performs exceedingly well in all technical disciplines and is the classic all-rounder, primarily with respect to the overall general, mechanical, thermal and tribological specifications.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® G plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +130 °C the permissible surface pressure is almost 35 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

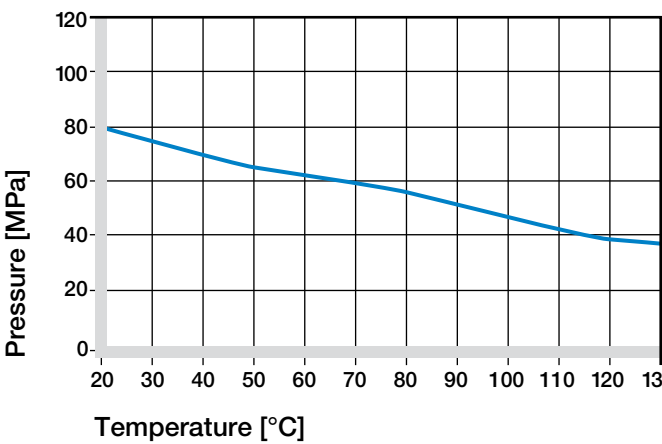


Diagram 02: Recommended maximum surface pressure as a function of temperature (80 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® G during radial loading. At the recommended maximum surface pressure of 80 MPa the deformation is less than 4 %. The plastic deformation is minimal up to a pressure of approximately 100 MPa. However, it is also dependant on the cycle time.

► Surface Pressure, page 63

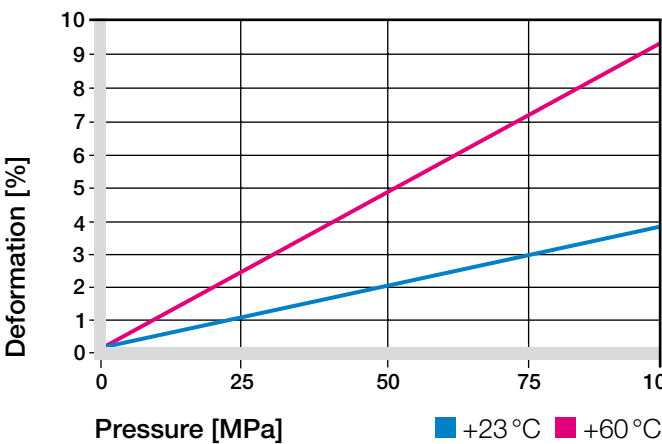


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® G has been developed for low to medium surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached due to varying application conditions.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 4      |
| Short term | 2        | 1.4         | 5      |

Table 02: Maximum running speed

Temperatures

Application temperatures greatly affect the properties of plain bearings. The short term maximum temperature is +220 °C, this allows the use of iglidur® G plain bearings in heat treating applications in which the bearings are not subjected to additional loading. The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +120 °C.

► Application Temperatures, page 66

| iglidur® G                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | +130 °C                 |
| Max. short term                | +220 °C                 |
| Add. securing is required from | +80 °C                  |

Table 03: Temperature limits



## Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. The coefficient of friction decreases with increasing pressures, whereas an increase in surface speed causes an increase of the coefficient of friction. This relationship explains the excellent results of iglidur® G plain bearings for high loads and low speeds (Diagrams 04 and 05).

► Coefficients of Friction and Surfaces, **page 68**

► Wear Resistance, **page 69**

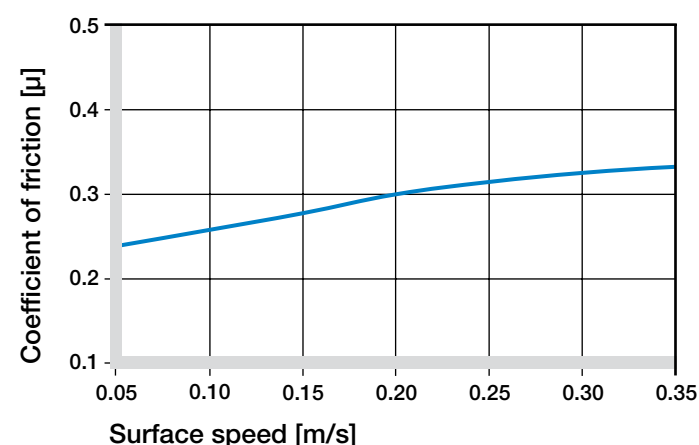


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

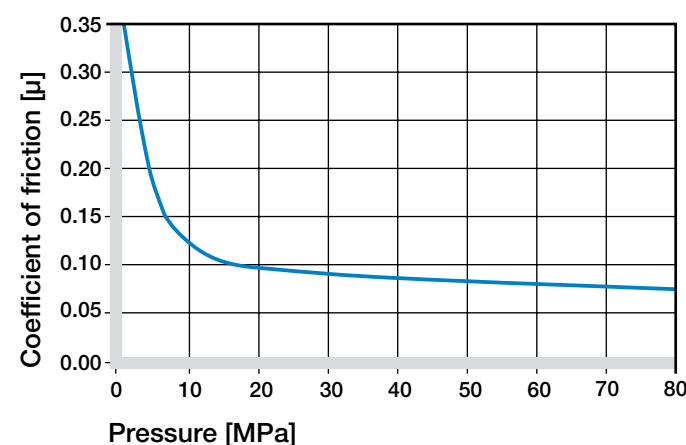


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

## Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® G a ground surface with an average roughness  $R_a = 0.8 \mu\text{m}$  is recommended (Diagram 06). Diagrams 07 to 09 show results of testing different shaft materials with plain bearings made of iglidur® G. In Diagram 07 it shows that iglidur® G can be combined with various shaft materials. The simple shaft materials of free-cutting steel and HR carbon steel have proven best at low loads. This helps to design cost-effective systems, since both iglidur® G and the shaft are economically priced. It is important to notice that with increasing loads, the recommended hardness of the shaft increases. The “soft” shafts tend to wear more easily and thus the wear of the overall system. If the loads exceed 2 MPa it is important to recognize that the wear rate (the gradient of the curves) clearly decreases with the hard shaft materials. The comparison of rotational movements to oscillating movements shows that iglidur® G provides advantages in oscillating movements. The wear of the bearing is smaller for equivalent conditions. The higher the load, the greater the difference.

If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft Materials, **page 71**

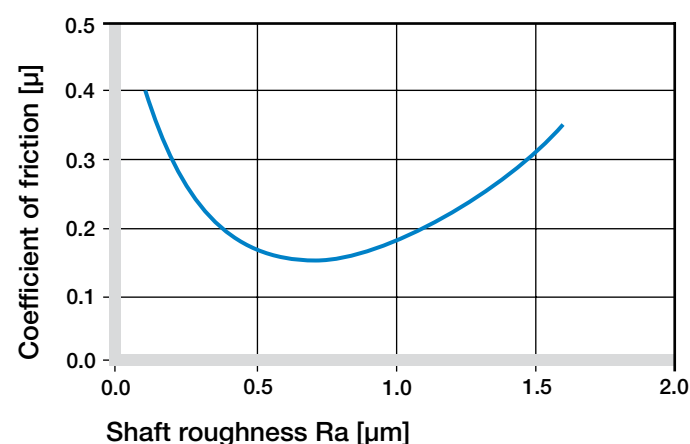


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

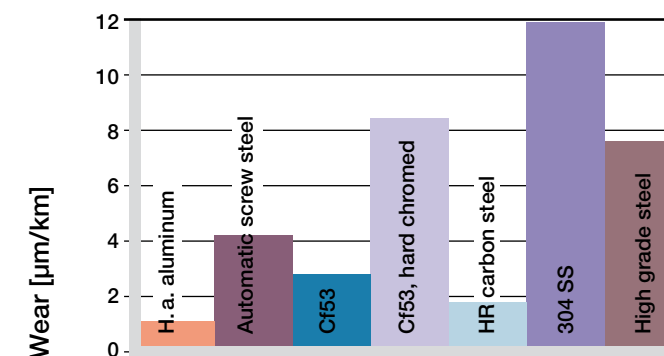


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

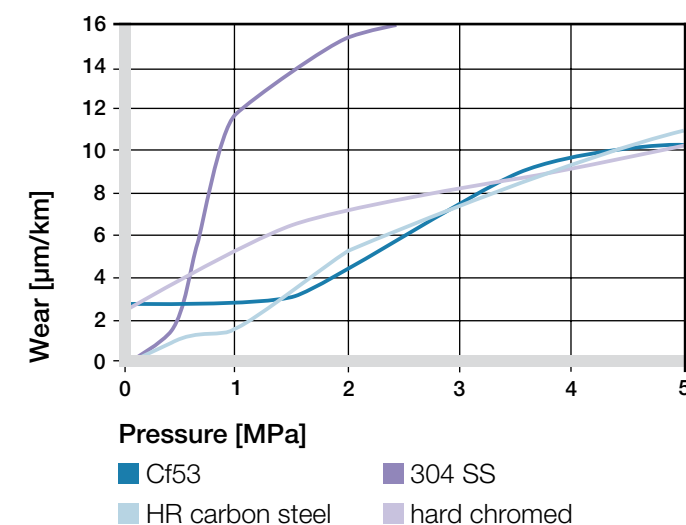


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

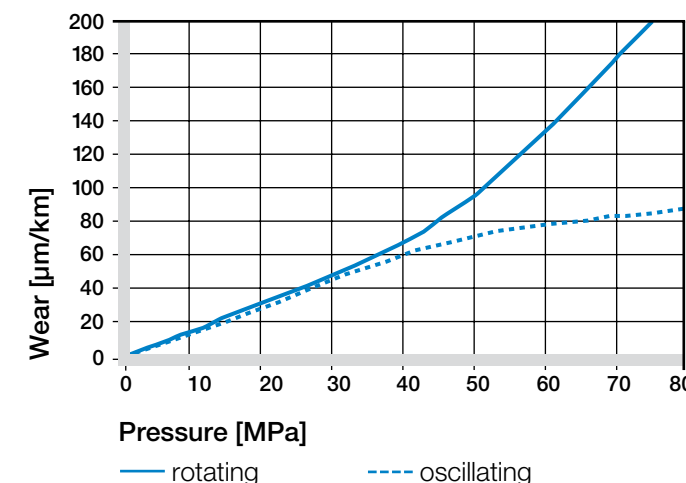


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® G     | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.08–0.15 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \mu\text{m}$ , 50 HRC)

## Additional Properties

### Chemical Resistance

iglidur® G plain bearings have strong resistance to chemicals. They are also resistant to most lubricants. iglidur® G plain bearings are not attacked by most weak organic or inorganic acids.

► Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

**+ resistant 0 conditionally resistant – not resistant**

All data given at room temperature  $[+20^\circ\text{C}]$

Table 05: Chemical resistance

### Radiation Resistance

Plain bearings made of iglidur® G are resistant to radiation up to an intensity of  $3 \cdot 10^2 \text{ Gy}$ .

### UV Resistance

iglidur® G plain bearings are permanently resistant to UV radiation.

### Vacuum

iglidur® G plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

### Electrical Properties

iglidur® G plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{13} \Omega\text{cm}$ |
| Surface resistance | $> 10^{11} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® G plain bearings is approximately 0.7 % in standard atmosphere. The saturation limit submerged in water is 4 %. This must be taken into account for these types of applications.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.7 % weight |
| Max. water absorption | 4.0 % weight |

Table 06: Moisture absorption

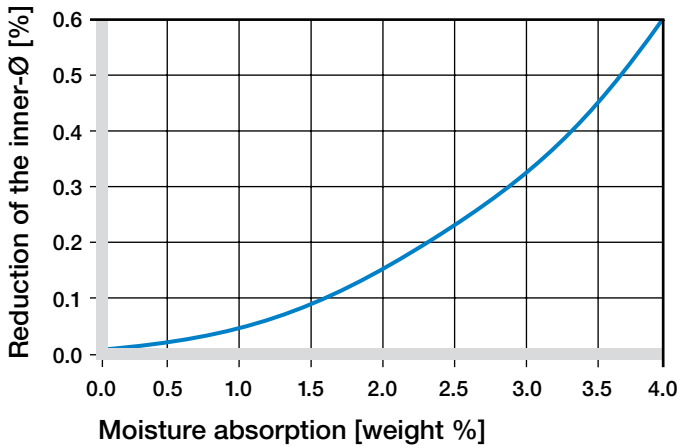


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

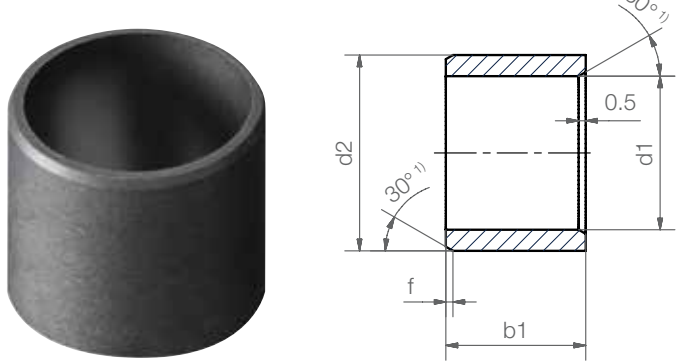
iglidur® G plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® G E10 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180       | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212       | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245       | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve Bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1  | d1-Tolerance* | d2  | b1<br>h13 |
|---------------|-----|---------------|-----|-----------|
| GSM-0103-02   | 1.5 | +0.014 +0.054 | 3.0 | 2.0       |
| GSM-0203-03   | 2.0 | +0.014 +0.054 | 3.5 | 3.0       |
| GSM-02504-05  | 2.5 | +0.014 +0.054 | 4.5 | 5.0       |
| GSM-0304-03   | 3.0 | +0.014 +0.054 | 4.5 | 3.0       |
| GSM-0304-05   | 3.0 | +0.014 +0.054 | 4.5 | 5.0       |
| GSM-0304-06   | 3.0 | +0.014 +0.054 | 4.5 | 6.0       |
| GSM-0405-04   | 4.0 | +0.020 +0.068 | 5.5 | 4.0       |
| GSM-0405-06   | 4.0 | +0.020 +0.068 | 5.5 | 6.0       |
| GSM-0406-08   | 4.5 | +0.020 +0.068 | 6.0 | 8.0       |
| GSM-0407-05   | 4.0 | +0.020 +0.068 | 7.0 | 5.5       |
| GSM-0506-046  | 5.0 | +0.010 +0.040 | 6.0 | 4.6       |
| GSM-0506-05   | 5.0 | +0.010 +0.040 | 6.0 | 5.0       |
| GSM-0506-07   | 5.0 | +0.010 +0.040 | 6.0 | 7.0       |
| GSM-0507-05   | 5.0 | +0.020 +0.068 | 7.0 | 5.0       |
| GSM-0507-07   | 5.0 | +0.020 +0.068 | 7.0 | 7.0       |
| GSM-0507-08   | 5.0 | +0.020 +0.068 | 7.0 | 8.0       |
| GSM-0507-10   | 5.0 | +0.020 +0.068 | 7.0 | 10.0      |
| GSM-0607-06   | 6.0 | +0.010 +0.040 | 7.0 | 6.0       |
| GSM-0607-12   | 6.0 | +0.010 +0.040 | 7.0 | 12.0      |
| GSM-0607-17   | 6.0 | +0.010 +0.040 | 7.0 | 17.0      |
| GSM-0607-17.5 | 6.0 | +0.010 +0.040 | 7.0 | 17.5      |
| GSM-0607-19   | 6.0 | +0.010 +0.040 | 7.0 | 19.0      |
| GSM-0608-015  | 6.0 | +0.020 +0.068 | 8.0 | 1.5       |
| GSM-0608-025  | 6.0 | +0.020 +0.068 | 8.0 | 2.5       |
| GSM-0608-03   | 6.0 | +0.020 +0.068 | 8.0 | 3.0       |

\* after pressfit. Testing methods ► page 75



Order key

GSM-0103-02

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® G

| Part number  | d1  | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|-----|---------------|------|-----------|
| GSM-0608-04  | 6.0 | +0.020 +0.068 | 8.0  | 4.0       |
| GSM-0608-05  | 6.0 | +0.020 +0.068 | 8.0  | 5.0       |
| GSM-0608-055 | 6.0 | +0.020 +0.068 | 8.0  | 5.5       |
| GSM-0608-06  | 6.0 | +0.020 +0.068 | 8.0  | 6.0       |
| GSM-0608-08  | 6.0 | +0.020 +0.068 | 8.0  | 8.0       |
| GSM-0608-09  | 6.0 | +0.020 +0.068 | 8.0  | 9.5       |
| GSM-0608-10  | 6.0 | +0.020 +0.068 | 8.0  | 10.0      |
| GSM-0608-11  | 6.0 | +0.020 +0.068 | 8.0  | 11.8      |
| GSM-0608-13  | 6.0 | +0.020 +0.068 | 8.0  | 13.8      |
| GSM-0708-10  | 7.0 | +0.013 +0.049 | 8.0  | 10.0      |
| GSM-0708-19  | 7.0 | +0.013 +0.049 | 8.0  | 19.0      |
| GSM-0709-08  | 7.0 | +0.025 +0.083 | 9.0  | 8.0       |
| GSM-0709-09  | 7.0 | +0.025 +0.083 | 9.0  | 9.0       |
| GSM-0709-10  | 7.0 | +0.025 +0.083 | 9.0  | 10.0      |
| GSM-0709-12  | 7.0 | +0.025 +0.083 | 9.0  | 12.0      |
| GSM-0809-05  | 8.0 | +0.013 +0.049 | 9.0  | 5.0       |
| GSM-0809-06  | 8.0 | +0.013 +0.049 | 9.0  | 6.0       |
| GSM-0809-08  | 8.0 | +0.013 +0.049 | 9.0  | 8.0       |
| GSM-0809-12  | 8.0 | +0.013 +0.049 | 9.0  | 12.0      |
| GSM-0810-05  | 8.0 | +0.025 +0.083 | 10.0 | 5.0       |
| GSM-0810-06  | 8.0 | +0.025 +0.083 | 10.0 | 6.0       |
| GSM-0810-07  | 8.0 | +0.025 +0.083 | 10.0 | 6.8       |
| GSM-0810-08  | 8.0 | +0.025 +0.083 | 10.0 | 8.0       |
| GSM-0810-10  | 8.0 | +0.025 +0.083 | 10.0 | 10.0      |
| GSM-0810-12  | 8.0 | +0.025 +0.083 | 10.0 | 12.0      |



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Sleeve Bearing

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| GSM-0810-13  | 8.0  | +0.025 +0.083 | 10.0 | 13.8      |
| GSM-0810-15  | 8.0  | +0.025 +0.083 | 10.0 | 15.0      |
| GSM-0810-16  | 8.0  | +0.025 +0.083 | 10.0 | 16.0      |
| GSM-0810-20  | 8.0  | +0.025 +0.083 | 10.0 | 20.0      |
| GSM-0810-22  | 8.0  | +0.025 +0.083 | 10.0 | 22.0      |
| GSM-0810-25  | 8.0  | +0.025 +0.083 | 10.1 | 25.0      |
| GSM-0812-09  | 8.0  | +0.040 +0.130 | 12.0 | 9.0       |
| GSM-0910-12  | 9.0  | +0.013 +0.049 | 10.0 | 12.0      |
| GSM-0910-16  | 9.0  | +0.013 +0.049 | 10.0 | 16.0      |
| GSM-0911-06  | 9.0  | +0.025 +0.083 | 11.0 | 6.0       |
| GSM-0911-20  | 9.0  | +0.025 +0.083 | 11.0 | 20.0      |
| GSM-1011-06  | 10.0 | +0.013 +0.049 | 11.0 | 6.0       |
| GSM-1011-07  | 10.0 | +0.013 +0.049 | 11.0 | 7.0       |
| GSM-1011-10  | 10.0 | +0.013 +0.049 | 11.0 | 10.0      |
| GSM-1011-20  | 10.0 | +0.013 +0.049 | 11.0 | 20.0      |
| GSM-1011-25  | 10.0 | +0.013 +0.049 | 11.0 | 25.0      |
| GSM-1011-30  | 10.0 | +0.013 +0.049 | 11.0 | 30.0      |
| GSM-1012-04  | 10.0 | +0.025 +0.083 | 12.0 | 4.0       |
| GSM-1012-045 | 10.0 | +0.025 +0.083 | 12.0 | 4.5       |
| GSM-1012-05  | 10.0 | +0.025 +0.083 | 12.0 | 5.0       |
| GSM-1012-06  | 10.0 | +0.025 +0.083 | 12.0 | 6.0       |
| GSM-1012-07  | 10.0 | +0.025 +0.083 | 12.0 | 7.0       |
| GSM-1012-08  | 10.0 | +0.025 +0.083 | 12.0 | 8.0       |
| GSM-1012-09  | 10.0 | +0.025 +0.083 | 12.0 | 9.0       |
| GSM-1012-10  | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| GSM-1012-12  | 10.0 | +0.025 +0.083 | 12.0 | 12.0      |
| GSM-1012-14  | 10.0 | +0.025 +0.083 | 12.0 | 14.0      |
| GSM-1012-15  | 10.0 | +0.025 +0.083 | 12.0 | 15.0      |
| GSM-1012-17  | 10.0 | +0.025 +0.083 | 12.0 | 17.0      |
| GSM-1012-20  | 10.0 | +0.025 +0.083 | 12.0 | 20.0      |
| GSM-1013-13  | 10.0 | +0.025 +0.083 | 13.0 | 13.5      |
| GSM-1014-10  | 10.0 | +0.025 +0.115 | 14.0 | 10.0      |
| GSM-1014-20  | 10.0 | +0.025 +0.115 | 14.0 | 20.0      |
| GSM-1016-10  | 10.0 | +0.040 +0.130 | 16.0 | 10.0      |
| GSM-1213-047 | 12.0 | +0.016 +0.059 | 13.0 | 4.7       |
| GSM-1213-10  | 12.0 | +0.016 +0.059 | 13.0 | 10.0      |
| GSM-1213-12  | 12.0 | +0.016 +0.059 | 13.0 | 12.0      |
| GSM-1213-15  | 12.0 | +0.016 +0.059 | 13.0 | 15.0      |
| GSM-1214-04  | 12.0 | +0.032 +0.102 | 14.0 | 4.0       |
| GSM-1214-05  | 12.0 | +0.032 +0.102 | 14.0 | 5.0       |
| GSM-1214-06  | 12.0 | +0.032 +0.102 | 14.0 | 6.0       |
| GSM-1214-08  | 12.0 | +0.032 +0.102 | 14.0 | 8.0       |

\* after pressfit. Testing methods ► page 75

| Part number   | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|---------------|------|---------------|------|-----------|
| GSM-1214-10   | 12.0 | +0.032 +0.102 | 14.0 | 10.0      |
| GSM-1214-12   | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| GSM-1214-14   | 12.0 | +0.032 +0.102 | 14.0 | 14.0      |
| GSM-1214-15   | 12.0 | +0.032 +0.102 | 14.0 | 15.0      |
| GSM-1214-20   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      |
| GSM-1214-25   | 12.0 | +0.032 +0.102 | 14.0 | 25.0      |
| GSM-1215-06   | 12.0 | +0.032 +0.102 | 15.0 | 6.0       |
| GSM-1215-22   | 12.0 | +0.032 +0.102 | 15.0 | 22.0      |
| GSM-1216-10   | 12.0 | +0.050 +0.160 | 16.0 | 10.0      |
| GSM-1216-20   | 12.0 | +0.050 +0.160 | 16.0 | 20.0      |
| GSM-1315-070  | 13.0 | +0.032 +0.102 | 15.0 | 7.0       |
| GSM-1315-075  | 13.0 | +0.032 +0.102 | 15.0 | 7.5       |
| GSM-1315-10   | 13.0 | +0.032 +0.102 | 15.0 | 10.0      |
| GSM-1315-15   | 13.0 | +0.032 +0.102 | 15.0 | 15.0      |
| GSM-1315-20   | 13.0 | +0.032 +0.102 | 15.0 | 20.0      |
| GSM-1315-25   | 13.0 | +0.032 +0.102 | 15.0 | 25.0      |
| GSM-1416-03   | 14.0 | +0.032 +0.102 | 16.0 | 3.0       |
| GSM-1416-06   | 14.0 | +0.032 +0.102 | 16.0 | 6.0       |
| GSM-1416-08   | 14.0 | +0.032 +0.102 | 16.0 | 8.0       |
| GSM-1416-10   | 14.0 | +0.032 +0.102 | 16.0 | 10.0      |
| GSM-1416-12   | 14.0 | +0.032 +0.102 | 16.0 | 12.0      |
| GSM-1416-15   | 14.0 | +0.032 +0.102 | 16.0 | 15.0      |
| GSM-1416-20   | 14.0 | +0.032 +0.102 | 16.0 | 20.0      |
| GSM-1416-25   | 14.0 | +0.032 +0.102 | 16.0 | 25.0      |
| GSM-1416-45   | 14.0 | +0.032 +0.102 | 16.0 | 45.0      |
| GSM-1516-10   | 15.0 | +0.016 +0.059 | 16.0 | 10.0      |
| GSM-1516-15   | 15.0 | +0.016 +0.059 | 16.0 | 15.0      |
| GSM-1517-04   | 15.0 | +0.032 +0.102 | 17.0 | 4.0       |
| GSM-1517-10   | 15.0 | +0.032 +0.102 | 17.0 | 10.0      |
| GSM-1517-12   | 15.0 | +0.032 +0.102 | 17.0 | 12.0      |
| GSM-1517-15   | 15.0 | +0.032 +0.102 | 17.0 | 15.0      |
| GSM-1517-20   | 15.0 | +0.032 +0.102 | 17.0 | 20.0      |
| GSM-1517-25   | 15.0 | +0.032 +0.102 | 17.0 | 25.0      |
| GSM-1618-055  | 16.0 | +0.032 +0.102 | 18.0 | 5.5       |
| GSM-1618-08   | 16.0 | +0.032 +0.102 | 18.0 | 8.0       |
| GSM-1618-10   | 16.0 | +0.032 +0.102 | 18.0 | 10.0      |
| GSM-1618-12   | 16.0 | +0.032 +0.102 | 18.0 | 12.0      |
| GSM-1618-13.5 | 16.0 | +0.032 +0.102 | 18.0 | 13.5      |
| GSM-1618-15   | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| GSM-1618-20   | 16.0 | +0.032 +0.102 | 18.0 | 20.0      |
| GSM-1618-25   | 16.0 | +0.032 +0.102 | 18.0 | 25.0      |
| GSM-1618-30   | 16.0 | +0.032 +0.102 | 18.0 | 30.0      |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| GSM-1618-50  | 16.0 | +0.032 +0.102 | 18.0 | 50.0      |
| GSM-1819-15  | 18.0 | +0.016 +0.059 | 19.0 | 15.0      |
| GSM-1820-06  | 18.0 | +0.032 +0.102 | 20.0 | 6.0       |
| GSM-1820-10  | 18.0 | +0.032 +0.102 | 20.0 | 10.0      |
| GSM-1820-12  | 18.0 | +0.032 +0.102 | 20.0 | 12.0      |
| GSM-1820-15  | 18.0 | +0.032 +0.102 | 20.0 | 15.0      |
| GSM-1820-20  | 18.0 | +0.032 +0.102 | 20.0 | 20.0      |
| GSM-1820-25  | 18.0 | +0.032 +0.102 | 20.0 | 25.0      |
| GSM-1820-34  | 18.0 | +0.032 +0.102 | 20.0 | 34.0      |
| GSM-1820-38  | 18.0 | +0.032 +0.102 | 20.0 | 38.0      |
| GSM-1820-45  | 18.0 | +0.032 +0.102 | 20.0 | 45.0      |
| GSM-1822-30  | 18.0 | +0.032 +0.102 | 22.0 | 30.0      |
| GSM-1922-06  | 19.0 | +0.040 +0.124 | 22.0 | 6.0       |
| GSM-1922-28  | 19.0 | +0.040 +0.124 | 22.0 | 28.0      |
| GSM-1922-35  | 19.0 | +0.040 +0.124 | 22.0 | 35.0      |
| GSM-2021-20  | 20.0 | +0.020 +0.072 | 21.0 | 20.0      |
| GSM-2022-03  | 20.0 | +0.040 +0.124 | 22.0 | 3.0       |
| GSM-2022-08  | 20.0 | +0.040 +0.124 | 22.0 | 8.0       |
| GSM-2022-105 | 20.0 | +0.040 +0.124 | 22.0 | 10.5      |
| GSM-2022-15  | 20.0 | +0.040 +0.124 | 22.0 | 15.0      |
| GSM-2022-20  | 20.0 | +0.040 +0.124 | 22.0 | 20.0      |
| GSM-2022-22  | 20.0 | +0.040 +0.124 | 22.0 | 22.0      |
| GSM-2022-28  | 20.0 | +0.040 +0.124 | 22.0 | 28.0      |
| GSM-2022-30  | 20.0 | +0.040 +0.124 | 22.0 | 30.0      |
| GSM-2022-47  | 20.0 | +0.040 +0.124 | 22.0 | 47.0      |
| GSM-2023-10  | 20.0 | +0.040 +0.124 | 23.0 | 10.0      |
| GSM-2023-15  | 20.0 | +0.040 +0.124 | 23.0 | 15.0      |
| GSM-2023-20  | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| GSM-2023-24  | 20.0 | +0.040 +0.124 | 23.0 | 24.0      |
| GSM-2023-25  | 20.0 | +0.040 +0.124 | 23.0 | 25.0      |
| GSM-2023-30  | 20.0 | +0.040 +0.124 | 23.0 | 30.0      |
| GSM-2023-35  | 20.0 | +0.040 +0.124 | 23.0 | 35.0      |
| GSM-2224-08  | 22.0 | +0.040 +0.124 | 24.0 | 8.0       |
| GSM-2224-10  | 22.0 | +0.040 +0.124 | 24.0 | 10.0      |
| GSM-2224-12  | 22.0 | +0.040 +0.124 | 24.0 | 12.0      |
| GSM-2224-15  | 22.0 | +0.040 +0.124 | 24.0 | 15.0      |
| GSM-2224-17  | 22.0 | +0.040 +0.124 | 24.0 | 17.0      |
| GSM-2224-20  | 22.0 | +0.040 +0.124 | 24.0 | 20.0      |
| GSM-2224-30  | 22.0 | +0.040 +0.124 | 24.0 | 30.0      |
| GSM-2224-48  | 22.0 | +0.040 +0.124 | 24.0 | 48.0      |
| GSM-2225-15  | 22.0 | +0.040 +0.124 | 25.0 | 15.0      |

\* after pressfit. Testing methods ► page 75



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## Sleeve Bearing

## Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| GSM-3034-40  | 30.0 | +0.040 +0.124 | 34.0 | 40.0      |
| GSM-3034-525 | 30.0 | +0.040 +0.124 | 34.0 | 52.5      |
| GSM-3236-15  | 32.0 | +0.050 +0.150 | 36.0 | 15.0      |
| GSM-3236-20  | 32.0 | +0.050 +0.150 | 36.0 | 20.0      |
| GSM-3236-30  | 32.0 | +0.050 +0.150 | 36.0 | 30.0      |
| GSM-3236-40  | 32.0 | +0.050 +0.150 | 36.0 | 40.0      |
| GSM-3539-14  | 35.0 | +0.050 +0.150 | 39.0 | 14.0      |
| GSM-3539-20  | 35.0 | +0.050 +0.150 | 39.0 | 20.0      |
| GSM-3539-25  | 35.0 | +0.050 +0.150 | 39.0 | 25.0      |
| GSM-3539-30  | 35.0 | +0.050 +0.150 | 39.0 | 30.0      |
| GSM-3539-40  | 35.0 | +0.050 +0.150 | 39.0 | 40.0      |
| GSM-3539-50  | 35.0 | +0.050 +0.150 | 39.0 | 50.0      |
| GSM-3541-50  | 35.0 | +0.050 +0.150 | 41.0 | 50.0      |
| GSM-3640-20  | 36.0 | +0.050 +0.150 | 40.0 | 20.0      |
| GSM-3741-20  | 37.0 | +0.050 +0.150 | 41.0 | 20.0      |
| GSM-3842-25  | 38.0 | +0.050 +0.150 | 42.0 | 25.0      |
| GSM-4044-10  | 40.0 | +0.050 +0.150 | 44.0 | 10.0      |
| GSM-4044-16  | 40.0 | +0.050 +0.150 | 44.0 | 16.5      |
| GSM-4044-20  | 40.0 | +0.050 +0.150 | 44.0 | 20.0      |
| GSM-4044-30  | 40.0 | +0.050 +0.150 | 44.0 | 30.0      |
| GSM-4044-40  | 40.0 | +0.050 +0.150 | 44.0 | 40.0      |
| GSM-4044-50  | 40.0 | +0.050 +0.150 | 44.0 | 50.0      |
| GSM-4044-525 | 40.0 | +0.050 +0.150 | 44.0 | 52.5      |
| GSM-4246-40  | 42.0 | +0.050 +0.150 | 46.0 | 40.0      |
| GSM-4448-20  | 44.0 | +0.050 +0.150 | 48.0 | 20.0      |
| GSM-4550-22  | 45.0 | +0.050 +0.150 | 50.0 | 22.0      |
| GSM-4550-235 | 45.0 | +0.050 +0.150 | 50.0 | 23.5      |
| GSM-4550-30  | 45.0 | +0.050 +0.150 | 50.0 | 30.0      |
| GSM-4550-38  | 45.0 | +0.050 +0.150 | 50.0 | 38.0      |
| GSM-4550-40  | 45.0 | +0.050 +0.150 | 50.0 | 40.0      |
| GSM-4550-50  | 45.0 | +0.050 +0.150 | 50.0 | 50.0      |
| GSM-5055-20  | 50.0 | +0.050 +0.150 | 55.0 | 20.0      |
| GSM-5055-25  | 50.0 | +0.050 +0.150 | 55.0 | 25.0      |
| GSM-5055-30  | 50.0 | +0.050 +0.150 | 55.0 | 30.0      |
| GSM-5055-40  | 50.0 | +0.050 +0.150 | 55.0 | 40.0      |
| GSM-5055-50  | 50.0 | +0.050 +0.150 | 55.0 | 50.0      |
| GSM-5257-20  | 52.0 | +0.060 +0.180 | 57.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

| Part number     | d1    | d1-Tolerance* | d2    | b1<br>h13 |
|-----------------|-------|---------------|-------|-----------|
| GSM-5560-20     | 55.0  | +0.060 +0.180 | 60.0  | 20.0      |
| GSM-5560-40     | 55.0  | +0.060 +0.180 | 60.0  | 40.0      |
| GSM-5560-50     | 55.0  | +0.060 +0.180 | 60.0  | 50.0      |
| GSM-5560-60     | 55.0  | +0.060 +0.180 | 60.0  | 60.0      |
| GSM-6065-30     | 60.0  | +0.060 +0.180 | 65.0  | 30.0      |
| GSM-6065-40     | 60.0  | +0.060 +0.180 | 65.0  | 40.0      |
| GSM-6065-50     | 60.0  | +0.060 +0.180 | 65.0  | 50.0      |
| GSM-6065-60     | 60.0  | +0.060 +0.180 | 65.0  | 60.0      |
| GSM-6065-70     | 60.0  | +0.060 +0.180 | 65.0  | 70.0      |
| GSM-6267-35     | 62.0  | +0.100 +0.250 | 67.0  | 35.0      |
| GSM-6267-72     | 62.0  | +0.060 +0.180 | 67.0  | 72.0      |
| GSM-6570-30     | 65.0  | +0.060 +0.180 | 70.0  | 30.0      |
| GSM-6570-50     | 65.0  | +0.060 +0.180 | 70.0  | 50.0      |
| GSM-6570-104    | 65.0  | +0.060 +0.180 | 70.0  | 104.0     |
| GSM-6873-60     | 68.0  | +0.060 +0.180 | 73.0  | 60.0      |
| GSM-7075-60     | 70.0  | +0.060 +0.180 | 75.0  | 60.0      |
| GSM-7277-24.5   | 72.0  | +0.060 +0.180 | 77.0  | 24.5      |
| GSM-7277-76     | 72.0  | +0.060 +0.180 | 77.0  | 76.0      |
| GSM-7580-40     | 75.0  | +0.060 +0.180 | 80.0  | 40.0      |
| GSM-7580-60     | 75.0  | +0.060 +0.180 | 80.0  | 60.0      |
| GSM-8085-60     | 80.0  | +0.060 +0.180 | 85.0  | 60.0      |
| GSM-8085-100    | 80.0  | +0.060 +0.180 | 85.0  | 100.0     |
| GSM-8590-100    | 85.0  | +0.072 +0.212 | 90.0  | 100.0     |
| GSM-9095-100    | 90.0  | +0.072 +0.212 | 95.0  | 100.0     |
| GSM-95100-100   | 95.0  | +0.072 +0.212 | 100.0 | 100.0     |
| GSM-100105-21.5 | 100.0 | +0.072 +0.212 | 105.0 | 21.5      |
| GSM-100105-30   | 100.0 | +0.072 +0.212 | 105.0 | 30.0      |
| GSM-100105-32   | 100.0 | +0.072 +0.212 | 105.0 | 32.0      |
| GSM-100105-100  | 100.0 | +0.072 +0.212 | 105.0 | 100.0     |
| GSM-110115-100  | 110.0 | +0.072 +0.212 | 115.0 | 100.0     |
| GSM-120125-100  | 120.0 | +0.072 +0.212 | 125.0 | 100.0     |
| GSM-125130-100  | 125.0 | +0.085 +0.245 | 130.0 | 100.0     |
| GSM-130135-100  | 130.0 | +0.085 +0.245 | 135.0 | 100.0     |
| GSM-135140-80   | 135.0 | +0.085 +0.245 | 140.0 | 80.0      |
| GSM-140145-100  | 140.0 | +0.085 +0.245 | 145.0 | 100.0     |
| GSM-140145-104  | 140.0 | +0.085 +0.245 | 145.0 | 104.0     |
| GSM-150155-100  | 150.0 | +0.085 +0.245 | 155.0 | 100.0     |

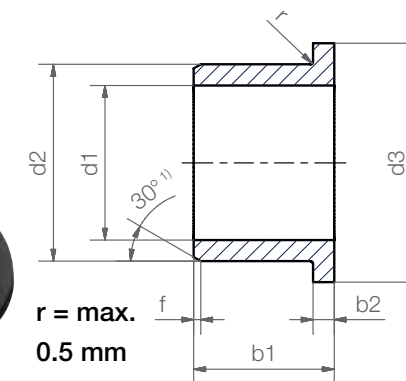


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## Flange Bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

## Dimensions [mm]

| Part number   | d1  | d1-Tolerance* | d2  | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|-----|---------------|-----|-----------|-----------|-------------|
| GFM-03040-15  | 3.0 | +0.010 +0.040 | 4.0 | 7.5       | 15.0      | 0.5         |
| GFM-0304-02   | 3.0 | +0.014 +0.054 | 4.5 | 7.5       | 2.0       | 0.5         |
| GFM-0304-0275 | 3.0 | +0.014 +0.054 | 4.5 | 7.0       | 2.7       | 0.75        |
| GFM-0304-03   | 3.0 | +0.014 +0.054 | 4.5 | 7.5       | 3.0       | 0.75        |
| GFM-0304-05   | 3.0 | +0.014 +0.054 | 4.5 | 7.5       | 5.0       | 0.75        |
| GFM-0304-15   | 3.0 | +0.014 +0.054 | 4.5 | 7.5       | 15.0      | 0.75        |
| GFM-030407-05 | 3.0 | +0.014 +0.054 | 4.5 | 7.0       | 5.0       | 0.75        |
| GFM-04050-04  | 4.0 | +0.010 +0.040 | 5.0 | 9.5       | 4.0       | 0.5         |
| GFM-04050-06  | 4.0 | +0.010 +0.040 | 5.0 | 9.5       | 6.0       | 0.5         |
| GFM-0405-0255 | 4.0 | +0.020 +0.068 | 5.5 | 9.5       | 2.55      | 0.75        |
| GFM-0405-03   | 4.0 | +0.020 +0.068 | 5.5 | 9.5       | 3.0       | 0.75        |
| GFM-0405-04   | 4.0 | +0.020 +0.068 | 5.5 | 9.5       | 4.0       | 0.75        |
| GFM-0405-06   | 4.0 | +0.020 +0.068 | 5.5 | 9.5       | 6.0       | 0.75        |
| GFM-040508-10 | 4.0 | +0.020 +0.068 | 5.5 | 8.0       | 10.0      | 1.0         |
| GFM-0506-035  | 5.0 | +0.010 +0.040 | 6.0 | 10.0      | 3.5       | 0.5         |
| GFM-0506-04   | 5.0 | +0.010 +0.040 | 6.0 | 10.0      | 4.0       | 0.5         |
| GFM-0506-05   | 5.0 | +0.010 +0.040 | 6.0 | 10.0      | 5.0       | 0.5         |
| GFM-0506-06   | 5.0 | +0.010 +0.040 | 6.0 | 10.0      | 6.0       | 0.5         |
| GFM-0506-15   | 5.0 | +0.010 +0.040 | 6.0 | 10.0      | 15.3      | 0.5         |
| GFM-0507-03   | 5.0 | +0.020 +0.068 | 7.0 | 11.0      | 3.5       | 1.0         |
| GFM-0507-04   | 5.0 | +0.020 +0.068 | 7.0 | 11.0      | 4.0       | 1.0         |
| GFM-0507-05   | 5.0 | +0.020 +0.068 | 7.0 | 11.0      | 5.0       | 1.0         |
| GFM-0507-07   | 5.0 | +0.020 +0.068 | 7.0 | 11.0      | 7.0       | 1.0         |
| GFM-0507-11   | 5.0 | +0.020 +0.068 | 7.0 | 11.0      | 11.0      | 1.0         |
| GFM-0507-145  | 5.0 | +0.020 +0.068 | 7.0 | 11.0      | 14.5      | 1.0         |

\* after pressfit. Testing methods ► page 75

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Flange Bearing

Dimensions [mm]

| Part number    | d1  | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|-----|---------------|------|-----------|-----------|-------------|
| GFM-0507-30    | 5.0 | +0.020 +0.068 | 7.0  | 11.0      | 5.0       | 1.0         |
| GFM-050709-05  | 5.0 | +0.020 +0.068 | 7.0  | 9.5       | 5.0       | 1.0         |
| GFM-050715-04  | 5.0 | +0.020 +0.068 | 7.0  | 15.0      | 4.0       | 1.0         |
| GFM-0607-024   | 6.0 | +0.010 +0.040 | 7.0  | 11.0      | 2.4       | 0.5         |
| GFM-0607-029   | 6.0 | +0.010 +0.040 | 7.0  | 11.0      | 2.9       | 0.5         |
| GFM-0607-045   | 6.0 | +0.010 +0.040 | 7.0  | 11.0      | 4.5       | 0.5         |
| GFM-0607-055   | 6.0 | +0.010 +0.040 | 7.0  | 11.0      | 5.5       | 0.5         |
| GFM-0607-06    | 6.0 | +0.010 +0.040 | 7.0  | 11.0      | 6.0       | 0.5         |
| GFM-0607-08    | 6.0 | +0.010 +0.040 | 7.0  | 11.0      | 8.0       | 0.5         |
| GFM-0607-10    | 6.0 | +0.010 +0.040 | 7.0  | 11.0      | 10.0      | 0.5         |
| GFM-060709-045 | 6.0 | +0.010 +0.040 | 7.0  | 9.0       | 4.5       | 0.5         |
| GFM-060709-10  | 6.0 | +0.010 +0.040 | 7.0  | 9.0       | 10.0      | 0.5         |
| GFM-0608-025   | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 2.5       | 1.0         |
| GFM-0608-04    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 4.0       | 1.0         |
| GFM-0608-048   | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 4.8       | 1.0         |
| GFM-0608-05    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 5.0       | 1.0         |
| GFM-0608-06    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| GFM-0608-07    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 7.0       | 1.0         |
| GFM-0608-08    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 8.0       | 1.0         |
| GFM-0608-10    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 10.0      | 1.0         |
| GFM-0608-25    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 25.0      | 1.0         |
| GFM-0608-35    | 6.0 | +0.020 +0.068 | 8.0  | 12.0      | 35.0      | 1.0         |
| GFM-060810-08  | 6.0 | +0.020 +0.068 | 8.0  | 10.0      | 8.0       | 1.0         |
| GFM-060814-028 | 6.0 | +0.020 +0.068 | 8.0  | 14.0      | 2.8       | 1.0         |
| GFM-060814-12  | 6.0 | +0.020 +0.068 | 8.0  | 14.0      | 12.0      | 1.0         |
| GFM-0708-017   | 7.0 | +0.013 +0.049 | 8.0  | 12.0      | 1.7       | 0.5         |
| GFM-0708-03    | 7.0 | +0.013 +0.049 | 8.0  | 12.0      | 3.0       | 0.5         |
| GFM-0708-08    | 7.0 | +0.013 +0.049 | 8.0  | 12.0      | 8.0       | 0.5         |
| GFM-0709-035   | 7.0 | +0.025 +0.083 | 9.0  | 15.0      | 3.5       | 1.0         |
| GFM-0709-06    | 7.0 | +0.025 +0.083 | 9.0  | 15.0      | 6.0       | 1.0         |
| GFM-0709-10    | 7.0 | +0.025 +0.083 | 9.0  | 15.0      | 10.0      | 1.0         |
| GFM-0709-12    | 7.0 | +0.025 +0.083 | 9.0  | 15.0      | 12.0      | 1.0         |
| GFM-070919-10  | 7.0 | +0.025 +0.083 | 9.0  | 19.0      | 10.0      | 1.0         |
| GFM-0809-03    | 8.0 | +0.013 +0.049 | 9.0  | 15.0      | 3.0       | 0.5         |
| GFM-0809-035   | 8.0 | +0.013 +0.049 | 9.0  | 13.0      | 3.5       | 0.5         |
| GFM-0809-055   | 8.0 | +0.013 +0.049 | 9.0  | 13.0      | 5.5       | 0.5         |
| GFM-0809-08    | 8.0 | +0.013 +0.049 | 9.0  | 13.0      | 8.0       | 0.5         |
| GFM-0809-12    | 8.0 | +0.013 +0.049 | 9.0  | 13.0      | 12.0      | 0.5         |
| GFM-0810-03    | 8.0 | +0.025 +0.083 | 10.0 | 15.0      | 3.0       | 1.0         |
| GFM-0810-035   | 8.0 | +0.025 +0.083 | 10.0 | 15.0      | 3.5       | 1.0         |
| GFM-0810-04    | 8.0 | +0.025 +0.083 | 10.0 | 15.0      | 4.0       | 1.0         |
| GFM-0810-050   | 8.0 | +0.025 +0.083 | 10.0 | 15.0      | 5.0       | 1.0         |

\* after pressfit. Testing methods ► page 75

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| GFM-0810-05    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 5.5       | 1.0         |
| GFM-0810-065   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 6.5       | 1.0         |
| GFM-0810-07    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 7.5       | 1.0         |
| GFM-0810-09    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 9.5       | 1.0         |
| GFM-0810-10    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| GFM-0810-11    | 8.0  | +0.025 +0.083 | 10.0 | 14.0      | 11.0      | 1.0         |
| GFM-0810-15    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 15.0      | 1.0         |
| GFM-0810-25    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 25.0      | 1.0         |
| GFM-0810-30    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 30.0      | 1.0         |
| GFM-081012-125 | 8.0  | +0.025 +0.083 | 10.0 | 12.0      | 12.5      | 1.0         |
| GFM-081013-08  | 8.0  | +0.025 +0.083 | 10.0 | 13.0      | 8.0       | 1.0         |
| GFM-081014-05  | 8.0  | +0.040 +0.098 | 10.0 | 14.0      | 5.0       | 1.0         |
| GFM-081014-06  | 8.0  | +0.025 +0.083 | 10.0 | 14.0      | 6.0       | 1.0         |
| GFM-081014-08  | 8.0  | +0.025 +0.083 | 10.0 | 14.0      | 8.0       | 1.0         |
| GFM-081014-10  | 8.0  | +0.040 +0.098 | 10.0 | 14.0      | 10.0      | 1.0         |
| GFM-081016-11  | 8.0  | +0.025 +0.083 | 10.0 | 16.0      | 11.5      | 1.5         |
| GFM-081016-15  | 8.0  | +0.025 +0.083 | 10.0 | 16.0      | 15.0      | 1.5         |
| GFM-081017-15  | 8.0  | +0.025 +0.083 | 10.0 | 17.0      | 15.0      | 1.0         |
| GFM-081018-03  | 8.0  | +0.025 +0.083 | 10.0 | 18.0      | 3.0       | 1.0         |
| GFM-0812-06    | 8.0  | +0.040 +0.130 | 12.0 | 16.0      | 6.0       | 2.0         |
| GFM-081221-08  | 8.0  | +0.040 +0.130 | 12.0 | 21.0      | 8.0       | 2.0         |
| GFM-0910-065   | 9.0  | +0.013 +0.049 | 10.0 | 15.0      | 6.5       | 0.5         |
| GFM-0910-17    | 9.0  | +0.013 +0.049 | 10.0 | 15.0      | 17.5      | 0.5         |
| GFM-1011-03    | 10.0 | +0.013 +0.046 | 11.0 | 20.0      | 3.5       | 0.5         |
| GFM-1011-044   | 10.0 | +0.013 +0.049 | 11.0 | 15.0      | 4.4       | 0.5         |
| GFM-1011-10    | 10.0 | +0.013 +0.049 | 11.0 | 15.0      | 10.0      | 0.5         |
| GFM-1012-035   | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 3.5       | 1.0         |
| GFM-1012-04    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 4.0       | 1.0         |
| GFM-1012-05    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 5.0       | 1.0         |
| GFM-1012-06    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 6.0       | 1.0         |
| GFM-1012-07    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 7.0       | 1.0         |
| GFM-1012-09    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 9.0       | 1.0         |
| GFM-1012-10    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| GFM-1012-12    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 12.0      | 1.0         |
| GFM-1012-15    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 15.0      | 1.0         |
| GFM-1012-17    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 17.0      | 1.0         |
| GFM-101215-12  | 10.0 | +0.025 +0.083 | 12.0 | 15.0      | 12.0      | 1.0         |
| GFM-101216-06  | 10.0 | +0.025 +0.083 | 12.0 | 16.0      | 6.0       | 1.0         |
| GFM-101216-09  | 10.0 | +0.025 +0.083 | 12.0 | 16.0      | 9.0       | 1.0         |
| GFM-101216-15  | 10.0 | +0.025 +0.083 | 12.0 | 16.0      | 15.0      | 1.0         |
| GFM-1112-06    | 11.0 | +0.016 +0.059 | 12.0 | 16.0      | 6.0       | 0.5         |
| GFM-1213-03    | 12.0 | +0.016 +0.059 | 13.0 | 17.0      | 3.0       | 0.5         |

\* after pressfit. Testing methods ► page 75



delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/g](http://www.igus.co.uk/en/g)



Flange Bearing

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| GFM-121315-12 | 12.0 | +0.016 +0.059 | 13.0 | 15.0      | 12.0      | 0.5         |
| GFM-1213-12   | 12.0 | +0.016 +0.059 | 13.0 | 17.0      | 12.0      | 0.5         |
| GFM-1214-03   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 3.0       | 1.0         |
| GFM-1214-05   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 5.0       | 1.0         |
| GFM-1214-06   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 6.0       | 1.0         |
| GFM-1214-07   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 7.0       | 1.0         |
| GFM-1214-09   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 9.0       | 1.0         |
| GFM-1214-10   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 10.0      | 1.0         |
| GFM-1214-11   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 11.0      | 1.0         |
| GFM-1214-12   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| GFM-1214-15   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 15.0      | 1.0         |
| GFM-1214-17   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 17.0      | 1.0         |
| GFM-1214-20   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 20.0      | 1.0         |
| GFM-1214-24   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 24.0      | 1.0         |
| GFM-1214-31   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 31.0      | 1.0         |
| GFM-1214-40   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 40.0      | 1.0         |
| GFM-121418-04 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 4.0       | 1.0         |
| GFM-121418-08 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 8.0       | 1.0         |
| GFM-121418-10 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 10.0      | 1.0         |
| GFM-121418-12 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 12.0      | 1.0         |
| GFM-121418-15 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 15.0      | 1.0         |
| GFM-121418-20 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 20.0      | 1.0         |
| GFM-1315-06   | 13.0 | +0.032 +0.102 | 15.0 | 22.0      | 6.0       | 1.0         |
| GFM-1315-08   | 13.0 | +0.032 +0.102 | 15.0 | 22.0      | 8.0       | 1.0         |
| GFM-1416-03   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 3.0       | 1.0         |
| GFM-1416-04   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 4.0       | 1.0         |
| GFM-1416-06   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 6.0       | 1.0         |
| GFM-1416-08   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 8.0       | 1.0         |
| GFM-1416-10   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 10.0      | 1.0         |
| GFM-1416-12   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 12.0      | 1.0         |
| GFM-1416-17   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 17.0      | 1.0         |
| GFM-1416-21   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 21.0      | 1.0         |
| GFM-1516-02   | 15.0 | +0.016 +0.059 | 16.0 | 20.0      | 2.0       | 0.5         |
| GFM-1516-025  | 15.0 | +0.016 +0.059 | 16.0 | 20.0      | 2.5       | 0.5         |
| GFM-1516-03   | 15.0 | +0.016 +0.059 | 16.0 | 20.0      | 3.0       | 0.5         |
| GFM-1516-15   | 15.0 | +0.016 +0.059 | 16.0 | 20.0      | 15.0      | 0.5         |
| GFM-1517-04   | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 4.0       | 1.0         |
| GFM-1517-045  | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 4.5       | 1.0         |
| GFM-1517-05   | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 5.0       | 1.0         |
| GFM-1517-09   | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 9.0       | 1.0         |
| GFM-1517-12   | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 12.0      | 1.0         |
| GFM-1517-17   | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 17.0      | 1.0         |

\* after pressfit. Testing methods ► page 75

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| GFM-1517-20    | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 20.0      | 1.0         |
| GFM-151824-32  | 15.0 | +0.032 +0.102 | 18.0 | 24.0      | 32.0      | 1.5         |
| GFM-1618-04    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 4.0       | 1.0         |
| GFM-1618-05    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 5.0       | 1.0         |
| GFM-1618-06    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 6.0       | 1.0         |
| GFM-1618-09    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 9.0       | 1.0         |
| GFM-1618-12    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 12.0      | 1.0         |
| GFM-1618-16    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 16.0      | 1.0         |
| GFM-1618-17    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| GFM-1618-21    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 21.0      | 1.0         |
| GFM-1719-09    | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 9.0       | 1.0         |
| GFM-1719-25    | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 25.0      | 1.0         |
| GFM-1820-04    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 4.0       | 1.0         |
| GFM-1820-06    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 6.0       | 1.0         |
| GFM-1820-09    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 9.0       | 1.0         |
| GFM-1820-11    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 11.0      | 1.0         |
| GFM-1820-12    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 12.0      | 1.0         |
| GFM-1820-17    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 17.0      | 1.0         |
| GFM-1820-22    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 22.0      | 1.0         |
| GFM-1820-30    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 30.0      | 1.0         |
| GFM-1820-32    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 32.0      | 1.0         |
| GFM-182022-06  | 18.0 | +0.032 +0.102 | 20.0 | 22.0      | 6.0       | 1.0         |
| GFM-1822-28    | 18.0 | +0.032 +0.102 | 22.0 | 26.0      | 28.0      | 2.0         |
| GFM-2021-035   | 20.0 | +0.020 +0.072 | 21.0 | 26.0      | 3.5       | 0.5         |
| GFM-2021-15    | 20.0 | +0.020 +0.072 | 21.0 | 25.0      | 15.0      | 0.5         |
| GFM-2021-20    | 20.0 | +0.020 +0.072 | 21.0 | 25.0      | 20.0      | 0.5         |
| GFM-2023-07    | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 7.0       | 1.5         |
| GFM-2023-11    | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 11.5      | 1.5         |
| GFM-2023-16    | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 16.5      | 1.5         |
| GFM-2023-21    | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |
| GFM-202326-07  | 20.0 | +0.040 +0.124 | 23.0 | 26.0      | 7.0       | 1.5         |
| GFM-202326-21  | 20.0 | +0.040 +0.124 | 23.0 | 26.0      | 21.5      | 1.5         |
| GFM-202328-15  | 20.0 | +0.040 +0.124 | 23.0 | 28.0      | 15.0      | 1.5         |
| GFM-202329-20  | 20.0 | +0.040 +0.124 | 23.0 | 29.0      | 20.0      | 1.5         |
| GFM-2224-25    | 22.0 | +0.040 +0.124 | 24.0 | 30.0      | 25.0      | 1.0         |
| GFM-222529-045 | 22.0 | +0.040 +0.124 | 25.0 | 29.0      | 4.5       | 1.5         |
| GFM-222535-315 | 22.0 | +0.040 +0.124 | 25.0 | 35.0      | 31.5      | 1.5         |
| GFM-2427-07    | 24.0 | +0.040 +0.124 | 27.0 | 32.0      | 7.0       | 1.5         |
| GFM-2427-10    | 24.0 | +0.040 +0.124 | 27.0 | 32.0      | 10.0      | 1.5         |
| GFM-2526-25    | 25.0 | +0.020 +0.072 | 26.0 | 30.0      | 25.0      | 0.5         |
| GFM-2527-07    | 25.0 | +0.040 +0.124 | 27.0 | 32.0      | 7.0       | 1.0         |
| GFM-2527-48    | 25.0 | +0.040 +0.124 | 27.0 | 32.0      | 48.0      | 1.0         |

\* after pressfit. Testing methods ► page 75



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time



prices price list online  
[www.igus.co.uk/en/g](http://www.igus.co.uk/en/g)





Flange Bearing

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| GFM-252830-10 | 25.0 | +0.040 +0.124 | 28.0 | 30.0      | 10.0      | 1.5         |
| GFM-2528-11   | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 11.5      | 1.5         |
| GFM-2528-16   | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 16.5      | 1.5         |
| GFM-2528-21   | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 21.5      | 1.5         |
| GFM-2630-12   | 26.0 | +0.040 +0.124 | 30.0 | 37.0      | 12.0      | 2.0         |
| GFM-2730-20   | 27.0 | +0.040 +0.124 | 30.0 | 38.0      | 20.0      | 1.5         |
| GFM-2830-10   | 28.0 | +0.040 +0.124 | 30.0 | 36.0      | 10.0      | 1.0         |
| GFM-2830-36   | 28.0 | +0.040 +0.124 | 30.0 | 35.0      | 36.0      | 1.0         |
| GFM-2830-48   | 28.0 | +0.040 +0.124 | 30.0 | 35.0      | 48.0      | 1.0         |
| GFM-283036-31 | 28.0 | +0.040 +0.124 | 30.0 | 36.0      | 31.0      | 1.0         |
| GFM-283239-20 | 28.0 | +0.040 +0.124 | 32.0 | 39.0      | 20.0      | 2.0         |
| GFM-283250-35 | 28.0 | +0.040 +0.124 | 32.0 | 50.0      | 35.0      | 2.0         |
| GFM-3031-20   | 30.0 | +0.040 +0.124 | 31.0 | 36.0      | 20.0      | 0.5         |
| GFM-3031-30   | 30.0 | +0.040 +0.124 | 31.0 | 35.0      | 30.0      | 0.5         |
| GFM-3032-04   | 30.0 | +0.040 +0.124 | 32.0 | 37.0      | 4.0       | 1.0         |
| GFM-3032-12   | 30.0 | +0.040 +0.124 | 32.0 | 37.0      | 12.0      | 1.0         |
| GFM-3032-17   | 30.0 | +0.040 +0.124 | 32.0 | 37.0      | 17.5      | 1.0         |
| GFM-3032-22   | 30.0 | +0.040 +0.124 | 32.0 | 37.0      | 22.0      | 1.0         |
| GFM-3034-09   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 9.0       | 2.0         |
| GFM-3034-16   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 16.0      | 2.0         |
| GFM-3034-20   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 20.0      | 2.0         |
| GFM-3034-26   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 26.0      | 2.0         |
| GFM-3034-37   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 37.0      | 2.0         |
| GFM-303440-10 | 30.0 | +0.040 +0.124 | 34.0 | 40.0      | 10.0      | 2.0         |
| GFM-3236-16   | 32.0 | +0.050 +0.150 | 36.0 | 40.0      | 16.0      | 2.0         |
| GFM-3236-26   | 32.0 | +0.050 +0.150 | 36.0 | 40.0      | 26.0      | 2.0         |
| GFM-343850-35 | 34.0 | +0.050 +0.150 | 38.0 | 50.0      | 35.0      | 2.0         |
| GFM-3539-058  | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 5.8       | 2.0         |
| GFM-3539-07   | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 7.0       | 2.0         |
| GFM-3539-12   | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 12.0      | 2.0         |
| GFM-3539-16   | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 16.0      | 2.0         |
| GFM-3539-26   | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 26.0      | 2.0         |
| GFM-3539-36   | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 36.0      | 2.0         |
| GFM-3842-22   | 38.0 | +0.050 +0.150 | 42.0 | 54.0      | 22.0      | 2.0         |
| GFM-4044-07   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 7.0       | 2.0         |
| GFM-4044-14   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 14.0      | 2.0         |
| GFM-4044-20   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 20.0      | 2.0         |
| GFM-4044-30   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 30.0      | 2.0         |
| GFM-4044-40   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 40.0      | 2.0         |
| GFM-4044-50   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 50.0      | 2.0         |
| GFM-4046-20   | 40.0 | +0.050 +0.150 | 46.0 | 50.0      | 20.0      | 2.0         |
| GFM-4246-19   | 42.0 | +0.050 +0.150 | 46.0 | 53.0      | 19.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Flange Bearing

Dimensions [mm]

| Part number      | d1    | d1-Tolerance* | d2    | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|------------------|-------|---------------|-------|-----------|-----------|-------------|
| GFM-4550-25      | 45.0  | +0.050 +0.150 | 50.0  | 58.0      | 25.0      | 2.0         |
| GFM-4550-30      | 45.0  | +0.050 +0.150 | 50.0  | 58.0      | 30.0      | 2.0         |
| GFM-4550-50      | 45.0  | +0.050 +0.150 | 50.0  | 58.0      | 50.0      | 2.0         |
| GFM-5055-07      | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 7.0       | 2.0         |
| GFM-5055-10      | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 10.0      | 2.0         |
| GFM-5055-25      | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 25.0      | 2.0         |
| GFM-5055-40      | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 40.0      | 2.0         |
| GFM-5055-50      | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 50.0      | 2.0         |
| GFM-6065-07      | 60.0  | +0.060 +0.180 | 65.0  | 73.0      | 7.0       | 2.0         |
| GFM-6065-22      | 60.0  | +0.060 +0.180 | 65.0  | 73.0      | 22.0      | 2.0         |
| GFM-6065-30      | 60.0  | +0.060 +0.180 | 65.0  | 73.0      | 30.0      | 2.0         |
| GFM-6065-50      | 60.0  | +0.060 +0.180 | 65.0  | 73.0      | 50.0      | 2.0         |
| GFM-606580-62    | 60.0  | +0.060 +0.180 | 65.0  | 80.0      | 62.0      | 2.0         |
| GFM-6570-50      | 65.0  | +0.060 +0.180 | 70.0  | 78.0      | 50.0      | 2.0         |
| GFM-7075-50      | 70.0  | +0.060 +0.180 | 75.0  | 83.0      | 50.0      | 2.0         |
| GFM-7580-50      | 75.0  | +0.060 +0.180 | 80.0  | 88.0      | 50.0      | 2.0         |
| GFM-8085-50      | 80.0  | +0.060 +0.180 | 85.0  | 93.0      | 50.0      | 2.5         |
| GFM-8085-100     | 80.0  | +0.060 +0.180 | 85.0  | 93.0      | 100.0     | 2.5         |
| GFM-8590-100     | 85.0  | +0.072 +0.212 | 90.0  | 98.0      | 100.0     | 2.5         |
| GFM-9095-100     | 90.0  | +0.072 +0.212 | 95.0  | 103.0     | 100.0     | 2.5         |
| GFM-95100-100    | 95.0  | +0.072 +0.212 | 100.0 | 108.0     | 100.0     | 2.5         |
| GFM-100105-425   | 100.0 | +0.072 +0.212 | 105.0 | 113.0     | 42.5      | 2.5         |
| GFM-100105-100   | 100.0 | +0.072 +0.212 | 105.0 | 113.0     | 100.0     | 2.5         |
| GFM-110115-100   | 110.0 | +0.072 +0.212 | 115.0 | 123.0     | 100.0     | 2.5         |
| GFM-120125-80    | 120.0 | +0.072 +0.212 | 125.0 | 133.0     | 80.0      | 2.5         |
| GFM-120125-100   | 120.0 | +0.072 +0.212 | 125.0 | 133.0     | 100.0     | 2.5         |
| GFM-125130-100   | 125.0 | +0.085 +0.245 | 130.0 | 138.0     | 100.0     | 2.5         |
| GFM-130135-100   | 130.0 | +0.085 +0.245 | 135.0 | 143.0     | 100.0     | 2.5         |
| GFM-140145-100   | 140.0 | +0.085 +0.245 | 145.0 | 153.0     | 100.0     | 2.5         |
| GFM-150155-40    | 150.0 | +0.085 +0.245 | 155.0 | 163.0     | 40.0      | 2.5         |
| GFM-150155-100   | 150.0 | +0.085 +0.245 | 155.0 | 163.0     | 100.0     | 2.5         |
| GFM-195205240-65 | 195.0 | +0.100 +0.285 | 205.0 | 240.0     | 65.0      | 5.0         |

\* after pressfit. Testing methods ► page 75



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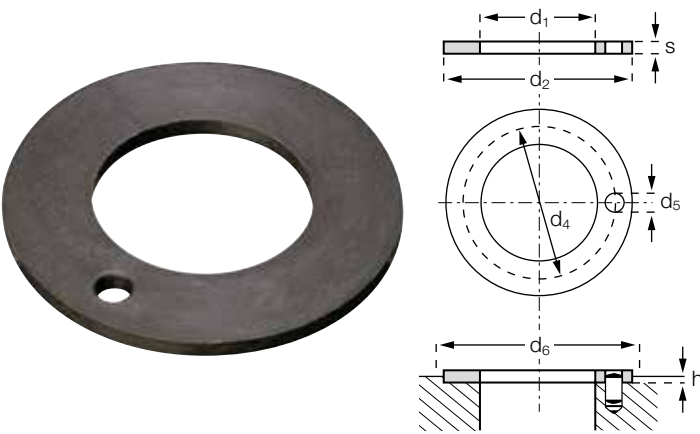


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Thrust Washer



Order key

GTM-0509-006



- Thickness s
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form T)
- Material iglidur® G

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

| Part number  | d1<br>+0.25 | d2<br>-0.25 | s<br>-0.05  | d4<br>-0.12<br>+0.12 | d5<br>+0.375<br>+0.125 | h<br>+0.2<br>-0.2 | d6<br>+0.12 |
|--------------|-------------|-------------|-------------|----------------------|------------------------|-------------------|-------------|
| GTM-0408-005 | 4.0         | 8.0         | 0.5         | **                   | **                     | 0.2               | 8.0         |
| GTM-0409-006 | 4.0         | 9.0         | 0.6         | **                   | **                     | 0.3               | 9.0         |
| GTM-0410-005 | 4.0         | 10.0        | 0.5         | **                   | **                     | 0.2               | 10.0        |
| GTM-0411-005 | 4.0         | 11.0        | 0.5 (-0.06) | **                   | **                     | 0.2               | 11.0        |
| GTM-0509-006 | 5.0         | 9.5         | 0.6         | **                   | **                     | 0.3               | 9.5         |
| GTM-0611-010 | 6.0         | 11.0        | 1.0         | **                   | **                     | 0.7               | 11.0        |
| GTM-0612-015 | 6.0         | 12.0        | 1.5         | **                   | **                     | 1.0               | 12.0        |
| GTM-0615-015 | 6.0         | 15.0        | 1.5         | **                   | **                     | 1.0               | 15.0        |
| GTM-0620-015 | 6.0         | 20.0        | 1.5         | 13.0                 | 1.5                    | 1.0               | 20.0        |
| GTM-0712-005 | 7.0         | 12.0        | 0.5         | **                   | **                     | 0.2               | 12.0        |
| GTM-0713-005 | 7.0         | 13.0        | 0.5         | **                   | **                     | 0.2               | 13.0        |
| GTM-0815-005 | 8.0         | 15.0        | 0.5         | **                   | **                     | 0.2               | 15.0        |
| GTM-0815-015 | 8.0         | 15.0        | 1.5         | **                   | **                     | 1.0               | 15.0        |
| GTM-0818-010 | 8.0         | 18.0        | 1.0         | **                   | **                     | 0.7               | 18.0        |
| GTM-0818-015 | 8.0         | 18.0        | 1.5         | 13.0                 | 1.5                    | 1.0               | 18.0        |
| GTM-0818-020 | 8.0         | 18.0        | 2.0         | **                   | **                     | 1.5               | 18.0        |
| GTM-0913-010 | 9.0         | 13.0        | 1.0         | **                   | **                     | 0.7               | 13.0        |
| GTM-0918-015 | 9.0         | 18.0        | 1.5         | 13.5                 | 1.5                    | 1.0               | 18.0        |
| GTM-1018-005 | 10.0        | 17.8        | 0.5         | **                   | **                     | 0.2               | 17.8        |
| GTM-1018-010 | 10.0        | 18.0        | 1.0         | **                   | **                     | 0.7               | 18.0        |
| GTM-1018-015 | 10.0        | 18.0        | 1.5         | **                   | **                     | 1.0               | 18.0        |
| GTM-1018-020 | 10.0        | 18.0        | 2.0         | **                   | **                     | 1.5               | 18.0        |
| GTM-1020-015 | 10.0        | 20.0        | 1.5         | **                   | **                     | 0.7               | 20.0        |
| GTM-1115-010 | 11.0        | 15.0        | 1.0         | **                   | **                     | 0.7               | 15.0        |

\*\* Design without fixing bore

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Thrust Washer

Dimensions [mm]

| Part number   | d1<br>+0.25 | d2<br>-0.25 | s<br>-0.05 | d4<br>-0.12<br>+0.12 | d5<br>+0.375<br>+0.125 | h<br>+0.2<br>-0.2 | d6<br>+0.12 |
|---------------|-------------|-------------|------------|----------------------|------------------------|-------------------|-------------|
| GTM-1127-005  | 11.0        | 27.0        | 0.5        | **                   | **                     | 0.2               | 27.0        |
| GTM-1224-015  | 12.0        | 24.0        | 1.5        | 18.0                 | 1.5                    | 1.0               | 24.0        |
| GTM-1230-015  | 12.0        | 30.0        | 1.5        | **                   | **                     | 1.0               | 30.0        |
| GTM-1420-015  | 14.0        | 20.0        | 1.5        | **                   | **                     | 1.0               | 20.0        |
| GTM-1426-015  | 14.0        | 26.0        | 1.5        | 20.0                 | 2.0                    | 1.0               | 26.0        |
| GTM-1522-008  | 15.0        | 22.0        | 0.8        | **                   | **                     | 0.5               | 22.0        |
| GTM-1519-008  | 15.0        | 19.0        | 0.8        | **                   | **                     | 0.5               | 19.0        |
| GTM-1524-015  | 15.0        | 24.0        | 1.5        | 19.5                 | 1.5                    | 1.0               | 24.0        |
| GTM-1524-0275 | 15.0        | 24.0        | 2.75       | **                   | **                     | 2.0               | 24.0        |
| GTM-1628-010  | 16.0        | 28.0        | 1.0        | **                   | **                     | 0.7               | 28.0        |
| GTM-1630-015  | 16.0        | 30.0        | 1.5        | 22.0                 | 2.0                    | 1.0               | 30.0        |
| GTM-1832-015  | 18.0        | 32.0        | 1.5        | 25.0                 | 2.0                    | 1.0               | 32.0        |
| GTM-2036-015  | 20.0        | 36.0        | 1.5        | 28.0                 | 3.0                    | 1.0               | 36.0        |
| GTM-2230-015  | 22.0        | 30.0        | 1.5        | **                   | **                     | 1.0               | 30.0        |
| GTM-2238-015  | 22.0        | 38.0        | 1.5        | 30.0                 | 3.0                    | 1.0               | 38.0        |
| GTM-2442-015  | 24.0        | 42.0        | 1.5        | 33.0                 | 3.0                    | 1.0               | 42.0        |
| GTM-2644-015  | 26.0        | 44.0        | 1.5        | 35.0                 | 3.0                    | 1.0               | 44.0        |
| GTM-2835-005  | 28.5        | 35.8        | 0.5        | **                   | **                     | 0.2               | 35.8        |
| GTM-2848-015  | 28.0        | 48.0        | 1.5        | 38.0                 | 4.0                    | 1.0               | 48.0        |
| GTM-3246-010  | 32.0        | 45.8        | 1.0        | **                   | **                     | 0.7               | 45.8        |
| GTM-3254-015  | 32.0        | 54.0        | 1.5        | 43.0                 | 4.0                    | 1.0               | 54.0        |
| GTM-3862-015  | 38.0        | 62.0        | 1.5        | 50.0                 | 4.0                    | 1.0               | 62.0        |
| GTM-4266-015  | 42.0        | 66.0        | 1.5        | 54.0                 | 4.0                    | 1.0               | 66.0        |
| GTM-4874-020  | 48.0        | 74.0        | 2.0        | 61.0                 | 4.0                    | 1.5               | 74.0        |
| GTM-5278-020  | 52.0        | 78.0        | 2.0        | 65.0                 | 4.0                    | 1.5               | 78.0        |
| GTM-52569-020 | 52.5        | 69.0        | 2.0        | **                   | **                     | 1.5               | 69.0        |
| GTM-6278-020  | 62.0        | 78.0        | 2.0        | **                   | **                     | 1.5               | 78.0        |
| GTM-6290-010  | 62.0        | 90.0        | 1.0        | **                   | **                     | 0.7               | 90.0        |
| GTM-6290-020  | 62.0        | 90.0        | 2.0        | 76.0                 | 4.0                    | 1.5               | 90.0        |
| GTM-6881-020  | 68.0        | 81.0        | 2.0        | **                   | **                     | 1.5               | 81.0        |
| GTM-78114-015 | 78.0        | 114.0       | 1.5        | **                   | **                     | 1.0               | 114.0       |
| GTM-80114-015 | 80.5        | 114.0       | 1.5        | **                   | **                     | 1.0               | 114.0       |

\*\* Design without fixing bore



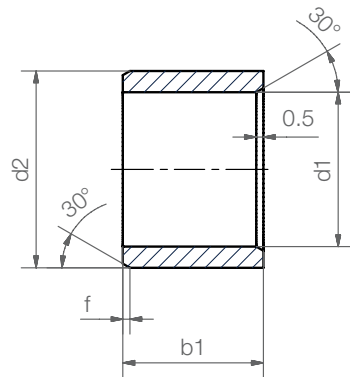
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Sleeve Bearing



Order key

GSI-0203-03



Length b1  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form S)  
Material iglidur® G

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d1*   |       | Housing Bore |       | Shaft Size |       |
|-------------|------|-------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      | max.  | min.  | max.         | min.  | max.       | min.  |
| GSI-0203-03 | 1/8  | 3/16  | 3/16 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| GSI-0203-04 | 1/8  | 3/16  | 1/4  | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| GSI-0203-06 | 1/8  | 3/16  | 3/8  | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| GSI-0304-04 | 3/16 | 1/4   | 1/4  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| GSI-0304-06 | 3/16 | 1/4   | 3/8  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| GSI-0304-08 | 3/16 | 1/4   | 1/2  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| GSI-0405-04 | 1/4  | 5/16  | 1/4  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GSI-0405-05 | 1/4  | 5/16  | 5/16 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GSI-0405-06 | 1/4  | 5/16  | 3/8  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GSI-0405-08 | 1/4  | 5/16  | 1/2  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GSI-0405-10 | 1/4  | 5/16  | 5/8  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GSI-0405-12 | 1/4  | 5/16  | 3/4  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GSI-0506-04 | 5/16 | 3/8   | 1/4  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GSI-0506-06 | 5/16 | 3/8   | 3/8  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GSI-0506-08 | 5/16 | 3/8   | 1/2  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GSI-0506-12 | 5/16 | 3/8   | 3/4  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GSI-0607-04 | 3/8  | 15/32 | 1/4  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GSI-0607-06 | 3/8  | 15/32 | 3/8  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GSI-0607-08 | 3/8  | 15/32 | 1/2  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GSI-0607-12 | 3/8  | 15/32 | 3/4  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GSI-0608-08 | 3/8  | 8/16  | 1/2  | .3783 | .3760 | .5015        | .5010 | .3750      | .3741 |
| GSI-0608-12 | 3/8  | 8/16  | 3/4  | .3773 | .3750 | .5015        | .5010 | .3750      | .3741 |
| GSI-0708-04 | 7/16 | 17/32 | 1/4  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| GSI-0708-08 | 7/16 | 17/32 | 1/2  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| GSI-0809-03 | 1/2  | 19/32 | 3/16 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |

\* after pressfit. Testing methods ► page 75



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Sleeve Bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1     | d1*    |        | Housing Bore |        | Shaft Size |        |
|-------------|-------|---------|--------|--------|--------|--------------|--------|------------|--------|
|             |       |         |        | max.   | min.   | max.         | min.   | max.       | min.   |
| GSI-0809-04 | 1/2   | 19/32   | 1/4    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GSI-0809-06 | 1/2   | 19/32   | 3/8    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GSI-0809-08 | 1/2   | 19/32   | 1/2    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GSI-0809-10 | 1/2   | 19/32   | 5/8    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GSI-0809-16 | 1/2   | 19/32   | 1      | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GSI-0810-08 | 1/2   | 5/8     | 1/2    | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| GSI-0810-12 | 1/2   | 5/8     | 3/4    | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| GSI-0910-06 | 9/16  | 21/32   | 3/8    | .5655  | .5627  | .6566        | .6559  | .5615      | .5605  |
| GSI-0910-08 | 9/16  | 21/32   | 1/2    | .5655  | .5627  | .6566        | .6559  | .5615      | .5605  |
| GSI-0910-10 | 9/16  | 21/32   | 5/8    | .5655  | .5627  | .6566        | .6559  | .5615      | .5605  |
| GSI-1011-06 | 5/8   | 23/32   | 3/8    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GSI-1011-08 | 5/8   | 23/32   | 1/2    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GSI-1011-10 | 5/8   | 23/32   | 5/8    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GSI-1011-12 | 5/8   | 23/32   | 3/4    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GSI-1011-16 | 5/8   | 23/32   | 1      | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GSI-1011-20 | 5/8   | 23/32   | 1 1/4  | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GSI-1011-30 | 5/8   | 23/32   | 1 7/8  | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GSI-1012-08 | 5/8   | 3/4     | 1/2    | .6290  | .6263  | .7510        | .7500  | .6250      | .6240  |
| GSI-1012-16 | 5/8   | 3/4     | 1      | .6290  | .6263  | .7510        | .7500  | .6250      | .6240  |
| GSI-1112-14 | 11/16 | 25/32   | 7/8    | .6906  | .6879  | .7817        | .7809  | .6865      | .6855  |
| GSI-1214-02 | 3/4   | 7/8     | 1/8    | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GSI-1214-06 | 3/4   | 7/8     | 3/8    | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GSI-1214-08 | 3/4   | 7/8     | 1/2    | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GSI-1214-12 | 3/4   | 7/8     | 3/4    | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GSI-1214-16 | 3/4   | 7/8     | 1      | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GSI-1214-20 | 3/4   | 7/8     | 1 1/4  | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GSI-1214-24 | 3/4   | 7/8     | 1 1/2  | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GSI-1416-06 | 7/8   | 1       | 3/8    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GSI-1416-08 | 7/8   | 1       | 1/2    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GSI-1416-10 | 7/8   | 1       | 5/8    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GSI-1416-12 | 7/8   | 1       | 3/4    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GSI-1416-16 | 7/8   | 1       | 1      | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GSI-1416-24 | 7/8   | 1       | 1 1/2  | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GSI-1618-08 | 1     | 1 1/8   | 1/2    | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GSI-1618-12 | 1     | 1 1/8   | 3/4    | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GSI-1618-16 | 1     | 1 1/8   | 1      | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GSI-1618-20 | 1     | 1 1/8   | 1 1/4  | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GSI-1618-24 | 1     | 1 1/8   | 1 1/2  | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GSI-1618-33 | 1     | 1 1/8   | 2 1/16 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GSI-1820-12 | 1 1/8 | 1 9/32  | 3/4    | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| GSI-1820-24 | 1 1/8 | 1 9/32  | 1 1/2  | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| GSI-2022-12 | 1 1/4 | 1 13/32 | 3/4    | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |

\* after pressfit. Testing methods ► page 75



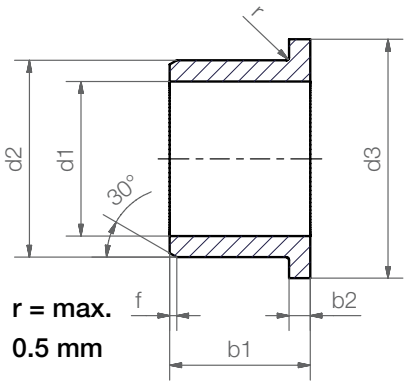
Sleeve Bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d1*    |        | Housing Bore |        | Shaft Size |        |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       | max.   | min.   | max.         | min.   | max.       | min.   |
| GSI-2022-14 | 1 1/4 | 1 13/32 | 7/8   | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GSI-2022-16 | 1 1/4 | 1 13/32 | 1     | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GSI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GSI-2022-24 | 1 1/4 | 1 13/32 | 1 1/2 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GSI-2224-16 | 1 3/8 | 1 17/32 | 1     | 1.3798 | 1.3758 | 1.5318       | 1.5308 | 1.3738     | 1.3722 |
| GSI-2224-24 | 1 3/8 | 1 17/32 | 1 1/2 | 1.3798 | 1.3758 | 1.5318       | 1.5308 | 1.3738     | 1.3722 |
| GSI-2224-26 | 1 3/8 | 1 17/32 | 1 5/8 | 1.3798 | 1.3758 | 1.5318       | 1.5308 | 1.3738     | 1.3722 |
| GSI-2426-06 | 1 1/2 | 1 21/32 | 3/8   | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GSI-2426-07 | 1 1/2 | 1 21/32 | 7/16  | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GSI-2426-08 | 1 1/2 | 1 21/32 | 1/2   | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GSI-2426-12 | 1 1/2 | 1 21/32 | 3/4   | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GSI-2426-16 | 1 1/2 | 1 21/32 | 1     | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GSI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GSI-2629-20 | 1 5/8 | 1 25/32 | 1 1/4 | 1.6297 | 1.6258 | 1.7818       | 1.7808 | 1.6238     | 1.6222 |
| GSI-2831-16 | 1 3/4 | 1 15/16 | 1     | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| GSI-2831-24 | 1 3/4 | 1 15/16 | 1 1/2 | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| GSI-2831-32 | 1 3/4 | 1 15/16 | 2     | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| GSI-2831-40 | 1 3/4 | 1 15/16 | 2 1/2 | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| GSI-2831-48 | 1 3/4 | 1 15/16 | 3     | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| GSI-3235-16 | 2     | 2 3/16  | 1     | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| GSI-3235-24 | 2     | 2 3/16  | 1 1/2 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| GSI-3235-32 | 2     | 2 3/16  | 2     | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| GSI-3639-32 | 2 1/4 | 2 7/16  | 2     | 2.2577 | 2.2531 | 2.4377       | 2.4365 | 2.2507     | 2.2489 |
| GSI-4043-32 | 2 2/4 | 2 11/16 | 2     | 2.5082 | 2.5035 | 2.6881       | 2.6869 | 2.5000     | 2.4999 |
| GSI-4447-32 | 2 3/4 | 2 15/16 | 2     | 2.7570 | 2.7523 | 2.9370       | 2.9358 | 2.7500     | 2.7490 |
| GSI-4851-32 | 3     | 3 3/16  | 2     | 3.0070 | 3.0023 | 3.1870       | 3.1858 | 3.0000     | 2.9990 |

\* after pressfit. Testing methods ► page 75

Flange Bearing



Order key

GFI-0203-02

- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® G

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d3   | b2   | d1*   |       | Housing Bore |       | Shaft Size |       |
|-------------|------|-------|------|------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      |      |      | max.  | min.  | max.         | min.  | max.       | min.  |
| GFI-0203-02 | 1/8  | 3/16  | 1/8  | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| GFI-0203-03 | 1/8  | 3/16  | 3/16 | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| GFI-0203-04 | 1/8  | 3/16  | 1/4  | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| GFI-0203-06 | 1/8  | 3/16  | 3/8  | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| GFI-0304-04 | 3/16 | 1/4   | 1/4  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| GFI-0304-06 | 3/16 | 1/4   | 3/8  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| GFI-0304-08 | 3/16 | 1/4   | 1/2  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| GFI-0405-04 | 1/4  | 5/16  | 1/4  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GFI-0405-05 | 1/4  | 5/16  | 5/16 | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GFI-0405-06 | 1/4  | 5/16  | 3/8  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GFI-0405-08 | 1/4  | 5/16  | 1/2  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GFI-0405-12 | 1/4  | 5/16  | 3/4  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| GFI-0506-04 | 5/16 | 3/8   | 1/4  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GFI-0506-06 | 5/16 | 3/8   | 3/8  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GFI-0506-08 | 5/16 | 3/8   | 1/2  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GFI-0506-12 | 5/16 | 3/8   | 3/4  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| GFI-0607-04 | 3/8  | 15/32 | 1/4  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GFI-0607-05 | 3/8  | 15/32 | 5/16 | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GFI-0607-06 | 3/8  | 15/32 | 3/8  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GFI-0607-08 | 3/8  | 15/32 | 1/2  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GFI-0607-12 | 3/8  | 15/32 | 3/4  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GFI-0607-14 | 3/8  | 15/32 | 7/8  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| GFI-0708-04 | 7/16 | 17/32 | 1/4  | .750 | .046 | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| GFI-0708-08 | 7/16 | 17/32 | 1/2  | .750 | .046 | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| GFI-0809-04 | 1/2  | 19/32 | 1/4  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |

\* after pressfit. Testing methods ► page 75



delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/g](http://www.igus.co.uk/en/g)





Flange Bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d3    | b2   | d1*    |        | Housing Bore |        | Shaft Size |        |
|-------------|-------|---------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| GFI-0809-05 | 1/2   | 19/32   | 5/16  | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GFI-0809-06 | 1/2   | 19/32   | 3/8   | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GFI-0809-08 | 1/2   | 19/32   | 1/2   | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GFI-0809-12 | 1/2   | 19/32   | 3/4   | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GFI-0809-16 | 1/2   | 19/32   | 1     | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| GFI-1011-06 | 5/8   | 23/32   | 3/8   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GFI-1011-08 | 5/8   | 23/32   | 1/2   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GFI-1011-12 | 5/8   | 23/32   | 3/4   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GFI-1011-14 | 5/8   | 23/32   | 7/8   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GFI-1011-16 | 5/8   | 23/32   | 1     | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GFI-1011-24 | 5/8   | 23/32   | 1 1/2 | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| GFI-1214-02 | 3/4   | 7/8     | 1/8   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GFI-1214-06 | 3/4   | 7/8     | 3/8   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GFI-1214-08 | 3/4   | 7/8     | 1/2   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GFI-1214-10 | 3/4   | 7/8     | 5/8   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GFI-1214-12 | 3/4   | 7/8     | 3/4   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GFI-1214-16 | 3/4   | 7/8     | 1     | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GFI-1214-24 | 3/4   | 7/8     | 1 1/2 | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| GFI-1416-08 | 7/8   | 1       | 1/2   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GFI-1416-12 | 7/8   | 1       | 3/4   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GFI-1416-16 | 7/8   | 1       | 1     | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GFI-1416-20 | 7/8   | 1       | 1 1/4 | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GFI-1416-24 | 7/8   | 1       | 1 1/2 | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| GFI-1618-08 | 1     | 1 1/8   | 1/2   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GFI-1618-12 | 1     | 1 1/8   | 3/4   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GFI-1618-16 | 1     | 1 1/8   | 1     | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GFI-1618-20 | 1     | 1 1/8   | 1 1/4 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GFI-1618-24 | 1     | 1 1/8   | 1 1/2 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| GFI-1820-12 | 1 1/8 | 1 9/32  | 3/4   | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| GFI-1820-24 | 1 1/8 | 1 9/32  | 1 1/2 | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| GFI-2022-06 | 1 1/4 | 1 13/32 | 3/8   | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GFI-2022-12 | 1 1/4 | 1 13/32 | 3/4   | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GFI-2022-14 | 1 1/4 | 1 13/32 | 7/8   | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GFI-2022-16 | 1 1/4 | 1 13/32 | 1     | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GFI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GFI-2022-24 | 1 1/4 | 1 13/32 | 1 1/2 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| GFI-2224-16 | 1 3/8 | 1 17/32 | 1     | 1.875 | .078 | 1.3798 | 1.3758 | 1.5318       | 1.5308 | 1.3738     | 1.3722 |
| GFI-2426-12 | 1 1/2 | 1 21/32 | 3/4   | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GFI-2426-16 | 1 1/2 | 1 21/32 | 1     | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GFI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| GFI-2831-16 | 1 3/4 | 1 15/16 | 1     | 2.375 | .093 | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| GFI-2831-24 | 1 3/4 | 1 15/16 | 1 1/2 | 2.375 | .093 | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |

\* after pressfit. Testing methods ► page 75



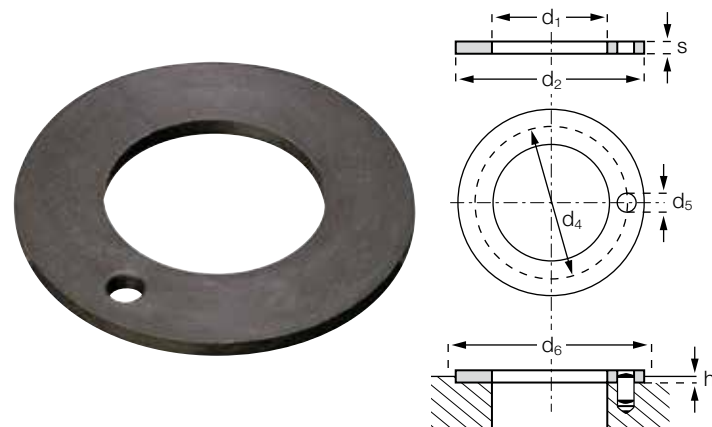
Flange Bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d3    | b2   | d1*    |        | Housing Bore |        | Shaft Size |        |
|-------------|-------|---------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| GFI-2831-32 | 1 3/4 | 1 15/16 | 2     | 2.375 | .093 | 1.7547 | 1.7505 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| GFI-3235-16 | 2     | 2 3/16  | 1     | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| GFI-3235-24 | 2     | 2 3/16  | 1 1/2 | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| GFI-3235-32 | 2     | 2 3/16  | 2     | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| GFI-3639-32 | 2 1/4 | 2 7/16  | 2     | 2.750 | .093 | 2.2577 | 2.2531 | 2.4377       | 2.4365 | 2.2507     | 2.2489 |
| GFI-4043-32 | 2 1/2 | 2 11/16 | 2     | 3.125 | .093 | 2.5082 | 2.5035 | 2.6881       | 2.6869 | 2.5000     | 2.4999 |
| GFI-4447-32 | 2 3/4 | 2 15/16 | 2     | 3.375 | .093 | 2.7570 | 2.7523 | 2.9370       | 2.9358 | 2.7500     | 2.7490 |

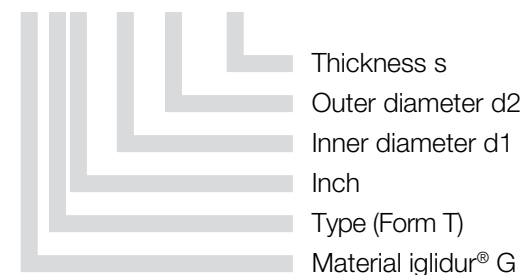
\* after pressfit. Testing methods ► page 75

## Thrust Washer



Order key

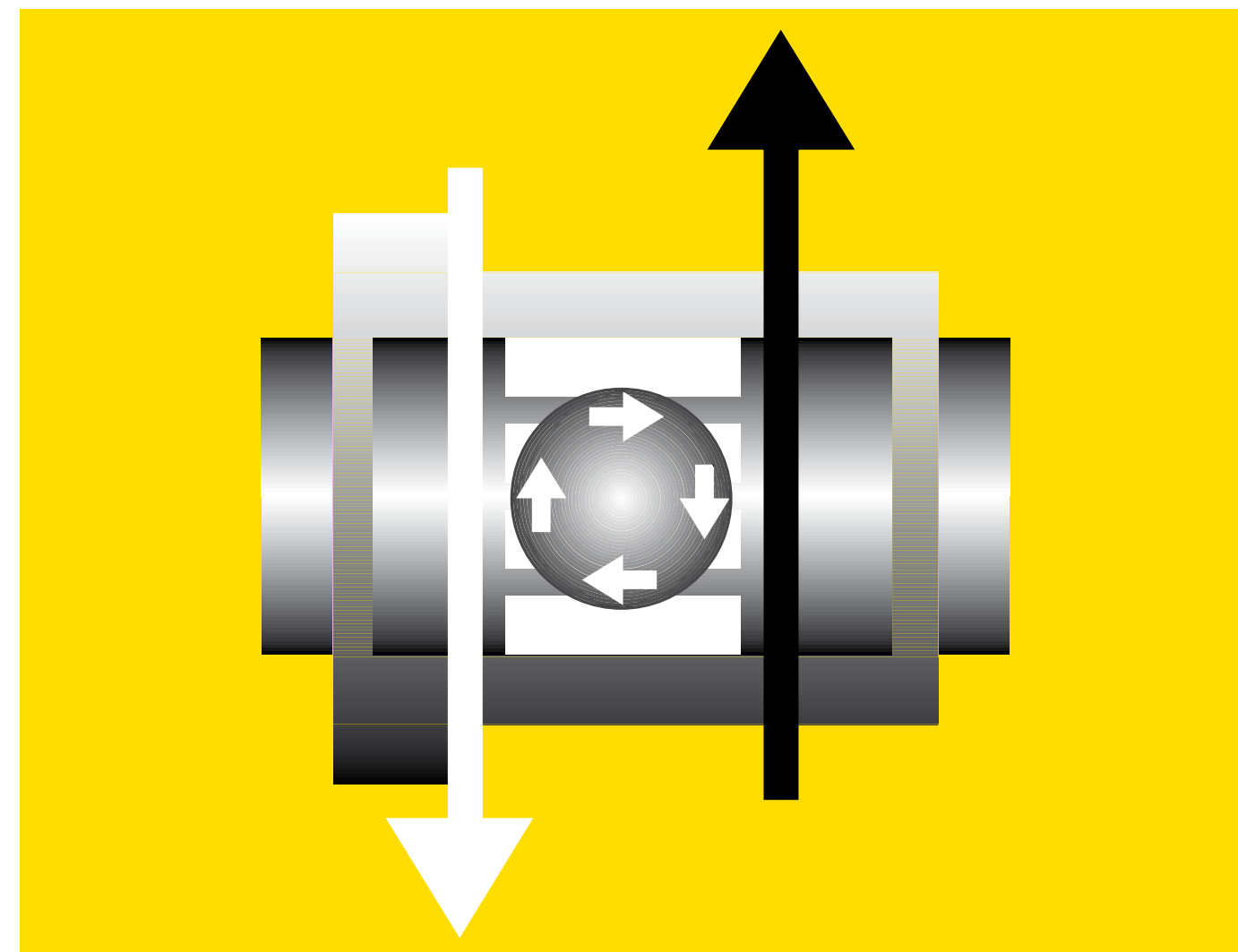
GTI-0814-01



Dimensions according to ISO 3547-1 and special dimensions

### Dimensions [Inch]

| Part number | d1<br>+.010 | d2<br>-.010 | s<br>-.0020 | d4<br>±.005 | d5<br>.015 + .005 | h<br>+.008 | d6<br>+.005 |
|-------------|-------------|-------------|-------------|-------------|-------------------|------------|-------------|
| GTI-0814-01 | .500        | .875        | .0585       | .692        | .067              | .040       | .875        |
| GTI-1018-01 | .625        | 1.125       | .0585       | .880        | .099              | .040       | 1.125       |
| GTI-1220-01 | .750        | 1.250       | .0585       | 1.005       | .099              | .040       | 1.250       |
| GTI-1424-01 | .875        | 1.500       | .0585       | 1.192       | .130              | .040       | 1.500       |
| GTI-1628-01 | 1.000       | 1.750       | .0585       | 1.380       | .130              | .040       | 1.750       |
| GTI-2034-01 | 1.250       | 2.125       | .0585       | 1.692       | .161              | .040       | 2.125       |
| GTI-2440-01 | 1.500       | 2.500       | .0585       | 2.005       | .192              | .040       | 2.500       |
| GTI-2844-01 | 1.750       | 2.750       | .0585       | 2.255       | .192              | .040       | 2.750       |
| GTI-3248-01 | 2.000       | 3.000       | .0895       | 2.505       | .192              | .070       | 3.000       |



## Low friction, low wear: The Fast and Slow Motion Specialist – iglidur® J



Over 250 sizes available from stock

Low wear against different shaft materials

Low coefficients of friction running dry

Vibration dampening

Good chemical resistance

Best material to use with soft shaft materials

Low moisture absorption



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/g

**Low friction, low wear.** The iglidur® J plain bearings are designed for the lowest coefficients of friction while running dry and low stick slip tendency. With a maximum permissible surface pressure of 35 MPa iglidur® J plain bearings are not suitable for extreme loads.



## When to use it?

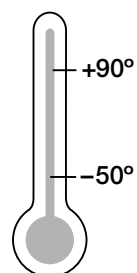
- For high speeds
- For highest wear resistance at low to medium pressures
- Low wear against different shafts
- Low coefficient of friction in dry run
- Vibration dampening
- Good chemical resistance
- Best performance with soft shaft materials
- Low moisture absorption



## When not to use it?

- When high pressures occur
  - ▶ iglidur® G, page 81
  - ▶ iglidur® W300, page 151
- When short term temperatures occur that are greater +120 °C
  - ▶ iglidur® J350, page 257
  - ▶ iglidur® Z, page 327
- When a low-cost bearing for occasional movements is necessary
  - ▶ iglidur® G, page 81

## Temperature



## Product range

3 types  
> 250 dimensions  
Ø 1.5–139 mm



## Typical sectors of industry and application areas

- Automation ● Printing industry
- Beverage technology ● Aerospace engineering ● Cleanroom etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/mountainbike](http://www.igus.co.uk/mountainbike)



▶ [www.igus.co.uk/powderpress](http://www.igus.co.uk/powderpress)



▶ [www.igus.co.uk/pullback-star](http://www.igus.co.uk/pullback-star)



▶ [www.igus.co.uk/sawmill](http://www.igus.co.uk/sawmill)



| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® J         |
| Density                                                |  | g/cm³                              | 1.49               |
| Colour                                                 |  |                                    | yellow             |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.3                |
| Max. water absorption                                  |  | % weight                           | 1.3                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.06–0.18          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.34               |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 2,400              |
| Tensile strength at +20 °C                             |  | MPa                                | 73                 |
| Compressive strength                                   |  | MPa                                | 60                 |
| Max. static surface pressure (+20 °C)                  |  | MPa                                | 35                 |
| Shore D hardness                                       |  |                                    | 74                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +90                |
| Max. short term application temperature                |  | °C                                 | +120               |
| Min. application temperature                           |  | °C                                 | –50                |
| Thermal conductivity                                   |  | W/m · K                            | 0.25               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>–1</sup> · 10 <sup>–5</sup> | 10                 |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>13</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>12</sup> |

Table 01: Material properties table

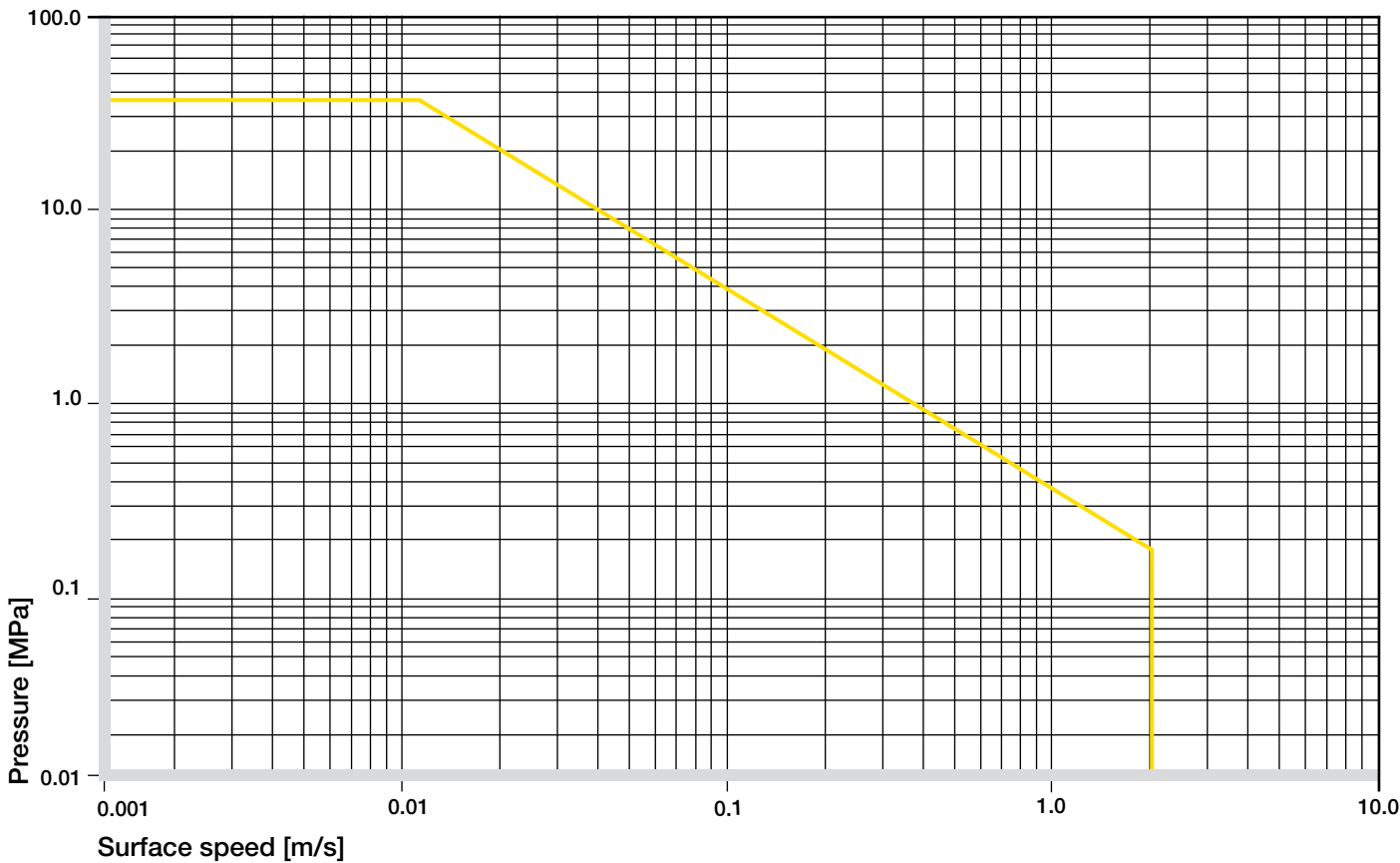


Diagram 01: Permissible pv values for iglidur® J with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

One main advantage of iglidur® J plain bearings is the combination of a low coefficient of friction when running dry and the low stick-slip tendency.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® J plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the long-term maximum temperature of +90 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

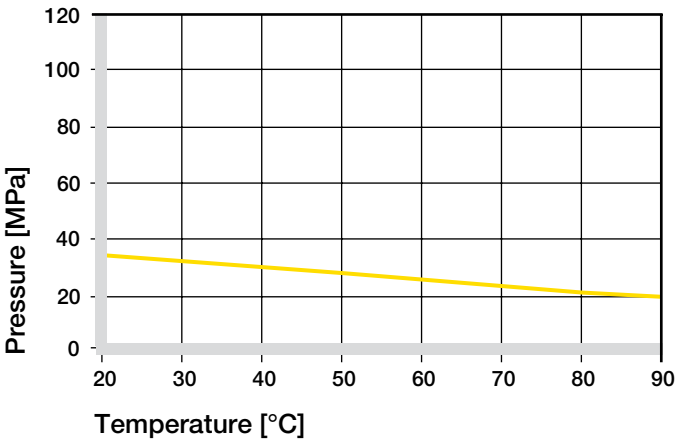


Diagram 02: Recommended maximum surface pressure as a function of temperature (35 MPa at +20 °C)

With a recommended maximum surface pressure of 35 MPa, iglidur® J plain bearings are not suitable for extreme loads. Diagram 03 shows the elastic deformation of iglidur® J as a function of radial pressure. At the recommended maximum surface pressure of 35 MPa the deformation is less than 2.5 %.

Surface Pressure, page 63

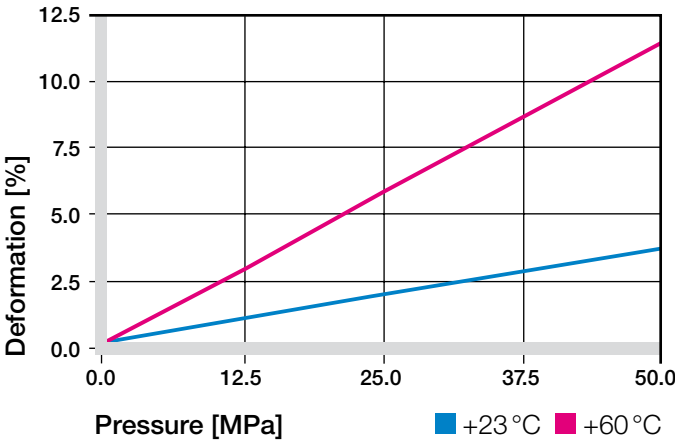


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The low coefficient of friction and the extremely low stick-slip tendency of iglidur® J plain bearings are especially important at very low speeds. However, iglidur® J material can also be used for high speeds of over 1 m/s. In both cases the static friction is very low and stick-slip does not occur. The maximum values given in Table 02 can only be achieved at the lowest pressure loads. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.5      | 1.1         | 8      |
| Short term | 3        | 2.1         | 10     |

Table 02: Maximum surface speeds

Temperatures

iglidur® J plain bearings can be used between –50 °C and +90 °C; the short-term maximum permissible temperature is +120 °C. Also, the wear increases significantly above +80 °C.

► Application Temperatures, page 66

| iglidur® J                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –50 °C                  |
| Max., long term                | +90 °C                  |
| Max., short term               | +120 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. Diagram 05 shows the coefficients of friction for different loads. The level of the coefficient of friction is very good for all loads with iglidur® J.

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

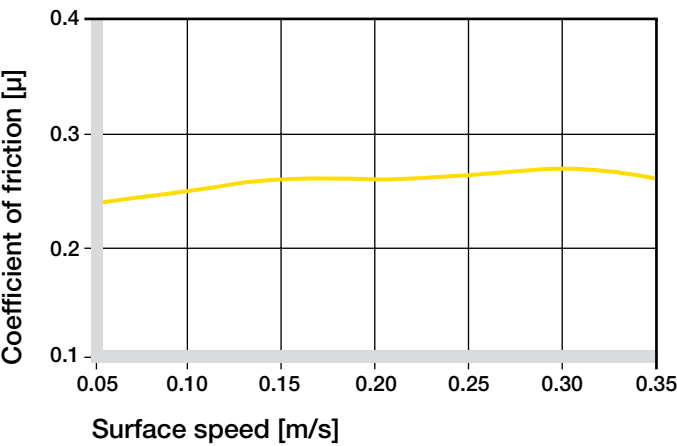


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

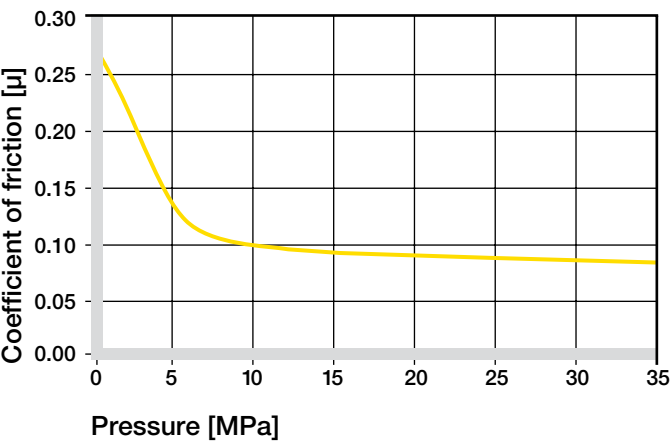


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

Friction and wear are also dependent, to a large extent, on the shaft material. With increasing shaft roughness, the coefficient of friction also increases. The best case is a ground surface with an average roughness  $Ra = 0.1\text{--}0.3 \text{ }\mu\text{m}$  (Diagram 06).

Diagrams 07 to 09 show results of testing different shaft materials with plain bearings made of iglidur® J.

If iglidur® J plain bearings are used in rotational applications with pressures under 2 MPa, several shaft materials are suitable. A Hard Chromed shaft provides the lowest wear in this range. When compared to most iglidur® materials, iglidur® J has very low wear results at low loads compared with all shaft materials tested. Also, for increasing pressures up to 5 MPa, the wear resistance of iglidur® J is excellent.

In oscillating operation with Cf53 Steel and HR Carbon Steel, the wear of iglidur® J is slightly higher than for rotation. As Diagram 09 shows, the difference in wear between rotation and oscillating movements is most significant for 303 stainless steel shafts.

If the shaft material you plan to use is not contained in this list, please contact us.

- Shaft Materials, **page 71**

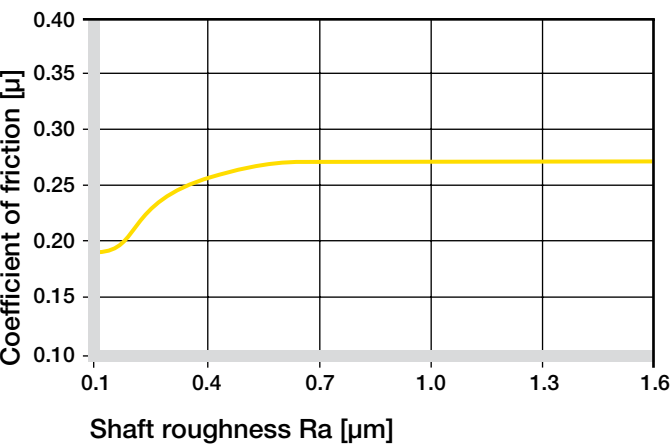


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

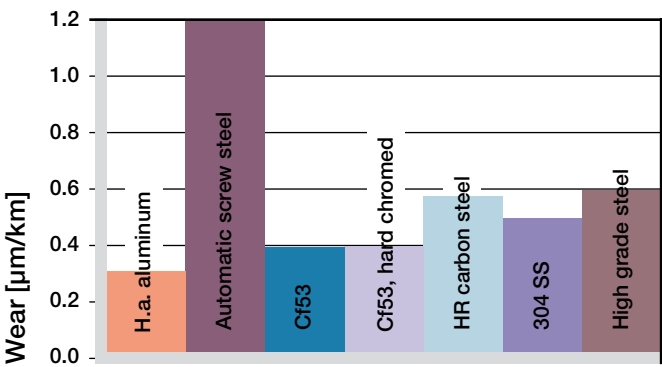


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

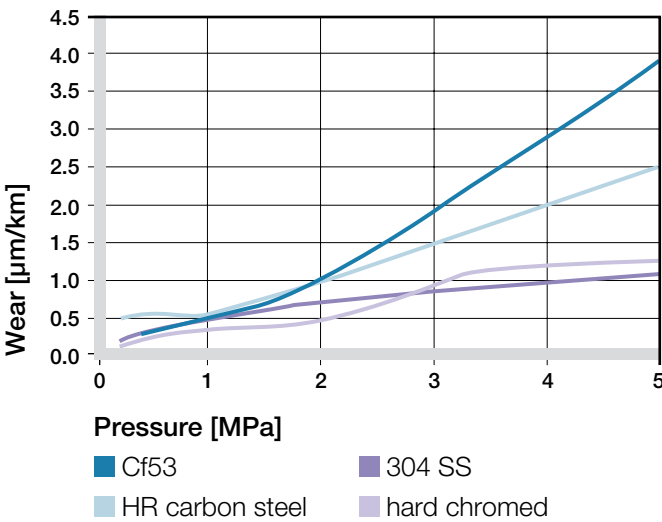


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

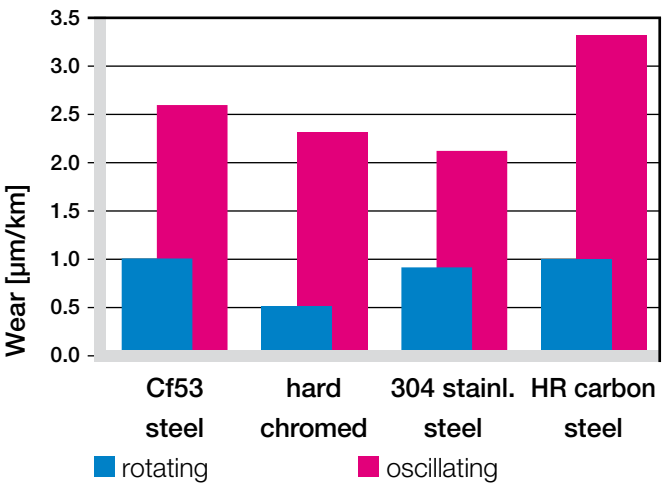


Diagram 09: Wear for rotating and oscillating applications with different shaft materials,  $p = 2 \text{ MPa}$

| iglidur® J   | Dry       | Grease | Oil  | Water |
|--------------|-----------|--------|------|-------|
| C.o.f. $\mu$ | 0.06–0.18 | 0.09   | 0.04 | 0.04  |

Table 04: Coefficients of friction against steel ( $Ra = 1 \text{ }\mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J plain bearings are resistant to diluted alkaline and very weak acids, as well as fuels and all types of lubricants. The low moisture absorption also permits use in wet or damp environments.

Plain bearings made of iglidur® J are resistant to common cleaning agents used in the food industry.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [ $+20 \text{ }^\circ\text{C}$ ]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® J are resistant to radiation up to an intensity of  $3 \cdot 10^2 \text{ Gy}$ .

UV Resistance

iglidur® J plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

Vacuum

When used in a vacuum environment, the iglidur® J plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

|                                                        |                         |
|--------------------------------------------------------|-------------------------|
| iglidur® J plain bearings are electrically insulating. |                         |
| Specific volume resistance                             | > 10 <sup>13</sup> Ωcm  |
| Surface resistance                                     | > 10 <sup>12</sup> Ω 10 |

Moisture Absorption

The moisture absorption of iglidur® J plain bearings is 0.3 % in standard atmosphere. The saturation limit in water is 1.3 %. These values are so low that design changes due to absorption are only necessary in extreme cases.

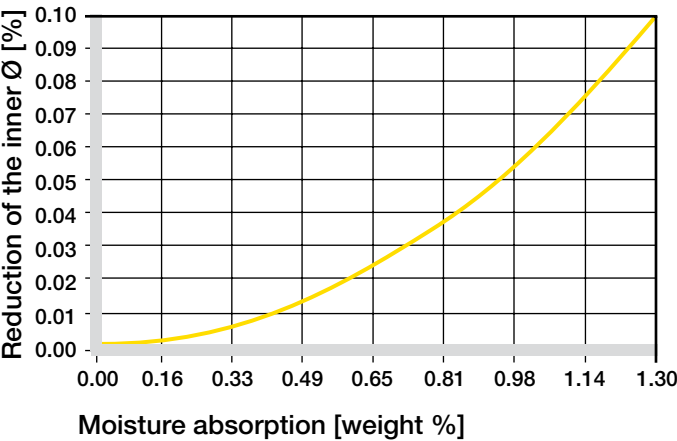


Diagram 10: Effect of moisture absorption on plain bearings

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.3 % weight |
| Max. water absorbtion | 1.3 % weight |

Table 06: Moisture absorption

Installation Tolerances

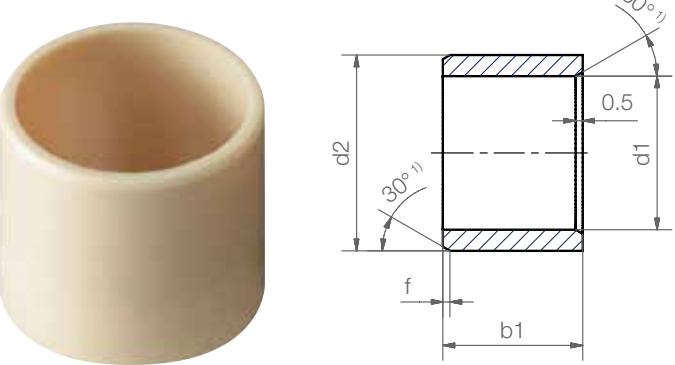
iglidur® J plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® J E10 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180       | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212       | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245       | 0 +0.040        |

Table 07: Essential tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1  | d1-Tolerance* | d2  | b1   |
|---------------|-----|---------------|-----|------|
| JSM-0104-02   | 1.5 | +0.014 +0.054 | 4.0 | 2.0  |
| JSM-0205-02   | 2.0 | +0.020 +0.080 | 5.0 | 2.5  |
| JSM-0206-02   | 2.5 | +0.020 +0.080 | 6.0 | 2.5  |
| JSM-0304-05   | 3.0 | +0.014 +0.054 | 4.5 | 5.0  |
| JSM-0304-09   | 3.0 | +0.014 +0.054 | 4.5 | 9.0  |
| JSM-0305-04   | 3.0 | +0.020 +0.080 | 5.0 | 4.0  |
| JSM-0307-14   | 3.0 | +0.020 +0.080 | 7.0 | 14.0 |
| JSM-0308-04   | 3.0 | +0.020 +0.080 | 8.0 | 4.0  |
| JSM-0308-05   | 3.0 | +0.020 +0.080 | 8.0 | 5.0  |
| JSM-0405-04   | 4.0 | +0.020 +0.068 | 5.5 | 4.0  |
| JSM-0405-08   | 4.0 | +0.020 +0.068 | 5.5 | 8.0  |
| JSM-0507-046  | 5.0 | +0.020 +0.068 | 7.0 | 4.6  |
| JSM-0507-05   | 5.0 | +0.020 +0.068 | 7.0 | 5.0  |
| JSM-0507-10   | 5.0 | +0.020 +0.068 | 7.0 | 10.0 |
| JSM-0507-14   | 5.0 | +0.020 +0.068 | 7.0 | 14.0 |
| JSM-0507-15   | 5.0 | +0.020 +0.080 | 7.0 | 15.0 |
| JSM-0508-05   | 5.0 | +0.030 +0.105 | 8.0 | 5.0  |
| JSM-0607-03   | 6.0 | +0.010 +0.058 | 7.0 | 3.0  |
| JSM-0607-05   | 6.0 | +0.010 +0.058 | 7.0 | 5.0  |
| JSM-0607-08   | 6.0 | +0.010 +0.058 | 7.0 | 8.0  |
| JSM-0607-12.5 | 6.0 | +0.010 +0.058 | 7.0 | 12.5 |
| JSM-0607-14   | 6.0 | +0.010 +0.058 | 7.0 | 14.0 |
| JSM-0608-043  | 6.0 | +0.020 +0.068 | 8.0 | 4.3  |
| JSM-0608-06   | 6.0 | +0.020 +0.068 | 8.0 | 6.0  |
| JSM-0608-08   | 6.0 | +0.020 +0.068 | 8.0 | 8.0  |
| JSM-0608-10   | 6.0 | +0.020 +0.068 | 8.0 | 10.0 |

\* after pressfit. Testing methods ► page 75

delivery from stock  
time



Order key

JSM-0104-02

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® J

| Part number  | d1   | d1-Tolerance* | d2   | b1   |
|--------------|------|---------------|------|------|
| JSM-0609-06  | 6.0  | +0.030 +0.105 | 9.0  | 6.0  |
| JSM-0610-10  | 6.0  | +0.030 +0.105 | 10.0 | 10.0 |
| JSM-0709-05  | 7.0  | +0.025 +0.083 | 9.0  | 5.0  |
| JSM-0709-07  | 7.0  | +0.025 +0.083 | 9.0  | 7.0  |
| JSM-0709-09  | 7.0  | +0.025 +0.083 | 9.0  | 9.0  |
| JSM-0709-125 | 7.0  | +0.025 +0.083 | 9.0  | 12.5 |
| JSM-0810-03  | 8.0  | +0.025 +0.083 | 10.0 | 3.0  |
| JSM-0810-04  | 8.0  | +0.025 +0.083 | 10.0 | 4.0  |
| JSM-0810-06  | 8.0  | +0.025 +0.083 | 10.0 | 6.0  |
| JSM-0810-08  | 8.0  | +0.025 +0.083 | 10.0 | 8.0  |
| JSM-0810-10  | 8.0  | +0.025 +0.083 | 10.0 | 10.0 |
| JSM-0810-12  | 8.0  | +0.025 +0.083 | 10.0 | 12.0 |
| JSM-0810-16  | 8.0  | +0.025 +0.083 | 10.0 | 16.0 |
| JSM-0812-10  | 8.0  | +0.040 +0.130 | 12.0 | 10.0 |
| JSM-0812-12  | 8.0  | +0.040 +0.130 | 12.0 | 12.0 |
| JSM-0911-10  | 9.0  | +0.025 +0.083 | 11.0 | 10.0 |
| JSM-1012-05  | 10.0 | +0.025 +0.083 | 12.0 | 5.0  |
| JSM-1012-06  | 10.0 | +0.025 +0.083 | 12.0 | 6.0  |
| JSM-1012-08  | 10.0 | +0.025 +0.083 | 12.0 | 8.0  |
| JSM-1012-10  | 10.0 | +0.025 +0.083 | 12.0 | 10.0 |
| JSM-1012-11  | 10.0 | +0.025 +0.083 | 12.0 | 11.0 |
| JSM-1012-12  | 10.0 | +0.025 +0.083 | 12.0 | 12.0 |
| JSM-1012-15  | 10.0 | +0.025 +0.083 | 12.0 | 15.0 |
| JSM-1012-20  | 10.0 | +0.025 +0.083 | 12.0 | 20.0 |
| JSM-1014-10  | 10.0 | +0.040 +0.130 | 14.0 | 10.0 |
| JSM-1014-16  | 10.0 | +0.040 +0.130 | 14.0 | 16.0 |

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Sleeve bearing

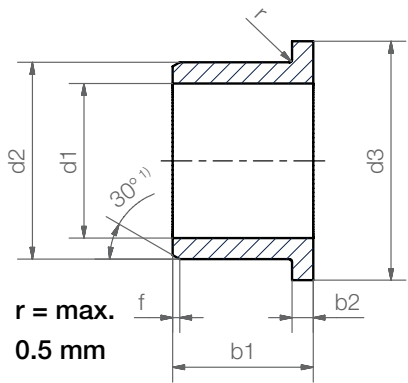
Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| JSM-1214-06  | 12.0 | +0.032 +0.102 | 14.0 | 6.0       |
| JSM-1214-08  | 12.0 | +0.032 +0.102 | 14.0 | 8.0       |
| JSM-1214-09  | 12.0 | +0.032 +0.102 | 14.0 | 9.0       |
| JSM-1214-10  | 12.0 | +0.032 +0.102 | 14.0 | 10.0      |
| JSM-1214-15  | 12.0 | +0.032 +0.102 | 14.0 | 15.0      |
| JSM-1214-20  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      |
| JSM-1216-12  | 12.0 | +0.050 +0.160 | 16.0 | 12.0      |
| JSM-1216-17  | 12.0 | +0.050 +0.160 | 16.0 | 17.0      |
| JSM-1315-20  | 13.0 | +0.032 +0.102 | 15.0 | 20.0      |
| JSM-1316-185 | 13.0 | +0.032 +0.102 | 16.0 | 18.5      |
| JSM-1416-05  | 14.0 | +0.032 +0.102 | 16.0 | 5.0       |
| JSM-1416-08  | 14.0 | +0.032 +0.102 | 16.0 | 8.0       |
| JSM-1416-10  | 14.0 | +0.032 +0.102 | 16.0 | 10.0      |
| JSM-1416-15  | 14.0 | +0.032 +0.102 | 16.0 | 15.0      |
| JSM-1416-20  | 14.0 | +0.032 +0.102 | 16.0 | 20.0      |
| JSM-1416-25  | 14.0 | +0.032 +0.102 | 16.0 | 25.0      |
| JSM-1418-18  | 14.0 | +0.032 +0.102 | 18.0 | 18.0      |
| JSM-1420-20  | 14.0 | +0.050 +0.160 | 20.0 | 20.0      |
| JSM-1517-06  | 15.0 | +0.032 +0.102 | 17.0 | 6.0       |
| JSM-1517-12  | 15.0 | +0.032 +0.102 | 17.0 | 12.0      |
| JSM-1517-20  | 15.0 | +0.032 +0.102 | 17.0 | 20.0      |
| JSM-1518-10  | 15.0 | +0.032 +0.102 | 18.0 | 10.0      |
| JSM-1618-10  | 16.0 | +0.032 +0.102 | 18.0 | 10.0      |
| JSM-1618-12  | 16.0 | +0.032 +0.102 | 18.0 | 12.0      |
| JSM-1618-15  | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| JSM-1618-20  | 16.0 | +0.032 +0.102 | 18.0 | 20.0      |
| JSM-1620-16  | 16.0 | +0.050 +0.160 | 20.0 | 16.0      |
| JSM-1622-16  | 16.0 | +0.050 +0.160 | 22.0 | 16.0      |
| JSM-1622-20  | 16.0 | +0.050 +0.160 | 22.0 | 20.0      |
| JSM-1820-15  | 18.0 | +0.032 +0.102 | 20.0 | 15.0      |
| JSM-1820-20  | 18.0 | +0.032 +0.102 | 20.0 | 20.0      |
| JSM-1922-14  | 19.0 | +0.032 +0.102 | 22.0 | 14.0      |
| JSM-2022-20  | 20.0 | +0.040 +0.124 | 22.0 | 20.0      |
| JSM-2022-30  | 20.0 | +0.040 +0.124 | 22.0 | 30.0      |
| JSM-2023-15  | 20.0 | +0.040 +0.124 | 23.0 | 15.0      |
| JSM-2023-20  | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| JSM-2023-25  | 20.0 | +0.020 +0.104 | 23.0 | 25.0      |
| JSM-2026-06  | 20.0 | +0.065 +0.195 | 26.0 | 6.0       |
| JSM-2026-20  | 20.0 | +0.065 +0.195 | 26.0 | 20.0      |
| JSM-2026-25  | 20.0 | +0.065 +0.195 | 26.0 | 25.0      |
| JSM-2026-30  | 20.0 | +0.065 +0.195 | 26.0 | 30.0      |
| JSM-2124-12  | 21.0 | +0.040 +0.124 | 24.0 | 12.0      |

\* after pressfit. Testing methods ► page 75

| Part number    | d1    | d1-Tolerance* | d2    | b1<br>h13 |
|----------------|-------|---------------|-------|-----------|
| JSM-2326-12    | 23.0  | +0.040 +0.124 | 26.0  | 12.0      |
| JSM-2427-25    | 24.0  | +0.040 +0.124 | 27.0  | 25.0      |
| JSM-2427-46    | 24.0  | +0.040 +0.124 | 27.0  | 46.0      |
| JSM-2528-12    | 25.0  | +0.040 +0.124 | 28.0  | 12.0      |
| JSM-2528-20    | 25.0  | +0.040 +0.124 | 28.0  | 20.0      |
| JSM-2528-30    | 25.0  | +0.040 +0.124 | 28.0  | 30.0      |
| JSM-2528-60    | 25.0  | +0.040 +0.124 | 28.0  | 60.0      |
| JSM-2530-40    | 25.0  | +0.065 +0.195 | 30.0  | 40.0      |
| JSM-2532-25    | 25.0  | +0.065 +0.195 | 32.0  | 25.0      |
| JSM-2532-32    | 25.0  | +0.065 +0.195 | 32.0  | 32.0      |
| JSM-2532-35    | 25.0  | +0.065 +0.195 | 32.0  | 35.0      |
| JSM-2630-20    | 26.0  | +0.065 +0.195 | 30.0  | 20.0      |
| JSM-2730-20    | 27.0  | +0.040 +0.124 | 30.0  | 20.0      |
| JSM-2832-20    | 28.0  | +0.065 +0.195 | 32.0  | 20.0      |
| JSM-3034-20    | 30.0  | +0.040 +0.124 | 34.0  | 20.0      |
| JSM-3034-25    | 30.0  | +0.040 +0.124 | 34.0  | 25.0      |
| JSM-3034-30    | 30.0  | +0.040 +0.124 | 34.0  | 30.0      |
| JSM-3038-40    | 30.0  | +0.065 +0.195 | 38.0  | 40.0      |
| JSM-3236-20    | 32.0  | +0.050 +0.150 | 36.0  | 20.0      |
| JSM-3236-30    | 32.0  | +0.050 +0.150 | 36.0  | 30.0      |
| JSM-3236-40    | 32.0  | +0.050 +0.150 | 36.0  | 40.0      |
| JSM-3238-50    | 32.0  | +0.080 +0.240 | 38.0  | 50.0      |
| JSM-3539-20    | 35.0  | +0.050 +0.150 | 39.0  | 20.0      |
| JSM-3539-30    | 35.0  | +0.050 +0.150 | 39.0  | 30.0      |
| JSM-3539-40    | 35.0  | +0.050 +0.150 | 39.0  | 40.0      |
| JSM-3640-45    | 36.0  | +0.050 +0.150 | 40.0  | 45.0      |
| JSM-4044-30    | 40.0  | +0.050 +0.150 | 44.0  | 30.0      |
| JSM-4044-35    | 40.0  | +0.050 +0.150 | 44.0  | 35.0      |
| JSM-4044-40    | 40.0  | +0.050 +0.150 | 44.0  | 40.0      |
| JSM-4246-73    | 42.0  | +0.080 +0.240 | 46.0  | 73.0      |
| JSM-4550-50    | 45.0  | +0.025 +0.125 | 50.0  | 50.0      |
| JSM-5055-30    | 50.0  | +0.050 +0.150 | 55.0  | 30.0      |
| JSM-5055-50    | 50.0  | +0.050 +0.150 | 55.0  | 50.0      |
| JSM-5560-60    | 55.0  | +0.060 +0.180 | 60.0  | 60.0      |
| JSM-6065-60    | 60.0  | +0.060 +0.180 | 65.0  | 60.0      |
| JSM-6570-50    | 65.0  | +0.060 +0.180 | 70.0  | 50.0      |
| JSM-7075-60    | 70.0  | +0.060 +0.180 | 75.0  | 60.0      |
| JSM-7580-60    | 75.0  | +0.060 +0.180 | 80.0  | 60.0      |
| JSM-8085-100   | 80.0  | +0.060 +0.180 | 85.0  | 100.0     |
| JSM-8086-60    | 80.0  | +0.060 +0.180 | 86.0  | 60.0      |
| JSM-100105-100 | 100.0 | +0.072 +0.212 | 105.0 | 100.0     |
| JSM-110115-60  | 110.0 | +0.072 +0.212 | 115.0 | 60.0      |

Flange bearing



Order key

JFM-0304-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® J

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| JFM-0304-03    | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 3.0       | 0.75        |
| JFM-0304-045   | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 4.5       | 0.75        |
| JFM-0304-05    | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 5.0       | 0.75        |
| JFM-0306-10    | 3.0  | +0.020 +0.080 | 6.0  | 9.0       | 10.0      | 1.5         |
| JFM-0405-03    | 4.0  | +0.020 +0.068 | 5.5  | 9.5       | 3.0       | 0.75        |
| JFM-0405-06    | 4.0  | +0.020 +0.068 | 5.5  | 9.5       | 6.0       | 0.75        |
| JFM-0506-05    | 5.0  | +0.020 +0.068 | 6.0  | 10.0      | 5.0       | 0.5         |
| JFM-0507-03    | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 3.0       | 1.0         |
| JFM-0507-05    | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 5.0       | 1.0         |
| JFM-0608-04    | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 4.0       | 1.0         |
| JFM-0608-06    | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| JFM-0608-08    | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 8.0       | 1.0         |
| JFM-0608-10    | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 10.0      | 1.0         |
| JFM-0610-10    | 6.0  | +0.030 +0.105 | 10.0 | 14.0      | 10.0      | 2.0         |
| JFM-0810-038   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 3.8       | 1.0         |
| JFM-0810-05    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 5.0       | 1.0         |
| JFM-0810-06    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 6.0       | 1.0         |
| JFM-0810-07    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 7.0       | 1.0         |
| JFM-0810-08    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 8.0       | 1.0         |
| JFM-0810-10    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| JFM-0810125-10 | 8.0  | +0.025 +0.083 | 10.0 | 12.5      | 10.0      | 1.0         |
| JFM-081014-10  | 8.0  | +0.025 +0.083 | 10.0 | 14.0      | 10.0      | 1.0         |
| JFM-081016-11  | 8.0  | +0.025 +0.083 | 10.0 | 16.0      | 11.0      | 2.0         |
| JFM-0812-06    | 8.0  | +0.025 +0.083 | 12.0 | 16.0      | 6.0       | 2.0         |
| JFM-1012-05    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 5.0       | 1.0         |
| JFM-1012-09    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 9.0       | 1.0         |

\* after pressfit. Testing methods ► page 75



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Flange bearing

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| JFM-1012-10    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| JFM-1012-12    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 12.0      | 1.0         |
| JFM-1012-15    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 15.0      | 1.0         |
| JFM-1012-18    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 18.0      | 1.0         |
| JFM-101215-035 | 10.0 | +0.025 +0.083 | 12.0 | 15.0      | 3.5       | 1.0         |
| JFM-1014-14    | 10.0 | +0.025 +0.083 | 14.0 | 17.5      | 14.0      | 1.0         |
| JFM-1113-05    | 11.0 | +0.032 +0.102 | 13.0 | 18.0      | 5.0       | 1.0         |
| JFM-1214-05    | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 5.0       | 1.0         |
| JFM-1214-07    | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 7.0       | 1.0         |
| JFM-1214-09    | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 9.0       | 1.0         |
| JFM-1214-12    | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| JFM-1214-15    | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 15.0      | 1.0         |
| JFM-121418-045 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 4.5       | 1.0         |
| JFM-121418-10  | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 10.0      | 1.0         |
| JFM-1218-08    | 12.0 | +0.050 +0.160 | 18.0 | 24.0      | 8.0       | 3.0         |
| JFM-1218-12    | 12.0 | +0.050 +0.160 | 18.0 | 24.0      | 12.0      | 3.0         |
| JFM-1218-20    | 12.0 | +0.050 +0.160 | 18.0 | 22.0      | 20.0      | 3.0         |
| JFM-1416-03    | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 3.0       | 1.0         |
| JFM-1416-10    | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 10.0      | 1.0         |
| JFM-1416-12    | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 12.0      | 1.0         |
| JFM-1416-17    | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 17.0      | 1.0         |
| JFM-141822-20  | 14.0 | +0.032 +0.102 | 18.0 | 22.0      | 20.0      | 2.0         |
| JFM-141825-24  | 14.0 | +0.032 +0.102 | 18.0 | 25.0      | 24.0      | 2.0         |
| JFM-1517-04    | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 4.0       | 1.0         |
| JFM-1517-055   | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 5.5       | 1.0         |
| JFM-1517-09    | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 9.0       | 1.0         |
| JFM-1517-12    | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 12.0      | 1.0         |
| JFM-1517-17    | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 17.0      | 1.0         |
| JFM-1521-20    | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 20.0      | 3.0         |
| JFM-1618-06    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 6.0       | 1.0         |
| JFM-1618-16    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 16.0      | 1.0         |
| JFM-1618-17    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| JFM-1622-12    | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 12.0      | 3.0         |
| JFM-1622-15    | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 15.0      | 3.0         |
| JFM-1719-09    | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 9.0       | 1.0         |
| JFM-1719-21    | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 21.0      | 1.0         |
| JFM-1820-04    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 4.0       | 1.0         |
| JFM-1820-12    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 12.0      | 1.0         |
| JFM-1820-22    | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 22.0      | 1.0         |
| JFM-1821-12    | 18.0 | +0.032 +0.102 | 21.0 | 25.0      | 12.0      | 1.0         |
| JFM-1922-36    | 19.0 | +0.032 +0.102 | 22.0 | 26.0      | 36.0      | 1.0         |
| JFM-2023-11    | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 11.5      | 1.5         |
| JFM-2023-15.5  | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 15.5      | 1.5         |

\* after pressfit. Testing methods ► page 75

Dimensions [mm]

| Part number    | d1    | d1-Tolerance* | d2    | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|-------|---------------|-------|-----------|-----------|-------------|
| JFM-2023-21    | 20.0  | +0.040 +0.124 | 23.0  | 30.0      | 21.5      | 1.5         |
| JFM-202530-15  | 20.0  | +0.065 +0.195 | 25.0  | 30.0      | 15.0      | 2.0         |
| JFM-2026-15    | 20.0  | +0.065 +0.195 | 26.0  | 32.0      | 15.0      | 3.0         |
| JFM-2026-20    | 20.0  | +0.065 +0.195 | 26.0  | 32.0      | 20.0      | 3.0         |
| JFM-2026-25    | 20.0  | +0.065 +0.195 | 26.0  | 32.0      | 25.0      | 3.0         |
| JFM-222532-08  | 22.0  | +0.040 +0.124 | 25.0  | 32.0      | 8.0       | 1.5         |
| JFM-2430-30    | 24.0  | +0.040 +0.124 | 30.0  | 36.0      | 30.0      | 3.0         |
| JFM-2528-06    | 25.0  | +0.040 +0.124 | 28.0  | 35.0      | 6.0       | 1.5         |
| JFM-2528-12    | 25.0  | +0.040 +0.124 | 28.0  | 35.0      | 12.0      | 1.5         |
| JFM-2528-14.5  | 25.0  | +0.040 +0.124 | 28.0  | 35.0      | 14.5      | 1.5         |
| JFM-2528-21    | 25.0  | +0.040 +0.124 | 28.0  | 35.0      | 21.5      | 1.5         |
| JFM-252839-05  | 25.0  | +0.040 +0.124 | 28.0  | 39.0      | 5.0       | 1.5         |
| JFM-252839-075 | 25.0  | +0.040 +0.124 | 28.0  | 39.0      | 7.5       | 1.5         |
| JFM-2532-20    | 25.0  | +0.065 +0.195 | 32.0  | 38.0      | 20.0      | 4.0         |
| JFM-2532-25    | 25.0  | +0.065 +0.195 | 32.0  | 38.0      | 25.0      | 4.0         |
| JFM-283235-07  | 28.0  | +0.065 +0.195 | 32.0  | 35.0      | 7.0       | 2.0         |
| JFM-283239-20  | 28.0  | +0.040 +0.124 | 32.0  | 39.0      | 20.0      | 2.0         |
| JFM-303240-12  | 30.0  | +0.040 +0.124 | 32.0  | 40.0      | 12.0      | 1.0         |
| JFM-3034-20    | 30.0  | +0.040 +0.124 | 34.0  | 42.0      | 20.0      | 2.0         |
| JFM-3034-26    | 30.0  | +0.040 +0.124 | 34.0  | 42.0      | 26.0      | 2.0         |
| JFM-3038-20    | 30.0  | +0.080 +0.240 | 38.0  | 44.0      | 20.0      | 4.0         |
| JFM-3038-30    | 30.0  | +0.065 +0.195 | 38.0  | 44.0      | 30.0      | 4.0         |
| JFM-3038-36    | 30.0  | +0.065 +0.195 | 38.0  | 44.0      | 36.0      | 4.0         |
| JFM-3539-12    | 35.0  | +0.050 +0.150 | 39.0  | 47.0      | 12.0      | 2.0         |
| JFM-3539-16    | 35.0  | +0.050 +0.150 | 39.0  | 47.0      | 16.0      | 2.0         |
| JFM-3539-26    | 35.0  | +0.050 +0.150 | 39.0  | 47.0      | 26.0      | 2.0         |
| JFM-4044-20    | 40.0  | +0.050 +0.150 | 44.0  | 52.0      | 20.0      | 2.0         |
| JFM-4044-30    | 40.0  | +0.050 +0.150 | 44.0  | 52.0      | 30.0      | 2.0         |
| JFM-4044-40    | 40.0  | +0.050 +0.150 | 44.0  | 52.0      | 40.0      | 2.0         |
| JFM-4550-12    | 45.0  | +0.050 +0.150 | 50.0  | 58.0      | 12.0      | 2.0         |
| JFM-4550-20    | 45.0  | +0.050 +0.150 | 50.0  | 58.0      | 20.0      | 2.0         |
| JFM-4550-50    | 45.0  | +0.050 +0.150 | 50.0  | 58.0      | 50.0      | 2.0         |
| JFM-5055-50    | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 50.0      | 2.0         |
| JFM-5055-115   | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 11.5      | 2.0         |
| JFM-5560-50    | 55.0  | +0.060 +0.180 | 60.0  | 68.0      | 50.0      | 2.0         |
| JFM-6065-37    | 60.0  | +0.060 +0.180 | 65.0  | 73.0      | 37.0      | 2.0         |
| JFM-6065-50    | 60.0  | +0.060 +0.180 | 65.0  | 73.0      | 50.0      | 2.0         |
| JFM-6570-60    | 65.0  | +0.060 +0.180 | 70.0  | 78.0      | 60.0      | 2.0         |
| JFM-7075-50    | 70.0  | +0.060 +0.180 | 75.0  | 83.0      | 50.0      | 2.0         |
| JFM-9095-100   | 90.0  | +0.072 +0.212 | 95.0  | 103.0     | 100.0     | 2.5         |
| JFM-100105-100 | 100.0 | +0.072 +0.212 | 105.0 | 113.0     | 100.0     | 2.5         |
| JFM-110115-100 | 110.0 | +0.072 +0.212 | 115.0 | 123.0     | 100.0     | 2.5         |
| JFM-120125-100 | 120.0 | +0.072 +0.212 | 125.0 | 133.0     | 100.0     | 2.5         |

\* after pressfit. Testing methods ► page 75

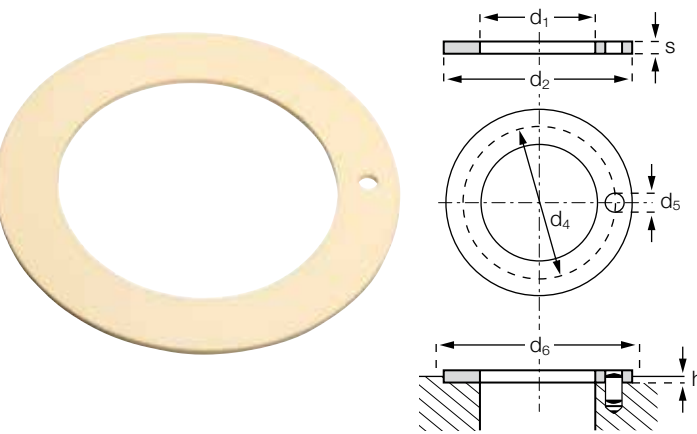


delivery from stock  
time



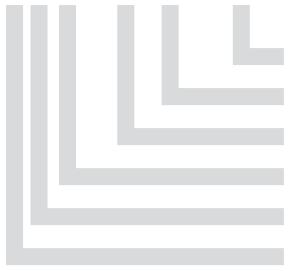
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Thrust washer



**Order key**

**JTM-1224-015**



- Thickness s
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form T)
- Material iglidur® J

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

| Part number    | d1    | d2    | s     | d4             | d5               | h            | d6    |
|----------------|-------|-------|-------|----------------|------------------|--------------|-------|
|                | +0.25 | -0.25 | -0.05 | -0.12<br>+0.12 | +0.375<br>+0.125 | +0.2<br>-0.2 | +0.12 |
| JTM-1224-015   | 12.0  | 24.0  | 1.5   | 18.0           | 1.5              | 1.0          | 24.0  |
| JTM-1234-015   | 12.0  | 34.0  | 1.5   | **             | **               | 1.0          | 34.0  |
| JTM-2036-015   | 20.0  | 36.0  | 1.5   | 28.0           | 3.0              | 1.0          | 36.0  |
| JTM-3039-015   | 30.0  | 39.0  | 1.5   | **             | **               | 1.0          | 39.0  |
| JTM-5670-010   | 56.0  | 70.0  | 1.0   | **             | **               | 0.7          | 70.0  |
| JTM-139188-020 | 139.0 | 188.0 | 2.0   | **             | **               | 1.5          | 188.0 |

\*\* Design without fixing bore



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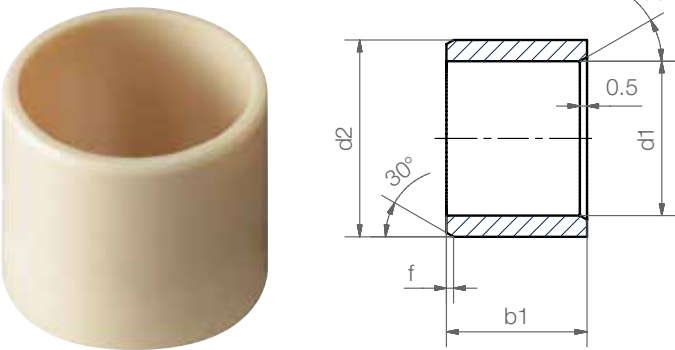


**delivery from stock**  
**time**



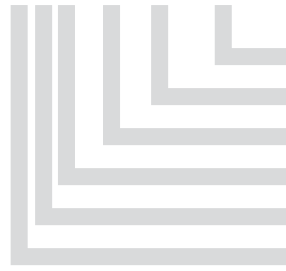
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Sleeve bearing



**Order key**

**JSI-0204-04**



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® J

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d1*   |       | Housing Bore |       | Shaft Size |       |
|-------------|------|-------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      | max.  | min.  | max.         | min.  | max.       | min.  |
| JSI-0204-04 | 1/8  | 1/4   | 1/4  | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| JSI-0204-06 | 1/8  | 1/4   | 3/8  | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| JSI-0304-06 | 3/16 | 1/4   | 3/8  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| JSI-0304-08 | 3/16 | 1/4   | 1/2  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| JSI-0305-05 | 3/16 | 5/16  | 5/16 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| JSI-0305-06 | 3/16 | 5/16  | 3/8  | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| JSI-0305-08 | 3/16 | 5/16  | 1/2  | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| JSI-0405-04 | 1/4  | 5/16  | 1/4  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| JSI-0405-06 | 1/4  | 5/16  | 3/8  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| JSI-0405-08 | 1/4  | 5/16  | 1/2  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| JSI-0406-04 | 1/4  | 3/8   | 1/4  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| JSI-0406-08 | 1/4  | 3/8   | 1/2  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| JSI-0406-12 | 1/4  | 3/8   | 3/4  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| JSI-0406-16 | 1/4  | 3/8   | 1    | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| JSI-0506-06 | 5/16 | 3/8   | 3/8  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| JSI-0506-08 | 5/16 | 3/8   | 1/2  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| JSI-0506-12 | 5/16 | 3/8   | 3/4  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| JSI-0507-06 | 5/16 | 7/16  | 3/8  | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| JSI-0507-08 | 5/16 | 7/16  | 1/2  | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| JSI-0507-10 | 5/16 | 7/16  | 5/8  | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| JSI-0607-06 | 3/8  | 15/32 | 3/8  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| JSI-0608-03 | 3/8  | 1/2   | 3/16 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| JSI-0608-06 | 3/8  | 1/2   | 3/8  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| JSI-0608-08 | 3/8  | 1/2   | 1/2  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| JSI-0608-10 | 3/8  | 1/2   | 5/8  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |

\* after pressfit. Testing methods ► page 75



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**time**



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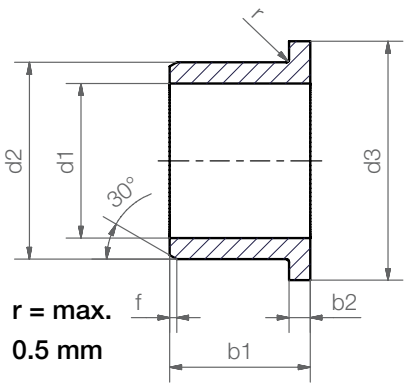
Sleeve bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d1*    |        | Housing Bore |        | Shaft Size |        |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       | max.   | min.   | max.         | min.   | max.       | min.   |
| JSI-0809-06 | 1/2   | 19/32   | 3/8   | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| JSI-0809-08 | 1/2   | 19/32   | 1/2   | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| JSI-0809-12 | 1/2   | 19/32   | 3/4   | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| JSI-0810-08 | 1/2   | 5/8     | 1/2   | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| JSI-0810-12 | 1/2   | 5/8     | 3/4   | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| JSI-1011-08 | 5/8   | 23/32   | 1/2   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| JSI-1011-12 | 5/8   | 23/32   | 3/4   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| JSI-1012-04 | 5/8   | 3/4     | 1/4   | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JSI-1012-06 | 5/8   | 3/4     | 3/8   | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JSI-1012-08 | 5/8   | 3/4     | 1/2   | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JSI-1012-12 | 5/8   | 3/4     | 3/4   | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JSI-1012-16 | 5/8   | 3/4     | 1     | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JSI-1214-08 | 3/4   | 7/8     | 1/2   | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| JSI-1214-12 | 3/4   | 7/8     | 3/4   | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| JSI-1214-16 | 3/4   | 7/8     | 1     | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| JSI-1216-12 | 3/4   | 1       | 3/4   | .7559  | .7525  | 1.0010       | 1.000  | .7500      | .7490  |
| JSI-1216-16 | 3/4   | 1       | 1     | .7559  | .7525  | 1.0010       | 1.000  | .7500      | .7490  |
| JSI-1416-12 | 7/8   | 1       | 3/4   | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| JSI-1418-12 | 7/8   | 1 1/8   | 3/4   | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| JSI-1418-24 | 7/8   | 1 1/8   | 1 1/2 | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| JSI-1620-16 | 1     | 1 1/4   | 1     | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| JSI-1620-24 | 1     | 1 1/4   | 1 1/2 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| JSI-1822-16 | 1 1/8 | 1 13/8  | 1     | 1.1327 | 1.1276 | 1.3760       | 1.3750 | 1.1250     | 1.1240 |
| JSI-2022-14 | 1 1/4 | 1 13/32 | 7/8   | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| JSI-2024-24 | 1 1/4 | 1 1/2   | 1 1/2 | 1.2600 | 1.2532 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| JSI-2428-24 | 1 1/2 | 1 3/4   | 1 1/2 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |

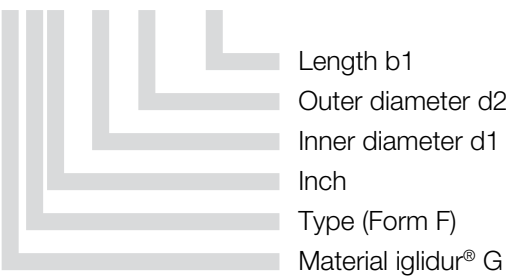
\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

JFI-0204-04



Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d3   | b2   | d1*   |       | Housing Bore |       | Shaft Size |       |
|-------------|------|-------|------|------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      |      |      | max.  | min.  | max.         | min.  | max.       | min.  |
| JFI-0204-06 | 1/8  | 1/4   | 3/8  | .360 | .047 | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| JFI-0304-02 | 3/16 | 1/4   | 1/8  | .375 | .032 | .1905 | .1887 | .2515        | .2510 | .1875      | .1866 |
| JFI-0304-04 | 3/16 | 1/4   | 1/4  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| JFI-0304-06 | 3/16 | 1/4   | 3/8  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| JFI-0304-08 | 3/16 | 1/4   | 1/2  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| JFI-0305-06 | 3/16 | 5/16  | 3/8  | .370 | .047 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| JFI-0305-08 | 3/16 | 5/16  | 1/2  | .370 | .047 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| JFI-0405-04 | 1/4  | 5/16  | 1/4  | .437 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| JFI-0405-06 | 1/4  | 5/16  | 3/8  | .437 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| JFI-0405-12 | 1/4  | 5/16  | 3/4  | .437 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| JFI-0406-03 | 1/4  | 3/8   | 3/16 | .560 | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| JFI-0406-04 | 1/4  | 3/8   | 1/4  | .560 | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| JFI-0406-08 | 1/4  | 3/8   | 1/2  | .560 | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| JFI-0506-04 | 5/16 | 3/8   | 1/4  | .500 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| JFI-0506-06 | 5/16 | 3/8   | 3/8  | .500 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| JFI-0506-08 | 5/16 | 3/8   | 1/2  | .500 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| JFI-0507-08 | 5/16 | 7/16  | 1/2  | .560 | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| JFI-0607-06 | 3/8  | 15/32 | 3/8  | .687 | .046 | .3772 | .3775 | .4691        | .4684 | .3740      | .3731 |
| JFI-0608-03 | 3/8  | 1/2   | 3/16 | .625 | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| JFI-0608-06 | 3/8  | 1/2   | 3/8  | .625 | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| JFI-0608-08 | 3/8  | 1/2   | 1/2  | .625 | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| JFI-0809-04 | 1/2  | 19/32 | 1/4  | .875 | .046 | .5040 | .5000 | .5941        | .5934 | .4990      | .4980 |
| JFI-0809-06 | 1/2  | 19/32 | 3/8  | .875 | .046 | .5040 | .5000 | .5941        | .5934 | .4990      | .4980 |
| JFI-0809-08 | 1/2  | 19/32 | 1/2  | .875 | .046 | .5040 | .5000 | .5941        | .5934 | .4990      | .4980 |
| JFI-0810-04 | 1/2  | 5/8   | 1/4  | .875 | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |

\* after pressfit. Testing methods ► page 75



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Flange bearing

Dimensions [Inch]

| Part number   | d1    | d2    | b1    | d3    | b2   | d1*    |        | Housing Bore |        | Shaft Size |        |
|---------------|-------|-------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|               |       |       |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| JFI-0810-08   | 1/2   | 5/8   | 1/2   | .875  | .062 | .5047  | .5020  | .6260        | .6250  | .5000      | .4990  |
| JFI-0810-10   | 1/2   | 5/8   | 5/8   | .875  | .062 | .5047  | .5020  | .6260        | .6250  | .5000      | .4990  |
| JFI-0810-12   | 1/2   | 5/8   | 3/4   | .875  | .062 | .5047  | .5020  | .6260        | .6250  | .5000      | .4990  |
| JFI-1011-08   | 5/8   | 23/32 | 1/2   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| JFI-1011-12   | 5/8   | 23/32 | 3/4   | 1.000 | .046 | .6297  | .6270  | .7192        | .7184  | .6250      | .6240  |
| JFI-1012-08   | 5/8   | 3/4   | 1/2   | 1.000 | .062 | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JFI-1012-12   | 5/8   | 3/4   | 3/4   | 1.000 | .062 | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JFI-1012-16   | 5/8   | 3/4   | 1     | 1.000 | .062 | .6297  | .6270  | .7510        | .7500  | .6250      | .6240  |
| JFI-1214-08   | 3/4   | 7/8   | 1/2   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| JFI-1214-10   | 3/4   | 7/8   | 5/8   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| JFI-1214-12   | 3/4   | 7/8   | 3/4   | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| JFI-1214-16   | 3/4   | 7/8   | 1     | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| JFI-1216-12   | 3/4   | 1     | 3/4   | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| JFI-1216-16   | 3/4   | 1     | 1     | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| JFI-1416-12   | 7/8   | 1     | 3/4   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| JFI-141618-11 | 7/8   | 1     | 11/16 | 1.125 | .062 | .8809  | .8776  | 1.0010       | 1.0000 | .8750      | .8740  |
| JFI-1618-12   | 1     | 1 1/8 | 3/4   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| JFI-1618-16   | 1     | 1 1/8 | 1     | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| JFI-1620-12   | 1     | 1 1/4 | 3/4   | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| JFI-1620-16   | 1     | 1 1/4 | 1     | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| JFI-1620-24   | 1     | 1 1/4 | 1 1/2 | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| JFI-2024-16   | 1 1/4 | 1 1/2 | 1     | 1.750 | .188 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| JFI-2024-24   | 1 1/4 | 1 1/2 | 1 1/2 | 1.750 | .188 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| JFI-2428-16   | 1 1/2 | 1 3/4 | 1     | 2.000 | .125 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| JFI-2428-24   | 1 1/2 | 1 3/4 | 1 1/2 | 2.000 | .125 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| JFI-2630-16   | 1 5/8 | 1 7/8 | 1     | 2.125 | .125 | 1.6350 | 1.6882 | 1.8755       | 1.8745 | 1.6250     | 1.6240 |

\* after pressfit. Testing methods ► page 75



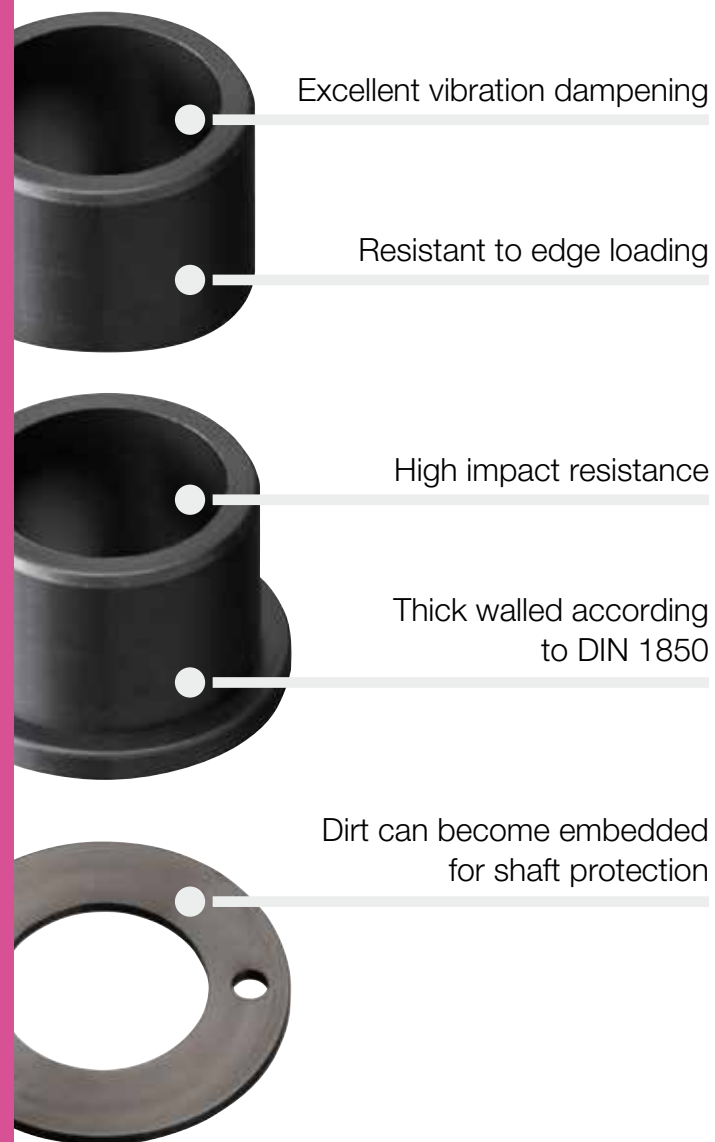
Excellent vibration dampening:  
Thick and Tough – iglidur® M250



- Over 450 sizes available from stock
- Excellent vibration dampening
- Resistant to edge loading
- High impact resistance
- Thick walled according to DIN 1850
- Dirt can become embedded for shaft protection



**Excellent vibration dampening.** The self-lubricating plain bearings made of iglidur® M250 are defined by their impact strength, vibration dampening, and wear resistant properties. They excel in applications in which vibration dampening is necessary, for example, in fitness and packaging machines.



## When to use it?

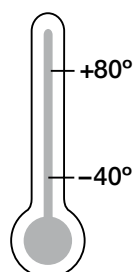
- When the bearings are exposed to high amounts of dirt
- When high vibration damping is necessary
- For low to average speeds
- When mechanical reaming of the wall surface is necessary
- Resistant to edge loads
- High impact resistance
- Thick-walled according to DIN 1850



## When not to use it?

- For applications in wet areas  
▶ iglidur® H, page 353
- When very high precision is necessary  
▶ iglidur® P, page 195
- For very smooth shafts  
▶ iglidur® J, page 109
- When a cost-effective wear resistant bearing is desired  
▶ iglidur® R, page 277

## Temperature



## Product range

3 types  
> 450 dimensions  
Ø 1–75 mm

## Typical sectors of industry and application areas

- Agricultural industry
- Furniture/industrial design
- Textile technology
- Doors and gates
- Machine building etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/waterpump](http://www.igus.co.uk/waterpump)



▶ [www.igus.co.uk/lawnmover](http://www.igus.co.uk/lawnmover)



▶ [www.igus.co.uk/camerajib](http://www.igus.co.uk/camerajib)



▶ [www.igus.co.uk/drilling-machine](http://www.igus.co.uk/drilling-machine)





| Material properties table                              |  |                                    |                                   |
|--------------------------------------------------------|--|------------------------------------|-----------------------------------|
| General properties                                     |  | Unit                               | iglidur® M250      Testing method |
| Density                                                |  | g/cm³                              | 1.14                              |
| Colour                                                 |  |                                    | charcoal                          |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 1.4      DIN 53495                |
| Max. water absorption                                  |  | % weight                           | 7.6                               |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.18–0.40                         |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.12                              |
| Mechanical properties                                  |  |                                    |                                   |
| Modulus of elasticity                                  |  | MPa                                | 2,700      DIN 53457              |
| Tensile strength at +20 °C                             |  | MPa                                | 112      DIN 53452                |
| Compressive strength                                   |  | MPa                                | 52                                |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 20                                |
| Shore D hardness                                       |  |                                    | 79      DIN 53505                 |
| Physical and thermal properties                        |  |                                    |                                   |
| Max. long term application temperature                 |  | °C                                 | +80                               |
| Max. short term application temperature                |  | °C                                 | +170                              |
| Min. application temperature                           |  | °C                                 | –40                               |
| Thermal conductivity                                   |  | W/m · K                            | 0.24      ASTM C 177              |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>-1</sup> · 10 <sup>-5</sup> | 10      DIN 53752                 |
| Electrical properties                                  |  |                                    |                                   |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>13</sup> DIN IEC 93     |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>11</sup> DIN 53482      |

Table 01: Material properties table

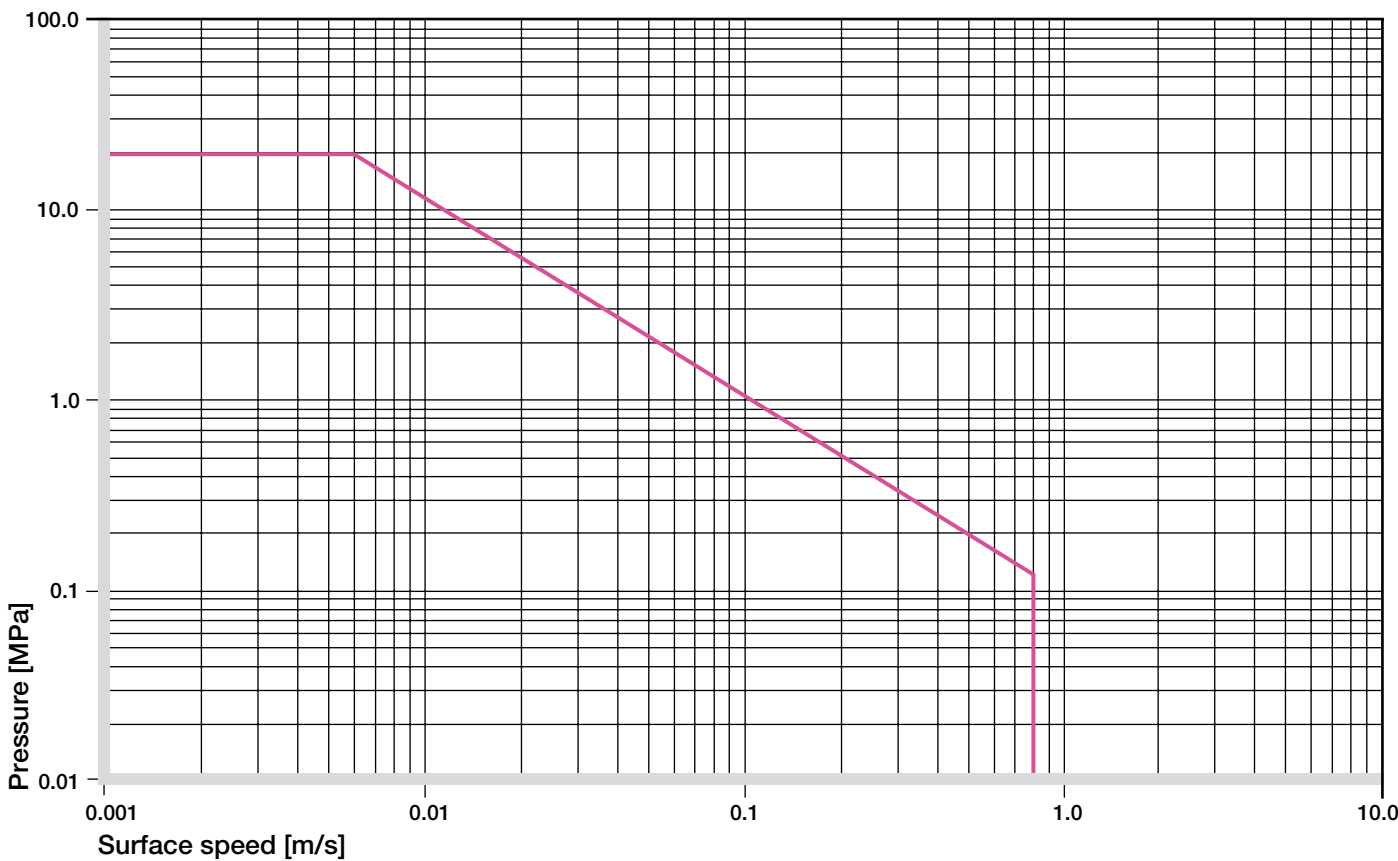


Diagram 01: Permissible pv values for iglidur® M250 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

The self lubricating plain bearings made of iglidur® M250 are defined by their impact strength, vibration dampening, and wear resistant properties. They excel in applications in which vibration dampening is necessary, for example, in fitness and packaging machines. Since they are additionally able to absorb dirt, they are also suited for agricultural machines and garden appliances.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® M250 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +80 °C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

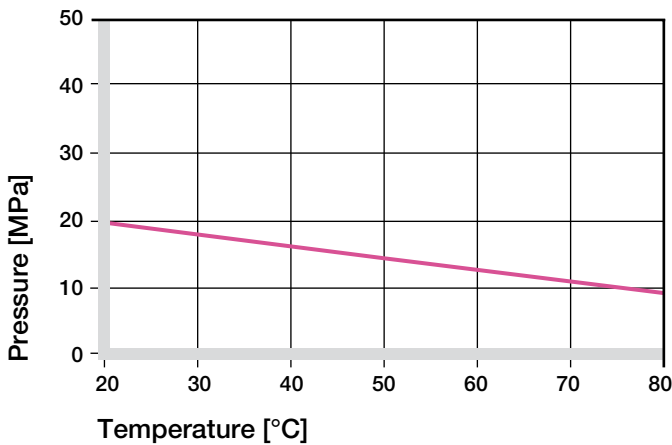


Diagram 02: Recommended maximum surface pressure as a function of temperature (20 MPa at +20 °C)

iglidur® M250 bearings can withstand radial loads of a maximum 20 MPa. The material deformation is below 2 % at room temperature. Compared with other iglidur® materials iglidur® M250 bearings are highly elastic. By this elasticity, they are able to yield very well, but retain their original shape again. A plastic deformation is minimal up to the permissible surface pressure.

► Surface Pressure, page 63

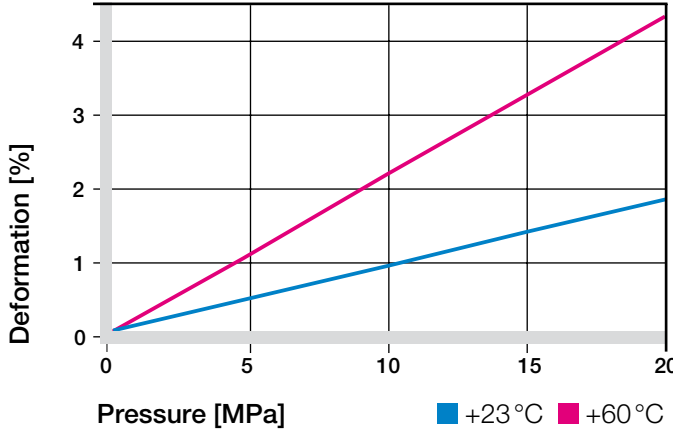


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

As standard, iglidur® M250 is manufactured as a thick walled bearing. iglidur® M250 is best suited for low to medium surface speeds. The maximum permissible speed for dry running applications is 0.8 m/s (rotating) or 2.5 m/s (linear). In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 2.5    |
| Short term | 2        | 1.4         | 5      |

Table 02: Maximum running speed

Temperatures

The maximum permissible short term temperature is +170 °C. However iglidur® M250 plain bearings may only be exposed to this temperature without any additional load. The long term permissible application temperature is +80 °C. This is also the point of the wear limit, i. e. the temperature over which the wear increases exponentially.

► Application Temperatures, page 66

| iglidur® M250                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | +80 °C                  |
| Max. short term                | +170 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction  $\mu$  of a plain bearing among other factors is influenced by the surface speed and the load. If the load stays constant, then the coefficient of friction increases with increasing speed (see Diagram 04). On the other hand, an increase in load at constant speed can result in a reduction in the coefficient of friction (see Diagram 05).

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

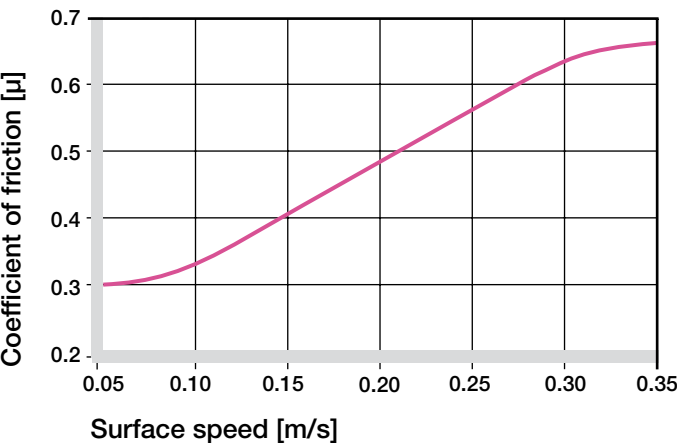


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

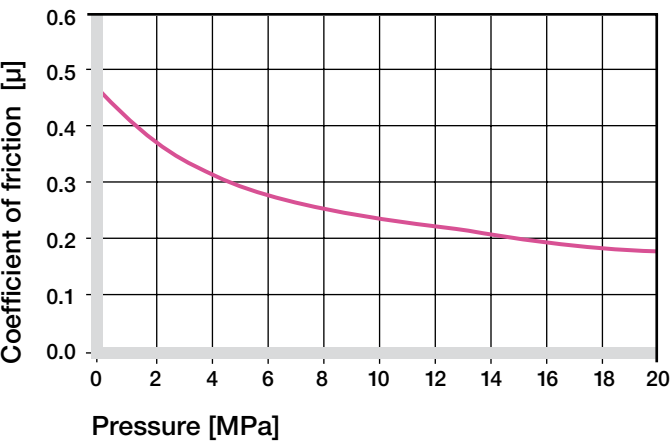


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

Friction and wear are also greatly dependent on the surface of the shaft. If you observe the coefficient of friction, then the ideal shaft surface finish for iglidur® M250 bearings is  $Ra = 0.6 \text{ }\mu\text{m}$  (Diagram 06). Diagrams 07 to 09 show results of testing different shaft materials with plain bearings made of iglidur® M250. Up to loads of 2 MPa the shaft material plays a relatively small role for rotational movements. Diagram 07 best illustrates which shaft materials are best suited for smaller loads. If the load increases, the wear of a bearing clearly increases. Therefore, a suitable shaft material must be considered for higher loads. These are hardened shafts, such as cold-rolled steel or hard chromed shafts. Diagram 09 makes it clear that iglidur® M250 is considerably better for rotational than for oscillating operation. However, it must be mentioned that in oscillating movements, often the vibrations acting on the bearing are especially high. Here, iglidur® M250 can utilise its special dampening properties. In our test, these vibrations are excluded so that the comparison between rotation and oscillating operation is captured first.

- Shaft Materials, **page 71**

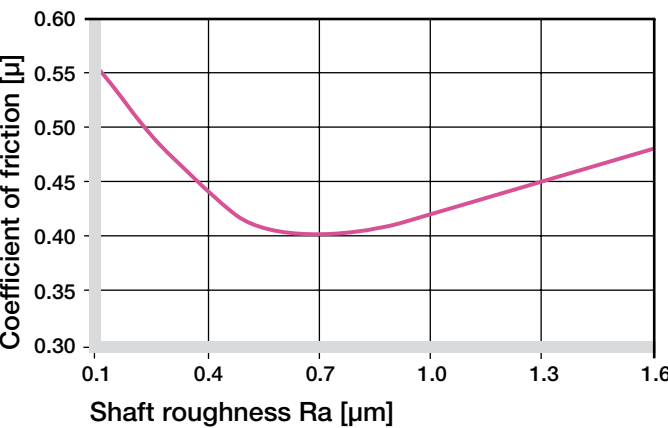


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

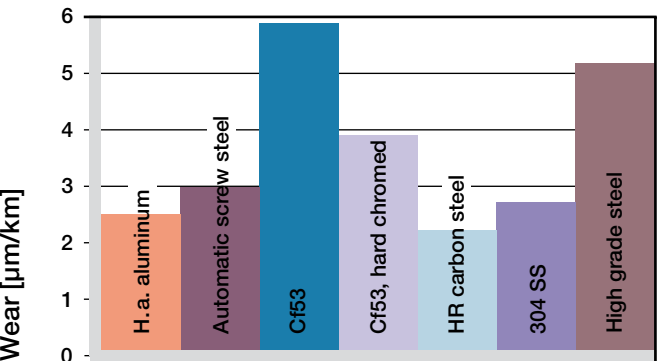


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

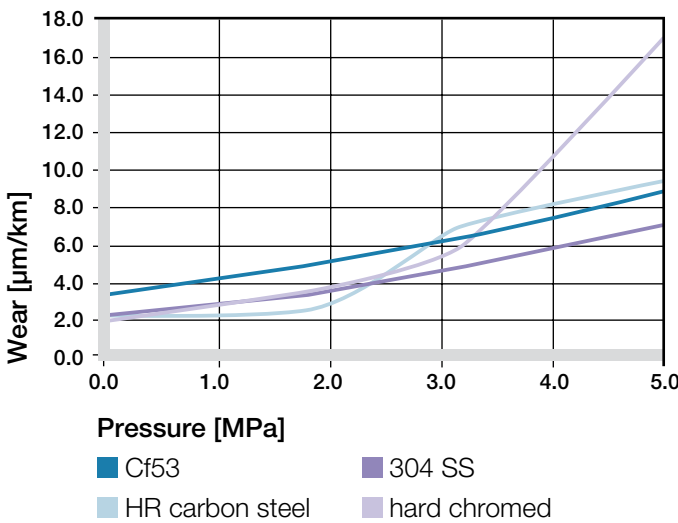


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

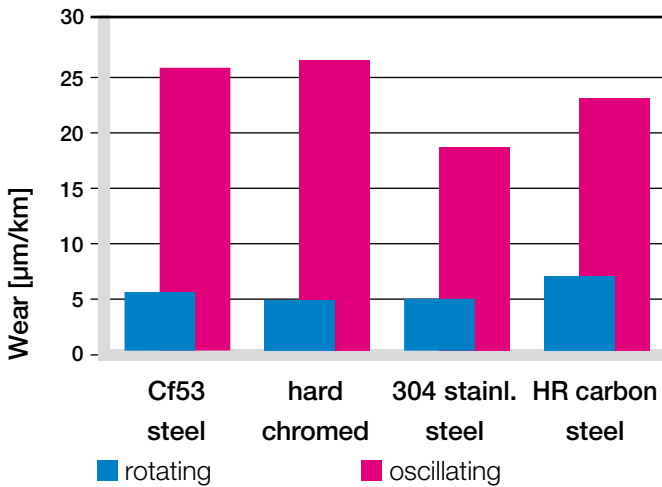


Diagram 09: Wear for rotating and oscillating applications with different shaft materials,  $p = 2 \text{ MPa}$

| iglidur® M250 | Dry       | Greases | Oil  | Water |
|---------------|-----------|---------|------|-------|
| C.o.f. $\mu$  | 0.18–0.40 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $Ra = 1 \text{ }\mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® M250 plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® M250 are not affected by most weak organic and inorganic acids.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature  $[+20 \text{ }^\circ\text{C}]$

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® M250 can be used conditionally under radioactive radiation. They are resistant to radiation up to a radiation intensity of  $1 \cdot 10^4 \text{ Gy}$ .

UV Resistance

iglidur® M250 plain bearings are permanently resistant to UV radiation.

Vacuum

In a vacuum environment, the iglidur® M250 plain bearing releases moisture as vapour. The relatively high moisture absorption of the bearing allows only limited use in the vacuum.

Electrical Properties

|                                                           |                                     |
|-----------------------------------------------------------|-------------------------------------|
| iglidur® M250 plain bearings are electrically insulating. |                                     |
| Volume resistance                                         | $> 10^{13} \text{ }\Omega\text{cm}$ |
| Surface resistance                                        | $> 10^{11} \text{ }\Omega$          |

Moisture Absorption

The moisture absorption of iglidur® M250 plain bearings is approximately 1.4 % in standard atmosphere. The saturation limit in water is 7.5 %. This must be taken into account along with other application conditions.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 1.4 % weight |
| Max. water absorption | 7.6 % weight |

Table 06: Moisture absorption

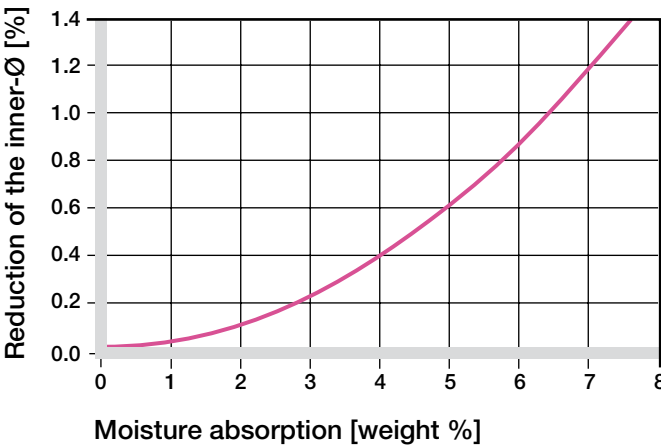


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

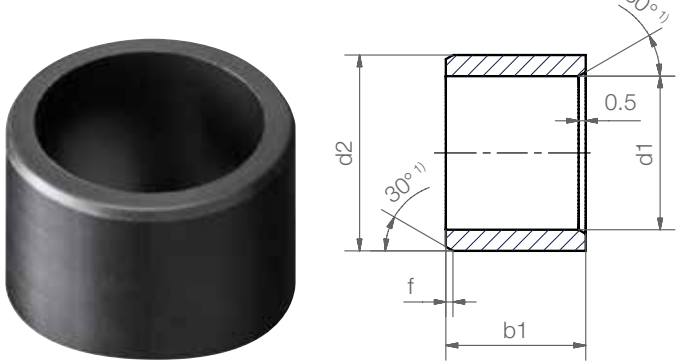
iglidur® M250 plain bearings require a relatively large amount of clearance for optimal operation. This ensures that the bearing remains reliable during temperature change and water absorption. The disadvantages of the bearings clearance are minimised by the vibration dampening properties. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table). The shaft should have a recommended minimum h9 tolerance.

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® M250<br>D11 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|---------------------------|--------------------|
| up to 3             | 0–0.025          | +0.020 +0.080             | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.030 +0.105             | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.040 +0.130             | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.050 +0.160             | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.065 +0.195             | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.080 +0.240             | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.100 +0.290             | 0 +0.030           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to DIN 1850 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1  | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|-----|---------------|------|-----------|
| MSM-0103-02 | 1.0 | +0.020 +0.080 | 3.0  | 2.0       |
| MSM-0104-02 | 1.5 | +0.020 +0.080 | 4.0  | 2.0       |
| MSM-0205-01 | 2.0 | +0.020 +0.080 | 5.0  | 1.0       |
| MSM-0205-02 | 2.0 | +0.020 +0.080 | 5.0  | 2.0       |
| MSM-0205-03 | 2.0 | +0.020 +0.080 | 5.0  | 3.0       |
| MSM-0206-03 | 2.5 | +0.020 +0.080 | 6.0  | 3.0       |
| MSM-0305-03 | 3.0 | +0.020 +0.080 | 5.0  | 3.0       |
| MSM-0305-04 | 3.0 | +0.020 +0.080 | 5.0  | 4.0       |
| MSM-0306-03 | 3.0 | +0.020 +0.080 | 6.0  | 3.0       |
| MSM-0306-04 | 3.0 | +0.020 +0.080 | 6.0  | 4.0       |
| MSM-0407-03 | 4.0 | +0.030 +0.105 | 7.0  | 3.0       |
| MSM-0407-04 | 4.0 | +0.030 +0.105 | 7.0  | 4.0       |
| MSM-0407-06 | 4.0 | +0.030 +0.105 | 7.0  | 6.0       |
| MSM-0408-04 | 4.0 | +0.030 +0.105 | 8.0  | 4.0       |
| MSM-0408-06 | 4.0 | +0.030 +0.105 | 8.0  | 6.0       |
| MSM-0508-04 | 5.0 | +0.030 +0.105 | 8.0  | 4.0       |
| MSM-0508-05 | 5.0 | +0.030 +0.105 | 8.0  | 5.0       |
| MSM-0508-08 | 5.0 | +0.030 +0.105 | 8.0  | 8.0       |
| MSM-0509-05 | 5.0 | +0.030 +0.105 | 9.0  | 5.0       |
| MSM-0509-08 | 5.0 | +0.030 +0.105 | 9.0  | 8.0       |
| MSM-0608-10 | 6.0 | +0.030 +0.105 | 8.0  | 10.0      |
| MSM-0609-06 | 6.0 | +0.030 +0.105 | 9.0  | 6.0       |
| MSM-0610-02 | 6.0 | +0.030 +0.105 | 10.0 | 2.5       |
| MSM-0610-04 | 6.0 | +0.030 +0.105 | 10.0 | 4.0       |
| MSM-0610-06 | 6.0 | +0.030 +0.105 | 10.0 | 6.0       |

\* after pressfit. Testing methods ► page 75



Order key

MSM-0103-02

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® M250

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| MSM-0610-08 | 6.0  | +0.030 +0.105 | 10.0 | 8.0       |
| MSM-0610-10 | 6.0  | +0.030 +0.105 | 10.0 | 10.0      |
| MSM-0611-04 | 6.0  | +0.030 +0.105 | 11.0 | 4.0       |
| MSM-0612-06 | 6.0  | +0.030 +0.105 | 12.0 | 6.0       |
| MSM-0612-10 | 6.0  | +0.030 +0.105 | 12.0 | 10.0      |
| MSM-0710-05 | 7.0  | +0.040 +0.130 | 10.0 | 5.0       |
| MSM-0710-08 | 7.0  | +0.040 +0.130 | 10.0 | 8.0       |
| MSM-0710-10 | 7.0  | +0.040 +0.130 | 10.0 | 10.0      |
| MSM-0711-16 | 7.0  | +0.040 +0.130 | 11.0 | 16.0      |
| MSM-0810-06 | 8.0  | +0.040 +0.130 | 10.0 | 6.0       |
| MSM-0810-08 | 8.0  | +0.040 +0.130 | 10.0 | 8.0       |
| MSM-0810-10 | 8.0  | +0.040 +0.130 | 10.0 | 10.0      |
| MSM-0811-06 | 8.0  | +0.040 +0.130 | 11.0 | 6.0       |
| MSM-0811-08 | 8.0  | +0.040 +0.130 | 11.0 | 8.0       |
| MSM-0811-12 | 8.0  | +0.040 +0.130 | 11.0 | 12.0      |
| MSM-0812-04 | 8.0  | +0.040 +0.130 | 12.0 | 4.0       |
| MSM-0812-06 | 8.0  | +0.040 +0.130 | 12.0 | 6.0       |
| MSM-0812-08 | 8.0  | +0.040 +0.130 | 12.0 | 8.0       |
| MSM-0812-10 | 8.0  | +0.040 +0.130 | 12.0 | 10.0      |
| MSM-0812-12 | 8.0  | +0.040 +0.130 | 12.0 | 12.0      |
| MSM-0814-06 | 8.0  | +0.040 +0.130 | 14.0 | 6.0       |
| MSM-0814-10 | 8.0  | +0.040 +0.130 | 14.0 | 10.0      |
| MSM-0912-14 | 9.0  | +0.040 +0.130 | 12.0 | 14.0      |
| MSM-1014-06 | 10.0 | +0.040 +0.130 | 14.0 | 6.0       |
| MSM-1014-08 | 10.0 | +0.040 +0.130 | 14.0 | 8.0       |



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time



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Sleeve bearing

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| MSM-1014-10  | 10.0 | +0.040 +0.130 | 14.0 | 10.0      |
| MSM-1014-16  | 10.0 | +0.040 +0.130 | 14.0 | 16.0      |
| MSM-1016-06  | 10.0 | +0.040 +0.130 | 16.0 | 6.0       |
| MSM-1016-08  | 10.0 | +0.040 +0.130 | 16.0 | 8.0       |
| MSM-1016-10  | 10.0 | +0.040 +0.130 | 16.0 | 10.0      |
| MSM-1016-16  | 10.0 | +0.040 +0.130 | 16.0 | 16.0      |
| MSM-1016-50  | 10.0 | +0.040 +0.130 | 16.0 | 50.0      |
| MSM-1214-15  | 12.0 | +0.050 +0.160 | 14.0 | 15.0      |
| MSM-1214-20  | 12.0 | +0.050 +0.160 | 14.0 | 20.0      |
| MSM-1216-15  | 12.0 | +0.050 +0.160 | 16.0 | 15.0      |
| MSM-1216-20  | 12.0 | +0.050 +0.160 | 16.0 | 20.0      |
| MSM-1218-08  | 12.0 | +0.050 +0.160 | 18.0 | 8.0       |
| MSM-1218-10  | 12.0 | +0.050 +0.160 | 18.0 | 10.0      |
| MSM-1218-15  | 12.0 | +0.050 +0.160 | 18.0 | 15.0      |
| MSM-1218-20  | 12.0 | +0.050 +0.160 | 18.0 | 20.0      |
| MSM-1416-085 | 14.0 | +0.050 +0.160 | 16.0 | 8.5       |
| MSM-1416-10  | 14.0 | +0.050 +0.160 | 16.0 | 10.0      |
| MSM-1416-15  | 14.0 | +0.050 +0.160 | 16.0 | 15.0      |
| MSM-1416-20  | 14.0 | +0.050 +0.160 | 16.0 | 20.0      |
| MSM-1416-29  | 14.0 | +0.050 +0.160 | 16.0 | 29.0      |
| MSM-1418-20  | 14.0 | +0.050 +0.160 | 18.0 | 20.0      |
| MSM-1420-10  | 14.0 | +0.050 +0.160 | 20.0 | 10.0      |
| MSM-1420-15  | 14.0 | +0.050 +0.160 | 20.0 | 15.0      |
| MSM-1420-20  | 14.0 | +0.050 +0.160 | 20.0 | 20.0      |
| MSM-1517-10  | 15.0 | +0.050 +0.160 | 17.0 | 10.0      |
| MSM-1517-15  | 15.0 | +0.050 +0.160 | 17.0 | 15.0      |
| MSM-1521-10  | 15.0 | +0.050 +0.160 | 21.0 | 10.0      |
| MSM-1521-15  | 15.0 | +0.050 +0.160 | 21.0 | 15.0      |
| MSM-1521-20  | 15.0 | +0.050 +0.160 | 21.0 | 20.0      |
| MSM-1521-23  | 15.0 | +0.050 +0.160 | 21.0 | 23.0      |
| MSM-1618-12  | 16.0 | +0.050 +0.160 | 18.0 | 12.0      |
| MSM-1618-20  | 16.0 | +0.050 +0.160 | 18.0 | 20.0      |
| MSM-1620-20  | 16.0 | +0.050 +0.160 | 20.0 | 20.0      |
| MSM-1620-25  | 16.0 | +0.050 +0.160 | 20.0 | 25.0      |
| MSM-1620-30  | 16.0 | +0.050 +0.160 | 20.0 | 30.0      |
| MSM-1622-12  | 16.0 | +0.050 +0.160 | 22.0 | 12.0      |
| MSM-1622-15  | 16.0 | +0.050 +0.160 | 22.0 | 15.0      |
| MSM-1622-16  | 16.0 | +0.050 +0.160 | 22.0 | 16.0      |
| MSM-1622-20  | 16.0 | +0.050 +0.160 | 22.0 | 20.0      |
| MSM-1622-25  | 16.0 | +0.050 +0.160 | 22.0 | 25.0      |
| MSM-1824-12  | 18.0 | +0.050 +0.160 | 24.0 | 12.0      |
| MSM-1824-20  | 18.0 | +0.050 +0.160 | 24.0 | 20.0      |

\* after pressfit. Testing methods ► page 75



Sleeve bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| MSM-3035-40 | 30.0 | +0.065 +0.195 | 35.0 | 40.0      |
| MSM-3038-20 | 30.0 | +0.065 +0.195 | 38.0 | 20.0      |
| MSM-3038-30 | 30.0 | +0.065 +0.195 | 38.0 | 30.0      |
| MSM-3038-40 | 30.0 | +0.065 +0.195 | 38.0 | 40.0      |
| MSM-3040-40 | 30.0 | +0.065 +0.195 | 40.0 | 40.0      |
| MSM-3240-20 | 32.0 | +0.080 +0.240 | 40.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| MSM-3240-30 | 32.0 | +0.080 +0.240 | 40.0 | 30.0      |
| MSM-3240-40 | 32.0 | +0.080 +0.240 | 40.0 | 40.0      |
| MSM-3542-50 | 35.0 | +0.080 +0.240 | 42.0 | 50.0      |
| MSM-4046-20 | 40.0 | +0.080 +0.240 | 46.0 | 20.0      |
| MSM-7580-60 | 75.0 | +0.100 +0.290 | 80.0 | 60.0      |



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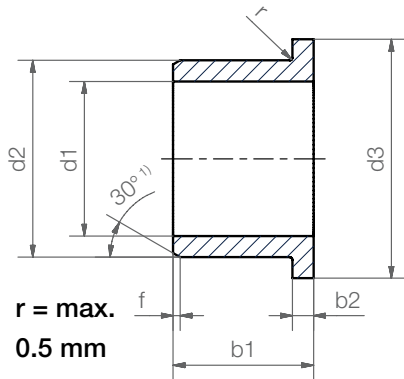


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Flange bearing



Order key

MFM-0103-02



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form S)

Material iglidur® M250

Dimensions according to DIN 1850 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

d1 [mm]:    Ø 1-6    |    Ø 6-12    |    Ø 12-30    |    Ø > 30

f [mm]:        0.3    |        0.5    |        0.8    |        1.2

Dimensions [mm]

| Part number | d1  | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|-----|---------------|------|-----------|-----------|-------------|
| MFM-0103-02 | 1.0 | +0.020 +0.080 | 3.0  | 5.0       | 2.0       | 1.0         |
| MFM-0104-02 | 1.5 | +0.020 +0.080 | 4.0  | 6.0       | 2.0       | 1.0         |
| MFM-0205-03 | 2.0 | +0.020 +0.080 | 5.0  | 8.0       | 3.0       | 1.5         |
| MFM-0206-03 | 2.5 | +0.020 +0.080 | 6.0  | 9.0       | 3.0       | 1.5         |
| MFM-0306-04 | 3.0 | +0.020 +0.080 | 6.0  | 9.0       | 4.0       | 1.5         |
| MFM-0408-04 | 4.0 | +0.030 +0.105 | 8.0  | 12.0      | 4.0       | 2.0         |
| MFM-0408-06 | 4.0 | +0.030 +0.105 | 8.0  | 12.0      | 6.0       | 2.0         |
| MFM-0408-08 | 4.0 | +0.030 +0.105 | 8.0  | 12.0      | 8.0       | 2.0         |
| MFM-0509-05 | 5.0 | +0.030 +0.105 | 9.0  | 13.0      | 5.0       | 2.0         |
| MFM-0509-06 | 5.0 | +0.030 +0.105 | 9.0  | 13.0      | 6.0       | 2.0         |
| MFM-0509-08 | 5.0 | +0.030 +0.105 | 9.0  | 13.0      | 8.0       | 2.0         |
| MFM-0610-04 | 6.0 | +0.030 +0.105 | 10.0 | 14.0      | 4.0       | 2.0         |
| MFM-0610-06 | 6.0 | +0.030 +0.105 | 10.0 | 14.0      | 6.0       | 2.0         |
| MFM-0610-10 | 6.0 | +0.030 +0.105 | 10.0 | 14.0      | 10.0      | 2.0         |
| MFM-0611-04 | 6.0 | +0.030 +0.105 | 11.0 | 14.0      | 4.0       | 2.0         |
| MFM-0612-06 | 6.0 | +0.030 +0.105 | 12.0 | 14.0      | 6.0       | 3.0         |
| MFM-0612-10 | 6.0 | +0.030 +0.105 | 12.0 | 14.0      | 10.0      | 3.0         |
| MFM-0711-08 | 7.0 | +0.040 +0.130 | 11.0 | 15.0      | 8.0       | 2.0         |
| MFM-0811-05 | 8.0 | +0.040 +0.130 | 11.0 | 13.0      | 5.0       | 2.0         |
| MFM-0811-08 | 8.0 | +0.040 +0.130 | 11.0 | 13.0      | 8.0       | 2.0         |
| MFM-0812-06 | 8.0 | +0.040 +0.130 | 12.0 | 16.0      | 6.0       | 2.0         |
| MFM-0812-08 | 8.0 | +0.040 +0.130 | 12.0 | 16.0      | 8.0       | 2.0         |
| MFM-0812-12 | 8.0 | +0.040 +0.130 | 12.0 | 16.0      | 12.0      | 2.0         |
| MFM-0814-06 | 8.0 | +0.040 +0.130 | 14.0 | 18.0      | 6.0       | 3.0         |
| MFM-0814-10 | 8.0 | +0.040 +0.130 | 14.0 | 18.0      | 10.0      | 3.0         |

\* after pressfit. Testing methods ► page 75



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Flange bearing

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| MFM-081416-06  | 8.0  | +0.040 +0.130 | 14.0 | 16.0      | 6.0       | 3.0         |
| MFM-081416-10  | 8.0  | +0.040 +0.130 | 14.0 | 16.0      | 10.0      | 3.0         |
| MFM-0914-06    | 9.0  | +0.040 +0.130 | 14.0 | 19.0      | 6.0       | 2.0         |
| MFM-0914-10    | 9.0  | +0.040 +0.130 | 14.0 | 19.0      | 10.0      | 2.0         |
| MFM-0914-14    | 9.0  | +0.040 +0.130 | 14.0 | 19.0      | 14.0      | 2.0         |
| MFM-1014-10    | 10.0 | +0.040 +0.130 | 14.0 | 19.0      | 10.0      | 2.0         |
| MFM-1014-14    | 10.0 | +0.040 +0.130 | 14.0 | 17.5      | 14.0      | 1.0         |
| MFM-1014-19    | 10.0 | +0.040 +0.130 | 14.0 | 17.5      | 19.0      | 1.0         |
| MFM-1014-24    | 10.0 | +0.040 +0.130 | 14.0 | 17.5      | 24.0      | 1.0         |
| MFM-1014-34    | 10.0 | +0.040 +0.130 | 14.0 | 17.5      | 34.0      | 1.0         |
| MFM-101419-08  | 10.0 | +0.040 +0.130 | 14.0 | 19.0      | 8.0       | 2.0         |
| MFM-101419-12  | 10.0 | +0.040 +0.130 | 14.0 | 19.0      | 12.0      | 1.5         |
| MFM-101420-12  | 10.0 | +0.040 +0.130 | 14.0 | 20.0      | 12.0      | 2.0         |
| MFM-1016-08    | 10.0 | +0.040 +0.130 | 16.0 | 22.0      | 8.0       | 3.0         |
| MFM-1016-10    | 10.0 | +0.040 +0.130 | 16.0 | 22.0      | 10.0      | 3.0         |
| MFM-1016-16    | 10.0 | +0.040 +0.130 | 16.0 | 22.0      | 16.0      | 3.0         |
| MFM-101620-06  | 10.0 | +0.040 +0.130 | 16.0 | 20.0      | 6.0       | 3.0         |
| MFM-101620-10  | 10.0 | +0.040 +0.130 | 16.0 | 20.0      | 10.0      | 3.0         |
| MFM-1216-10    | 12.0 | +0.050 +0.160 | 16.0 | 22.0      | 10.0      | 2.0         |
| MFM-1216-20    | 12.0 | +0.050 +0.160 | 16.0 | 22.0      | 20.0      | 2.0         |
| MFM-1218-08    | 12.0 | +0.050 +0.160 | 18.0 | 24.0      | 8.0       | 3.0         |
| MFM-1218-10    | 12.0 | +0.050 +0.160 | 18.0 | 22.0      | 10.0      | 3.0         |
| MFM-1218-12    | 12.0 | +0.050 +0.160 | 18.0 | 24.0      | 12.0      | 3.0         |
| MFM-1218-15    | 12.0 | +0.050 +0.160 | 18.0 | 22.0      | 15.0      | 3.0         |
| MFM-1218-20    | 12.0 | +0.050 +0.160 | 18.0 | 22.0      | 20.0      | 3.0         |
| MFM-1315-14    | 13.0 | +0.050 +0.160 | 15.0 | 20.0      | 14.0      | 2.0         |
| MFM-131624-08  | 13.0 | +0.050 +0.160 | 16.0 | 24.0      | 8.0       | 2.0         |
| MFM-1420-07    | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 7.0       | 3.0         |
| MFM-1420-10    | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 10.0      | 3.0         |
| MFM-1420-15    | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 15.0      | 3.0         |
| MFM-1420-20    | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 20.0      | 3.0         |
| MFM-1521-10    | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 10.0      | 3.0         |
| MFM-1521-15    | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 15.0      | 3.0         |
| MFM-1521-20    | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 20.0      | 3.0         |
| MFM-1521-25    | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 25.0      | 3.0         |
| MFM-1618-08/02 | 16.0 | +0.050 +0.160 | 18.0 | 28.0      | 8.0       | 2.0         |
| MFM-1618-12    | 16.0 | +0.050 +0.160 | 18.0 | 24.0      | 12.0      | 1.0         |
| MFM-1622-12    | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 12.0      | 3.0         |
| MFM-1622-15    | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 15.0      | 3.0         |
| MFM-1622-20    | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 20.0      | 3.0         |
| MFM-1622-25    | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 25.0      | 3.0         |
| MFM-1824-08    | 18.0 | +0.050 +0.160 | 24.0 | 30.0      | 8.0       | 3.0         |

\* after pressfit. Testing methods ► page 75



Flange bearing

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3   | b1   | b2    |
|----------------|------|---------------|------|------|------|-------|
|                |      |               |      | d13  | h13  | -0.14 |
| MFM-1824-12    | 18.0 | +0.050 +0.160 | 24.0 | 30.0 | 12.0 | 3.0   |
| MFM-1824-18    | 18.0 | +0.050 +0.160 | 24.0 | 30.0 | 18.0 | 3.0   |
| MFM-1824-20    | 18.0 | +0.050 +0.160 | 24.0 | 30.0 | 20.0 | 3.0   |
| MFM-1824-30    | 18.0 | +0.050 +0.160 | 24.0 | 30.0 | 30.0 | 3.0   |
| MFM-182426-078 | 18.0 | +0.050 +0.160 | 24.0 | 26.0 | 7.8  | 3.0   |
| MFM-192427-12  | 19.0 | +0.065 +0.195 | 24.0 | 27.0 | 12.0 | 2.0   |
| MFM-2026-15    | 20.0 | +0.065 +0.195 | 26.0 | 32.0 | 15.0 | 3.0   |
| MFM-2026-20    | 20.0 | +0.065 +0.195 | 26.0 | 32.0 | 20.0 | 3.0   |
| MFM-202628-12  | 20.0 | +0.065 +0.195 | 26.0 | 28.0 | 12.0 | 3.0   |
| MFM-2026-30    | 20.0 | +0.065 +0.195 | 26.0 | 32.0 | 30.0 | 3.0   |
| MFM-2228-15    | 22.0 | +0.065 +0.195 | 28.0 | 34.0 | 15.0 | 3.0   |
| MFM-2228-20    | 22.0 | +0.065 +0.195 | 28.0 | 34.0 | 20.0 | 3.0   |
| MFM-2228-30    | 22.0 | +0.065 +0.195 | 28.0 | 34.0 | 30.0 | 3.0   |
| MFM-2430-15    | 24.0 | +0.065 +0.195 | 30.0 | 36.0 | 15.0 | 3.0   |
| MFM-2430-20    | 24.0 | +0.065 +0.195 | 30.0 | 36.0 | 20.0 | 3.0   |
| MFM-2430-30    | 24.0 | +0.065 +0.195 | 30.0 | 36.0 | 30.0 | 3.0   |
| MFM-2532-12    | 25.0 | +0.065 +0.195 | 32.0 | 38.0 | 12.0 | 4.0   |
| MFM-2532-15    | 25.0 | +0.065 +0.195 | 32.0 | 38.0 | 15.0 | 4.0   |
| MFM-2532-20    | 25.0 | +0.065 +0.195 | 32.0 | 38.0 | 20.0 | 4.0   |
| MFM-2532-30    | 25.0 | +0.065 +0.195 | 32.0 | 38.0 | 30.0 | 4.0   |
| MFM-2532-40    | 25.0 | +0.065 +0.195 | 32.0 | 38.0 | 40.0 | 4.0   |
| MFM-2734-20    | 27.0 | +0.065 +0.195 | 34.0 | 40.0 | 20.0 | 4.0   |
| MFM-2734-30    | 27.0 | +0.065 +0.195 | 34.0 | 40.0 | 30.0 | 4.0   |
| MFM-2734-40    | 27.0 | +0.065 +0.195 | 34.0 | 40.0 | 40.0 | 4.0   |
| MFM-2836-20    | 28.0 | +0.065 +0.195 | 36.0 | 42.0 | 20.0 | 4.0   |
| MFM-2836-30    | 28.0 | +0.065 +0.195 | 36.0 | 42.0 | 30.0 | 4.0   |
| MFM-2836-40    | 28.0 | +0.065 +0.195 | 36.0 | 42.0 | 40.0 | 4.0   |
| MFM-3035-20    | 30.0 | +0.065 +0.195 | 35.0 | 44.0 | 20.0 | 4.0   |
| MFM-3038-20    | 30.0 | +0.065 +0.195 | 38.0 | 44.0 | 20.0 | 4.0   |
| MFM-3038-30    | 30.0 | +0.065 +0.195 | 38.0 | 44.0 | 30.0 | 4.0   |
| MFM-3038-40    | 30.0 | +0.065 +0.195 | 38.0 | 44.0 | 40.0 | 4.0   |
| MFM-3240-20    | 32.0 | +0.080 +0.240 | 40.0 | 46.0 | 20.0 | 4.0   |
| MFM-3240-30    | 32.0 | +0.080 +0.240 | 40.0 | 46.0 | 30.0 | 4.0   |
| MFM-3240-40    | 32.0 | +0.080 +0.240 | 40.0 | 46.0 | 40.0 | 4.0   |

\* after pressfit. Testing methods ► page 75



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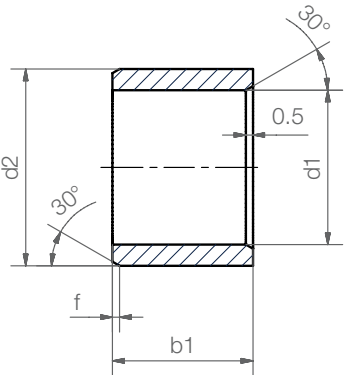


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Sleeve bearing



Order key

MSI-0203-02

- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® M250

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2   | b1   | d1*   |       | Housing bore |       | Shaft size |       |
|-------------|------|------|------|-------|-------|--------------|-------|------------|-------|
|             |      |      |      | max.  | min.  | max.         | min.  | max.       | min.  |
| MSI-0203-02 | 1/8  | 3/16 | 1/8  | .1280 | .1262 | .1990        | .1985 | .1250      | .1241 |
| MSI-0203-04 | 1/8  | 3/16 | 1/4  | .1280 | .1262 | .1990        | .1985 | .1250      | .1241 |
| MSI-0204-02 | 1/8  | 1/4  | 1/8  | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MSI-0204-03 | 1/8  | 1/4  | 3/16 | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MSI-0204-04 | 1/8  | 1/4  | 1/4  | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MSI-0204-06 | 1/8  | 1/4  | 3/8  | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MSI-0304-04 | 3/16 | 1/4  | 1/4  | .1905 | .1887 | .2515        | .2510 | .1875      | .1866 |
| MSI-0304-06 | 3/16 | 1/4  | 3/8  | .1905 | .1887 | .2515        | .2510 | .1875      | .1866 |
| MSI-0304-08 | 3/16 | 1/4  | 1/2  | .1905 | .1887 | .2515        | .2510 | .1875      | .1866 |
| MSI-0305-02 | 3/16 | 5/16 | 1/8  | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MSI-0305-03 | 3/16 | 5/16 | 3/16 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MSI-0305-04 | 3/16 | 5/16 | 1/4  | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MSI-0305-05 | 3/16 | 5/16 | 5/16 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MSI-0305-06 | 3/16 | 5/16 | 3/8  | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MSI-0305-08 | 3/16 | 5/16 | 1/2  | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MSI-0405-03 | 1/4  | 5/16 | 3/16 | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MSI-0405-06 | 1/4  | 5/16 | 3/8  | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MSI-0405-08 | 1/4  | 5/16 | 1/2  | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MSI-0406-02 | 1/4  | 3/8  | 1/8  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MSI-0406-03 | 1/4  | 3/8  | 3/16 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MSI-0406-04 | 1/4  | 3/8  | 1/4  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MSI-0406-05 | 1/4  | 3/8  | 5/16 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MSI-0406-06 | 1/4  | 3/8  | 3/8  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MSI-0406-08 | 1/4  | 3/8  | 1/2  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MSI-0406-10 | 1/4  | 3/8  | 5/8  | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |

\* after pressfit. Testing methods ► page 75



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Sleeve bearing

Dimensions [Inch]

| Part number | d1   | d2    | b1    | d1*   |       | Housing bore |       | Shaft size |       |
|-------------|------|-------|-------|-------|-------|--------------|-------|------------|-------|
|             |      |       |       | max.  | min.  | max.         | min.  | max.       | min.  |
| MSI-0406-12 | 1/4  | 3/8   | 3/4   | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MSI-0506-04 | 5/16 | 3/8   | 1/4   | .3164 | .3141 | .3765        | .3760 | .3125      | .3116 |
| MSI-0506-06 | 5/16 | 3/8   | 3/8   | .3164 | .3141 | .3765        | .3760 | .3125      | .3116 |
| MSI-0506-08 | 5/16 | 3/8   | 1/2   | .3164 | .3141 | .3765        | .3760 | .3125      | .3116 |
| MSI-0507-03 | 5/16 | 7/16  | 3/16  | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MSI-0507-04 | 5/16 | 7/16  | 1/4   | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MSI-0507-05 | 5/16 | 7/16  | 5/16  | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MSI-0507-06 | 5/16 | 7/16  | 3/8   | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MSI-0507-08 | 5/16 | 7/16  | 1/2   | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MSI-0507-10 | 5/16 | 7/16  | 5/8   | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MSI-0507-12 | 5/16 | 7/16  | 3/4   | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MSI-0607-04 | 3/8  | 7/16  | 1/4   | .3789 | .3766 | .4390        | .4385 | .3750      | .3741 |
| MSI-0607-06 | 3/8  | 7/16  | 3/8   | .3789 | .3766 | .4390        | .4385 | .3750      | .3741 |
| MSI-0607-08 | 3/8  | 7/16  | 1/2   | .3789 | .3766 | .4390        | .4385 | .3750      | .3741 |
| MSI-0608-04 | 3/8  | 1/2   | 1/4   | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MSI-0608-05 | 3/8  | 1/2   | 5/16  | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MSI-0608-06 | 3/8  | 1/2   | 3/8   | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MSI-0608-08 | 3/8  | 1/2   | 1/2   | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MSI-0608-10 | 3/8  | 1/2   | 5/8   | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MSI-0608-12 | 3/8  | 1/2   | 3/4   | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MSI-0608-16 | 3/8  | 1/2   | 1     | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MSI-0709-06 | 7/16 | 9/16  | 3/8   | .4422 | .4395 | .5941        | .5934 | .4375      | .4365 |
| MSI-0709-08 | 7/16 | 9/16  | 1/2   | .4422 | .4395 | .5941        | .5934 | .4375      | .4365 |
| MSI-0810-04 | 1/2  | 5/8   | 1/4   | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MSI-0810-05 | 1/2  | 5/8   | 5/16  | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MSI-0810-06 | 1/2  | 5/8   | 3/8   | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MSI-0810-08 | 1/2  | 5/8   | 1/2   | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MSI-0810-10 | 1/2  | 5/8   | 5/8   | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MSI-0810-12 | 1/2  | 5/8   | 3/4   | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MSI-0810-16 | 1/2  | 5/8   | 1     | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MSI-1012-04 | 5/8  | 3/4   | 1/4   | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MSI-1012-06 | 5/8  | 3/4   | 3/8   | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MSI-1012-08 | 5/8  | 3/4   | 1/2   | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MSI-1012-10 | 5/8  | 3/4   | 5/8   | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MSI-1012-12 | 5/8  | 3/4   | 3/4   | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MSI-1012-16 | 5/8  | 3/4   | 1     | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MSI-1012-26 | 5/8  | 3/4   | 1 5/8 | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MSI-1013-06 | 5/8  | 13/16 | 3/8   | .6297 | .6270 | .8135        | .8125 | .6250      | .6240 |
| MSI-1013-08 | 5/8  | 13/16 | 1/2   | .6297 | .6270 | .8135        | .8125 | .6250      | .6240 |
| MSI-1013-10 | 5/8  | 13/16 | 5/8   | .6297 | .6270 | .8135        | .8125 | .6250      | .6240 |
| MSI-1013-12 | 5/8  | 13/16 | 3/4   | .6297 | .6270 | .8135        | .8125 | .6250      | .6240 |
| MSI-1013-16 | 5/8  | 13/16 | 1     | .6297 | .6270 | .8135        | .8125 | .6250      | .6240 |

\* after pressfit. Testing methods ► page 75



Sleeve bearing

Dimensions [Inch]

| Part number | d1    | d2    | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|-------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |       |       | max.   | min.   | max.         | min.   | max.       | min.   |
| MSI-1113-12 | 11/16 | 13/16 | 3/4   | .6921  | .6893  | .8135        | .8125  | .6875      | .6865  |
| MSI-1113-14 | 11/16 | 13/16 | 7/8   | .6921  | .6893  | .8135        | .8125  | .6875      | .6865  |
| MSI-1113-16 | 11/16 | 13/16 | 1     | .6922  | .6900  | .8135        | .8125  | .6875      | .6865  |
| MSI-1214-06 | 3/4   | 7/8   | 3/8   | .7559  | .7525  | .8760        | .8750  | .7500      | .7490  |
| MSI-1214-12 | 3/4   | 7/8   | 3/4   | .7559  | .7525  | .8760        | .8750  | .7500      | .7490  |
| MSI-1214-16 | 3/4   | 7/8   | 1     | .7559  | .7525  | .8760        | .8750  | .7500      | .7490  |
| MSI-1214-24 | 3/4   | 7/8   | 1 1/2 | .7559  | .7525  | .8760        | .8750  | .7500      | .7490  |
| MSI-1216-06 | 3/4   | 1     | 3/8   | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MSI-1216-08 | 3/4   | 1     | 1/2   | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MSI-1216-10 | 3/4   | 1     | 5/8   | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MSI-1216-12 | 3/4   | 1     | 3/4   | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MSI-1216-16 | 3/4   | 1     | 1     | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MSI-1216-20 | 3/4   | 1     | 1 1/4 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MSI-1216-24 | 3/4   | 1     | 1 1/2 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MSI-1316-08 | 13/16 | 1     | 1/2   | .8184  | .8151  | 1.0010       | 1.0000 | .8126      | .8116  |
| MSI-1416-12 | 7/8   | 1     | 3/4   | .8809  | .8775  | 1.0010       | 1.0000 | .8750      | .8740  |
| MSI-1416-16 | 7/8   | 1     | 1     | .8809  | .8775  | 1.0010       | 1.0000 | .8750      | .8740  |
| MSI-1416-24 | 7/8   | 1     | 1 1/2 | .8809  | .8775  | 1.0010       | 1.0000 | .8750      | .8740  |
| MSI-1418-08 | 7/8   | 1 1/8 | 1/2   | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MSI-1418-12 | 7/8   | 1 1/8 | 3/4   | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MSI-1418-16 | 7/8   | 1 1/8 | 1     | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MSI-1418-24 | 7/8   | 1 1/8 | 1 1/2 | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MSI-1618-12 | 1     | 1 1/8 | 3/4   | 1.0059 | 1.0025 | 1.1260       | 1.1250 | 1.0000     | .9990  |
| MSI-1618-16 | 1     | 1 1/8 | 1     | 1.0059 | 1.0025 | 1.1260       | 1.1250 | 1.0000     | .9990  |
| MSI-1618-24 | 1     | 1 1/8 | 1 1/2 | 1.0059 | 1.0025 | 1.1260       | 1.1250 | 1.0000     | .9990  |
| MSI-1620-08 | 1     | 1 1/4 | 1/2   | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MSI-1620-10 | 1     | 1 1/4 | 5/8   | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MSI-1620-12 | 1     | 1 1/4 | 3/4   | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MSI-1620-16 | 1     | 1 1/4 | 1     | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MSI-1620-24 | 1     | 1 1/4 | 1 1/2 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MSI-1620-32 | 1     | 1 1/4 | 2     | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MSI-1822-16 | 1 1/8 | 1 3/8 | 1     | 1.1309 | 1.1275 | 1.3760       | 1.3750 | 1.1250     | 1.1240 |
| MSI-1822-24 | 1 1/8 | 1 3/8 | 1 1/2 | 1.1309 | 1.1275 | 1.3760       | 1.3750 | 1.1250     | 1.1240 |
| MSI-2024-12 | 1 1/4 | 1 1/2 | 3/4   | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MSI-2024-16 | 1 1/4 | 1 1/2 | 1     | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MSI-2024-22 | 1 1/4 | 1 1/2 | 1 3/8 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MSI-2024-24 | 1 1/4 | 1 1/2 | 1 1/2 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MSI-2024-40 | 1 1/4 | 1 1/2 | 2 1/2 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MSI-2226-16 | 1 3/8 | 1 5/8 | 1     | 1.3850 | 1.3182 | 1.6255       | 1.6245 | 1.3750     | 1.3740 |

\* after pressfit. Testing methods ► page 75



delivery from stock  
time



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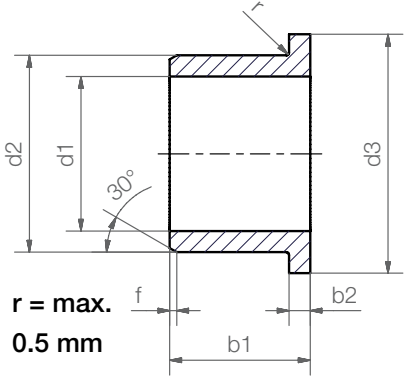
Sleeve bearing

Dimensions [Inch]

| Part number | d1    | d2    | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|-------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |       |       | max.   | min.   | max.         | min.   | max.       | min.   |
| MSI-2428-12 | 1 1/2 | 1 3/4 | 3/4   | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| MSI-2428-16 | 1 1/2 | 1 3/4 | 1     | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| MSI-2428-24 | 1 1/2 | 1 3/4 | 1 1/2 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| MSI-2428-40 | 1 1/2 | 1 3/4 | 2 1/2 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| MSI-2630-16 | 1 5/8 | 1 7/8 | 1     | 1.6350 | 1.6282 | 1.8755       | 1.8745 | 1.6250     | 1.6240 |
| MSI-2832-08 | 1 3/4 | 2     | 1/2   | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MSI-2832-12 | 1 3/4 | 2     | 3/4   | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MSI-2832-16 | 1 3/4 | 2     | 1     | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MSI-2832-24 | 1 3/4 | 2     | 1 1/2 | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MSI-2832-40 | 1 3/4 | 2     | 2 1/2 | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MSI-3236-16 | 2     | 2 1/4 | 1     | 2.0100 | 2.0032 | 2.2505       | 2.2495 | 2.0000     | 1.9990 |
| MSI-3236-24 | 2     | 2 1/4 | 1 1/2 | 2.0100 | 2.0032 | 2.2505       | 2.2495 | 2.0000     | 1.9990 |
| MSI-3236-32 | 2     | 2 1/4 | 2     | 2.0100 | 2.0032 | 2.2505       | 2.2495 | 2.0000     | 1.9990 |
| MSI-3236-40 | 2     | 2 1/4 | 2 1/2 | 2.0100 | 2.0032 | 2.2505       | 2.2495 | 2.0000     | 1.9990 |
| MSI-4852-16 | 3     | 3 1/4 | 1     | 3.0114 | 3.0039 | 3.2505       | 3.2495 | 3.0000     | 2.9990 |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

MFI-0203-02

- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® M250

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2   | b1   | d3    | b2   | d1*   |       | Housing bore |       | Shaft size |       |
|-------------|------|------|------|-------|------|-------|-------|--------------|-------|------------|-------|
|             |      |      |      |       |      | max.  | min.  | max.         | min.  | max.       | min.  |
| MFI-0203-02 | 1/8  | 3/16 | 1/8  | .3125 | .032 | .1280 | .1262 | .1885        | .1880 | .1250      | .1241 |
| MFI-0203-04 | 1/8  | 3/16 | 1/4  | .3125 | .032 | .1280 | .1262 | .1885        | .1880 | .1250      | .1241 |
| MFI-0204-02 | 1/8  | 1/4  | 1/8  | .360  | .047 | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MFI-0204-03 | 1/8  | 1/4  | 3/16 | .360  | .047 | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MFI-0204-04 | 1/8  | 1/4  | 1/4  | .360  | .047 | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MFI-0204-06 | 1/8  | 1/4  | 3/8  | .360  | .047 | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MFI-0204-12 | 1/8  | 1/4  | 3/4  | .360  | .047 | .1280 | .1262 | .2515        | .2510 | .1250      | .1241 |
| MFI-0304-04 | 3/16 | 1/4  | 1/4  | .375  | .032 | .1905 | .1887 | .2515        | .2510 | .1875      | .1866 |
| MFI-0304-06 | 3/16 | 1/4  | 3/8  | .375  | .032 | .1905 | .1887 | .2515        | .2510 | .1875      | .1866 |
| MFI-0304-08 | 3/16 | 1/4  | 1/2  | .375  | .032 | .1905 | .1887 | .2515        | .2510 | .1875      | .1866 |
| MFI-0305-03 | 3/16 | 5/16 | 3/16 | .370  | .047 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MFI-0305-04 | 3/16 | 5/16 | 1/4  | .370  | .047 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MFI-0305-05 | 3/16 | 5/16 | 5/16 | .370  | .047 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MFI-0305-06 | 3/16 | 5/16 | 3/8  | .370  | .047 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MFI-0305-08 | 3/16 | 5/16 | 1/2  | .370  | .047 | .1905 | .1887 | .3140        | .3135 | .1875      | .1866 |
| MFI-0405-03 | 1/4  | 5/16 | 3/16 | .4375 | .047 | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MFI-0405-04 | 1/4  | 5/16 | 1/4  | .4375 | .032 | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MFI-0405-06 | 1/4  | 5/16 | 3/8  | .4375 | .032 | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MFI-0405-07 | 1/4  | 5/16 | 7/16 | .4375 | .047 | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MFI-0405-08 | 1/4  | 5/16 | 1/2  | .4375 | .032 | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MFI-0405-12 | 1/4  | 5/16 | 3/4  | .4375 | .047 | .2539 | .2516 | .3140        | .3135 | .2500      | .2491 |
| MFI-0406-02 | 1/4  | 3/8  | 1/8  | .560  | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MFI-0406-03 | 1/4  | 3/8  | 3/16 | .560  | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MFI-0406-04 | 1/4  | 3/8  | 1/4  | .560  | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MFI-0406-06 | 1/4  | 3/8  | 3/8  | .560  | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |

\* after pressfit. Testing methods ► page 75



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time



prices price list online  
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Flange bearing

Dimensions [Inch]

| Part number | d1   | d2   | b1    | d3    | b2   | d1*   |       | Housing bore |       | Shaft size |       |
|-------------|------|------|-------|-------|------|-------|-------|--------------|-------|------------|-------|
|             |      |      |       |       |      | max.  | min.  | max.         | min.  | max.       | min.  |
| MFI-0406-08 | 1/4  | 3/8  | 1/2   | .560  | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MFI-0406-10 | 1/4  | 3/8  | 5/8   | .560  | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MFI-0406-12 | 1/4  | 3/8  | 3/4   | .560  | .047 | .2539 | .2516 | .3765        | .3760 | .2500      | .2491 |
| MFI-0506-04 | 5/16 | 3/8  | 1/4   | .500  | .032 | .3164 | .3141 | .3765        | .3760 | .3125      | .3116 |
| MFI-0506-06 | 5/16 | 3/8  | 3/8   | .500  | .032 | .3164 | .3141 | .3765        | .3760 | .3125      | .3116 |
| MFI-0506-08 | 5/16 | 3/8  | 1/2   | .500  | .032 | .3164 | .3141 | .3765        | .3760 | .3125      | .3116 |
| MFI-0506-15 | 5/16 | 3/8  | 15/16 | .500  | .032 | .3164 | .3141 | .3765        | .3760 | .3125      | .3116 |
| MFI-0507-03 | 5/16 | 7/16 | 3/16  | .560  | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MFI-0507-04 | 5/16 | 7/16 | 1/4   | .560  | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MFI-0507-05 | 5/16 | 7/16 | 5/16  | .560  | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MFI-0507-06 | 5/16 | 7/16 | 3/8   | .560  | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MFI-0507-08 | 5/16 | 7/16 | 1/2   | .560  | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MFI-0507-10 | 5/16 | 7/16 | 5/8   | .560  | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MFI-0507-12 | 5/16 | 7/16 | 3/4   | .560  | .062 | .3164 | .3141 | .4390        | .4385 | .3125      | .3116 |
| MFI-0607-04 | 3/8  | 7/16 | 1/4   | .5625 | .032 | .3789 | .3766 | .4390        | .4385 | .3750      | .3741 |
| MFI-0607-06 | 3/8  | 7/16 | 3/8   | .5625 | .032 | .3789 | .3766 | .4390        | .4385 | .3750      | .3741 |
| MFI-0607-08 | 3/8  | 7/16 | 1/2   | .5625 | .032 | .3789 | .3766 | .4390        | .4385 | .3750      | .3741 |
| MFI-0608-02 | 3/8  | 1/2  | 1/8   | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-03 | 3/8  | 1/2  | 3/16  | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-04 | 3/8  | 1/2  | 1/4   | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-05 | 3/8  | 1/2  | 5/16  | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-06 | 3/8  | 1/2  | 3/8   | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-08 | 3/8  | 1/2  | 1/2   | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-10 | 3/8  | 1/2  | 5/8   | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-12 | 3/8  | 1/2  | 3/4   | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0608-16 | 3/8  | 1/2  | 1     | .625  | .062 | .3789 | .3766 | .5015        | .5010 | .3750      | .3741 |
| MFI-0709-06 | 7/16 | 9/16 | 3/8   | .687  | .062 | .4422 | .4395 | .5941        | .5934 | .4375      | .4365 |
| MFI-0709-08 | 7/16 | 9/16 | 1/2   | .687  | .062 | .4422 | .4395 | .5941        | .5934 | .4375      | .4365 |
| MFI-0810-02 | 1/2  | 5/8  | 1/8   | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-0810-04 | 1/2  | 5/8  | 1/4   | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-0810-05 | 1/2  | 5/8  | 5/16  | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-0810-06 | 1/2  | 5/8  | 3/8   | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-0810-08 | 1/2  | 5/8  | 1/2   | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-0810-10 | 1/2  | 5/8  | 5/8   | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-0810-12 | 1/2  | 5/8  | 3/4   | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-0810-16 | 1/2  | 5/8  | 1     | .875  | .062 | .5047 | .5020 | .6260        | .6250 | .5000      | .4990 |
| MFI-1012-06 | 5/8  | 3/4  | 3/8   | 1.000 | .062 | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MFI-1012-08 | 5/8  | 3/4  | 1/2   | 1.000 | .062 | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MFI-1012-10 | 5/8  | 3/4  | 5/8   | 1.000 | .062 | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MFI-1012-12 | 5/8  | 3/4  | 3/4   | 1.000 | .062 | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MFI-1012-16 | 5/8  | 3/4  | 1     | 1.000 | .062 | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |
| MFI-1012-24 | 5/8  | 3/4  | 1 1/2 | 1.000 | .062 | .6297 | .6270 | .7510        | .7500 | .6250      | .6240 |

\* after pressfit. Testing methods ► page 75



Flange bearing

Dimensions [Inch]

| Part number | d1    | d2    | b1    | d3    | b2   | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|-------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |       |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| MFI-1013-08 | 5/8   | 13/16 | 1/2   | 1.063 | .062 | .6297  | .6270  | .8135        | .8125  | .6250      | .6240  |
| MFI-1013-10 | 5/8   | 13/16 | 5/8   | 1.063 | .062 | .6297  | .6270  | .8135        | .8125  | .6250      | .6240  |
| MFI-1013-12 | 5/8   | 13/16 | 3/4   | 1.063 | .062 | .6297  | .6270  | .8135        | .8125  | .6250      | .6240  |
| MFI-1013-16 | 5/8   | 13/16 | 1     | 1.063 | .062 | .6297  | .6270  | .8135        | .8125  | .6250      | .6240  |
| MFI-1214-06 | 3/4   | 7/8   | 3/8   | 1.125 | .062 | .7559  | .7525  | .8760        | .8750  | .6250      | .6240  |
| MFI-1214-08 | 3/4   | 7/8   | 1/2   | 1.125 | .062 | .7559  | .7525  | .8760        | .8750  | .6250      | .6240  |
| MFI-1214-12 | 3/4   | 7/8   | 3/4   | 1.125 | .062 | .7559  | .7525  | .8760        | .8750  | .7500      | .7490  |
| MFI-1214-16 | 3/4   | 7/8   | 1     | 1.125 | .062 | .7559  | .7525  | .8760        | .8750  | .7500      | .7490  |
| MFI-1214-24 | 3/4   | 7/8   | 1 1/2 | 1.125 | .062 | .7559  | .7525  | .8760        | .8750  | .7500      | .7490  |
| MFI-1216-08 | 3/4   | 1     | 1/2   | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MFI-1216-10 | 3/4   | 1     | 5/8   | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MFI-1216-12 | 3/4   | 1     | 3/4   | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MFI-1216-16 | 3/4   | 1     | 1     | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MFI-1216-24 | 3/4   | 1     | 1 1/2 | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| MFI-1416-12 | 7/8   | 1     | 3/4   | 1.250 | .062 | .8809  | .8775  | 1.0010       | 1.0000 | .8750      | .8740  |
| MFI-1416-16 | 7/8   | 1     | 1     | 1.250 | .062 | .8809  | .8775  | 1.0010       | 1.0000 | .8750      | .8740  |
| MFI-1416-24 | 7/8   | 1     | 1 1/2 | 1.250 | .062 | .8809  | .8775  | 1.0010       | 1.0000 | .8750      | .8740  |
| MFI-1418-08 | 7/8   | 1 1/8 | 1/2   | 1.375 | .156 | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MFI-1418-12 | 7/8   | 1 1/8 | 3/4   | 1.375 | .156 | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MFI-1418-16 | 7/8   | 1 1/8 | 1     | 1.375 | .156 | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MFI-1418-24 | 7/8   | 1 1/8 | 1 1/2 | 1.375 | .156 | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| MFI-1618-03 | 1     | 1 1/8 | 3/16  | 1.375 | .062 | 1.0059 | 1.0025 | 1.1260       | 1.1250 | 1.0000     | .9990  |
| MFI-1618-12 | 1     | 1 1/8 | 3/4   | 1.375 | .062 | 1.0059 | 1.0025 | 1.1260       | 1.1250 | 1.0000     | .9990  |
| MFI-1618-16 | 1     | 1 1/8 | 1     | 1.375 | .062 | 1.0059 | 1.0025 | 1.1260       | 1.1250 | 1.0000     | .9990  |
| MFI-1618-24 | 1     | 1 1/8 | 1 1/2 | 1.375 | .062 | 1.0059 | 1.0025 | 1.1260       | 1.1250 | 1.0000     | .9990  |
| MFI-1620-08 | 1     | 1 1/4 | 1/2   | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MFI-1620-10 | 1     | 1 1/4 | 5/8   | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MFI-1620-12 | 1     | 1 1/4 | 3/4   | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MFI-1620-16 | 1     | 1 1/4 | 1     | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MFI-1620-24 | 1     | 1 1/4 | 1 1/2 | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| MFI-2024-07 | 1 1/4 | 1 1/2 | 7/16  | 1.750 | .200 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MFI-2024-12 | 1 1/4 | 1 1/2 | 3/4   | 1.750 | .200 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MFI-2024-16 | 1 1/4 | 1 1/2 | 1     | 1.750 | .200 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MFI-2024-24 | 1 1/4 | 1 1/2 | 1 1/2 | 1.750 | .200 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| MFI-2226-12 | 1 3/8 | 1 5/8 | 3/4   | 1.875 | .125 | 1.3850 | 1.3182 | 1.6255       | 1.6245 | 1.3750     | 1.3740 |
| MFI-2226-16 | 1 3/8 | 1 5/8 | 1     | 1.875 | .125 | 1.3850 | 1.3182 | 1.6255       | 1.6245 | 1.3750     | 1.3740 |
| MFI-2428-12 | 1 1/2 | 1 3/4 | 3/4   | 2.000 | .125 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| MFI-2428-16 | 1 1/2 | 1 3/4 | 1     | 2.000 | .125 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| MFI-2428-24 | 1 1/2 | 1 3/4 | 1 1/2 | 2.000 | .125 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |

\* after pressfit. Testing methods ► page 75

 delivery

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 prices

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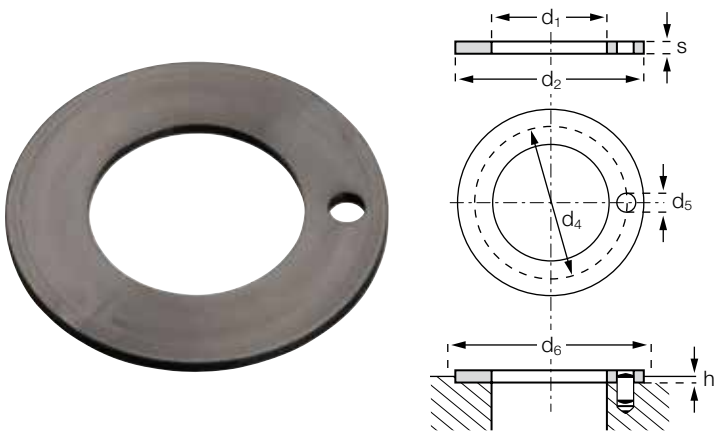
Flange bearing

Dimensions [Inch]

| Part number | d1    | d2    | b1    | d3    | b2   | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|-------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |       |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| MFI-2630-16 | 1 5/8 | 1 7/8 | 1     | 2.125 | .125 | 1.6350 | 1.6282 | 1.8755       | 1.8745 | 1.6250     | 1.6240 |
| MFI-2832-12 | 1 3/4 | 2     | 3/4   | 2.250 | .125 | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MFI-2832-16 | 1 3/4 | 2     | 1     | 2.250 | .125 | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MFI-2832-24 | 1 3/4 | 2     | 1 1/2 | 2.250 | .125 | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |
| MFI-3236-16 | 2     | 2 1/4 | 1     | 2.500 | .125 | 2.0100 | 2.0032 | 2.2550       | 2.2540 | 2.0000     | 1.9990 |
| MFI-3236-24 | 2     | 2 1/4 | 1 1/2 | 2.500 | .125 | 2.0100 | 2.0032 | 2.2550       | 2.2540 | 2.0000     | 1.9990 |
| MFI-3236-32 | 2     | 2 1/4 | 2     | 2.500 | .125 | 2.0100 | 2.0032 | 2.2550       | 2.2540 | 2.0000     | 1.9990 |

\* after pressfit. Testing methods ► page 75

Thrust washer



Order key

MTI-04

- Thickness s
- Inch
- Type (Form T)
- Material iglidur® M250

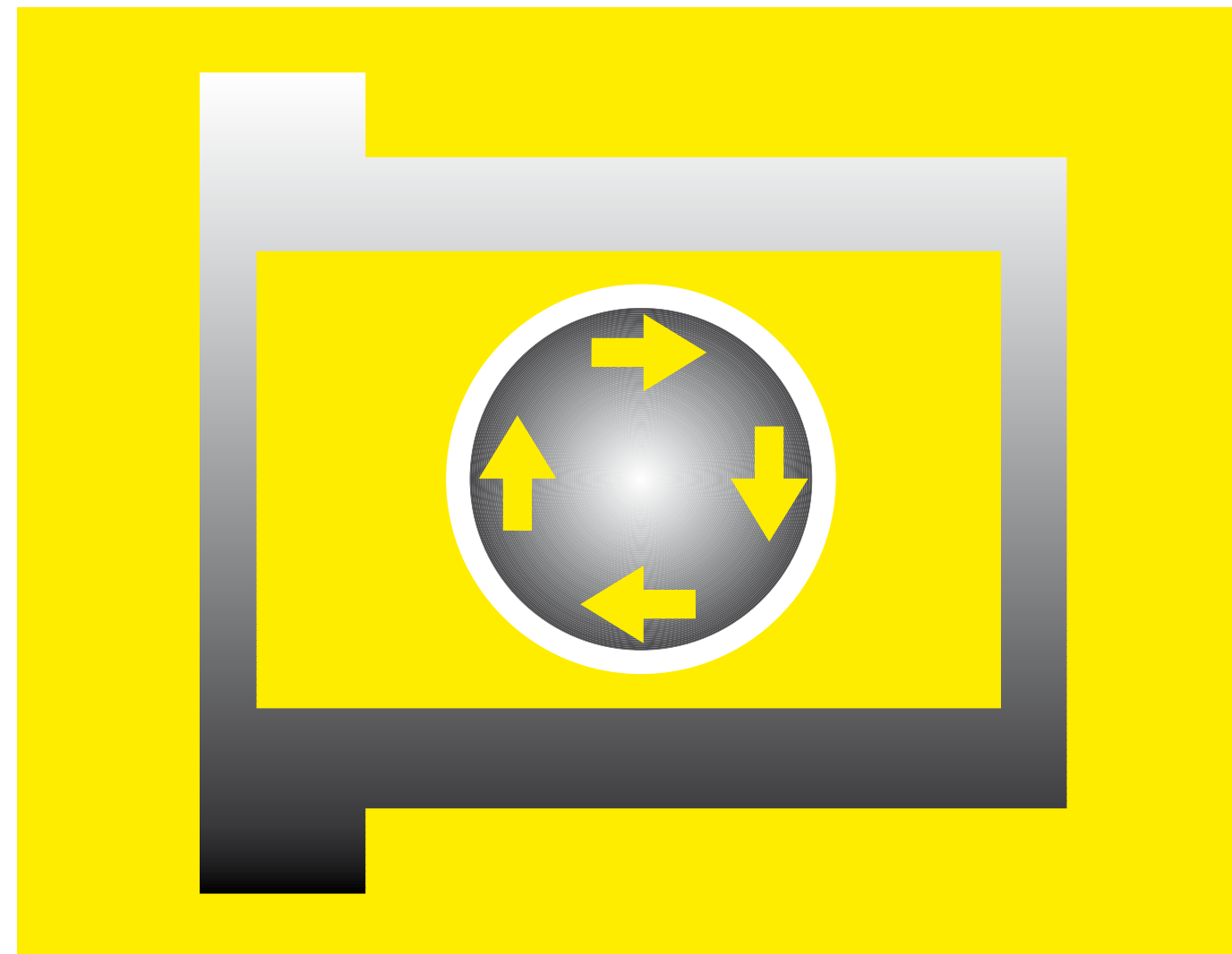
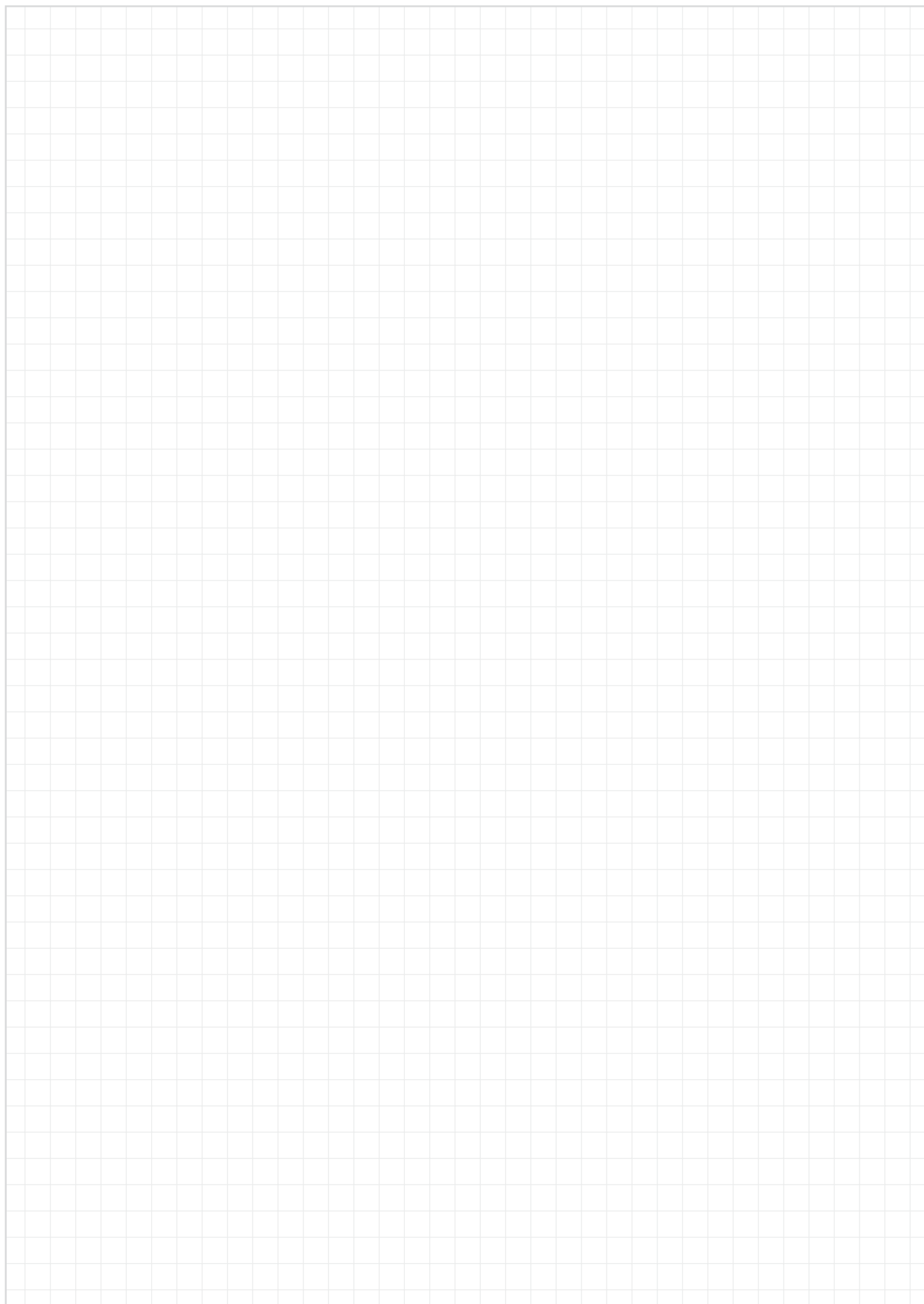
Dimensions [Inch]

| Part number | d1 (nominal) | d1*    |        | d2     |        | s     |
|-------------|--------------|--------|--------|--------|--------|-------|
|             |              | max.   | min.   | max.   | min.   |       |
| MTI-04      | 1/4          | .2609  | .2550  | .6200  | .6094  | .0900 |
| MTI-05      | 5/16         | .3271  | .3189  | .6874  | .6767  | .0900 |
| MTI-06      | 3/8          | .3940  | .3810  | .7409  | .7394  | .0900 |
| MTI-08      | 1/2          | .5101  | .5030  | .8200  | .8070  | .0900 |
| MTI-10      | 5/8          | .6371  | .6300  | 1.0000 | .9870  | .0940 |
| MTI-12      | 3/4          | .7675  | .7600  | 1.0630 | 1.0500 | .0940 |
| MTI-16      | 1            | 1.0200 | 1.0100 | 1.5000 | 1.4843 | .1250 |
| MTI-20      | 1 1/4        | 1.2998 | 1.2900 | 2.1400 | 2.1220 | .0980 |
| MTI-24      | 1 1/2        | 1.6000 | 1.5500 | 2.6000 | 2.5500 | .1250 |

\* after pressfit. Testing methods ► page 75

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## Low wear on all shafts: The Marathon Runner – iglidur® W300



Over 400 sizes available from stock

For especially long service life

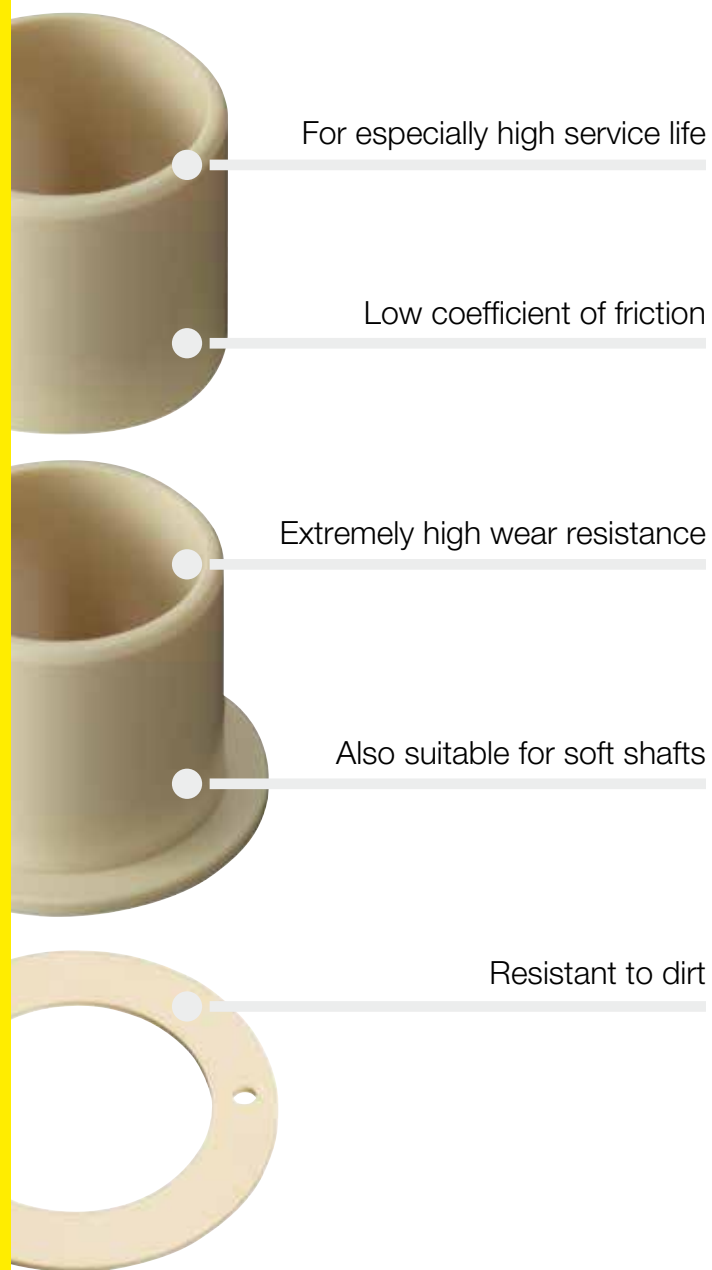
Low coefficient of friction

Extremely high wear resistance

Also suitable for soft shafts

Resistant to dirt

**Low wear on all shafts.** The iglidur® W300 material gives excellent wear resistance, even in harsh environments or when used with rough shafts. Of all iglidur® materials, iglidur® W300 is the most resistant to these conditions.



## When to use it?

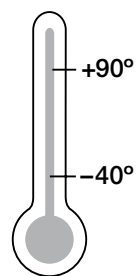
- When especially high service life is necessary
- When low coefficients of dynamic friction and high wear resistance are needed
- For use on 303 stainless steel shafts
- For harsh environments and very rough shafts
- Dirt resistant



## When not to use it?

- For high loads starting at 50 MPa  
▶ iglidur® Q, page 541
- When temperatures are constantly above +90 °C  
▶ iglidur® H, page 353  
▶ iglidur® X, page 173
- For very wet environments  
▶ iglidur® P, page 195
- When an economical bearing is required  
▶ iglidur® G, page 81

## Temperature



## Product range

3 types  
> 400 dimensions  
Ø 2–120 mm

## Typical sectors of industry and application areas

- Automation ● Printing industry
- Woodworking ● Mechatronics
- Test engineering and quality assurance etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

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| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® W300      |
| Density                                                |  | g/cm³                              | 1.24               |
| Colour                                                 |  |                                    | yellow             |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 1.3                |
| Max. water absorption                                  |  | % weight                           | 6.5                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.08–0.23          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.23               |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 3,500              |
| Tensile strength at +20 °C                             |  | MPa                                | 125                |
| Compressive strength                                   |  | MPa                                | 61                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 60                 |
| Shore D hardness                                       |  |                                    | 77                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +90                |
| Max. short term application temperature                |  | °C                                 | +180               |
| Min. application temperature                           |  | °C                                 | −40                |
| Thermal conductivity                                   |  | W/m · K                            | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>−1</sup> · 10 <sup>−5</sup> | 9                  |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>13</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>12</sup> |

Table 01: Material properties table

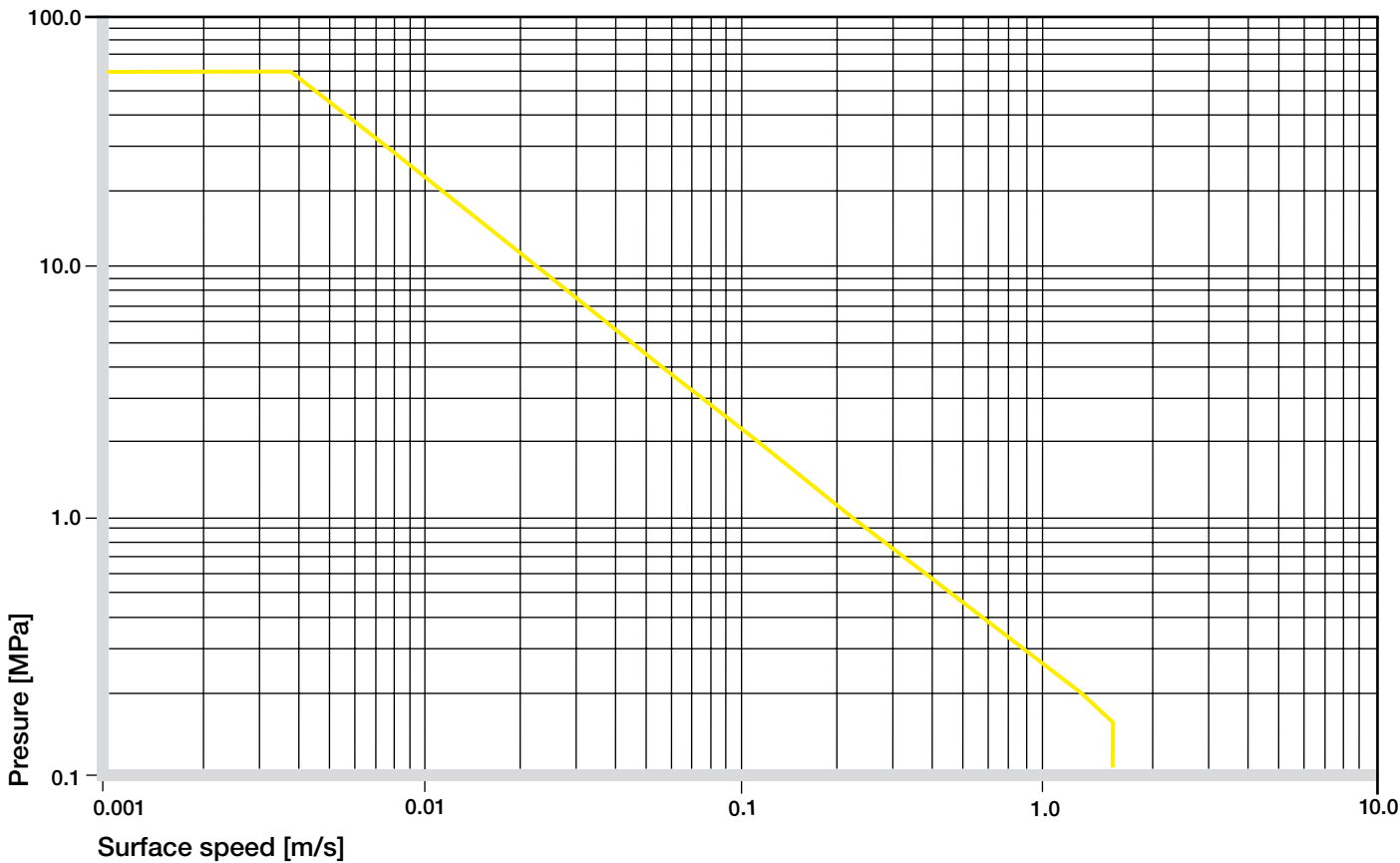


Diagram 01: Permissible pv values for iglidur® W300 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® W300 gives excellent wear resistance, even in harsh environments or when used with rough shafts. This material is the most tolerant of these external effects out of all the iglidur® range.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® W300 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 30 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

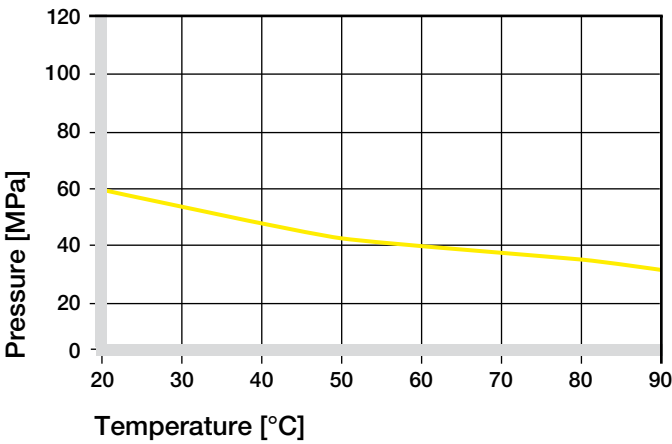


Diagram 02: Recommended maximum surface pressure as a function of temperature (60 MPa at +20 °C)

iglidur® W300 presents a very high compression strength in spite of its high elasticity. Diagram 03 shows the elastic deformation of iglidur® W300 under radial loads. At the recommended maximum surface pressure of 60 MPa, the deformation at room temperature is less than 3 %. Below the recommended maximum surface pressure of 60 MPa the deformation at room temperature is virtually zero.

► Surface Pressure, page 63

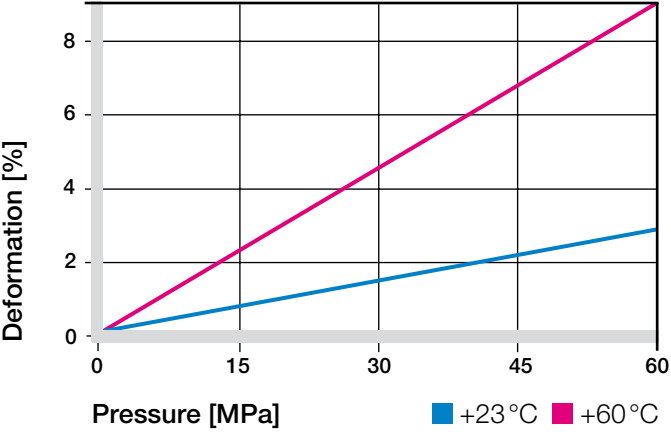


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Even at higher surface speeds, the coefficients of friction for iglidur® W300 do not increase. Therefore, compared to other materials, higher surface speeds can be obtained, for example, up to 1.5 m/s rotating and up to 5 m/s linear. The bearing wear remains low when used for long periods at high speeds, due to exceptional wear resistance. Relatively high speeds can be obtained with iglidur® W300 bearings on hardened shafts with the recommended surface finish.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 4      |
| Short term | 2.5      | 1.8         | 6      |

Table 02: Maximum surface speeds

Temperatures

iglidur® W300 plain bearings show minimal reaction to environmental effects. This also applies to temperatures. iglidur® W300 bearings maintain their exceptional wear resistance even up to the highest permissible application temperatures and at the same time resist becoming brittle at low temperatures.

► Application Temperatures, page 66

| iglidur® W300                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | −40 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +180 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. In contrast to other iglidur® materials, the coefficient of friction of iglidur® W300 remains consistently low at higher rotational speeds.

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

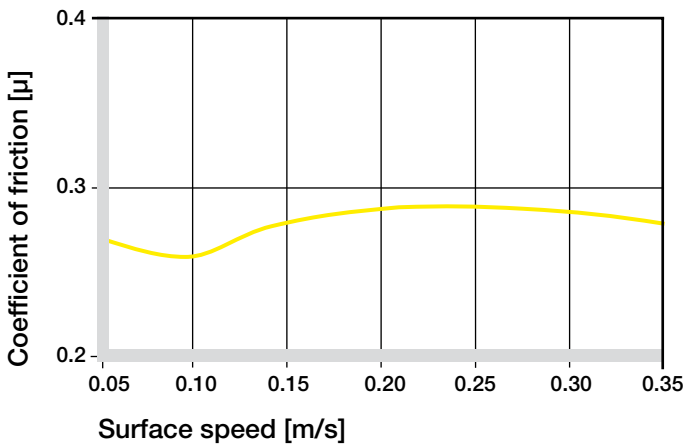


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

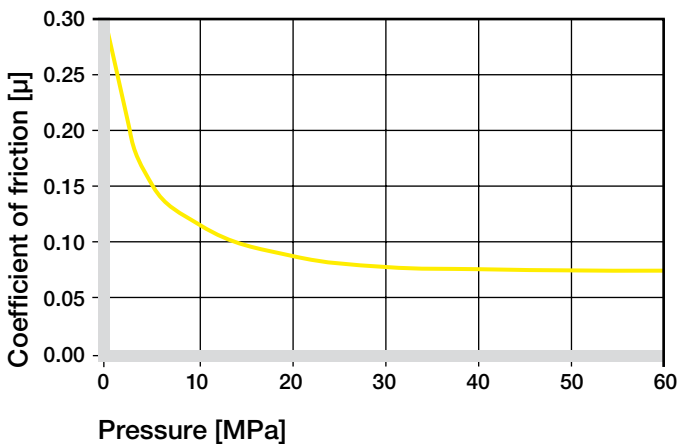


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

Friction and wear are to a large extent also highly dependant on the shaft materials. Shafts that are too smooth increase both the coefficient of friction and the wear of the bearing. Smooth shafts have the danger of stick slip. Squeaking as an effect of stick slip is usually the result of shafts that are too smooth.

For the lowest coefficients of friction when using iglidur® W300 plain bearings, the surfaces should not be too smooth. Shaft roughnesses of  $0.4$  to  $0.5 \text{ }\mu\text{m}$  have proven to be the best (see Diagram 06). Tests with iglidur® W300 have shown the wear resistance at this roughness is very high, while the friction reduces to the lowest value.

Diagrams 07 to 09 show results of testing different shaft materials with iglidur® W300 plain bearings. For rotational applications with low loads, the wear varies according to the shaft material. iglidur® W300 provides very good to acceptable coefficients of friction for all shafts that were tested. For small radial loads with hard chromed shafts and/or shafts made of stainless steel, iglidur® W300 is the most suitable iglidur® material. The soft shaft materials HR carbon steel and free-machining steel are not as well suited to iglidur® W300 plain bearings. Hardened shafts are preferred for applications for higher loads. Diagram 08 clearly shows the difference in materials for increasing loads. A similar picture emerges for oscillating applications. First, for low loads, the wear for the oscillating movement lies below that of a rotation at the same load.

For higher loads, the situation changes. If the shaft material you plan to use is not contained in this list, please contact us.

- Shaft Materials, **page 71**

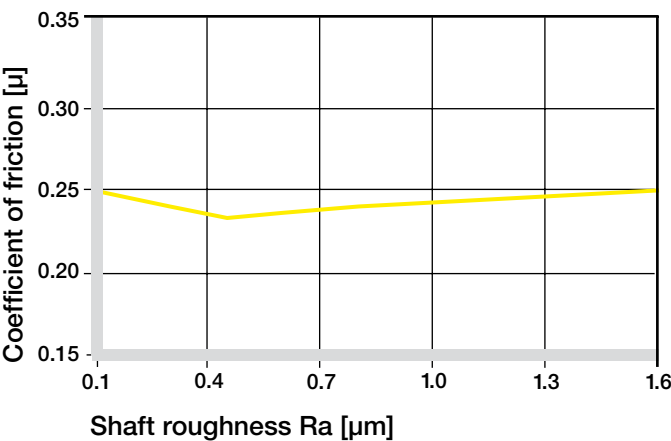


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

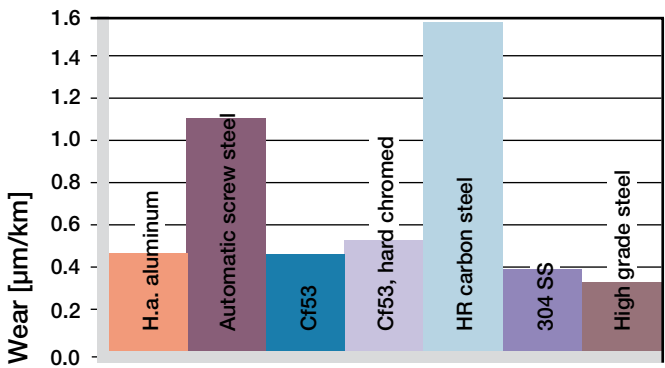


Diagram 07: Wear, rotating application with different shaft materials,  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

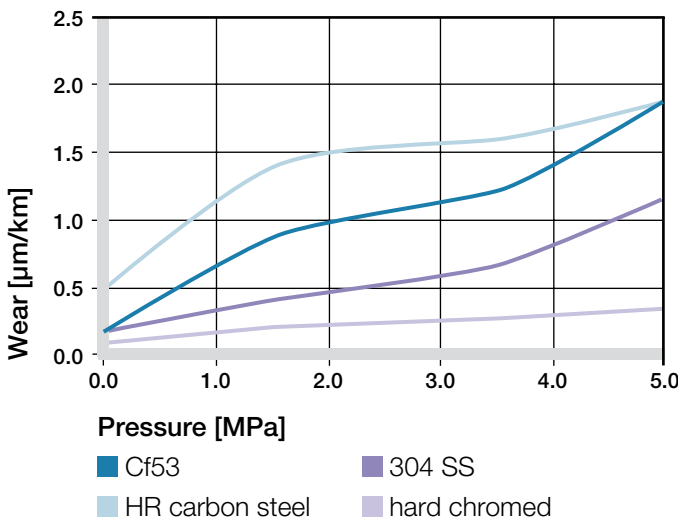


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

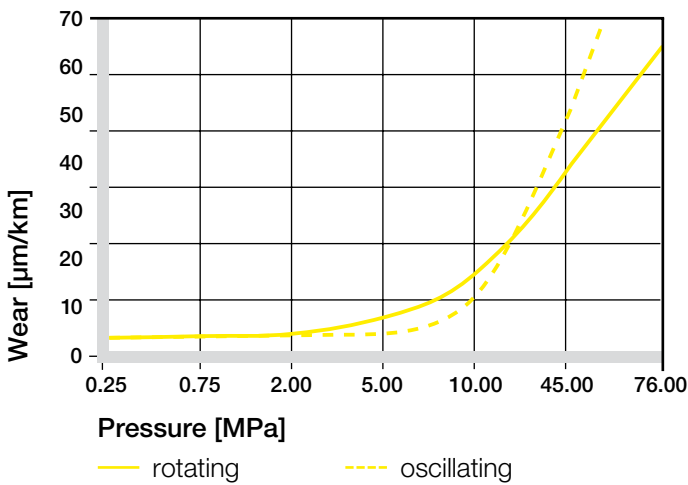


Diagram 09: Wear for oscillating and rotating applications with Cf53 hardened and ground steel shafts, as a function of the pressure

| iglidur® W300  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.08–0.23 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $Ra = 1 \text{ }\mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® W300 plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® W300 is not attacked by most weak organic or inorganic acids.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alkohole                        | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature  $[+20 \text{ }^{\circ}\text{C}]$

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® W300 are resistant to radiation up to an intensity of  $3 \cdot 10^2 \text{ Gy}$ .

UV Resistance

iglidur® W300 plain bearings are permanently resistant to UV radiation. A slight change in colour (dark coloration) due to UV radiation and other weathering effects will not significantly influence the mechanical, electrical or thermal properties.

Vacuum

In a vacuum, iglidur® W300 plain bearings will outgas any moisture that may have been absorbed. The use of iglidur® W300 in a vacuum environment is only possible to a limited extent.

Electrical Properties

|                                                           |                        |
|-----------------------------------------------------------|------------------------|
| iglidur® W300 plain bearings are electrically insulating. |                        |
| Specific volume resistance                                | > 10 <sup>13</sup> Ωcm |
| Surface resistance                                        | > 10 <sup>12</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® W300 plain bearings is approximately 1.3 % weight in the standard atmosphere. The maximum water absorption is 6.5 %. This must be taken into account along with other environmental influences.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 1.3 % weight |
| Max. water absorbtion       | 6.5 % weight |

Table 06: Moisture absorption

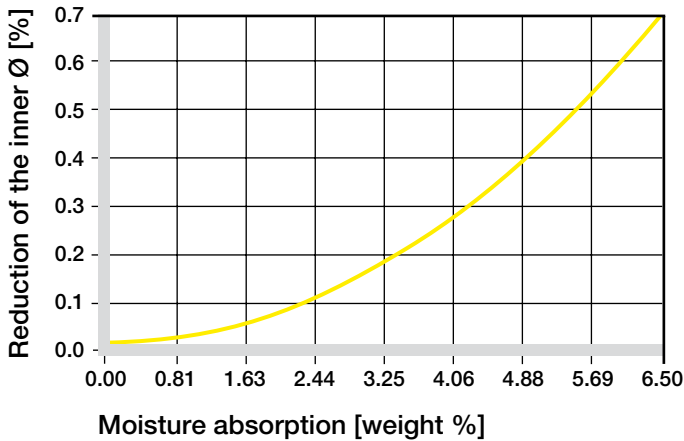


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

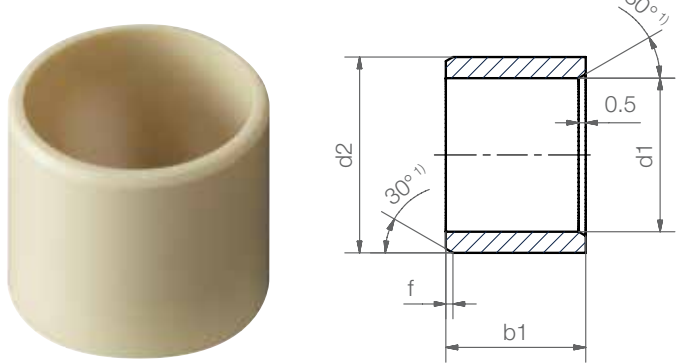
iglidur® W300 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® W300 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180          | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212          | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245          | 0 +0.040        |

Table 07: Essential tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1  | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|-----|---------------|------|-----------|
| WSM-0203-03  | 2.0 | +0.014 +0.054 | 3.5  | 3.0       |
| WSM-0204-03  | 2.5 | +0.014 +0.054 | 4.0  | 3.0       |
| WSM-0304-03  | 3.0 | +0.014 +0.054 | 4.5  | 3.0       |
| WSM-0304-05  | 3.0 | +0.014 +0.054 | 4.5  | 5.0       |
| WSM-0304-06  | 3.0 | +0.014 +0.054 | 4.5  | 6.0       |
| WSM-0405-04  | 4.0 | +0.020 +0.068 | 5.5  | 4.0       |
| WSM-0405-06  | 4.0 | +0.020 +0.068 | 5.5  | 6.0       |
| WSM-0405-08  | 4.0 | +0.020 +0.068 | 5.5  | 8.0       |
| WSM-0405-10  | 4.0 | +0.020 +0.068 | 5.5  | 10.0      |
| WSM-0507-05  | 5.0 | +0.020 +0.068 | 7.0  | 5.0       |
| WSM-0507-08  | 5.0 | +0.020 +0.068 | 7.0  | 8.0       |
| WSM-0507-10  | 5.0 | +0.020 +0.068 | 7.0  | 10.0      |
| WSM-0607-14  | 6.0 | +0.010 +0.058 | 7.0  | 14.0      |
| WSM-0608-06  | 6.0 | +0.020 +0.068 | 8.0  | 6.0       |
| WSM-0608-08  | 6.0 | +0.020 +0.068 | 8.0  | 8.0       |
| WSM-0608-09  | 6.0 | +0.020 +0.068 | 8.0  | 9.5       |
| WSM-0608-10  | 6.0 | +0.020 +0.068 | 8.0  | 10.0      |
| WSM-0608-11  | 6.0 | +0.020 +0.068 | 8.0  | 11.8      |
| WSM-0608-13  | 6.0 | +0.020 +0.068 | 8.0  | 13.8      |
| WSM-0709-09  | 7.0 | +0.025 +0.083 | 9.0  | 9.0       |
| WSM-0709-12  | 7.0 | +0.025 +0.083 | 9.0  | 12.0      |
| WSM-0709-125 | 7.0 | +0.025 +0.083 | 9.0  | 12.5      |
| WSM-0810-06  | 8.0 | +0.025 +0.083 | 10.0 | 6.0       |
| WSM-0810-08  | 8.0 | +0.025 +0.083 | 10.0 | 8.0       |
| WSM-0810-10  | 8.0 | +0.025 +0.083 | 10.0 | 10.0      |

\* after pressfit. Testing methods ► page 75



Order key

WSM-0203-03

|                        |
|------------------------|
| Length b1              |
| Outer diameter d2      |
| Inner diameter d1      |
| Metric                 |
| Type (Form S)          |
| Material iglidur® W300 |

| Part number   | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|---------------|------|---------------|------|-----------|
| WSM-0810-12   | 8.0  | +0.025 +0.083 | 10.0 | 12.0      |
| WSM-0810-13   | 8.0  | +0.025 +0.083 | 10.0 | 13.8      |
| WSM-0810-15   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      |
| WSM-0810-16   | 8.0  | +0.025 +0.083 | 10.0 | 16.0      |
| WSM-0810-20   | 8.0  | +0.025 +0.083 | 10.0 | 20.0      |
| WSM-0810-21   | 8.0  | +0.025 +0.083 | 10.0 | 21.0      |
| WSM-0911-06   | 9.0  | +0.025 +0.083 | 11.0 | 6.0       |
| WSM-1012-04   | 10.0 | +0.025 +0.083 | 12.0 | 4.0       |
| WSM-1012-06   | 10.0 | +0.025 +0.083 | 12.0 | 6.0       |
| WSM-1012-08   | 10.0 | +0.025 +0.083 | 12.0 | 8.0       |
| WSM-1012-09   | 10.0 | +0.025 +0.083 | 12.0 | 9.0       |
| WSM-1012-10   | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| WSM-1012-12   | 10.0 | +0.025 +0.083 | 12.0 | 12.0      |
| WSM-1012-15   | 10.0 | +0.025 +0.083 | 12.0 | 15.0      |
| WSM-1012-17   | 10.0 | +0.025 +0.083 | 12.0 | 17.0      |
| WSM-1012-20   | 10.0 | +0.025 +0.083 | 12.0 | 20.0      |
| WSM-1012-25.5 | 10.0 | +0.025 +0.083 | 12.0 | 25.5      |
| WSM-1113-08   | 11.0 | +0.032 +0.102 | 13.0 | 8.0       |
| WSM-1214-04   | 12.0 | +0.032 +0.102 | 14.0 | 4.0       |
| WSM-1214-05   | 12.0 | +0.032 +0.102 | 14.0 | 5.0       |
| WSM-1214-06   | 12.0 | +0.032 +0.102 | 14.0 | 6.0       |
| WSM-1214-08   | 12.0 | +0.032 +0.102 | 14.0 | 8.0       |
| WSM-1214-10   | 12.0 | +0.032 +0.102 | 14.0 | 10.0      |
| WSM-1214-12   | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| WSM-1214-15   | 12.0 | +0.032 +0.102 | 14.0 | 15.0      |



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Sleeve bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| WSM-1214-20 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      |
| WSM-1214-25 | 12.0 | +0.032 +0.102 | 14.0 | 25.0      |
| WSM-1315-07 | 13.0 | +0.032 +0.102 | 15.0 | 7.0       |
| WSM-1315-10 | 13.0 | +0.032 +0.102 | 15.0 | 10.0      |
| WSM-1315-15 | 13.0 | +0.032 +0.102 | 15.0 | 15.0      |
| WSM-1315-20 | 13.0 | +0.032 +0.102 | 15.0 | 20.0      |
| WSM-1416-07 | 14.0 | +0.032 +0.102 | 16.0 | 7.25      |
| WSM-1416-10 | 14.0 | +0.032 +0.102 | 16.0 | 10.0      |
| WSM-1416-15 | 14.0 | +0.032 +0.102 | 16.0 | 15.0      |
| WSM-1416-20 | 14.0 | +0.032 +0.102 | 16.0 | 20.0      |
| WSM-1416-25 | 14.0 | +0.032 +0.102 | 16.0 | 25.0      |
| WSM-1416-33 | 14.0 | +0.032 +0.102 | 16.0 | 33.0      |
| WSM-1517-10 | 15.0 | +0.032 +0.102 | 17.0 | 10.0      |
| WSM-1517-15 | 15.0 | +0.032 +0.102 | 17.0 | 15.0      |
| WSM-1517-20 | 15.0 | +0.032 +0.102 | 17.0 | 20.0      |
| WSM-1517-25 | 15.0 | +0.032 +0.102 | 17.0 | 25.0      |
| WSM-1618-07 | 16.0 | +0.032 +0.102 | 18.0 | 7.0       |
| WSM-1618-08 | 16.0 | +0.032 +0.102 | 18.0 | 8.0       |
| WSM-1618-11 | 16.0 | +0.032 +0.102 | 18.0 | 11.5      |
| WSM-1618-12 | 16.0 | +0.032 +0.102 | 18.0 | 12.0      |
| WSM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| WSM-1618-20 | 16.0 | +0.032 +0.102 | 18.0 | 20.0      |
| WSM-1618-25 | 16.0 | +0.032 +0.102 | 18.0 | 25.0      |
| WSM-1618-30 | 16.0 | +0.032 +0.102 | 18.0 | 30.0      |
| WSM-1618-35 | 16.0 | +0.032 +0.102 | 18.0 | 35.0      |
| WSM-1618-45 | 16.0 | +0.032 +0.102 | 18.0 | 45.0      |
| WSM-1820-12 | 18.0 | +0.032 +0.102 | 20.0 | 12.0      |
| WSM-1820-15 | 18.0 | +0.032 +0.102 | 20.0 | 15.0      |
| WSM-1820-20 | 18.0 | +0.032 +0.102 | 20.0 | 20.0      |
| WSM-1820-25 | 18.0 | +0.032 +0.102 | 20.0 | 25.0      |
| WSM-1820-33 | 18.0 | +0.032 +0.102 | 20.0 | 33.0      |
| WSM-1820-35 | 18.0 | +0.032 +0.102 | 20.0 | 35.0      |
| WSM-1922-28 | 19.0 | +0.040 +0.124 | 22.0 | 28.0      |
| WSM-2022-11 | 20.0 | +0.040 +0.124 | 22.0 | 11.5      |
| WSM-2022-12 | 20.0 | +0.040 +0.124 | 22.0 | 12.0      |
| WSM-2022-15 | 20.0 | +0.040 +0.124 | 22.0 | 15.0      |
| WSM-2022-20 | 20.0 | +0.040 +0.124 | 22.0 | 20.0      |
| WSM-2022-30 | 20.0 | +0.040 +0.124 | 22.0 | 30.0      |
| WSM-2023-08 | 20.0 | +0.040 +0.124 | 23.0 | 8.0       |
| WSM-2023-12 | 20.0 | +0.040 +0.124 | 23.0 | 12.0      |
| WSM-2023-15 | 20.0 | +0.040 +0.124 | 23.0 | 15.0      |
| WSM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75



Sleeve bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| WSM-3236-30 | 32.0 | +0.050 +0.150 | 36.0 | 30.0      |
| WSM-3236-40 | 32.0 | +0.050 +0.150 | 36.0 | 40.0      |
| WSM-3539-20 | 35.0 | +0.050 +0.150 | 39.0 | 20.0      |
| WSM-3539-30 | 35.0 | +0.050 +0.150 | 39.0 | 30.0      |
| WSM-3539-40 | 35.0 | +0.050 +0.150 | 39.0 | 40.0      |
| WSM-3539-50 | 35.0 | +0.050 +0.150 | 39.0 | 50.0      |
| WSM-3540-07 | 35.0 | +0.050 +0.150 | 40.0 | 7.0       |
| WSM-4044-20 | 40.0 | +0.050 +0.150 | 44.0 | 20.0      |
| WSM-4044-30 | 40.0 | +0.050 +0.150 | 44.0 | 30.0      |
| WSM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 40.0      |
| WSM-4044-50 | 40.0 | +0.050 +0.150 | 44.0 | 50.0      |
| WSM-4550-30 | 45.0 | +0.050 +0.150 | 50.0 | 30.0      |
| WSM-4550-50 | 45.0 | +0.050 +0.150 | 50.0 | 50.0      |
| WSM-5055-20 | 50.0 | +0.050 +0.150 | 55.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

| Part number    | d1    | d1-Tolerance* | d2    | b1<br>h13 |
|----------------|-------|---------------|-------|-----------|
| WSM-5055-30    | 50.0  | +0.050 +0.150 | 55.0  | 30.0      |
| WSM-5055-40    | 50.0  | +0.050 +0.150 | 55.0  | 40.0      |
| WSM-5055-50    | 50.0  | +0.050 +0.150 | 55.0  | 50.0      |
| WSM-5055-55    | 50.0  | +0.050 +0.150 | 55.0  | 55.0      |
| WSM-5560-40    | 55.0  | +0.060 +0.180 | 60.0  | 40.0      |
| WSM-5560-60    | 55.0  | +0.060 +0.180 | 60.0  | 60.0      |
| WSM-6065-30    | 60.0  | +0.060 +0.180 | 65.0  | 30.0      |
| WSM-6065-60    | 60.0  | +0.060 +0.180 | 65.0  | 60.0      |
| WSM-6570-60    | 65.0  | +0.060 +0.180 | 70.0  | 60.0      |
| WSM-7075-60    | 70.0  | +0.060 +0.180 | 75.0  | 60.0      |
| WSM-7580-100   | 75.0  | +0.060 +0.180 | 80.0  | 100.0     |
| WSM-8085-100   | 80.0  | +0.060 +0.180 | 85.0  | 100.0     |
| WSM-9095-100   | 90.0  | +0.072 +0.212 | 95.0  | 100.0     |
| WSM-100105-100 | 100.0 | +0.072 +0.212 | 105.0 | 100.0     |



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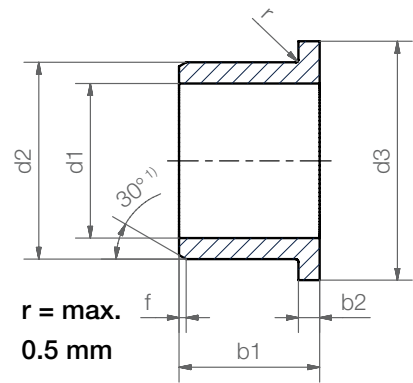


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Flange bearing



Order key

WFM-0204-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® W300

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| WFM-0204-03   | 2.5  | +0.014 +0.054 | 4.0  | 6.5       | 3.0       | 0.75        |
| WFM-0304-03   | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 3.0       | 0.75        |
| WFM-0304-05   | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 5.0       | 0.75        |
| WFM-0405-03   | 4.0  | +0.020 +0.068 | 5.5  | 9.5       | 3.0       | 0.75        |
| WFM-0405-04   | 4.0  | +0.020 +0.068 | 5.5  | 9.5       | 4.0       | 0.75        |
| WFM-0405-06   | 4.0  | +0.020 +0.068 | 5.5  | 9.5       | 6.0       | 0.75        |
| WFM-0506-08   | 5.0  | +0.010 +0.040 | 6.0  | 10.0      | 8.0       | 0.5         |
| WFM-0507-04   | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 4.0       | 1.0         |
| WFM-0507-05   | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 5.0       | 1.0         |
| WFM-0608-04   | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 4.0       | 1.0         |
| WFM-0608-06   | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| WFM-0608-08   | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 8.0       | 1.0         |
| WFM-0608-10   | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 10.0      | 1.0         |
| WFM-0608-15   | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 15.0      | 1.0         |
| WFM-0709-10   | 7.0  | +0.025 +0.083 | 9.0  | 15.0      | 10.0      | 1.0         |
| WFM-0709-12   | 7.0  | +0.025 +0.083 | 9.0  | 15.0      | 12.0      | 1.0         |
| WFM-0810-02   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 2.7       | 1.0         |
| WFM-0810-04   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 4.0       | 1.0         |
| WFM-0810-05   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 5.5       | 1.0         |
| WFM-0810-07   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 7.5       | 1.0         |
| WFM-0810-09   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 9.5       | 1.0         |
| WFM-0810-10   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| WFM-0810-23   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 23.0      | 1.0         |
| WFM-0810-30   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 30.0      | 1.0         |
| WFM-081015-05 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 5.0       | 1.0         |
| WFM-1012-04   | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 4.0       | 1.0         |

\* after pressfit. Testing methods ► page 75



delivery from stock  
time



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Flange bearing

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|--------------|------|---------------|------|-----------|-----------|-------------|
| WFM-1012-05  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 5.0       | 1.0         |
| WFM-1012-06  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 6.0       | 1.0         |
| WFM-1012-07  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 7.0       | 1.0         |
| WFM-1012-09  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 9.0       | 1.0         |
| WFM-1012-10  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| WFM-1012-12  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 12.0      | 1.0         |
| WFM-1012-15  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 15.0      | 1.0         |
| WFM-1012-17  | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 17.0      | 1.0         |
| WFM-1214-04  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 4.0       | 1.0         |
| WFM-1214-044 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 4.4       | 1.0         |
| WFM-1214-06  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 6.0       | 1.0         |
| WFM-1214-07  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 7.0       | 1.0         |
| WFM-1214-09  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 9.0       | 1.0         |
| WFM-1214-10  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 10.0      | 1.0         |
| WFM-1214-11  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 11.0      | 1.0         |
| WFM-1214-12  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| WFM-1214-15  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 15.0      | 1.0         |
| WFM-1214-17  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 17.0      | 1.0         |
| WFM-1214-20  | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 20.0      | 1.0         |
| WFM-1315-06  | 13.0 | +0.032 +0.102 | 15.0 | 22.0      | 6.0       | 1.0         |
| WFM-1416-04  | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 4.0       | 1.0         |
| WFM-1416-05  | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 5.0       | 1.0         |
| WFM-1416-08  | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 8.0       | 1.0         |
| WFM-1416-12  | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 12.0      | 1.0         |
| WFM-1416-17  | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 17.0      | 1.0         |
| WFM-1416-29  | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 29.0      | 1.0         |
| WFM-1517-09  | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 9.0       | 1.0         |
| WFM-1517-12  | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 12.0      | 1.0         |
| WFM-1517-17  | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 17.0      | 1.0         |
| WFM-1517-20  | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 20.0      | 1.0         |
| WFM-1618-09  | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 9.0       | 1.0         |
| WFM-1618-12  | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 12.0      | 1.0         |
| WFM-1618-17  | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| WFM-1719-12  | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 12.0      | 1.0         |
| WFM-1719-18  | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 18.0      | 1.0         |
| WFM-1719-25  | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 25.0      | 1.0         |
| WFM-1820-06  | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 6.0       | 1.0         |
| WFM-1820-12  | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 12.0      | 1.0         |
| WFM-1820-17  | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 17.0      | 1.0         |
| WFM-1820-22  | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 22.0      | 1.0         |
| WFM-2023-11  | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 11.5      | 1.5         |
| WFM-2023-14  | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 14.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Flange bearing

Dimensions [mm]

| Part number    | d1    | d1-Tolerance* | d2    | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|-------|---------------|-------|-----------|-----------|-------------|
| WFM-2023-16    | 20.0  | +0.040 +0.124 | 23.0  | 30.0      | 16.5      | 1.5         |
| WFM-2023-21    | 20.0  | +0.040 +0.124 | 23.0  | 30.0      | 21.5      | 1.5         |
| WFM-2427-10    | 24.0  | +0.040 +0.124 | 27.0  | 32.0      | 10.5      | 1.5         |
| WFM-2528-11    | 25.0  | +0.040 +0.124 | 28.0  | 35.0      | 11.5      | 1.5         |
| WFM-2528-16    | 25.0  | +0.040 +0.124 | 28.0  | 35.0      | 16.5      | 1.5         |
| WFM-2528-21    | 25.0  | +0.040 +0.124 | 28.0  | 35.0      | 21.0      | 1.5         |
| WFM-2528-30    | 25.0  | +0.040 +0.124 | 28.0  | 32.0      | 30.0      | 1.5         |
| WFM-252831-13  | 25.0  | +0.040 +0.124 | 28.0  | 31.0      | 13.0      | 1.5         |
| WFM-2830-36    | 28.0  | +0.040 +0.124 | 30.0  | 35.0      | 36.0      | 1.0         |
| WFM-3034-10    | 30.0  | +0.040 +0.124 | 34.0  | 42.0      | 10.0      | 2.0         |
| WFM-3034-16    | 30.0  | +0.040 +0.124 | 34.0  | 42.0      | 16.0      | 2.0         |
| WFM-3034-26    | 30.0  | +0.040 +0.124 | 34.0  | 42.0      | 26.0      | 2.0         |
| WFM-3034-37    | 30.0  | +0.040 +0.124 | 34.0  | 42.0      | 37.0      | 2.0         |
| WFM-3236-16    | 32.0  | +0.050 +0.150 | 36.0  | 40.0      | 16.0      | 2.0         |
| WFM-3236-26    | 32.0  | +0.050 +0.150 | 36.0  | 40.0      | 26.0      | 2.0         |
| WFM-3539-09    | 35.0  | +0.050 +0.150 | 39.0  | 47.0      | 9.0       | 2.0         |
| WFM-3539-16    | 35.0  | +0.050 +0.150 | 39.0  | 47.0      | 16.0      | 2.0         |
| WFM-3539-26    | 35.0  | +0.050 +0.150 | 39.0  | 47.0      | 26.0      | 2.0         |
| WFM-353950-35  | 35.0  | +0.050 +0.150 | 39.0  | 50.0      | 35.0      | 2.0         |
| WFM-3842-22    | 38.0  | +0.050 +0.150 | 42.0  | 50.0      | 22.0      | 2.0         |
| WFM-4044-30    | 40.0  | +0.050 +0.150 | 44.0  | 52.0      | 30.0      | 2.0         |
| WFM-4044-40    | 40.0  | +0.050 +0.150 | 44.0  | 52.0      | 40.0      | 2.0         |
| WFM-4550-50    | 45.0  | +0.050 +0.150 | 50.0  | 58.0      | 50.0      | 2.0         |
| WFM-5055-40    | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 40.0      | 2.0         |
| WFM-5055-50    | 50.0  | +0.050 +0.150 | 55.0  | 63.0      | 50.0      | 2.0         |
| WFM-5560-60    | 55.0  | +0.060 +0.180 | 60.0  | 68.0      | 60.0      | 2.0         |
| WFM-5762-40    | 57.0  | +0.060 +0.180 | 62.0  | 67.0      | 40.0      | 2.0         |
| WFM-6065-60    | 60.0  | +0.060 +0.180 | 65.0  | 73.0      | 60.0      | 2.0         |
| WFM-6570-60    | 65.0  | +0.060 +0.180 | 70.0  | 78.0      | 60.0      | 2.0         |
| WFM-7075-100   | 70.0  | +0.060 +0.180 | 75.0  | 83.0      | 100.0     | 2.5         |
| WFM-7580-100   | 75.0  | +0.060 +0.180 | 80.0  | 88.0      | 100.0     | 2.5         |
| WFM-8085-100   | 80.0  | +0.060 +0.180 | 85.0  | 93.0      | 100.0     | 2.5         |
| WFM-9095-100   | 90.0  | +0.072 +0.212 | 95.0  | 103.0     | 100.0     | 2.5         |
| WFM-100105-100 | 100.0 | +0.072 +0.212 | 105.0 | 113.0     | 100.0     | 2.5         |
| WFM-120125-100 | 120.0 | +0.072 +0.212 | 125.0 | 133.0     | 100.0     | 2.5         |

\* after pressfit. Testing methods ► page 75



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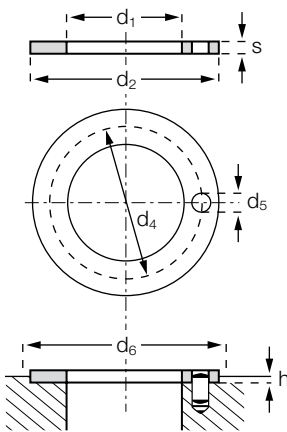


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Thrust washer



Order key

WTM-0509-006

- Thickness s
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form T)
- Material iglidur® W300

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

| Part number    | d1<br>+0.25 | d2<br>-0.25 | s<br>-0.05 | d4<br>-0.12<br>+0.12 | d5<br>+0.375<br>+0.125 | h<br>+0.2<br>-0.2 | d6<br>+0.12 |
|----------------|-------------|-------------|------------|----------------------|------------------------|-------------------|-------------|
| WTM-0509-006   | 5.0         | 9.5         | 0.6        | **                   | **                     | 0.3               | 9.5         |
| WTM-0620-015   | 6.0         | 20.0        | 1.5        | 13.0                 | 1.5                    | 1.0               | 20.0        |
| WTM-0818-015   | 8.0         | 18.0        | 1.5        | 13.0                 | 1.5                    | 1.0               | 18.0        |
| WTM-1018-010   | 10.0        | 18.0        | 1.0        | **                   | **                     | 0.7               | 18.0        |
| WTM-1018-015   | 10.0        | 18.0        | 1.5        | **                   | **                     | 1.0               | 18.0        |
| WTM-1224-015   | 12.0        | 24.0        | 1.5        | 18.0                 | 1.5                    | 1.0               | 24.0        |
| WTM-1426-015   | 14.0        | 26.0        | 1.5        | 20.0                 | 2.0                    | 1.0               | 26.0        |
| WTM-1524-015   | 15.0        | 24.0        | 1.5        | 19.5                 | 1.5                    | 1.0               | 24.0        |
| WTM-1630-015   | 16.0        | 30.0        | 1.5        | 23.0                 | 2.0                    | 1.0               | 30.0        |
| WTM-1832-015   | 18.0        | 32.0        | 1.5        | 25.0                 | 2.0                    | 1.0               | 32.0        |
| WTM-1844-015   | 18.0        | 44.0        | 1.5        | 30.0                 | 7.0                    | 1.0               | 44.0        |
| WTM-2036-015   | 20.0        | 36.0        | 1.5        | 28.0                 | 3.0                    | 1.0               | 36.0        |
| WTM-2238-015   | 22.0        | 38.0        | 1.5        | 30.0                 | 3.0                    | 1.0               | 38.0        |
| WTM-2442-015   | 24.0        | 42.0        | 1.5        | 33.0                 | 3.0                    | 1.0               | 42.0        |
| WTM-2644-015   | 26.0        | 44.0        | 1.5        | 35.0                 | 3.0                    | 1.0               | 44.0        |
| WTM-2848-015   | 28.0        | 48.0        | 1.5        | 38.0                 | 4.0                    | 1.0               | 48.0        |
| WTM-3254-015   | 32.0        | 54.0        | 1.5        | 43.0                 | 4.0                    | 1.0               | 54.0        |
| WTM-3862-015   | 38.0        | 62.0        | 1.5        | 50.0                 | 4.0                    | 1.0               | 62.0        |
| WTM-4266-015   | 42.0        | 66.0        | 1.5        | 54.0                 | 4.0                    | 1.0               | 66.0        |
| WTM-4874-020   | 48.0        | 74.0        | 2.0        | 61.0                 | 4.0                    | 1.5               | 74.0        |
| WTM-5278-020   | 52.0        | 78.0        | 2.0        | 65.0                 | 4.0                    | 1.5               | 78.0        |
| WTM-6290-020   | 62.0        | 90.0        | 2.0        | 76.0                 | 4.0                    | 1.5               | 90.0        |
| WTM-82110-020  | 82.0        | 110.0       | 2.0        | **                   | **                     | 1.5               | 110.0       |
| WTM-102130-020 | 102.0       | 130.0       | 2.0        | **                   | **                     | 1.5               | 130.0       |
| WTM-120150-020 | 120.0       | 150.0       | 2.0        | **                   | **                     | 1.5               | 150.0       |

\*\* Design without fixing bore



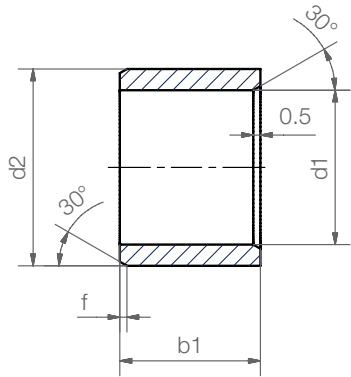
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Sleeve bearing



Order key

WSI-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® W300

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d1*   |       | Housing bore |       | Shaft size |       |
|-------------|------|-------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      | max.  | min.  | max.         | min.  | max.       | min.  |
| WSI-0203-03 | 1/8  | 3/16  | 3/16 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| WSI-0203-04 | 1/8  | 3/16  | 1/4  | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| WSI-0203-06 | 1/8  | 3/16  | 3/8  | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| WSI-0304-04 | 3/16 | 1/4   | 1/4  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| WSI-0304-06 | 3/16 | 1/4   | 3/8  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| WSI-0304-08 | 3/16 | 1/4   | 1/2  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| WSI-0405-03 | 1/4  | 5/16  | 3/16 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WSI-0405-04 | 1/4  | 5/16  | 1/4  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WSI-0405-05 | 1/4  | 5/16  | 5/16 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WSI-0405-06 | 1/4  | 5/16  | 3/8  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WSI-0405-08 | 1/4  | 5/16  | 1/2  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WSI-0506-04 | 5/16 | 3/8   | 1/4  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WSI-0506-06 | 5/16 | 3/8   | 3/8  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WSI-0506-08 | 5/16 | 3/8   | 1/2  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WSI-0506-12 | 5/16 | 3/8   | 3/4  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WSI-0607-04 | 3/8  | 15/32 | 1/4  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WSI-0607-06 | 3/8  | 15/32 | 3/8  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WSI-0607-07 | 3/8  | 15/32 | 7/16 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WSI-0607-08 | 3/8  | 15/32 | 1/2  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WSI-0607-12 | 3/8  | 15/32 | 3/4  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WSI-0608-12 | 3/8  | 17/32 | 3/4  | .3773 | .3750 | .5316        | .5309 | .3740      | .3731 |
| WSI-0708-04 | 7/16 | 17/32 | 1/4  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| WSI-0708-08 | 7/16 | 17/32 | 1/2  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| WSI-0809-03 | 1/2  | 19/32 | 3/16 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| WSI-0809-04 | 1/2  | 19/32 | 1/4  | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |

\* after pressfit. Testing methods ► page 75



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Sleeve bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1     | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|--------|--------|--------|--------------|--------|------------|--------|
|             |       |         |        | max.   | min.   | max.         | min.   | max.       | min.   |
| WSI-0809-06 | 1/2   | 19/32   | 3/8    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| WSI-0809-08 | 1/2   | 19/32   | 1/2    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| WSI-0809-10 | 1/2   | 19/32   | 5/8    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| WSI-0809-12 | 1/2   | 19/32   | 3/4    | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| WSI-0809-16 | 1/2   | 19/32   | 1      | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| WSI-0810-08 | 1/2   | 5/8     | 1/2    | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| WSI-0810-10 | 1/2   | 5/8     | 5/8    | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| WSI-0810-12 | 1/2   | 5/8     | 3/4    | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| WSI-0810-16 | 1/2   | 5/8     | 1      | .5040  | .5013  | .6260        | .6250  | .5000      | .4990  |
| WSI-0910-08 | 9/16  | 5/8     | 1/2    | .5655  | .5627  | .6566        | .6559  | .5615      | .5605  |
| WSI-0910-12 | 9/16  | 5/8     | 3/4    | .5655  | .5627  | .6566        | .6559  | .5615      | .5605  |
| WSI-1011-04 | 5/8   | 23/32   | 1/4    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WSI-1011-06 | 5/8   | 23/32   | 3/8    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WSI-1011-08 | 5/8   | 23/32   | 1/2    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WSI-1011-10 | 5/8   | 23/32   | 5/8    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WSI-1011-12 | 5/8   | 23/32   | 3/4    | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WSI-1011-16 | 5/8   | 23/32   | 1      | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WSI-1112-12 | 11/16 | 25/32   | 3/4    | .6906  | .6879  | .7817        | .7809  | .6865      | .6855  |
| WSI-1214-08 | 3/4   | 7/8     | 1/2    | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WSI-1214-12 | 3/4   | 7/8     | 3/4    | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WSI-1214-16 | 3/4   | 7/8     | 1      | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WSI-1214-24 | 3/4   | 7/8     | 1 1/2  | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WSI-1416-04 | 7/8   | 1       | 1/4    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WSI-1416-06 | 7/8   | 1       | 3/8    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WSI-1416-08 | 7/8   | 1       | 1/2    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WSI-1416-10 | 7/8   | 1       | 5/8    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WSI-1416-12 | 7/8   | 1       | 3/4    | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WSI-1416-16 | 7/8   | 1       | 1      | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WSI-1416-24 | 7/8   | 1       | 1 1/2  | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WSI-1618-06 | 1     | 1 1/8   | 3/8    | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WSI-1618-08 | 1     | 1 1/8   | 1/2    | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WSI-1618-12 | 1     | 1 1/8   | 3/4    | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WSI-1618-16 | 1     | 1 1/8   | 1      | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WSI-1618-20 | 1     | 1 1/8   | 1 5/16 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WSI-1618-22 | 1     | 1 1/8   | 1 3/8  | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WSI-1618-24 | 1     | 1 1/8   | 1 1/2  | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WSI-1820-12 | 1 1/8 | 1 9/32  | 3/4    | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| WSI-2022-14 | 1 1/4 | 1 13/32 | 7/8    | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WSI-2022-16 | 1 1/4 | 1 13/32 | 1      | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WSI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4  | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WSI-2022-24 | 1 1/4 | 1 13/32 | 1 1/2  | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WSI-2224-16 | 1 3/8 | 1 17/32 | 1      | 1.3798 | 1.3758 | 1.5318       | 1.5308 | 1.3738     | 1.3722 |

\* after pressfit. Testing methods ► page 75



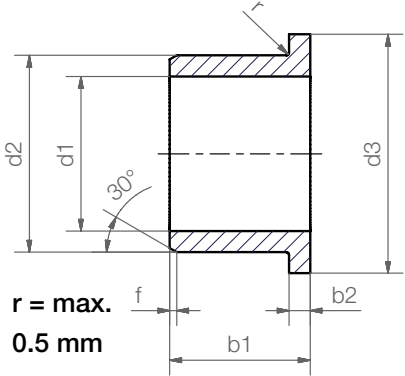
Sleeve bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       | max.   | min.   | max.         | min.   | max.       | min.   |
| WSI-2224-24 | 1 3/8 | 1 17/32 | 1 1/2 | 1.3798 | 1.3758 | 1.5318       | 1.5308 | 1.3738     | 1.3722 |
| WSI-2426-12 | 1 1/2 | 1 21/32 | 3/4   | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| WSI-2426-16 | 1 1/2 | 1 21/32 | 1     | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| WSI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| WSI-2426-44 | 1 1/2 | 1 21/32 | 2 3/4 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| WSI-2629-16 | 1 5/8 | 1 25/32 | 1     | 1.6297 | 1.6258 | 1.7818       | 1.7808 | 1.6238     | 1.6222 |
| WSI-2629-20 | 1 5/8 | 1 25/32 | 1 1/4 | 1.6297 | 1.6258 | 1.7818       | 1.7808 | 1.6238     | 1.6222 |
| WSI-2831-16 | 1 3/4 | 1 15/16 | 1     | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| WSI-2831-24 | 1 3/4 | 1 15/16 | 1 1/2 | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| WSI-2831-32 | 1 3/4 | 1 15/16 | 2     | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| WSI-2831-48 | 1 3/4 | 1 15/16 | 3     | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| WSI-3235-16 | 2     | 2 3/16  | 1     | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| WSI-3235-24 | 2     | 2 3/16  | 1 1/2 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| WSI-3235-32 | 2     | 2 3/16  | 2     | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| WSI-3639-32 | 2 1/4 | 2 7/16  | 2     | 2.2577 | 2.2531 | 2.4377       | 2.4365 | 2.2507     | 2.2489 |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

WFI-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® W300

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d3   | b2   | d1*   |       | Housing bore |       | Shaft aize |       |
|-------------|------|-------|------|------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      |      |      | max.  | min.  | max.         | min.  | max.       | min.  |
| WFI-0203-03 | 1/8  | 3/16  | 3/16 | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| WFI-0203-04 | 1/8  | 3/16  | 1/4  | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| WFI-0203-06 | 1/8  | 3/16  | 3/8  | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| WFI-0304-02 | 3/16 | 1/4   | 1/8  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| WFI-0304-04 | 3/16 | 1/4   | 1/4  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| WFI-0304-06 | 3/16 | 1/4   | 3/8  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| WFI-0304-08 | 3/16 | 1/4   | 1/2  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| WFI-0405-04 | 1/4  | 5/16  | 1/4  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WFI-0405-05 | 1/4  | 5/16  | 5/16 | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WFI-0405-06 | 1/4  | 5/16  | 3/8  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WFI-0405-08 | 1/4  | 5/16  | 1/2  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WFI-0405-12 | 1/4  | 5/16  | 3/4  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| WFI-0506-04 | 5/16 | 3/8   | 1/4  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WFI-0506-06 | 5/16 | 3/8   | 3/8  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WFI-0506-08 | 5/16 | 3/8   | 1/2  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WFI-0506-12 | 5/16 | 3/8   | 3/4  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| WFI-0607-04 | 3/8  | 15/32 | 1/4  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WFI-0607-06 | 3/8  | 15/32 | 3/8  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WFI-0607-08 | 3/8  | 15/32 | 1/2  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WFI-0607-12 | 3/8  | 15/32 | 3/4  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| WFI-0708-08 | 7/16 | 17/32 | 1/2  | .750 | .046 | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| WFI-0809-04 | 1/2  | 19/32 | 1/4  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| WFI-0809-06 | 1/2  | 19/32 | 3/8  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| WFI-0809-08 | 1/2  | 19/32 | 1/2  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| WFI-0809-12 | 1/2  | 19/32 | 3/4  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |

\* after pressfit. Testing methods ► page 75



delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/w300](http://www.igus.co.uk/en/w300)



Flange bearing

Dimensions [Inch]

| Part number   | d1    | d2      | b1    | d3    | b2   | d1*    |        | Housing bore |        | Shaft aize |        |
|---------------|-------|---------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|               |       |         |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| WFI-0809-16   | 1/2   | 19/32   | 1     | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| WFI-1011-045  | 5/8   | 23/32   | 9/32  | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WFI-1011-08   | 5/8   | 23/32   | 1/2   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WFI-1011-12   | 5/8   | 23/32   | 3/4   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WFI-1011-16   | 5/8   | 23/32   | 1     | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WFI-1011-24   | 5/8   | 23/32   | 1 1/2 | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| WFI-1214-08   | 3/4   | 7/8     | 1/2   | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WFI-1214-10   | 3/4   | 7/8     | 5/8   | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WFI-1214-12   | 3/4   | 7/8     | 3/4   | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WFI-1214-16   | 3/4   | 7/8     | 1     | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WFI-1214-24   | 3/4   | 7/8     | 1 1/2 | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| WFI-1416-04   | 7/8   | 1       | 1/4   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1416-075  | 7/8   | 1       | 15/32 | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1416-08   | 7/8   | 1       | 1/2   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1416-115  | 7/8   | 1       | 23/32 | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1416-12   | 7/8   | 1       | 3/4   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1416-16   | 7/8   | 1       | 1     | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1416-20   | 7/8   | 1       | 1 1/4 | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1416-24   | 7/8   | 1       | 1 1/2 | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-141618-10 | 7/8   | 1       | 5/8   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-141620-11 | 7/8   | 1       | 11/16 | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| WFI-1618-08   | 1     | 1 1/8   | 1/2   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WFI-1618-12   | 1     | 1 1/8   | 3/4   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WFI-1618-16   | 1     | 1 1/8   | 1     | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WFI-1618-20   | 1     | 1 1/8   | 1 1/4 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WFI-1618-24   | 1     | 1 1/8   | 1 1/2 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| WFI-1820-08   | 1 1/8 | 1 9/32  | 1/2   | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| WFI-1820-12   | 1 1/8 | 1 9/32  | 3/4   | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| WFI-1820-24   | 1 1/8 | 1 9/32  | 1 1/2 | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| WFI-2022-12   | 1 1/4 | 1 13/32 | 3/4   | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WFI-2022-14   | 1 1/4 | 1 13/32 | 7/8   | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WFI-2022-16   | 1 1/4 | 1 13/32 | 1     | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WFI-2022-20   | 1 1/4 | 1 13/32 | 1 1/4 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WFI-2022-24   | 1 1/4 | 1 13/32 | 1 1/2 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| WFI-2224-16   | 1 3/8 | 1 17/32 | 1     | 1.875 | .078 | 1.3798 | 1.3758 | 1.5318       | 1.5308 | 1.3738     | 1.3722 |
| WFI-2426-12   | 1 1/2 | 1 21/32 | 3/4   | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| WFI-2426-16   | 1 1/2 | 1 21/32 | 1     | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| WFI-2426-24   | 1 1/2 | 1 21/32 | 1 1/2 | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| WFI-2831-16   | 1 3/4 | 1 15/16 | 1     | 2.375 | .093 | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| WFI-2831-24   | 1 3/4 | 1 15/16 | 1 1/2 | 2.375 | .093 | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| WFI-2831-32   | 1 3/4 | 1 15/16 | 2     | 2.375 | .093 | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| WFI-3235-16   | 2     | 2 3/16  | 1     | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |

\* after pressfit. Testing methods ► page 75



Flange bearing

Dimensions [Inch]

| Part number | d1 | d2     | b1    | d3    | b2   | d1*    |        | Housing bore |        | Shaft aize |        |
|-------------|----|--------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |    |        |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| WFI-3235-24 | 2  | 2 3/16 | 1 1/2 | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| WFI-3235-32 | 2  | 2 3/16 | 2     | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |

\* after pressfit. Testing methods ► page 75



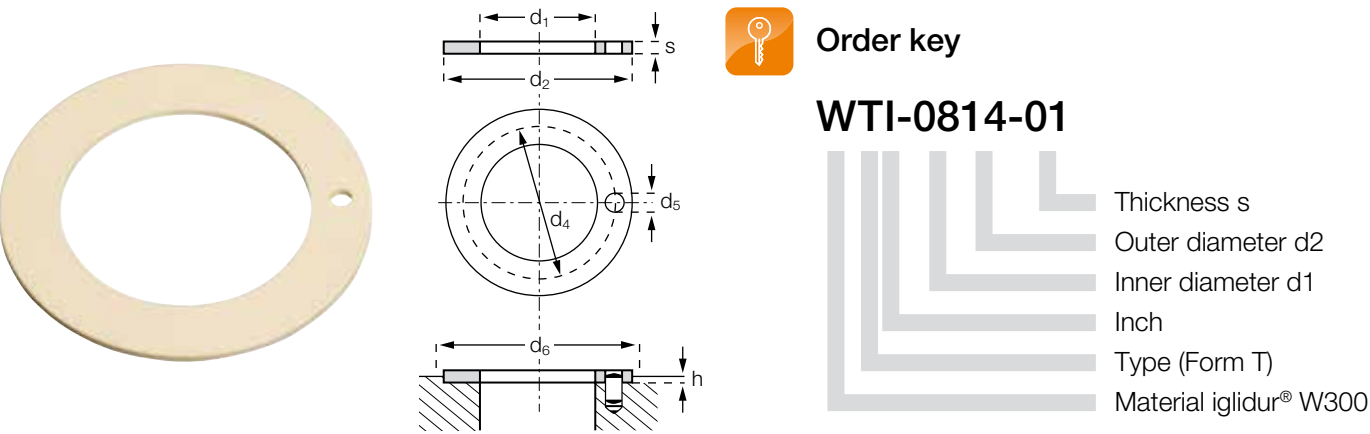
delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/w300](http://www.igus.co.uk/en/w300)



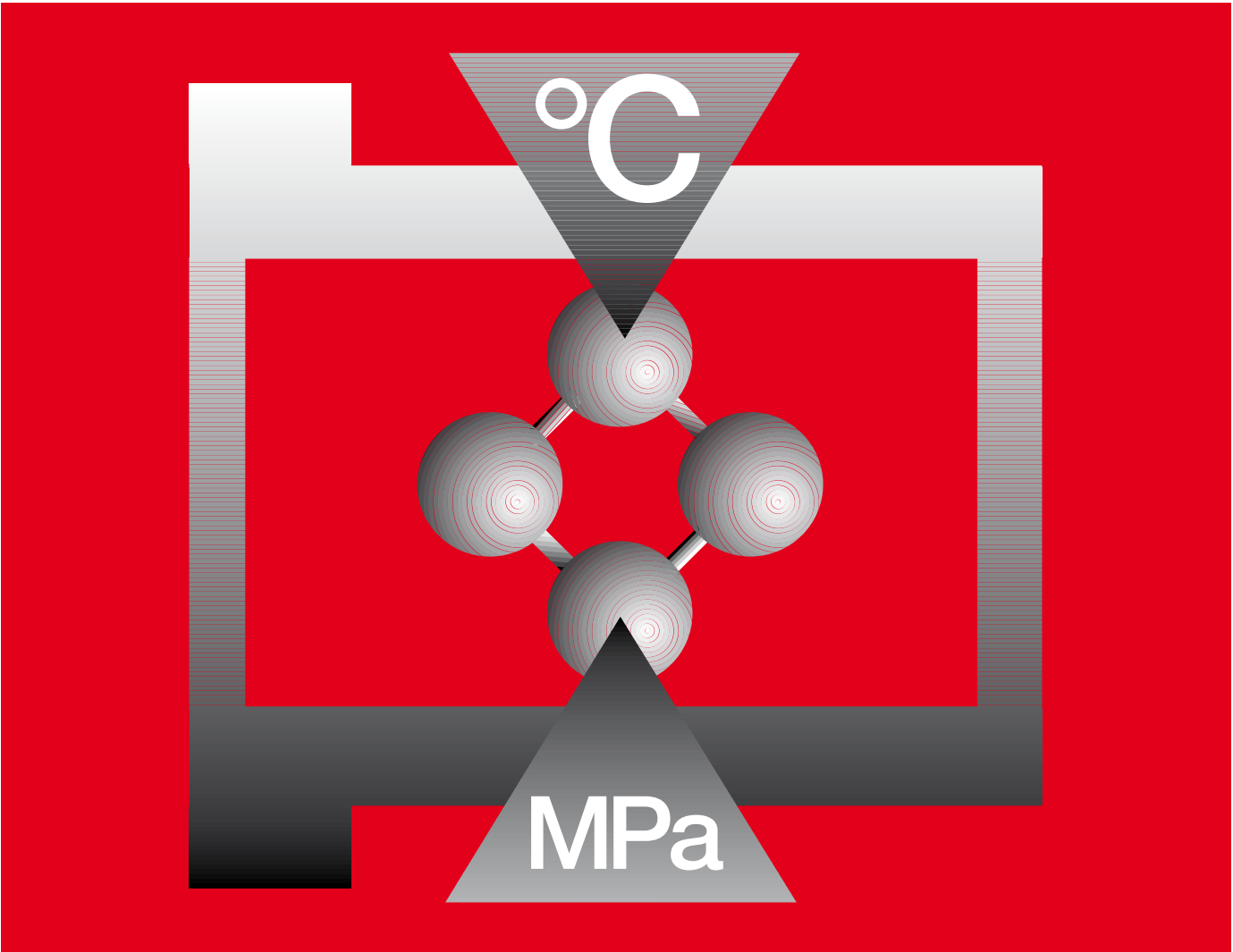
Thrust washer



Dimensions according to ISO 3547-1 and special dimensions

Dimensions [Inch]

| Part number | d1<br>+.010 | d2<br>-.010 | s<br>-.0020 | d4<br>±.005 | d5<br>.015 + .005 | h<br>+.008 | d6<br>+.005 |
|-------------|-------------|-------------|-------------|-------------|-------------------|------------|-------------|
| WTI-0814-01 | .500        | .875        | .0585       | .692        | .067              | .040       | .875        |
| WTI-1018-01 | .625        | 1.125       | .0585       | .880        | .099              | .040       | 1.125       |
| WTI-1220-01 | .750        | 1.250       | .0585       | 1.005       | .099              | .040       | 1.250       |
| WTI-1424-01 | .875        | 1.500       | .0585       | 1.192       | .130              | .040       | 1.500       |
| WTI-1628-01 | 1.000       | 1.750       | .0585       | 1.380       | .130              | .040       | 1.750       |
| WTI-2034-01 | 1.250       | 2.125       | .0585       | 1.692       | .161              | .040       | 2.125       |
| WTI-2440-01 | 1.500       | 2.500       | .0585       | 2.005       | .192              | .040       | 2.500       |
| WTI-2844-01 | 1.750       | 2.750       | .0585       | 2.255       | .192              | .040       | 2.750       |
| WTI-3248-01 | 2.000       | 3.000       | .0895       | 2.505       | .192              | .070       | 3.000       |



# High temperature and chemical resistance: The High-Tech Problem Solver – iglidur® X

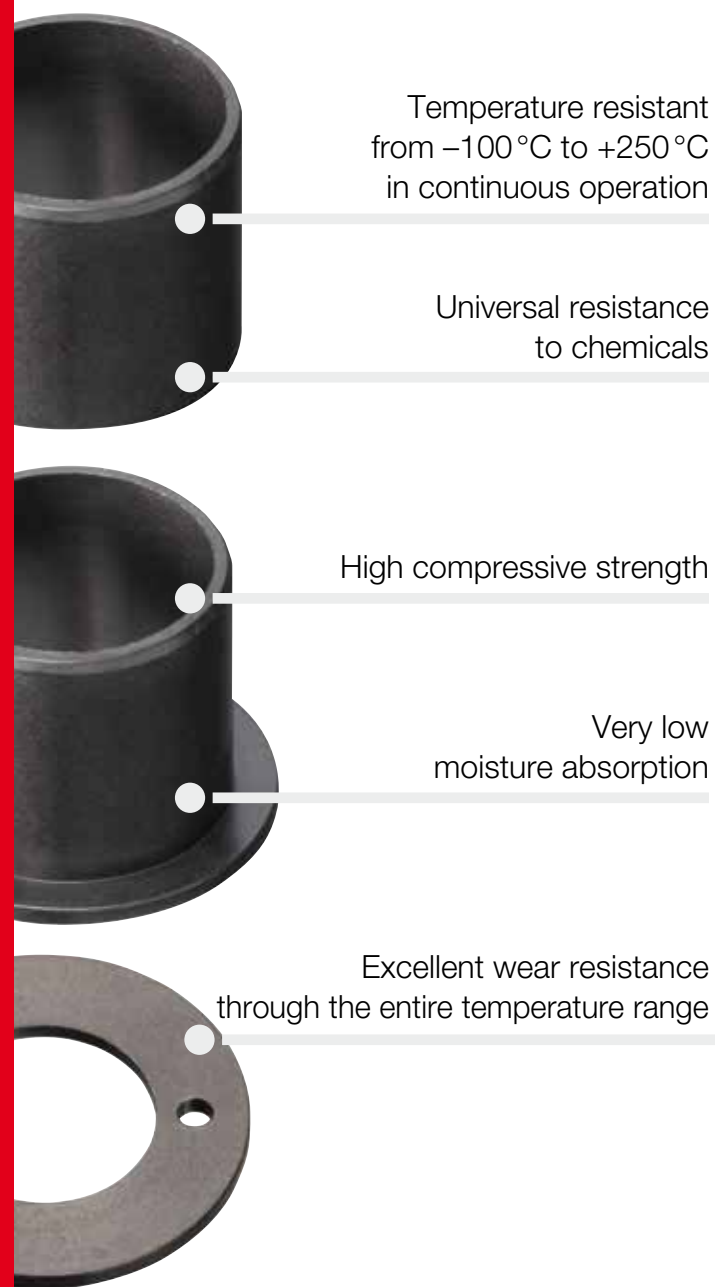


- Over 250 dimensions available from stock
- Temperature resistant from -100 °C to +250 °C in continuous operation
- Universal resistance to chemicals
- High compressive strength
- Very low moisture absorption
- Excellent wear resistance through the entire temperature range

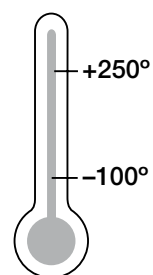
delivery from stock  
time

prices price list online  
[www.igus.co.uk/en/w300](http://www.igus.co.uk/en/w300)

**High temperature and chemical resistance.** iglidur® X is defined by its combination of high temperature resistance with compressive strength, along with high resistance to chemicals. iglidur® X is designed for higher speeds than other iglidur® bearings.



Temperature



## When to use it?

- For pressure loads up to 150 MPa
- For linear movements with stainless steel at high temperatures
- Universal resistance to chemicals
- Temperature resistant from -100 °C to +250 °C in continuous operation (short term to +315 °C)
- Very low moisture absorption
- High wear resistance over the entire temperature range



## When not to use it?

- For very low wear at high loads
  - ▶ iglidur® Q2, page 555
  - ▶ iglidur® Z, page 327
- For economical underwater applications
  - ▶ iglidur® H370, page 375
- For edge pressure
  - ▶ iglidur® Z, page 327

## Product range

3 types  
> 250 dimensions  
Ø 2–75 mm



## Typical sectors of industry and application areas

- Beverage technology ● Woodworking
- Plastic processing industry ● Aerospace engineering ● Cleanroom etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/bottle-filling](http://www.igus.co.uk/bottle-filling)



▶ [www.igus.co.uk/drillrig](http://www.igus.co.uk/drillrig)



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| Material properties table                              |  |                                    |                   |
|--------------------------------------------------------|--|------------------------------------|-------------------|
| General properties                                     |  | Unit                               | iglidur® X        |
| Density                                                |  | g/cm³                              | 1.44              |
| Colour                                                 |  |                                    | black             |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.1               |
| Max. water absorption                                  |  | % weight                           | 0.5               |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.09–0.27         |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 1.32              |
| Mechanical properties                                  |  |                                    |                   |
| Modulus of elasticity                                  |  | MPa                                | 8,100             |
| Tensile strength at +20 °C                             |  | MPa                                | 170               |
| Compressive strength                                   |  | MPa                                | 100               |
| Max. static surface pressure (+20 °C)                  |  | MPa                                | 150               |
| Shore-D Hardness                                       |  |                                    | 85                |
| Physical and thermal properties                        |  |                                    |                   |
| Max. long term application temperature                 |  | °C                                 | +250              |
| Max. short term application temperature                |  | °C                                 | +315              |
| Min. application temperature                           |  | °C                                 | −100              |
| Thermal conductivity                                   |  | W/m · K                            | 0.6               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>−1</sup> · 10 <sup>−5</sup> | 5                 |
| Electrical properties <sup>1)</sup>                    |  |                                    |                   |
| Specific volume resistance                             |  | Ωcm                                | < 10 <sup>5</sup> |
| Surface resistance                                     |  | Ω                                  | < 10 <sup>3</sup> |

<sup>2)</sup> The good conductivity of this product might lead to the corrosion of metallic counterparts under certain conditions.

Table 01: Material properties table

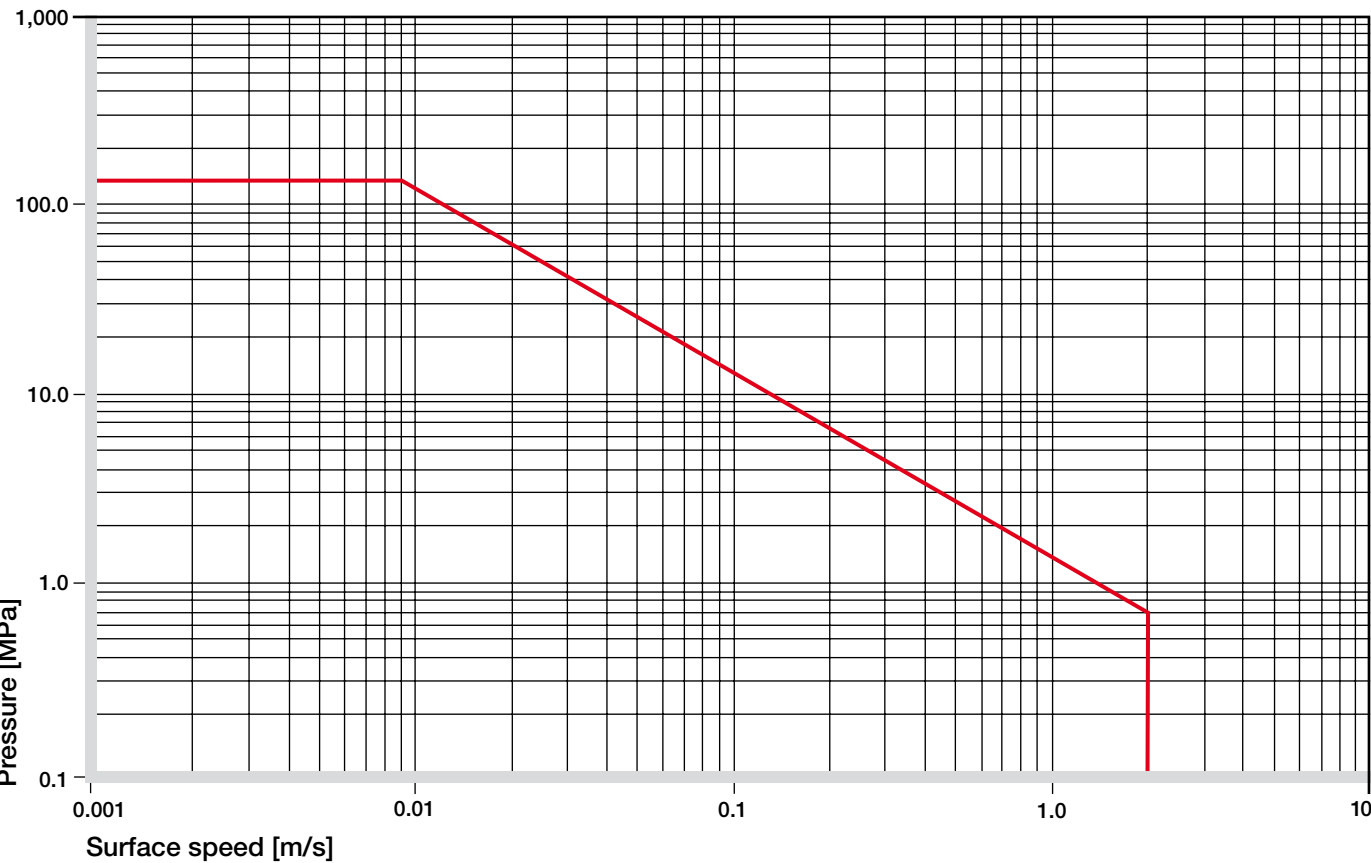


Diagram 01: Permissible pv values for iglidur® X with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® X has an excellent combination of high temperature resistance, high compressive strength, and excellent resistance to chemicals. The aspect of temperature resistance and pressure susceptibility is also reflected in the pv diagram.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® X plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +250 °C the permissible surface pressure is almost 32 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

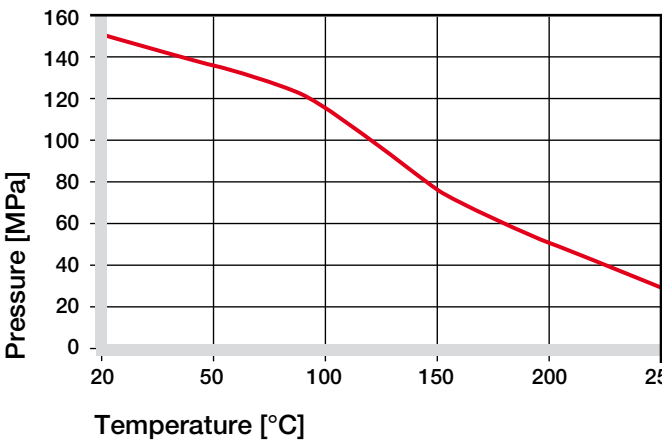


Diagram 02: Recommended maximum surface pressure as a function of temperature (150 MPa at +20 °C)

Diagram 03 shows how iglidur® X plain bearings deform elastically under load.

Surface Pressure, page 63

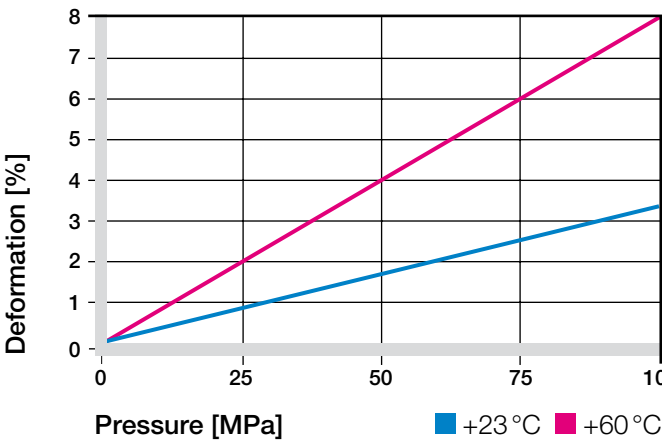


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® X is designed for higher speeds than other iglidur® bearings. This is due to its high temperature resistance and excellent thermal conductivity. One benefit of this is seen in the maximum pV value of 1.32 MPa · m/s. However, in this case, only the smallest radial loads may act on the bearings. At the given speeds, friction can cause a temperature increase to maximum permissible levels.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.5      | 1.1         | 5      |
| Short term | 3.5      | 2.5         | 10     |

Table 02: Maximum running speed

Temperatures

In terms of temperature resistance iglidur® X has also taken on a leading position. Having a permissible long term application temperature of +250 °C, iglidur® X will even withstand +315 °C short term. As with all thermoplastics, the compression resistance of iglidur® X decreases with increasing temperature. However, the wear drops considerably when used within the observed temperature range of +23 °C to +150 °C.

In certain cases, relaxation of the bearing can even occur at temperatures of more than +170 °C. This leads, after re-cooling, to the bearing moving out of the housing. At temperatures over +170 °C the axial security of the bearing in the housing needs to be tested. If necessary, secondary measures must be taken to mechanically secure the bearing. Please contact us if you have questions on bearing use.

Application Temperatures, page 66

| iglidur® X                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | −100 °C                 |
| Max. long term                 | +250 °C                 |
| Max. short term                | +315 °C                 |
| Add. securing is required from | +135 °C                 |

Table 03: Temperature limits



## Friction and Wear

Similar to wear resistance, the coefficient of friction also changes with the load. The coefficient of friction increases with an increase in surface speed. On the other hand, an increased load has an inverse effect: the coefficient of friction decreases (see Diagrams 05 and 06). This explains the excellent performance of iglidur® X plain bearings for high loads.

► Coefficients of Friction and Surfaces, **page 68**

► Wear Resistance, **page 69**

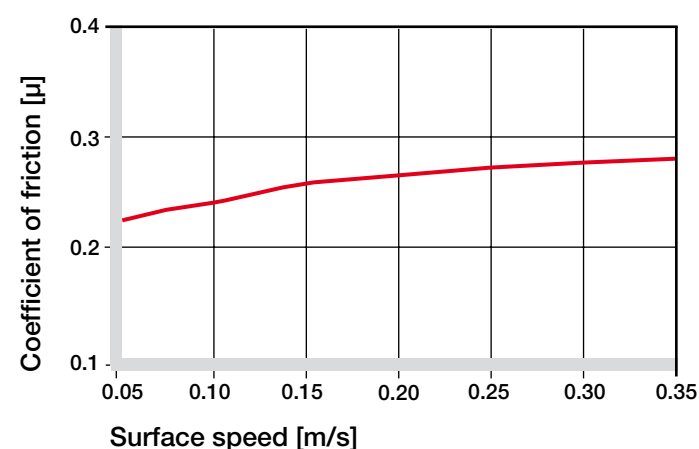


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

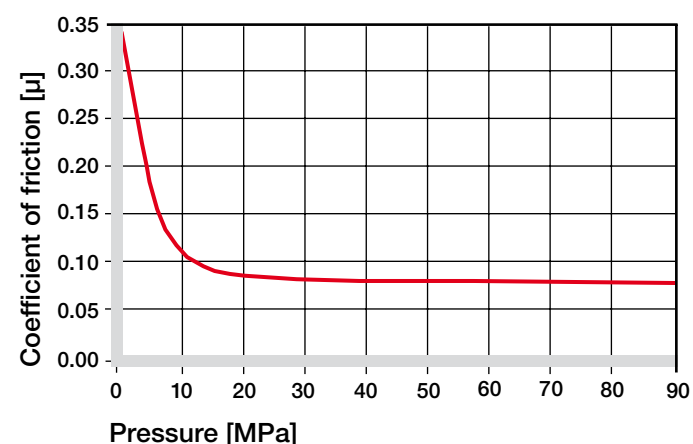


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

## Shaft Materials

Friction and wear, to a high degree, are also dependent on the shaft material. Shafts that are too smooth increase the coefficient of friction of the bearing. Ground surfaces with an average roughness  $R_a$  of 0.6 to 0.8  $\mu\text{m}$  are ideal. Diagrams 07 to 10 show results of testing different shaft materials with plain bearings made of iglidur® X. For low loads in rotating operation, the best wear values are found with 303 Stainless and HR Carbon Steel shafts. However, above a load of 2 MPa the bearing wear greatly increases with these two shaft materials. For the higher load range, hard chromed shafts or Cf53 shafts give good results. In oscillating operation at low loads, similar wear values for Cf53 and 303 stainless steel shafts occur. The wear is somewhat higher than during rotational movements. If the shaft material you plan to use is not contained in this list, please contact us.

► Shaft Materials, **page 71**

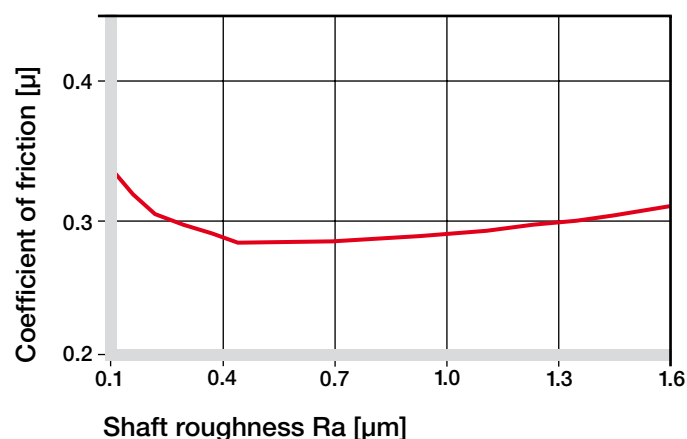


Diagram 07: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

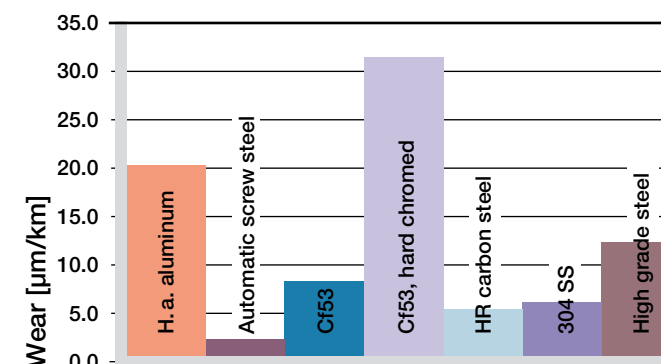


Diagram 08: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

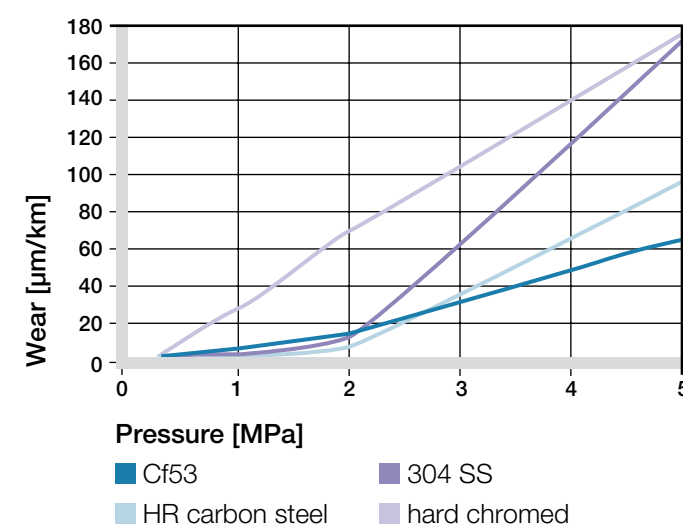


Diagram 09: Wear with different shaft materials in rotational operation, as a function of the pressure

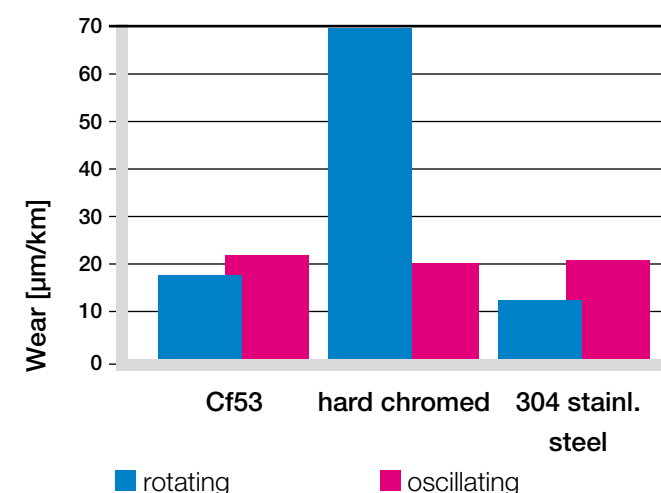


Diagram 10: Wear for rotating and oscillating applications with different shaft materials,  $p = 2 \text{ MPa}$

| iglidur® X     | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.09–0.27 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \mu\text{m}$ , 50 HRC)

## Additional Properties

### Chemical Resistance

iglidur® X plain bearings have almost universal chemical resistance. The material is only attacked by concentrated acids.

► Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature  $[+20^\circ\text{C}]$

Table 05: Chemical resistance

### Radiation Resistance

Plain bearings made from iglidur® X are resistant to radiation up to an intensity of  $1 \cdot 10^5 \text{ Gy}$ . iglidur® X is the most radioactive resistant material of the iglidur® product range. iglidur® X is extremely resistant to hard gamma radiation and withstands a radiation dose of 1,000 Mrad without detectable change in its properties. The material also withstands an alpha or beta radiation of 10,000 Mrad with practically no damage.

### UV Resistance

The excellent material properties of iglidur® X do not change under UV radiation and other weathering effects.

### Vacuum

In a vacuum environment iglidur® X plain bearings can be used virtually without restrictions. Outgassing takes place to a very limited extent.

### Electrical Properties

iglidur® X plain bearings are electrically conductive.

Volume resistance  $< 10^5 \Omega\text{cm}$

Surface resistance  $< 10^3 \Omega\text{cm}$

Moisture Absorption

The moisture absorption of iglidur® X plain bearings is very low. It is approximately 0.1% by weight in the standard atmosphere. So even in applications under water, iglidur® X bearings can be used without alterations of the assembly conditions. The maximum moisture absorption is 0.5 % by weight.

| Maximum moisture absorption |  |              |
|-----------------------------|--|--------------|
| At +23 °C/50 % r.h.         |  | 0.1 % weight |
| Max. water absorption       |  | 0.5 % weight |

Table 06: Moisture absorption

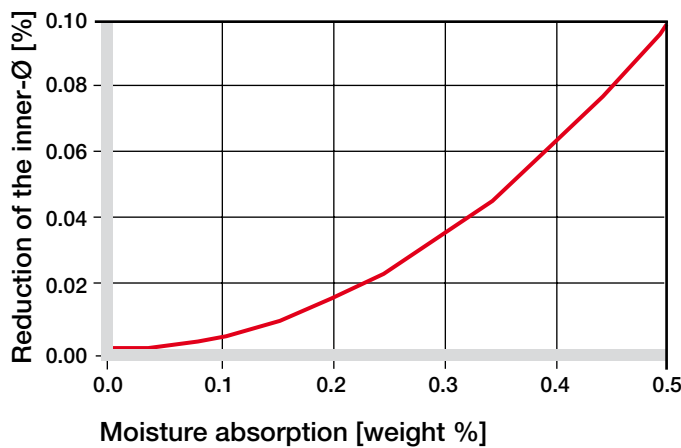


Diagram 11: Effect of moisture absorption plain bearings

Installation Tolerances

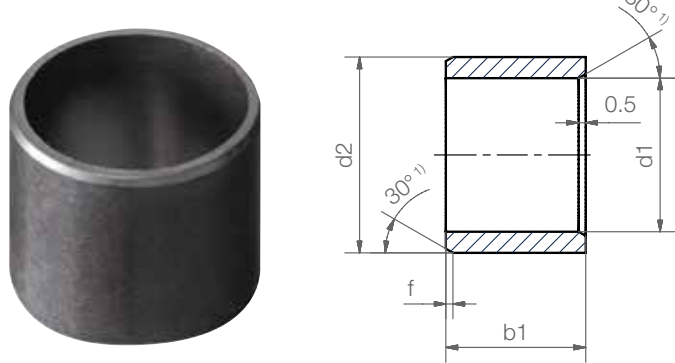
iglidur® X plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® X<br>F10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|------------------------|--------------------|
| up to 3             | 0–0.025          | +0.006 +0.046          | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.010 +0.058          | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.013 +0.071          | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.016 +0.086          | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.020 +0.104          | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.025 +0.125          | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.030 +0.150          | 0 +0.030           |

Table 07: Important tolerances plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| XSM-0203-03  | 2.0  | +0.006 +0.046 | 3.5  | 3.0       |
| XSM-0304-03  | 3.0  | +0.006 +0.046 | 4.5  | 3.0       |
| XSM-0304-06  | 3.0  | +0.006 +0.046 | 4.5  | 6.0       |
| XSM-0405-04  | 4.0  | +0.010 +0.058 | 5.5  | 4.0       |
| XSM-0405-06  | 4.0  | +0.010 +0.058 | 5.5  | 6.0       |
| XSM-0405-10  | 4.0  | +0.010 +0.058 | 5.5  | 10.0      |
| XSM-0507-035 | 5.0  | +0.010 +0.058 | 7.0  | 3.5       |
| XSM-0507-05  | 5.0  | +0.010 +0.058 | 7.0  | 5.0       |
| XSM-0507-08  | 5.0  | +0.010 +0.058 | 7.0  | 8.0       |
| XSM-0608-06  | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| XSM-0608-08  | 6.0  | +0.010 +0.058 | 8.0  | 8.0       |
| XSM-0608-10  | 6.0  | +0.010 +0.058 | 8.0  | 10.0      |
| XSM-0608-13  | 6.0  | +0.010 +0.058 | 8.0  | 13.8      |
| XSM-0709-10  | 7.0  | +0.013 +0.071 | 9.0  | 10.0      |
| XSM-0709-12  | 7.0  | +0.013 +0.071 | 9.0  | 12.0      |
| XSM-0810-06  | 8.0  | +0.013 +0.071 | 10.0 | 6.0       |
| XSM-0810-08  | 8.0  | +0.013 +0.071 | 10.0 | 8.0       |
| XSM-0810-10  | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| XSM-0810-12  | 8.0  | +0.013 +0.071 | 10.0 | 12.0      |
| XSM-0810-15  | 8.0  | +0.013 +0.071 | 10.0 | 15.0      |
| XSM-1012-035 | 10.0 | +0.013 +0.071 | 12.0 | 3.5       |
| XSM-1012-06  | 10.0 | +0.013 +0.071 | 12.0 | 6.0       |
| XSM-1012-08  | 10.0 | +0.013 +0.071 | 12.0 | 8.0       |
| XSM-1012-10  | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| XSM-1012-12  | 10.0 | +0.013 +0.071 | 12.0 | 12.0      |

\* after pressfit. Testing methods ► page 75



Order key

XSM-0203-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® X

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| XSM-1012-15  | 10.0 | +0.013 +0.071 | 12.0 | 15.0      |
| XSM-1012-20  | 10.0 | +0.013 +0.071 | 12.0 | 20.0      |
| XSM-1214-035 | 12.0 | +0.016 +0.086 | 14.0 | 3.5       |
| XSM-1214-06  | 12.0 | +0.016 +0.086 | 14.0 | 6.0       |
| XSM-1214-08  | 12.0 | +0.016 +0.086 | 14.0 | 8.0       |
| XSM-1214-10  | 12.0 | +0.016 +0.086 | 14.0 | 10.0      |
| XSM-1214-12  | 12.0 | +0.016 +0.086 | 14.0 | 12.0      |
| XSM-1214-15  | 12.0 | +0.016 +0.086 | 14.0 | 15.0      |
| XSM-1214-20  | 12.0 | +0.016 +0.086 | 14.0 | 20.0      |
| XSM-1214-25  | 12.0 | +0.016 +0.086 | 14.0 | 25.0      |
| XSM-1416-12  | 14.0 | +0.016 +0.086 | 16.0 | 12.0      |
| XSM-1416-15  | 14.0 | +0.016 +0.086 | 16.0 | 15.0      |
| XSM-1416-20  | 14.0 | +0.016 +0.086 | 16.0 | 20.0      |
| XSM-1517-07  | 15.0 | +0.016 +0.086 | 17.0 | 7.0       |
| XSM-1517-10  | 15.0 | +0.016 +0.086 | 17.0 | 10.0      |
| XSM-1517-15  | 15.0 | +0.016 +0.086 | 17.0 | 15.0      |
| XSM-1517-20  | 15.0 | +0.016 +0.086 | 17.0 | 20.0      |
| XSM-1517-25  | 15.0 | +0.016 +0.086 | 17.0 | 25.0      |
| XSM-1618-10  | 16.0 | +0.016 +0.086 | 18.0 | 10.0      |
| XSM-1618-12  | 16.0 | +0.016 +0.086 | 18.0 | 12.0      |
| XSM-1618-15  | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| XSM-1618-20  | 16.0 | +0.016 +0.086 | 18.0 | 20.0      |
| XSM-1618-35  | 16.0 | +0.016 +0.086 | 18.0 | 35.0      |
| XSM-1719-20  | 17.0 | +0.016 +0.086 | 19.0 | 20.0      |
| XSM-1820-15  | 18.0 | +0.016 +0.086 | 20.0 | 15.0      |

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time

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## Sleeve bearing

## Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| XSM-1820-20  | 18.0 | +0.016 +0.086 | 20.0 | 20.0      |
| XSM-2022-140 | 20.0 | +0.020 +0.104 | 22.0 | 14.0      |
| XSM-2022-145 | 20.0 | +0.020 +0.104 | 22.0 | 14.5      |
| XSM-2022-18  | 20.0 | +0.020 +0.104 | 22.0 | 18.0      |
| XSM-2022-20  | 20.0 | +0.020 +0.104 | 22.0 | 20.0      |
| XSM-2023-07  | 20.0 | +0.020 +0.104 | 23.0 | 7.0       |
| XSM-2023-10  | 20.0 | +0.020 +0.104 | 23.0 | 10.0      |
| XSM-2023-15  | 20.0 | +0.020 +0.104 | 23.0 | 15.0      |
| XSM-2023-20  | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |
| XSM-2023-25  | 20.0 | +0.020 +0.104 | 23.0 | 25.0      |
| XSM-2023-30  | 20.0 | +0.020 +0.104 | 23.0 | 30.0      |
| XSM-2225-15  | 22.0 | +0.020 +0.104 | 25.0 | 15.0      |
| XSM-2225-20  | 22.0 | +0.020 +0.104 | 25.0 | 20.0      |
| XSM-2426-20  | 24.0 | +0.020 +0.104 | 26.0 | 20.0      |
| XSM-2427-20  | 24.0 | +0.020 +0.104 | 27.0 | 20.0      |
| XSM-2528-077 | 25.0 | +0.020 +0.104 | 28.0 | 7.7       |
| XSM-2528-09  | 25.0 | +0.020 +0.104 | 28.0 | 9.0       |
| XSM-2528-12  | 25.0 | +0.020 +0.104 | 28.0 | 12.0      |
| XSM-2528-13  | 25.0 | +0.020 +0.104 | 28.0 | 13.0      |
| XSM-2528-15  | 25.0 | +0.020 +0.104 | 28.0 | 15.0      |
| XSM-2528-20  | 25.0 | +0.020 +0.104 | 28.0 | 20.0      |
| XSM-2528-30  | 25.0 | +0.020 +0.104 | 28.0 | 30.0      |
| XSM-2528-35  | 25.0 | +0.020 +0.104 | 28.0 | 35.0      |
| XSM-2730-05  | 27.0 | +0.020 +0.104 | 30.0 | 5.7       |
| XSM-2832-20  | 28.0 | +0.020 +0.104 | 32.0 | 20.0      |
| XSM-2832-30  | 28.0 | +0.020 +0.104 | 32.0 | 30.0      |

\* after pressfit. Testing methods ► page 75



## Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

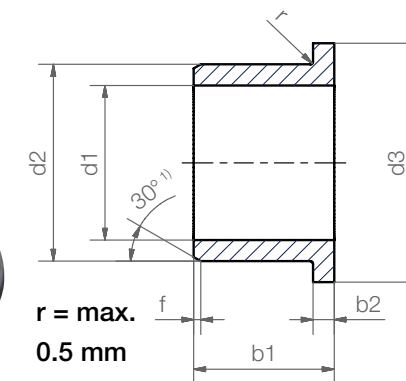


## Even more dimensions from stock

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## Flange bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

## Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| XFM-020406-03 | 2.0  | +0.006 +0.046 | 4.0  | 6.0       | 3.0       | 1.0         |
| XFM-0304-05   | 3.0  | +0.006 +0.046 | 4.5  | 7.5       | 5.0       | 0.75        |
| XFM-0405-04   | 4.0  | +0.010 +0.058 | 5.5  | 9.5       | 4.0       | 0.75        |
| XFM-0405-06   | 4.0  | +0.010 +0.058 | 5.5  | 9.5       | 6.0       | 0.75        |
| XFM-040508-06 | 4.0  | +0.010 +0.058 | 5.5  | 8.0       | 6.0       | 0.75        |
| XFM-0507-05   | 5.0  | +0.010 +0.058 | 7.0  | 11.0      | 5.0       | 1.0         |
| XFM-0608-08   | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 8.0       | 1.0         |
| XFM-0608-10   | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 10.0      | 1.0         |
| XFM-0810-05   | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 5.5       | 1.0         |
| XFM-0810-075  | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 7.5       | 1.0         |
| XFM-0810-08   | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 8.0       | 1.0         |
| XFM-0810-09   | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 9.0       | 1.0         |
| XFM-081012-04 | 8.0  | +0.013 +0.071 | 10.0 | 12.0      | 4.0       | 1.0         |
| XFM-081014-31 | 8.0  | +0.013 +0.071 | 10.0 | 14.0      | 31.5      | 1.0         |
| XFM-1012-05   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 5.0       | 1.0         |
| XFM-1012-06   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 6.0       | 1.0         |
| XFM-1012-08   | 10.0 | +0.013 +0.071 | 12.0 | 15.0      | 8.0       | 1.0         |
| XFM-1012-09   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 9.0       | 1.0         |
| XFM-1012-15   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 15.0      | 1.0         |
| XFM-1012-18   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 18.0      | 1.0         |
| XFM-1012-22   | 10.0 | +0.013 +0.071 | 12.0 | 15.0      | 22.0      | 1.0         |
| XFM-1012-25   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 25.0      | 1.0         |
| XFM-1214-055  | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 5.5       | 1.0         |
| XFM-1214-09   | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 9.0       | 1.0         |
| XFM-1214-12   | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| XFM-1214-15   | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 15.0      | 1.0         |

\* after pressfit. Testing methods ► page 75

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Flange bearing

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| XFM-121418-039 | 12.0 | +0.016 +0.086 | 14.0 | 18.0      | 3.9       | 1.0         |
| XFM-121418-059 | 12.0 | +0.016 +0.086 | 14.0 | 18.0      | 5.9       | 1.0         |
| XFM-1416-10    | 14.0 | +0.016 +0.086 | 16.0 | 22.0      | 10.0      | 1.0         |
| XFM-1416-12    | 14.0 | +0.016 +0.086 | 16.0 | 22.0      | 12.0      | 1.0         |
| XFM-1416-17    | 14.0 | +0.016 +0.086 | 16.0 | 22.0      | 17.0      | 1.0         |
| XFM-1517-06    | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 6.0       | 1.0         |
| XFM-1517-12    | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 12.0      | 1.0         |
| XFM-1517-17    | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 17.0      | 1.0         |
| XFM-1618-12    | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 12.0      | 1.0         |
| XFM-1618-17    | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| XFM-1820-12    | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 12.0      | 1.0         |
| XFM-1820-17    | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 17.0      | 1.0         |
| XFM-2023-065   | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 6.5       | 1.5         |
| XFM-2023-075   | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 7.5       | 1.5         |
| XFM-2023-11    | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 11.0      | 1.5         |
| XFM-2023-16    | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 16.5      | 1.5         |
| XFM-2023-21    | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.0      | 1.5         |
| XFM-2528-13    | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 13.5      | 1.5         |
| XFM-2528-21    | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 21.0      | 1.5         |
| XFM-252833-08  | 25.0 | +0.020 +0.104 | 28.0 | 33.0      | 8.0       | 1.0         |
| XFM-2730-20    | 27.0 | +0.020 +0.104 | 30.0 | 38.0      | 20.0      | 1.5         |
| XFM-3034-16    | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 16.0      | 2.0         |
| XFM-3034-26    | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 26.0      | 2.0         |
| XFM-3034-40    | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 40.0      | 2.0         |
| XFM-3236-15    | 32.0 | +0.025 +0.125 | 36.0 | 45.0      | 15.0      | 2.0         |
| XFM-3236-26    | 32.0 | +0.025 +0.125 | 36.0 | 45.0      | 26.0      | 2.0         |
| XFM-3539-26    | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 26.0      | 2.0         |
| XFM-4044-22    | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 22.0      | 2.0         |
| XFM-4044-30    | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 30.0      | 2.0         |
| XFM-4044-40    | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 40.0      | 2.0         |
| XFM-4550-50    | 45.0 | +0.025 +0.125 | 50.0 | 58.0      | 50.0      | 2.0         |
| XFM-5055-40    | 50.0 | +0.025 +0.125 | 55.0 | 63.0      | 40.0      | 2.0         |
| XFM-6065-40    | 60.0 | +0.030 +0.150 | 65.0 | 73.0      | 40.0      | 2.0         |
| XFM-7075-40    | 70.0 | +0.030 +0.150 | 75.0 | 83.0      | 40.0      | 2.0         |
| XFM-7580-50    | 75.0 | +0.030 +0.150 | 80.0 | 88.0      | 50.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



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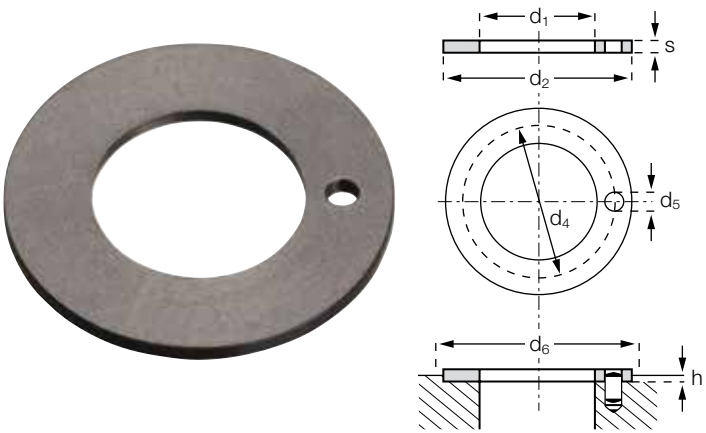


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Order key

XTM-0620-015

- Thickness s
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form T)
- Material iglidur® X

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

| Part number  | d1<br>+0.25 | d2<br>-0.25 | s<br>-0.05 | d4<br>-0.12<br>+0.12 | d5<br>+0.375<br>+0.125 | h<br>+0.2<br>-0.2 | d6<br>+0.12 |
|--------------|-------------|-------------|------------|----------------------|------------------------|-------------------|-------------|
| XTM-0620-015 | 6.0         | 20.0        | 1.5        | 13.0                 | 1.5                    | 1.0               | 20.0        |
| XTM-0818-015 | 8.0         | 18.0        | 1.5        | 13.0                 | 1.5                    | 1.0               | 18.0        |
| XTM-0829-015 | 8.0         | 29.0        | 1.5        | **                   | **                     | 1.0               | 29.0        |
| XTM-0830-015 | 8.0         | 30.0        | 1.5        | **                   | **                     | 1.0               | 30.0        |
| XTM-1018-010 | 10.0        | 18.0        | 1.0        | **                   | **                     | 0.7               | 18.0        |
| XTM-1224-015 | 12.0        | 24.0        | 1.5        | 18.0                 | 1.5                    | 1.0               | 24.0        |
| XTM-1426-015 | 14.0        | 26.0        | 1.5        | 20.0                 | 2.0                    | 1.0               | 26.0        |
| XTM-1522-008 | 15.0        | 22.0        | 0.8        | **                   | **                     | 0.5               | 22.0        |
| XTM-1524-015 | 15.0        | 24.0        | 1.5        | 19.5                 | 1.5                    | 1.0               | 24.0        |
| XTM-1630-015 | 16.0        | 30.0        | 1.5        | 22.0                 | 2.0                    | 1.0               | 30.0        |
| XTM-1832-015 | 18.0        | 32.0        | 1.5        | 25.0                 | 2.0                    | 1.0               | 32.0        |
| XTM-2036-015 | 20.0        | 36.0        | 1.5        | 28.0                 | 3.0                    | 1.0               | 36.0        |
| XTM-2238-015 | 22.0        | 38.0        | 1.5        | 30.0                 | 3.0                    | 1.0               | 38.0        |
| XTM-2442-015 | 24.0        | 42.0        | 1.5        | 33.0                 | 3.0                    | 1.0               | 42.0        |
| XTM-2644-015 | 26.0        | 44.0        | 1.5        | 35.0                 | 3.0                    | 1.0               | 44.0        |
| XTM-2848-015 | 28.0        | 48.0        | 1.5        | 38.0                 | 4.0                    | 1.0               | 48.0        |
| XTM-3254-015 | 32.0        | 54.0        | 1.5        | 43.0                 | 4.0                    | 1.0               | 54.0        |
| XTM-3862-015 | 38.0        | 62.0        | 1.5        | 50.0                 | 4.0                    | 1.0               | 62.0        |
| XTM-4266-015 | 42.0        | 66.0        | 1.5        | 54.0                 | 4.0                    | 1.0               | 66.0        |
| XTM-4874-020 | 48.0        | 74.0        | 2.0        | 61.0                 | 4.0                    | 1.5               | 74.0        |
| XTM-5278-020 | 52.0        | 78.0        | 2.0        | 65.0                 | 4.0                    | 1.5               | 78.0        |
| XTM-6290-020 | 62.0        | 90.0        | 2.0        | 76.0                 | 4.0                    | 1.5               | 90.0        |

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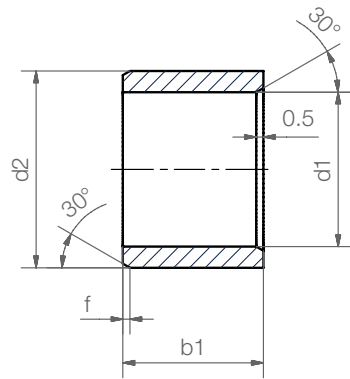


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Sleeve bearing



Order key

XSI-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® X

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d1*   |       | Housing bore |       | Shaft size |       |
|-------------|------|-------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      | max.  | min.  | max.         | min.  | max.       | min.  |
| XSI-0203-03 | 1/8  | 3/16  | 3/16 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| XSI-0203-05 | 1/8  | 3/16  | 5/16 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| XSI-0203-06 | 1/8  | 3/16  | 3/8  | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| XSI-0304-03 | 3/16 | 1/4   | 3/16 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| XSI-0304-04 | 3/16 | 1/4   | 1/4  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| XSI-0304-06 | 3/16 | 1/4   | 3/8  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| XSI-0304-08 | 3/16 | 1/4   | 1/2  | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| XSI-0405-04 | 1/4  | 5/16  | 1/4  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XSI-0405-06 | 1/4  | 5/16  | 3/8  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XSI-0405-08 | 1/4  | 5/16  | 1/2  | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XSI-0506-04 | 5/16 | 3/8   | 1/4  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| XSI-0506-06 | 5/16 | 3/8   | 3/8  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| XSI-0506-08 | 5/16 | 3/8   | 1/2  | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| XSI-0607-04 | 3/8  | 15/32 | 1/4  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XSI-0607-05 | 3/8  | 15/32 | 5/16 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XSI-0607-06 | 3/8  | 15/32 | 3/8  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XSI-0607-08 | 3/8  | 15/32 | 1/2  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XSI-0607-10 | 3/8  | 15/32 | 5/8  | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XSI-0708-04 | 7/16 | 17/32 | 1/4  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| XSI-0708-08 | 7/16 | 17/32 | 1/2  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| XSI-0708-10 | 7/16 | 17/32 | 5/8  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| XSI-0708-12 | 7/16 | 17/32 | 3/4  | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| XSI-0809-04 | 1/2  | 19/32 | 1/4  | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| XSI-0809-06 | 1/2  | 19/32 | 3/8  | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| XSI-0809-08 | 1/2  | 19/32 | 1/2  | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |

\* after pressfit. Testing methods ► page 75



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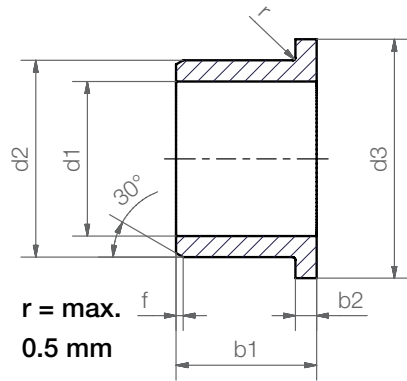
Sleeve bearing

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       | max.   | min.   | max.         | min.   | max.       | min.   |
| XSI-0809-10 | 1/2   | 19/32   | 5/8   | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| XSI-0809-12 | 1/2   | 19/32   | 3/4   | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| XSI-0809-16 | 1/2   | 19/32   | 1     | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| XSI-0910-08 | 9/16  | 21/32   | 1/2   | .5655  | .5627  | .6566        | .6559  | .5615      | .5605  |
| XSI-0910-12 | 9/16  | 21/32   | 3/4   | .5655  | .5627  | .6566        | .6559  | .5615      | .5605  |
| XSI-1011-04 | 5/8   | 23/32   | 1/4   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XSI-1011-06 | 5/8   | 23/32   | 3/8   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XSI-1011-08 | 5/8   | 23/32   | 1/2   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XSI-1011-10 | 5/8   | 23/32   | 5/8   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XSI-1011-12 | 5/8   | 23/32   | 3/4   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XSI-1011-16 | 5/8   | 23/32   | 1     | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XSI-1112-14 | 11/16 | 25/32   | 7/8   | .6906  | .6879  | .7817        | .7809  | .6865      | .6855  |
| XSI-1214-06 | 3/4   | 7/8     | 3/8   | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XSI-1214-08 | 3/4   | 7/8     | 1/2   | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XSI-1214-12 | 3/4   | 7/8     | 3/4   | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XSI-1214-16 | 3/4   | 7/8     | 1     | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XSI-1416-12 | 7/8   | 1       | 3/4   | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| XSI-1416-16 | 7/8   | 1       | 1     | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| XSI-1618-08 | 1     | 1 1/8   | 1/2   | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XSI-1618-12 | 1     | 1 1/8   | 3/4   | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XSI-1618-16 | 1     | 1 1/8   | 1     | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XSI-1618-24 | 1     | 1 1/8   | 1 1/2 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XSI-1820-12 | 1 1/8 | 1 9/32  | 3/4   | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| XSI-2022-10 | 1 1/4 | 1 13/32 | 5/8   | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| XSI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| XSI-2426-12 | 1 1/2 | 1 21/32 | 3/4   | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| XSI-2426-16 | 1 1/2 | 1 21/32 | 1     | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| XSI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| XSI-2629-20 | 1 5/8 | 1 25/32 | 1 1/4 | 1.6297 | 1.6258 | 1.7818       | 1.7808 | 1.6238     | 1.6222 |
| XSI-2831-16 | 1 3/4 | 1 15/16 | 1     | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| XSI-3235-24 | 2     | 2 3/16  | 1 1/2 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| XSI-3235-32 | 2     | 2 3/16  | 2     | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| XSI-3639-32 | 2 1/4 | 2 7/16  | 2     | 2.2577 | 2.2531 | 2.4377       | 2.4365 | 2.2507     | 2.2489 |
| XSI-4447-32 | 2 3/4 | 2 15/16 | 2     | 2.7570 | 2.7523 | 2.9370       | 2.9358 | 2.7500     | 2.7490 |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

XFI-0203-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® X

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1   | d2    | b1   | d3   | b2   | d1*   |       | Housing bore |       | Shaft size |       |
|-------------|------|-------|------|------|------|-------|-------|--------------|-------|------------|-------|
|             |      |       |      |      |      | max.  | min.  | max.         | min.  | max.       | min.  |
| XFI-0203-03 | 1/8  | 3/16  | 3/16 | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| XFI-0203-06 | 1/8  | 3/16  | 3/8  | .312 | .032 | .1269 | .1251 | .1878        | .1873 | .1243      | .1236 |
| XFI-0304-04 | 3/16 | 1/4   | 1/4  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| XFI-0304-06 | 3/16 | 1/4   | 3/8  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| XFI-0304-08 | 3/16 | 1/4   | 1/2  | .375 | .032 | .1892 | .1873 | .2503        | .2497 | .1865      | .1858 |
| XFI-0405-03 | 1/4  | 5/16  | 3/16 | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XFI-0405-04 | 1/4  | 5/16  | 1/4  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XFI-0405-06 | 1/4  | 5/16  | 3/8  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XFI-0405-08 | 1/4  | 5/16  | 1/2  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XFI-0405-12 | 1/4  | 5/16  | 3/4  | .500 | .032 | .2521 | .2498 | .3128        | .3122 | .2490      | .2481 |
| XFI-0506-04 | 5/16 | 3/8   | 1/4  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| XFI-0506-06 | 5/16 | 3/8   | 3/8  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| XFI-0506-08 | 5/16 | 3/8   | 1/2  | .562 | .032 | .3148 | .3125 | .3753        | .3747 | .3115      | .3106 |
| XFI-0607-04 | 3/8  | 15/32 | 1/4  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XFI-0607-06 | 3/8  | 15/32 | 3/8  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XFI-0607-08 | 3/8  | 15/32 | 1/2  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XFI-0607-12 | 3/8  | 15/32 | 3/4  | .687 | .046 | .3773 | .3750 | .4691        | .4684 | .3740      | .3731 |
| XFI-0708-08 | 7/16 | 17/32 | 1/2  | .750 | .046 | .4406 | .4379 | .5316        | .5309 | .4365      | .4355 |
| XFI-0809-04 | 1/2  | 19/32 | 1/4  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| XFI-0809-06 | 1/2  | 19/32 | 3/8  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| XFI-0809-08 | 1/2  | 19/32 | 1/2  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| XFI-0809-12 | 1/2  | 19/32 | 3/4  | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| XFI-0809-16 | 1/2  | 19/32 | 1    | .875 | .046 | .5030 | .5003 | .5941        | .5934 | .4990      | .4980 |
| XFI-1011-08 | 5/8  | 23/32 | 1/2  | .937 | .046 | .6280 | .6253 | .7192        | .7184 | .6240      | .6230 |
| XFI-1011-12 | 5/8  | 23/32 | 3/4  | .937 | .046 | .6280 | .6253 | .7192        | .7184 | .6240      | .6230 |

\* after pressfit. Testing methods ► page 75



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/x



Flange bearing

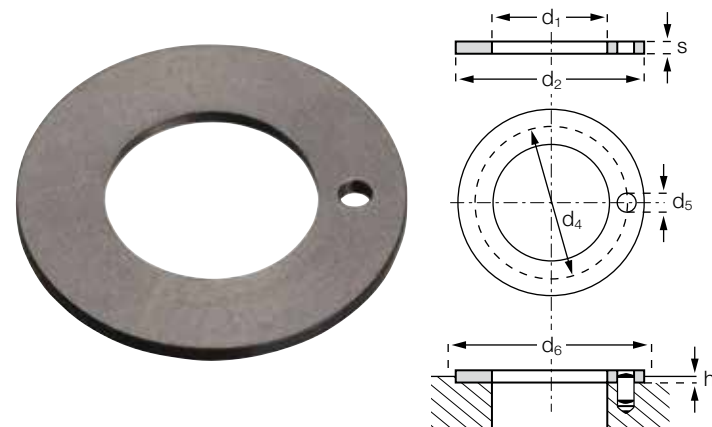
Dimensions [Inch]

| Part number | d1    | d2      | b1    | d3    | b2   | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| XFI-1011-16 | 5/8   | 23/32   | 1     | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XFI-1011-24 | 5/8   | 23/32   | 1 1/2 | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| XFI-1214-08 | 3/4   | 7/8     | 1/2   | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XFI-1214-12 | 3/4   | 7/8     | 3/4   | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XFI-1214-16 | 3/4   | 7/8     | 1     | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XFI-1214-28 | 3/4   | 7/8     | 1 3/4 | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| XFI-1416-12 | 7/8   | 1       | 3/4   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| XFI-1416-16 | 7/8   | 1       | 1     | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| XFI-1618-08 | 1     | 1 1/8   | 1/2   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XFI-1618-12 | 1     | 1 1/8   | 3/4   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XFI-1618-16 | 1     | 1 1/8   | 1     | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XFI-1618-24 | 1     | 1 1/8   | 1 1/2 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| XFI-1820-12 | 1 1/8 | 1 9/32  | 3/4   | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| XFI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| XFI-2022-32 | 1 1/4 | 1 13/32 | 2     | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| XFI-2426-12 | 1 1/2 | 1 21/32 | 3/4   | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| XFI-2426-16 | 1 1/2 | 1 21/32 | 1     | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| XFI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| XFI-2426-26 | 1 1/2 | 1 21/32 | 1 5/8 | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| XFI-2831-16 | 1 3/4 | 1 15/16 | 1     | 2.375 | .093 | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| XFI-3235-32 | 2     | 2 3/16  | 2     | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| XFI-4447-32 | 2 3/4 | 2 15/16 | 2     | 3.375 | .093 | 2.7570 | 2.7523 | 2.9370       | 2.9358 | 2.7500     | 2.7490 |

\* after pressfit. Testing methods ► page 75



Thrust washer



Order key

XTI-0814-01



Thickness s  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form T)  
Material iglidur® X

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [Inch]

| Part number | d1<br>+.010 | d2<br>-.010 | s<br>-.0020 | d4<br>±.005 | d5<br>.015 + .005 | h<br>+.008 | d6<br>+.005 |
|-------------|-------------|-------------|-------------|-------------|-------------------|------------|-------------|
| XTI-0814-01 | .500        | .875        | .0585       | .692        | .067              | .040       | .875        |
| XTI-1018-01 | .625        | 1.125       | .0585       | .880        | .099              | .040       | 1.125       |
| XTI-1220-01 | .750        | 1.250       | .0585       | 1.005       | .099              | .040       | 1.250       |
| XTI-1424-01 | .875        | 1.500       | .0585       | 1.192       | .130              | .040       | 1.500       |
| XTI-1628-01 | 1.000       | 1.750       | .0585       | 1.380       | .130              | .040       | 1.750       |
| XTI-1826-01 | 1.125       | 1.625       | .0585       | –           | –                 | .040       | 1.625       |
| XTI-2034-01 | 1.250       | 2.125       | .0585       | 1.692       | .161              | .040       | 2.125       |
| XTI-2440-01 | 1.500       | 2.500       | .0585       | 2.005       | .192              | .040       | 2.500       |
| XTI-2844-01 | 1.750       | 2.750       | .0585       | 2.255       | .192              | .040       | 2.750       |
| XTI-3248-01 | 2.000       | 3.000       | .0895       | 2.505       | .192              | .070       | 3.000       |



iglidur® P

low water absorption

Standard range from stock ► from page 195



iglidur® P210

flexible, wear resistant  
& more

Standard range from stock ► from page 207



iglidur® K

versatile

Standard range from stock ► from page 215



iglidur® GLW

low-cost material  
for high quantities

On request ► from page 225



delivery from stock  
time

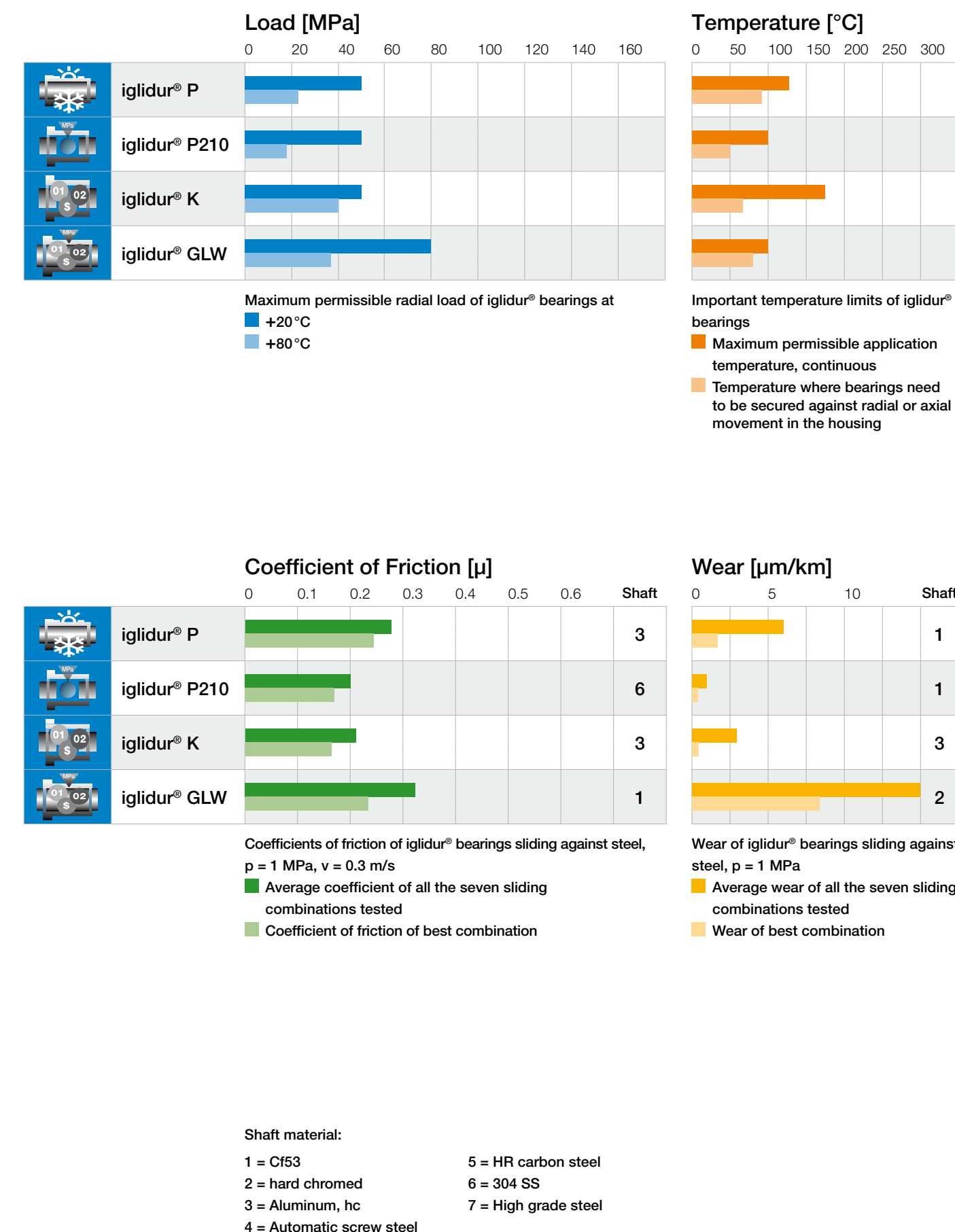


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## iglidur® Specialists – General Purpose

- Long life dry running
- For high loads
- For high temperatures
- Low friction/high speed
- Dirt resistant
- Chemicals resistant
- Low water absorption
- Food-suitable
- Vibration-dampening
- Edge pressure
- For under water use
- Cost-effective

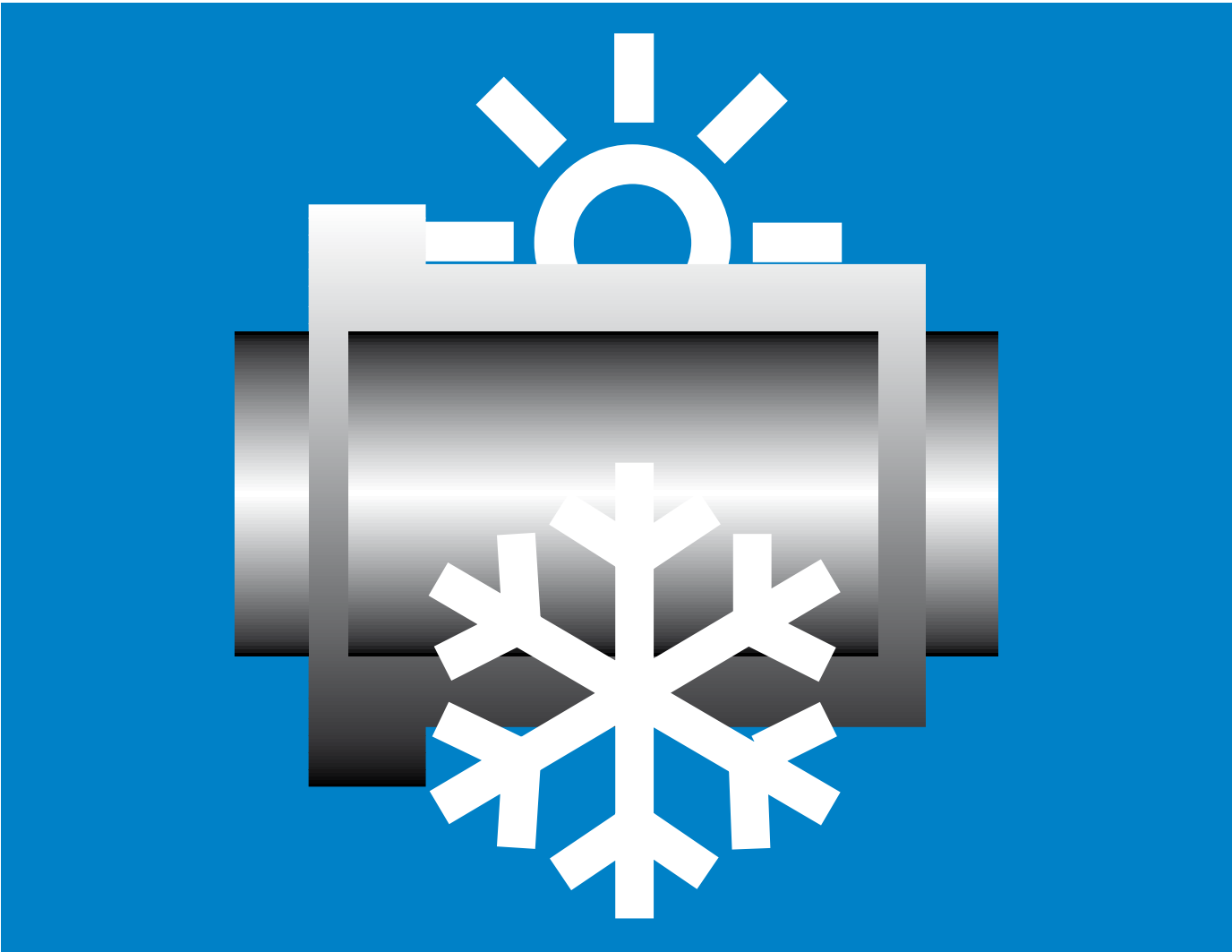
|                         | iglidur® P | iglidur® P210 | iglidur® K | iglidur® GLW |
|-------------------------|------------|---------------|------------|--------------|
| Long life dry running   | ●          | ●             | ●          |              |
| For high loads          |            |               |            | ●            |
| For high temperatures   |            |               |            |              |
| Low friction/high speed |            |               | ●          |              |
| Dirt resistant          | ●          | ●             |            | ●            |
| Chemicals resistant     |            |               |            |              |
| Low water absorption    | ●          | ●             | ●          |              |
| Food-suitable           |            |               |            |              |
| Vibration-dampening     |            |               |            |              |
| Edge pressure           |            | ●             |            |              |
| For under water use     |            |               |            |              |
| Cost-effective          | ●          | ●             | ●          | ●            |
| from page               | 195        | 207           | 215        | 225          |



| Material properties table                              |                                    |                    |                    |                    |                    |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|--------------------|--------------------|
| General properties                                     | Unit                               | iglidur® P         | iglidur® P210      | iglidur® K         | iglidur® GLW       |
| Density                                                | g/cm³                              | 1.58               | 1.40               | 1.52               | 1.36               |
| Colour                                                 |                                    | black              | yellow             | yellow beige       | black              |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2                | 0.3                | 0.1                | 1.3                |
| Max. water absorption                                  | % weight                           | 0.4                | 0.5                | 0.6                | 5.5                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.06–0.21          | 0.07–0.19          | 0.06–0.21          | 0.1–0.24           |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.39               | 0.4                | 0.30               | 0.3                |
| Mechanical properties                                  |                                    |                    |                    |                    |                    |
| Modulus of elasticity                                  | MPa                                | 5,300              | 2,500              | 3,500              | 7,700              |
| Tensile strength at +20 °C                             | MPa                                | 120                | 70                 | 80                 | 235                |
| Compressive strength                                   | MPa                                | 66                 | 50                 | 60                 | 74                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 50                 | 50                 | 50                 | 80                 |
| Shore D hardness                                       |                                    | 75                 | 75                 | 72                 | 78                 |
| Physical and thermal properties                        |                                    |                    |                    |                    |                    |
| Max. long term application temperature                 | °C                                 | +130               | +100               | +170               | +100               |
| Max. short term application temperature                | °C                                 | +200               | +160               | +240               | +160               |
| Min. application temperature                           | °C                                 | –40                | –40                | –40                | –40                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | 0.25               | 0.25               | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 4                  | 8                  | 3                  | 17                 |
| Electrical properties                                  |                                    |                    |                    |                    |                    |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | > 10 <sup>12</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | > 10 <sup>11</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> |

| Material resistance (at +20 °C) |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|
| Chemical resistance             | iglidur® P          | iglidur® P210       | iglidur® K          | iglidur® GLW        |
| Alcohol                         | +                   | +                   | + to 0              | + to 0              |
| Hydrocarbons                    | –                   | –                   | +                   | +                   |
| Greases, oils without additives | +                   | +                   | +                   | +                   |
| Fuels                           | +                   | +                   | +                   | +                   |
| Diluted acids                   | 0                   | 0                   | 0 to –              | 0 to –              |
| Strong acids                    | –                   | –                   | –                   | –                   |
| Diluted alkalines               | –                   | –                   | +                   | +                   |
| Strong alkalines                | –                   | –                   | 0                   | 0                   |
| Radiation resistance [Gy] to    | 5 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 5 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> |

+ resistant   0 conditionally resistant   – not resistant



## Low water absorption – iglidur® P



Standard range from stock

Low water absorption

Low wear rates

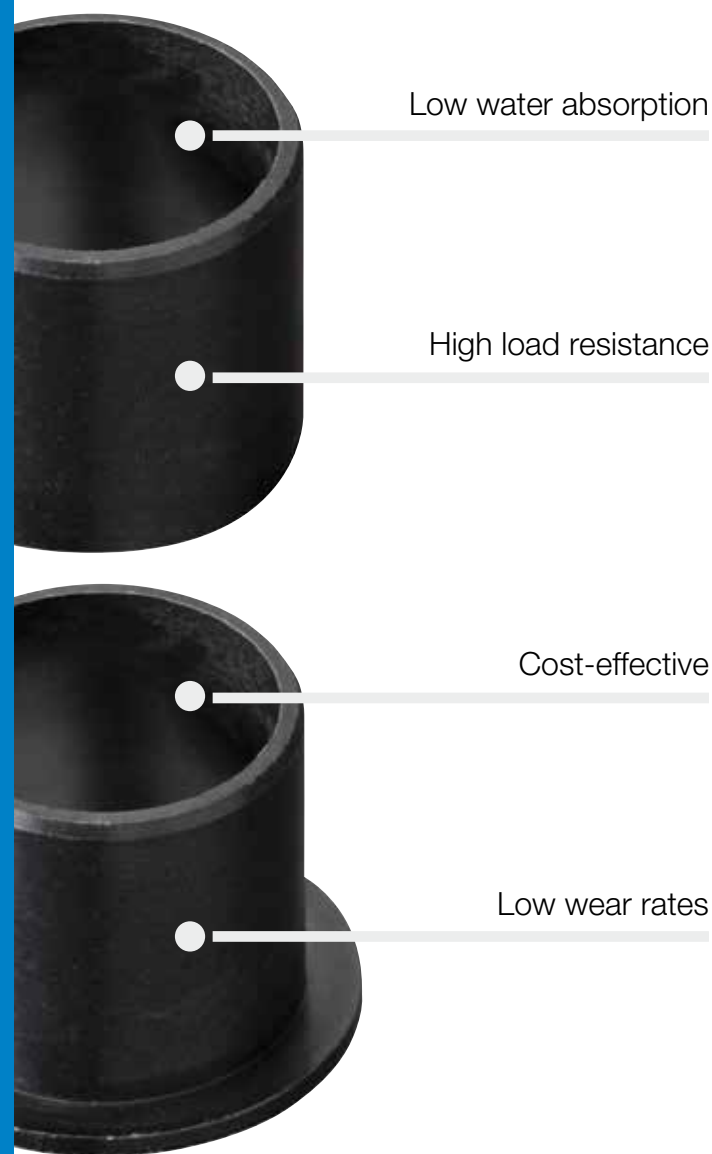
High load capacity

Maintenance-free

Cost-effective



**Low water absorption.** Due to thermal stability and low water absorption, the iglidur® P bearings are among the most dimensionally stable allround bearings under varying environmental conditions. iglidur® P bearings are recommended for oscillating and rotating movements at average loads.



## When to use it?

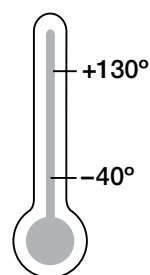
- When very low water absorption is needed
- When a cost-effective bearing for high pressure loads is required
- When high precision in high humidity and moderately high temperatures are needed



## When not to use it?

- When the maximum application temperature is above +120 °C  
► iglidur® K, page 215
- When mechanical reaming of the wall surface is necessary  
► iglidur® M250, page 127
- When the highest wear resistance is needed  
► iglidur® W300, page 151

## Temperature



## Product range

2 types  
Ø 3–95 mm  
more dimensions  
on request



## Typical sectors of industry and application areas

- Solar technology ● Sports and leisure
- Machine Building ● Doors and gates
- Railway industry etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

► [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



► [www.igus.co.uk/boat-cranes](http://www.igus.co.uk/boat-cranes)



► [www.igus.co.uk/helicopter-loadsystem](http://www.igus.co.uk/helicopter-loadsystem)



► [www.igus.co.uk/road-sweeper](http://www.igus.co.uk/road-sweeper)

| Material properties table                              |                                    |       |                    |
|--------------------------------------------------------|------------------------------------|-------|--------------------|
| General properties                                     |                                    | Unit  | iglidur® P         |
| Density                                                |                                    | g/cm³ | 1.58               |
| Colour                                                 |                                    |       | black              |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           |       | 0.2                |
| Max. water absorption                                  | % weight                           |       | 0.4                |
| Coefficient of sliding friction, dynamic against steel | μ                                  |       | 0.06–0.21          |
| pv value, max. (dry)                                   | MPa · m/s                          |       | 0.39               |
| Mechanical properties                                  |                                    |       |                    |
| Modulus of elasticity                                  | MPa                                |       | 5,300              |
| Tensile strength at +20 °C                             | MPa                                |       | 120                |
| Compressive strength                                   | MPa                                |       | 66                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                |       | 50                 |
| Shore D hardness                                       |                                    |       | 75                 |
| Physical and thermal properties                        |                                    |       |                    |
| Max. long term application temperature                 | °C                                 |       | +130               |
| Max. short term application temperature                | °C                                 |       | +200               |
| Min. application temperature                           | °C                                 |       | –40                |
| Thermal conductivity                                   | W/m · K                            |       | 0.25               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> |       | 4                  |
| Electrical properties                                  |                                    |       |                    |
| Specific volume resistance                             | Ωcm                                |       | > 10 <sup>13</sup> |
| Surface resistance                                     | Ω                                  |       | > 10 <sup>12</sup> |

Table 01: Material properties table

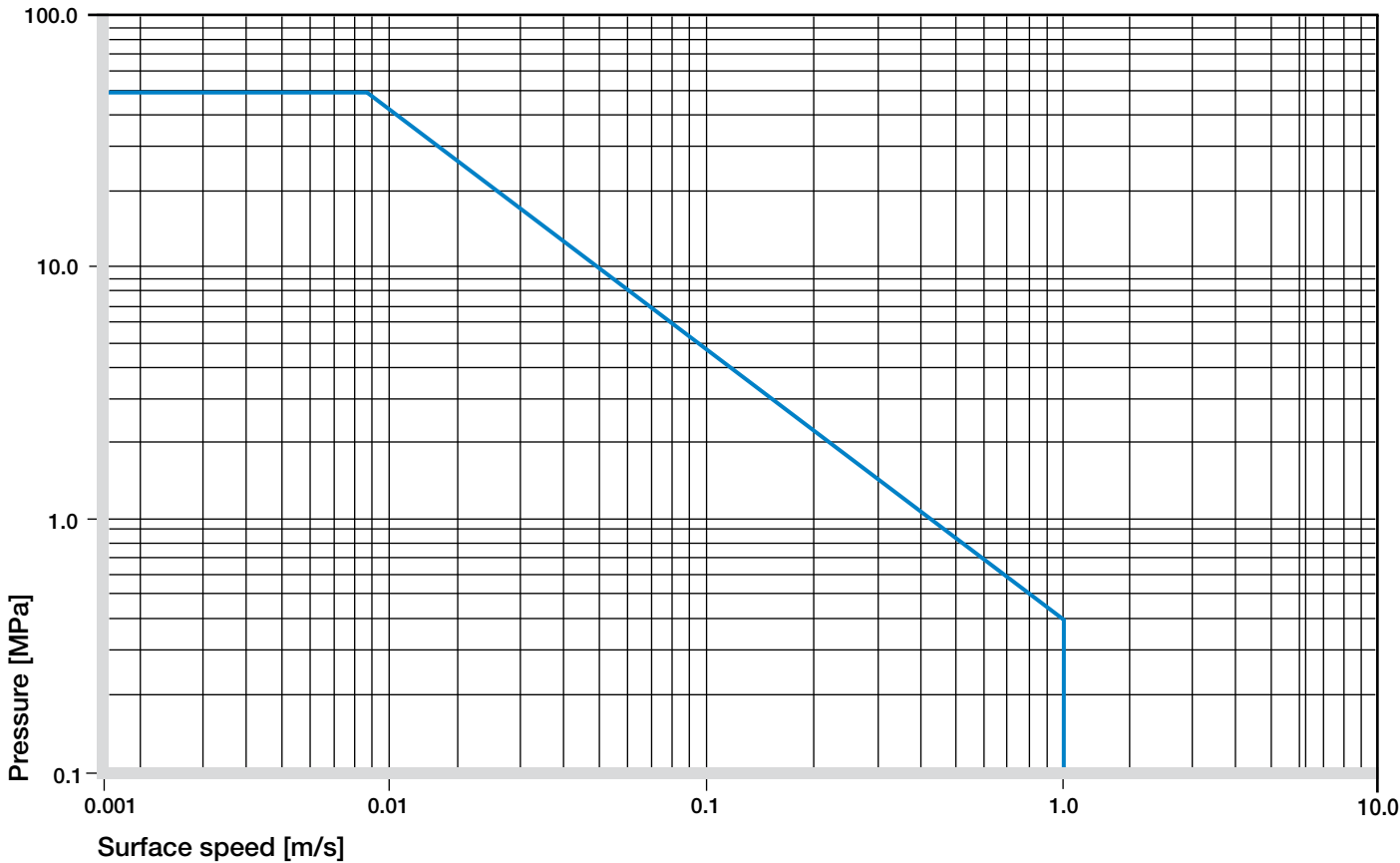


Diagram 01: Permissible pv values for iglidur® P with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

With the iglidur® P plain bearing, the user has a cost-effective, maintenance-free plain bearing. Compared to iglidur® G, plain bearings made of iglidur® P are better suited for rotating movements and average loads.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® P plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +130 °C the permissible surface pressure is almost 15 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

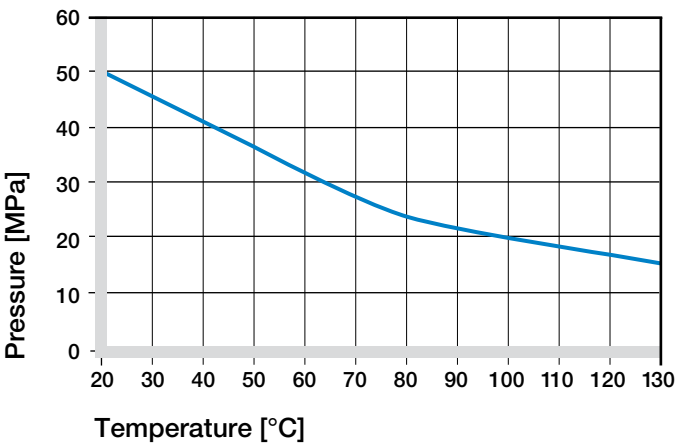


Diagram 02: Recommended maximum surface pressure as a function of temperature (50 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® P as a function of radial pressure. At the recommended maximum surface pressure of 50 MPa the deformation is less than 4 %.

► Surface Pressure, page 63

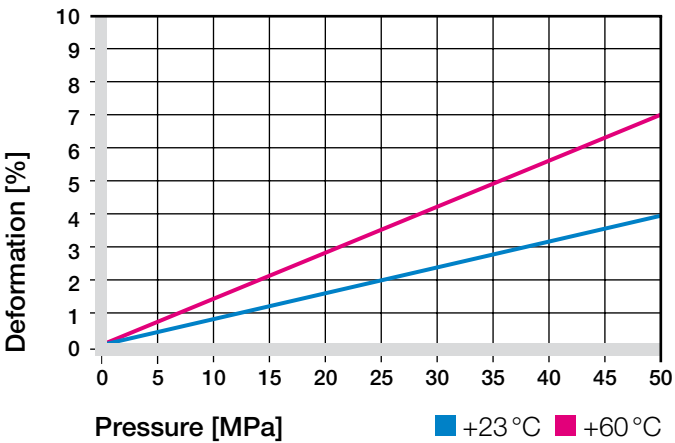


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Plain bearings made of iglidur® P are maintenance-free plain bearings, which were developed for low to average surface speeds. The maximum values given in table 02 can only be achieved at a very low surface pressure. The maximum speed given is the speed at which an increase up to the continuous use temperature occurs due to friction.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 3      |
| Short term | 2        | 1.4         | 4      |

Table 02: Maximum running speed

Temperatures

Even at its highest long term application temperature of +130 °C, iglidur® P does not quite reach the values of iglidur® G. The ambient temperatures in the bearing system also have an effect on the bearing wear. With increasing temperatures, the wear increases.

► Application Temperatures, page 66

| iglidur® P                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | +130 °C                 |
| Max. short term                | +200 °C                 |
| Add. securing is required from | +90 °C                  |

Table 03: Temperature limits

Friction and Wear

Just as the wear resistance, the coefficient of friction changes greatly with increasing load. With regard to iglidur® P, the coefficient of friction increases slightly when the speed increases (Diagram 04). Diagram 05 shows how the coefficient of friction drops when the load increases. Starting at approximately 6 MPa, the coefficient of friction is already below 0.1. iglidur® P plain bearings obtain a minimum coefficient of friction on shafts with a roughness Ra from 0.1 to 0.2 μm. Both smoother and rougher shaft surface finish cause the friction to clearly increase.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

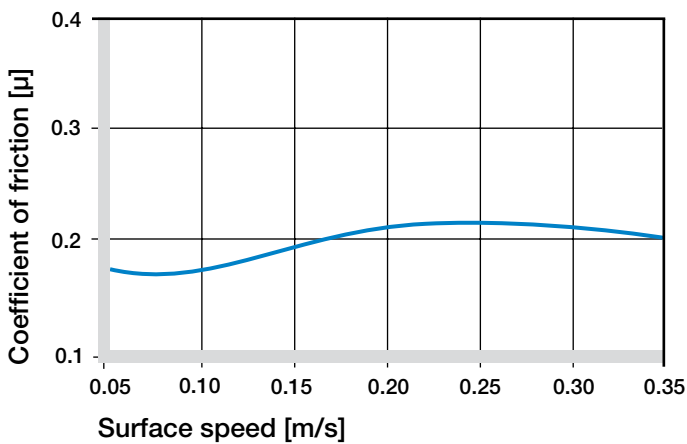


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

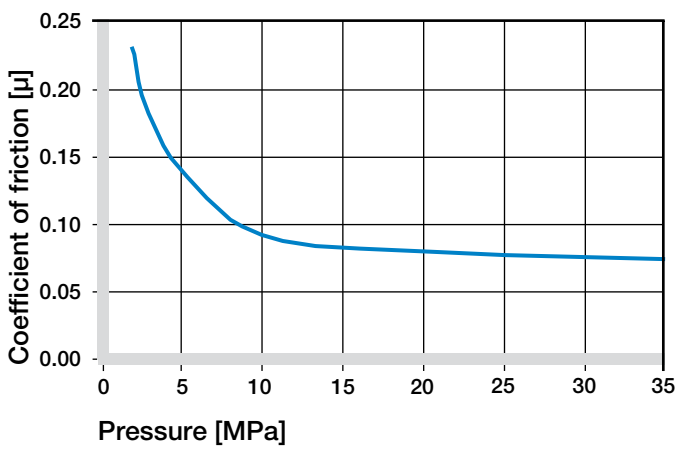


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagrams 06 to 10 show results of testing different shaft materials with plain bearings made of iglidur® P. For rotating movements, the wear of iglidur® P with Cold Rolled Steel and HR Carbon Steel shafts is very low. On the other hand, the bearings on 304 Stainless Steel shafts as well as hard-chromed shafts result in higher wear than other shaft materials even in the low load range. For example at a load of 2 MPa, Cold Rolled Steel is six times better than 304 Stainless Steel. For oscillating movements, however, is the „soft“ shaft St37 significantly less favorable than the hardened shaft versions or the V2A shafts.

► Shaft Materials, page 71

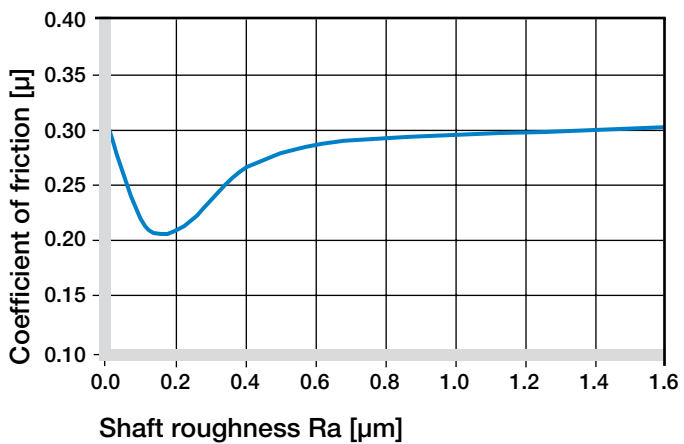


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

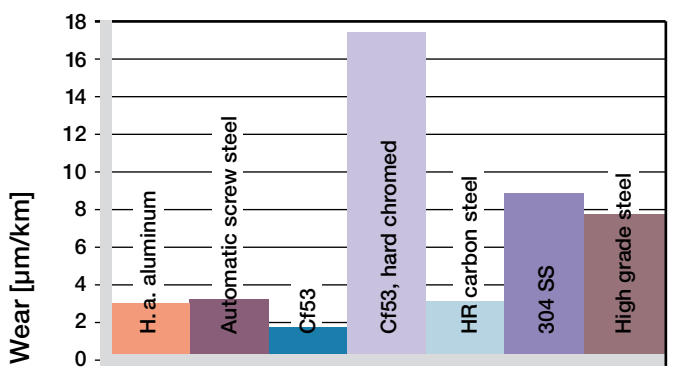


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

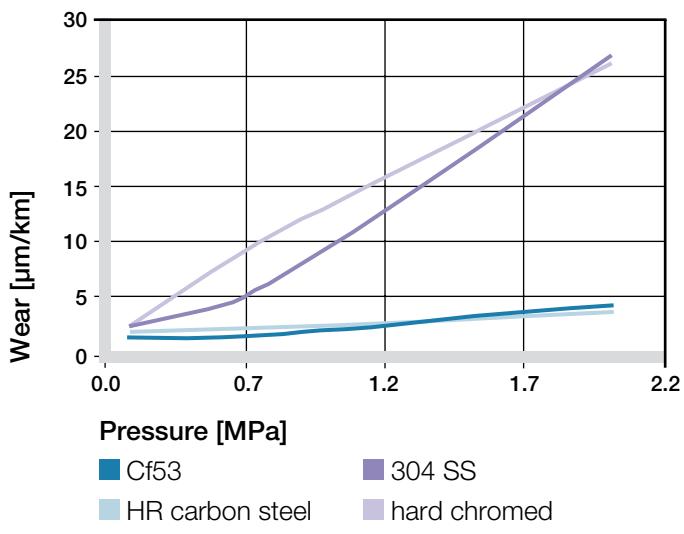


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

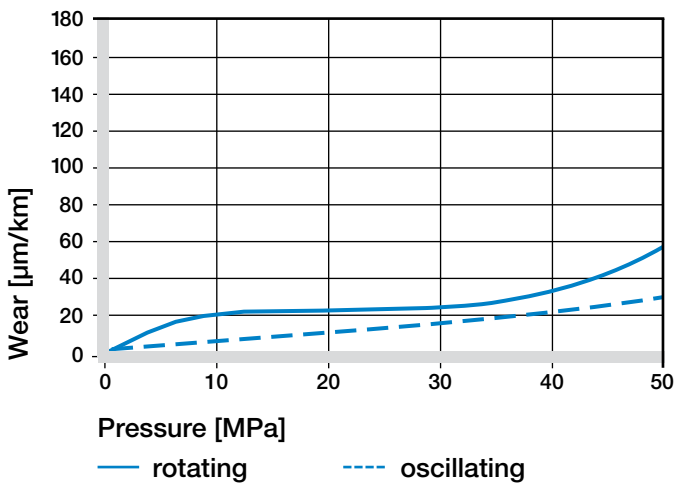


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

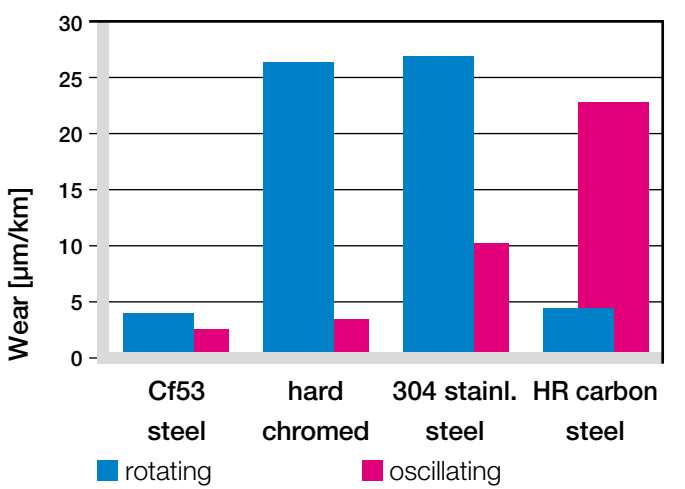


Diagram 10: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® P | Dry       | Greases | Oil  | Water |
|------------|-----------|---------|------|-------|
| C. o. f. μ | 0.06–0.21 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 μm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® P plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® P is not attacked by most weak organic and inorganic acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | –          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0          |
| Strong acids                    | –          |
| Diluted alkalines               | –          |
| Strong alkalines                | –          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® P have limited use under radioactive radiation. They are resistant to radiation up to an intensity of  $5 \cdot 10^2$  Gy.

UV Resistance

iglidur® P plain bearings are partially UV resistant.

Vacuum

In a vacuum environment, existing moisture in iglidur® P plain bearings is released as a vapour. Use in vacuum can be limited.

Electrical Properties

|                                                        |                             |
|--------------------------------------------------------|-----------------------------|
| iglidur® P plain bearings are electrically insulating. |                             |
| Volume resistance                                      | $> 10^{13} \Omega\text{cm}$ |
| Surface resistance                                     | $> 10^{12} \Omega$          |



Moisture Absorption

The moisture absorption of iglidur® P plain bearings is approximately 0.2 % in standard atmosphere. The saturation limit in water is 0.4 %. This low moisture absorption is well below the values of iglidur® G.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.2 % weight |
| Max. water absorption | 0.4 % weight |

Table 06: Moisture absorption

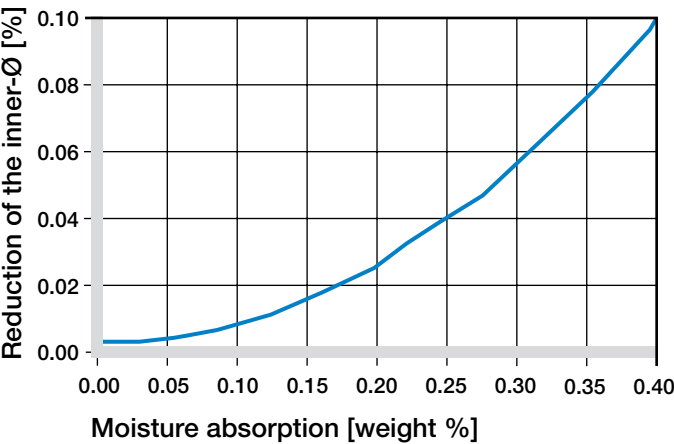


Diagram 11: Effect of moisture absorption on plain bearings

Installation Tolerances

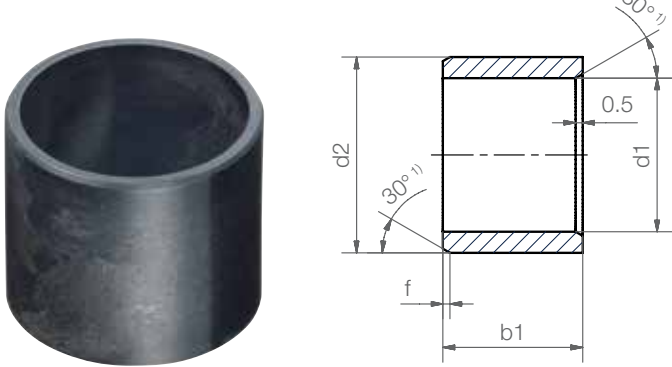
iglidur® P plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® P E10 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180       | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212       | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245       | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| PSM-0304-03 | 3.0  | +0.014 +0.054 | 4.5  | 3.0       |
| PSM-0405-04 | 4.0  | +0.020 +0.068 | 5.5  | 4.0       |
| PSM-0507-05 | 5.0  | +0.020 +0.068 | 7.0  | 5.0       |
| PSM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| PSM-0810-08 | 8.0  | +0.025 +0.083 | 10.0 | 8.0       |
| PSM-0810-11 | 8.0  | +0.025 +0.083 | 10.0 | 11.5      |
| PSM-0810-12 | 8.0  | +0.025 +0.083 | 10.0 | 12.0      |
| PSM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| PSM-1214-15 | 12.0 | +0.032 +0.102 | 14.0 | 15.0      |
| PSM-1214-25 | 12.0 | +0.032 +0.102 | 14.0 | 25.0      |
| PSM-1517-15 | 15.0 | +0.032 +0.102 | 17.0 | 15.0      |
| PSM-1618-20 | 16.0 | +0.032 +0.102 | 18.0 | 20.0      |
| PSM-1618-42 | 16.0 | +0.032 +0.102 | 18.0 | 42.0      |
| PSM-1820-15 | 18.0 | +0.032 +0.102 | 20.0 | 15.0      |
| PSM-1820-20 | 18.0 | +0.032 +0.102 | 20.0 | 20.0      |
| PSM-1820-33 | 18.0 | +0.032 +0.102 | 20.0 | 33.0      |
| PSM-2022-22 | 20.0 | +0.040 +0.124 | 22.0 | 22.0      |
| PSM-2022-30 | 20.0 | +0.040 +0.124 | 22.0 | 30.0      |
| PSM-2022-51 | 20.0 | +0.040 +0.124 | 22.0 | 51.0      |
| PSM-2023-15 | 20.0 | +0.040 +0.124 | 23.0 | 15.0      |
| PSM-2023-25 | 20.0 | +0.040 +0.124 | 23.0 | 25.0      |
| PSM-2023-30 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      |
| PSM-2224-45 | 22.0 | +0.040 +0.124 | 24.0 | 45.0      |
| PSM-2225-15 | 22.0 | +0.040 +0.124 | 25.0 | 15.0      |
| PSM-2225-20 | 22.0 | +0.040 +0.124 | 25.0 | 20.0      |

\* after pressfit. Testing methods ► page 75



Order key

PSM-0304-03

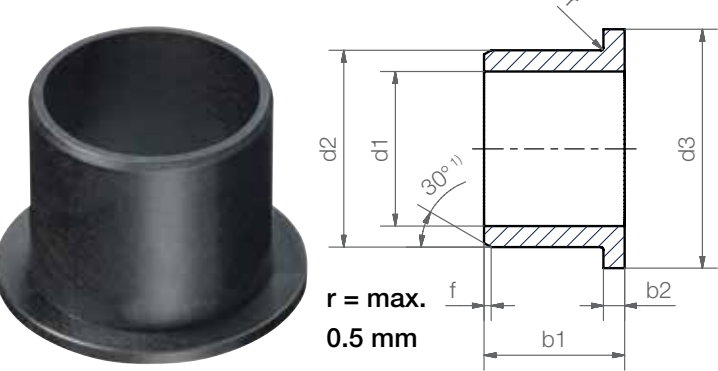
- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® P

| Part number   | d1   | d1-Tolerance* | d2    | b1<br>h13 |
|---------------|------|---------------|-------|-----------|
| PSM-2225-45   | 22.0 | +0.040 +0.124 | 25.0  | 45.0      |
| PSM-2325-37   | 23.0 | +0.040 +0.124 | 25.0  | 37.0      |
| PSM-2325-58   | 23.0 | +0.040 +0.124 | 25.0  | 58.0      |
| PSM-2325-68   | 23.0 | +0.040 +0.124 | 25.0  | 68.0      |
| PSM-2528-20   | 25.0 | +0.040 +0.124 | 28.0  | 20.0      |
| PSM-2528-30   | 25.0 | +0.040 +0.124 | 28.0  | 30.0      |
| PSM-2528-35   | 25.0 | +0.040 +0.124 | 28.0  | 35.0      |
| PSM-2630-25   | 26.0 | +0.040 +0.124 | 30.0  | 25.0      |
| PSM-2832-20   | 28.0 | +0.040 +0.124 | 32.0  | 20.0      |
| PSM-2832-25   | 28.0 | +0.040 +0.124 | 32.0  | 25.0      |
| PSM-3034-20   | 30.0 | +0.040 +0.124 | 34.0  | 20.0      |
| PSM-3034-30   | 30.0 | +0.040 +0.124 | 34.0  | 30.0      |
| PSM-3034-40   | 30.0 | +0.040 +0.124 | 34.0  | 40.0      |
| PSM-3034-45   | 30.0 | +0.040 +0.124 | 34.0  | 45.0      |
| PSM-3539-40   | 35.0 | +0.050 +0.150 | 39.0  | 40.0      |
| PSM-4044-50   | 40.0 | +0.050 +0.150 | 44.0  | 50.0      |
| PSM-4044-58   | 40.0 | +0.050 +0.150 | 44.0  | 58.0      |
| PSM-5055-40   | 50.0 | +0.050 +0.150 | 55.0  | 40.0      |
| PSM-6065-50   | 60.0 | +0.060 +0.180 | 65.0  | 50.0      |
| PSM-6065-60   | 60.0 | +0.060 +0.180 | 65.0  | 60.0      |
| PSM-6570-50   | 65.0 | +0.060 +0.180 | 70.0  | 50.0      |
| PSM-7580-80   | 75.0 | +0.060 +0.180 | 80.0  | 80.0      |
| PSM-9095-100  | 90.0 | +0.072 +0.212 | 95.0  | 100.0     |
| PSM-95100-100 | 95.0 | +0.072 +0.212 | 100.0 | 100.0     |

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Flange bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| PFM-0405-04   | 4.0  | +0.020 +0.068 | 5.5  | 9.5       | 4.0       | 0.75        |
| PFM-0507-05   | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 5.0       | 1.0         |
| PFM-0608-04   | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 4.0       | 1.0         |
| PFM-0608-06   | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| PFM-0810-075  | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 7.5       | 1.0         |
| PFM-0810-10   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| PFM-0810-15   | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 15.0      | 1.0         |
| PFM-081012-10 | 8.0  | +0.025 +0.083 | 10.0 | 12.0      | 10.0      | 1.0         |
| PFM-1012-10   | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| PFM-1012-17   | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 17.0      | 1.0         |
| PFM-1214-09   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 9.0       | 1.0         |
| PFM-1214-10   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 10.0      | 1.0         |
| PFM-1214-15   | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 15.0      | 1.0         |
| PFM-121418-08 | 12.0 | +0.032 +0.102 | 14.0 | 18.0      | 8.0       | 1.0         |
| PFM-121420-10 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 10.0      | 1.0         |
| PFM-1416-04   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 4.0       | 1.0         |
| PFM-1416-08   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 8.0       | 1.0         |
| PFM-1416-12   | 14.0 | +0.032 +0.102 | 16.0 | 22.0      | 12.0      | 1.0         |
| PFM-141624-25 | 14.0 | +0.032 +0.102 | 16.0 | 24.0      | 25.0      | 1.0         |
| PFM-1420-10   | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 10.0      | 3.0         |
| PFM-1517-22   | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 22.0      | 1.0         |
| PFM-151824-32 | 15.0 | +0.032 +0.102 | 18.0 | 24.0      | 32.0      | 1.5         |
| PFM-1618-12   | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 12.0      | 1.0         |
| PFM-1618-17   | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| PFM-161824-40 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 40.0      | 1.0         |

\* after pressfit. Testing methods ► page 75

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Flange bearing

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| PFM-1719-25   | 17.0 | +0.032 +0.102 | 19.0 | 25.0      | 25.0      | 1.0         |
| PFM-1820-17   | 18.0 | +0.032 +0.102 | 20.0 | 26.0      | 17.0      | 1.0         |
| PFM-202328-15 | 20.0 | +0.040 +0.124 | 23.0 | 28.0      | 15.0      | 1.5         |
| PFM-2023-16   | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 16.5      | 1.5         |
| PFM-2023-30   | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 30.0      | 1.5         |
| PFM-2427-22   | 24.0 | +0.040 +0.124 | 27.0 | 32.0      | 22.0      | 1.5         |
| PFM-2528-11   | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 11.5      | 1.5         |
| PFM-2528-21   | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 21.5      | 1.5         |
| PFM-3034-16   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 16.0      | 2.0         |
| PFM-3034-30   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 30.0      | 2.0         |
| PFM-3034-37   | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 37.0      | 2.0         |
| PFM-3539-26   | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 26.0      | 2.0         |
| PFM-4044-30   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 30.0      | 2.0         |
| PFM-4044-40   | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 40.0      | 2.0         |
| PFM-5055-50   | 50.0 | +0.050 +0.150 | 55.0 | 63.0      | 50.0      | 2.0         |
| PFM-6065-40   | 60.0 | +0.060 +0.180 | 65.0 | 73.0      | 40.0      | 2.0         |
| PFM-6065-50   | 60.0 | +0.060 +0.180 | 65.0 | 73.0      | 50.0      | 2.0         |
| PFM-7075-50   | 70.0 | +0.060 +0.180 | 75.0 | 83.0      | 50.0      | 2.0         |
| PFM-8085-100  | 80.0 | +0.060 +0.180 | 85.0 | 93.0      | 100.0     | 2.5         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

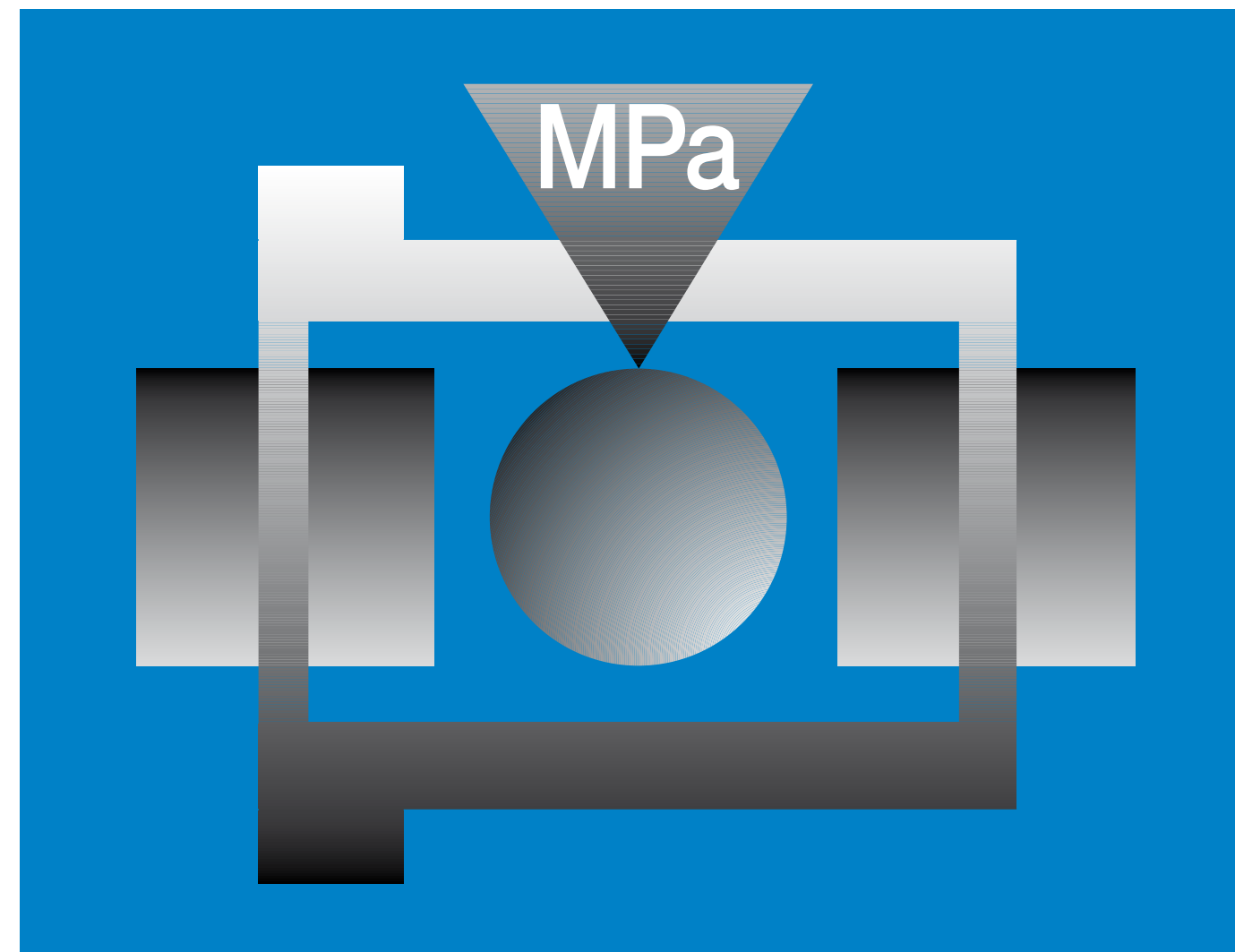
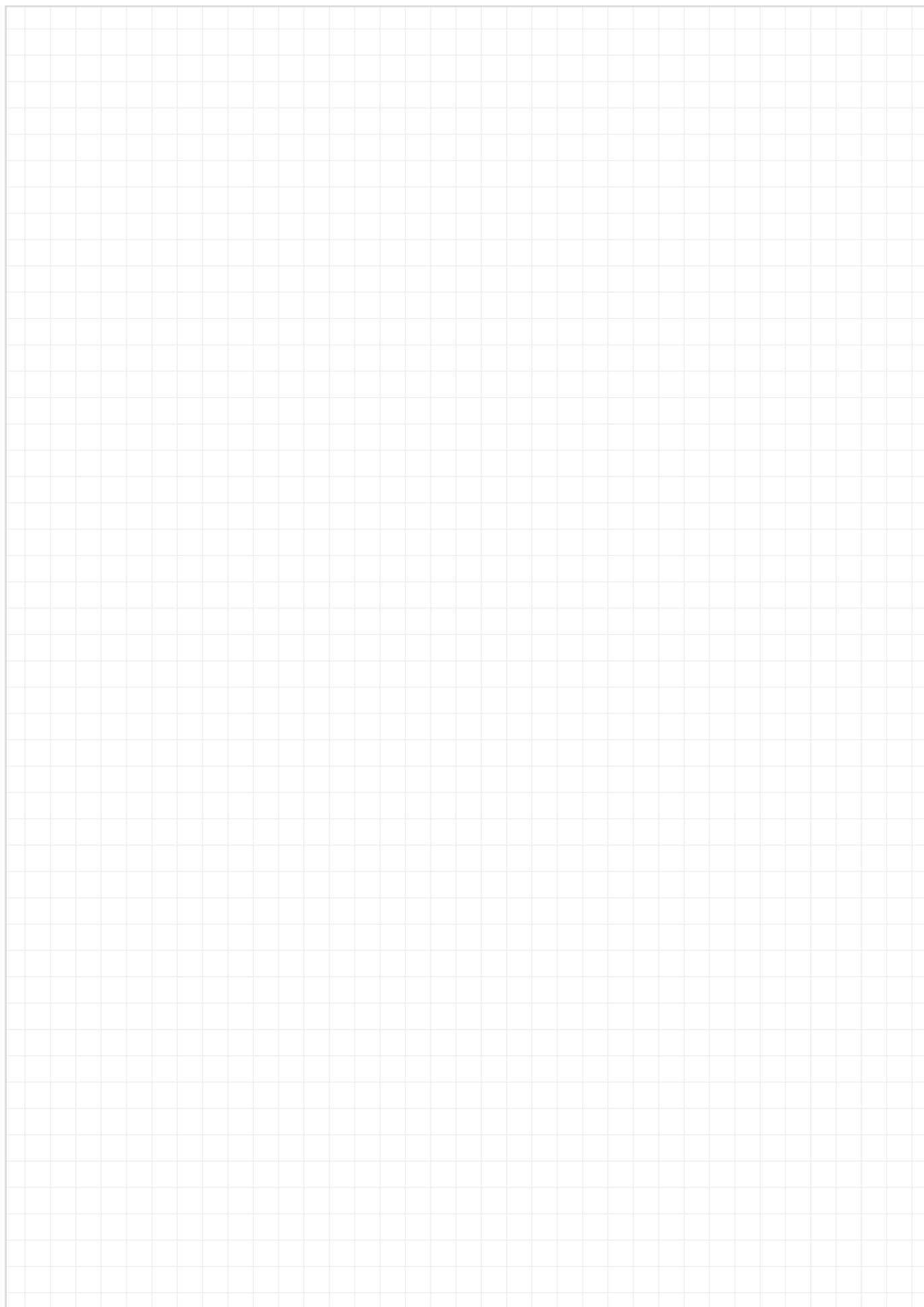
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## Flexible, wear resistant & more – iglidur® P210



Standard range from stock

Low humidity absorption

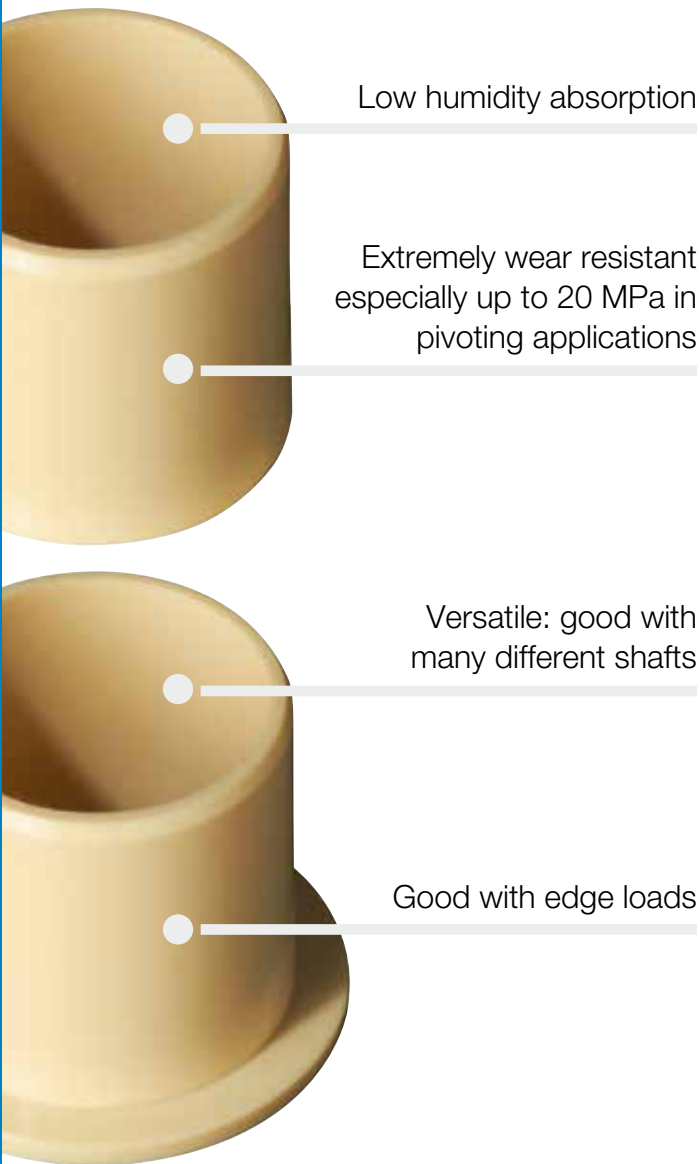
Extremely wear resistant especially up to 20 MPa  
in pivoting applications

Versatile: good with many different shafts

Good with edge loads



**Flexible, wear resistant & more.** This versatile material has already proven its worth in many customer-specific solutions and as a bar stock material. Clip-on or pretensioned design as well as vehicle interior applications are possible. Now available in a standard size range.



**When to use it?**

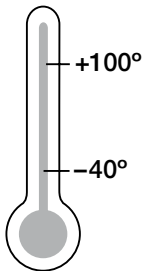
- When you need a universal bearing for use in a moist environment
- When you need a wear-resistant bearing for pivoting applications at medium loads
- When edge loads and shocks occur
- When the surface pressure of iglidur® J is insufficient



**When not to use it?**

- When you need a universal bearing with the largest possible range of dimensions
  - ▶ iglidur® G, page 81
- When you need a bearing for highly loaded pivoting applications
  - ▶ iglidur® Q, page 541
  - ▶ iglidur® Q2, page 555
- When temperatures in excess of +100 °C occur
  - ▶ iglidur® G, page 81
  - ▶ iglidur® J350, page 257

**Temperature**



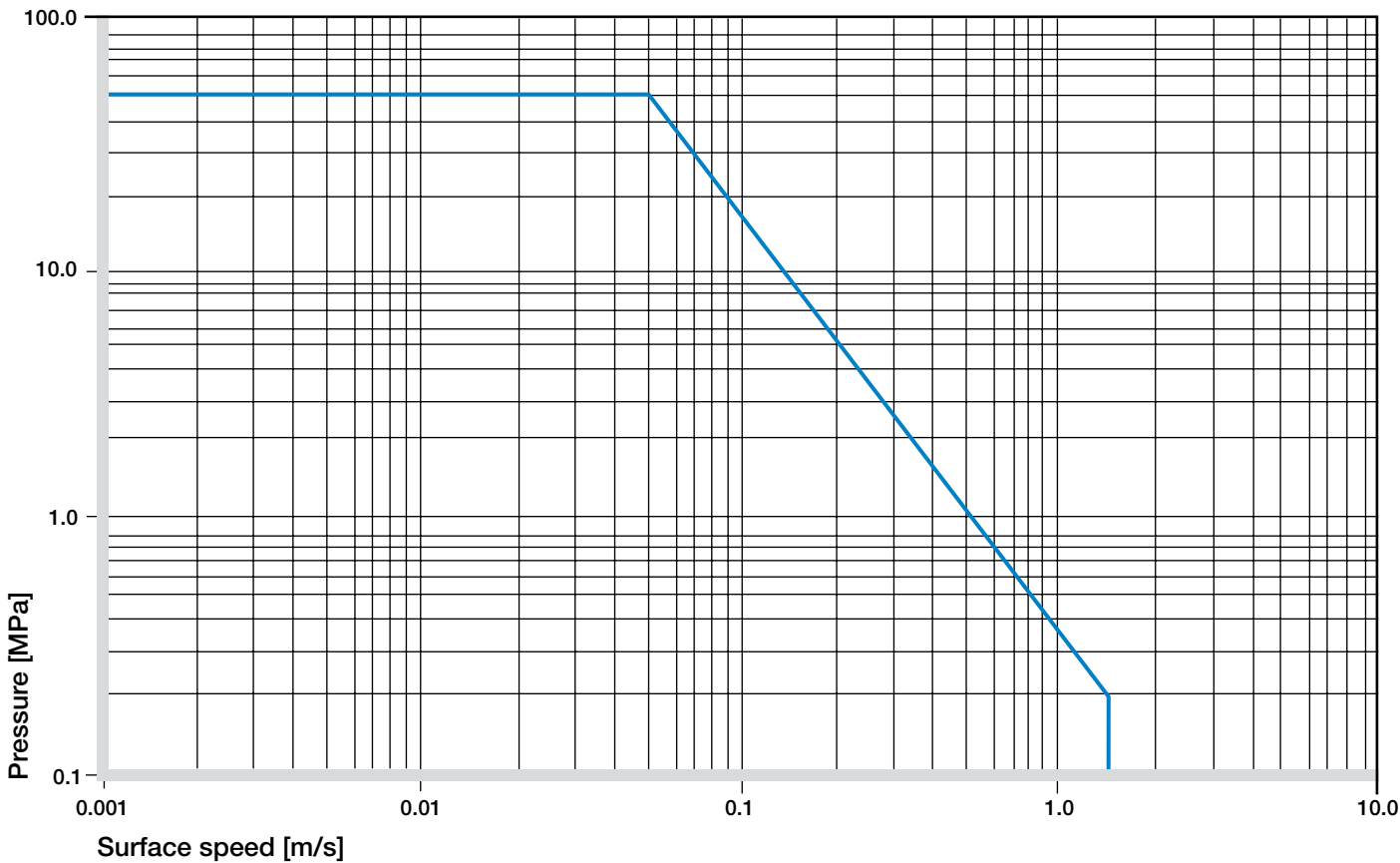
**Product range**

2 types  
Ø 6–20 mm  
more dimensions  
on request

**Material properties table**

| General properties                                     | Unit                               | iglidur® P210      | Testing method |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| Density                                                | g/cm³                              | 1.40               |                |
| Colour                                                 |                                    | yellow             |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.5                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.07–0.19          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.4                |                |
| <b>Mechanical properties</b>                           |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 2,500              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 70                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 50                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 50                 |                |
| Shore D hardness                                       |                                    | 75                 | DIN 53505      |
| <b>Physical and thermal properties</b>                 |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +100               |                |
| Max. short term application temperature                | °C                                 | +160               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 8                  | DIN 53752      |
| <b>Electrical properties</b>                           |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

**Table 01: Material properties table**



**Diagram 01: Permissible pv values for iglidur® P210 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing**



iglidur® P210 plain bearings provide the user with versatile all-round bearings, which have proven to have above average service life, primarily in pivoting applications at medium loads of up to 20 MPa.

### Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® P210 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +100 °C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

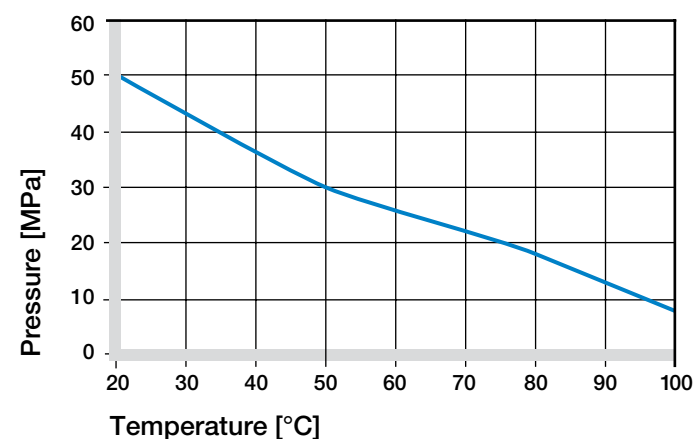


Diagram 02: Recommended maximum surface pressure as a function of temperature (50 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® P210 as a function of radial pressure. At the recommended maximum surface pressure of 50 MPa the deformation at room temperature is less than 3 %.

### ► Surface Pressure, page 63

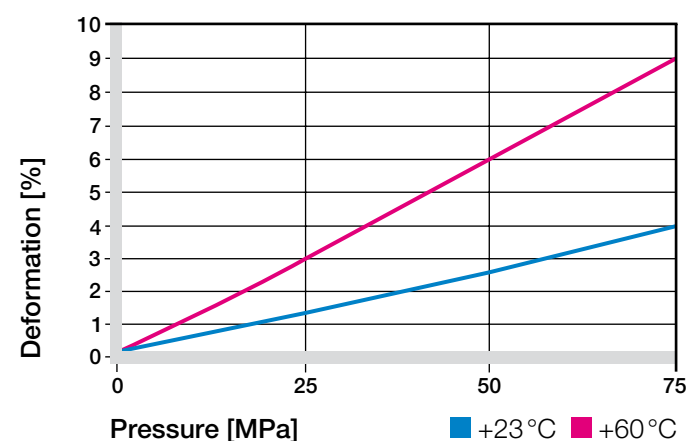


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

Plain bearings made of iglidur® P210 are maintenance-free plain bearings, which were developed for low to average surface speeds. The maximum values given in table 02 can only be achieved at a very low surface pressure. The maximum speed given is the speed at which an increase up to the continuous use temperature occurs due to friction.

### ► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 3      |
| Short term | 2        | 1.4         | 4      |

Table 02: Maximum running speed

### Temperatures

With its highest long term application temperature of +100 °C, iglidur® P210 is suitable for a large application spectrum. If higher temperatures are required, the best seller iglidur® G with a maximum longterm temperature of +130 °C can be used. The ambient temperatures in the bearing system also have an effect on the bearing wear. With increasing temperatures, the wear increases.

### ► Application Temperatures, page 66

| iglidur® P210                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +100 °C                 |
| Max. short term                | +160 °C                 |
| Add. securing is required from | +50 °C                  |

Table 03: Temperature limits

### Friction and Wear

With regard to iglidur® P210, the coefficient of friction increases continuously with the speed. Just as the wear resistance, the coefficient of friction changes greatly with increasing load. Diagram 05 shows how the coefficient of friction drops when the load increases. Starting at approximately 10 MPa, the coefficient of friction is already below 0.1. iglidur® P210 plain bearings obtain a minimum coefficient of friction on shafts with a roughness Ra from 0.5 to 0.6 µm. Both smoother and rougher shaft surface finish cause the friction to increase significantly.

### ► Coefficients of Friction and Surfaces, page 68

### ► Wear Resistance, page 69

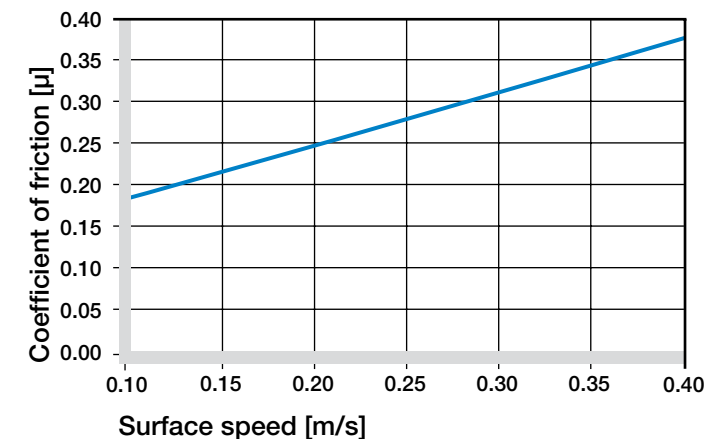


Diagram 04: Coefficient of friction as a function of the running speed, p = 1 MPa

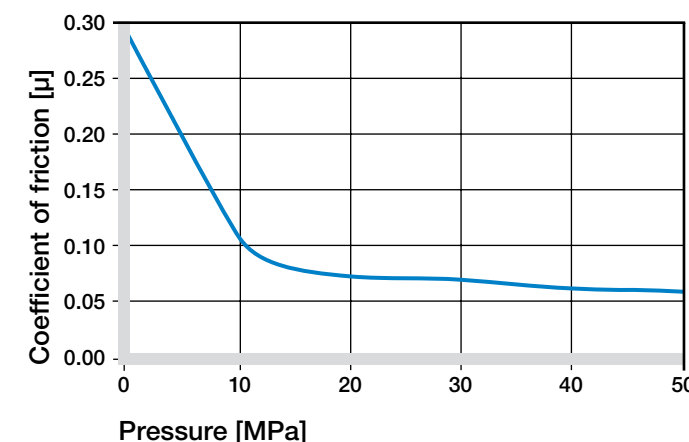


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### Shaft Materials

Diagrams 06 to 08 show results of testing different shaft materials with plain bearings made of iglidur® P210. For rotating motions at radial loads below 1 MPa, iglidur® P210 has generally very low wear. Wear is only significantly higher in combination with St37 shafts. Generally, rotational wear will be higher than for a pivoting application of equal load. This is only reversed at loads above 25 MPa (Diagram 08).

### ► Shaft Materials, page 71

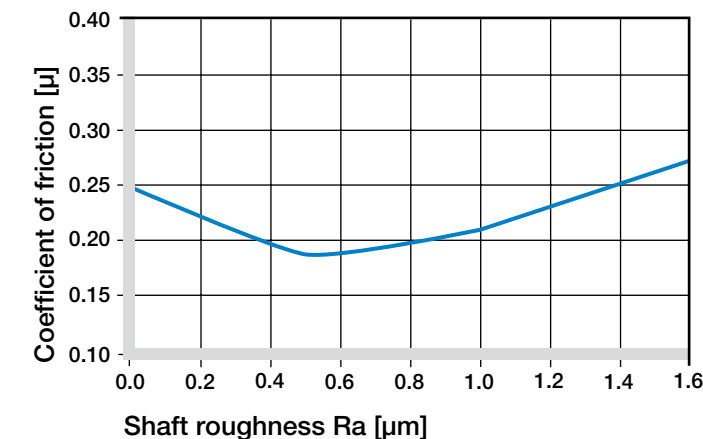


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

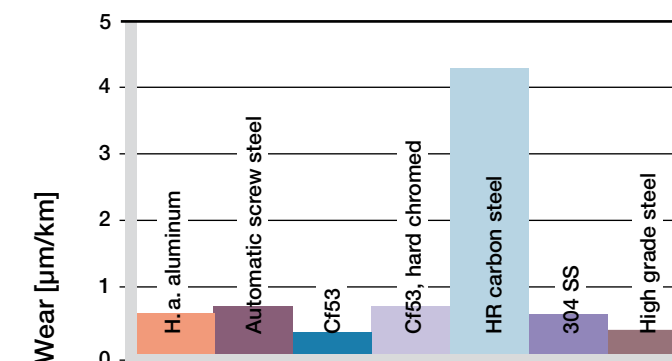


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

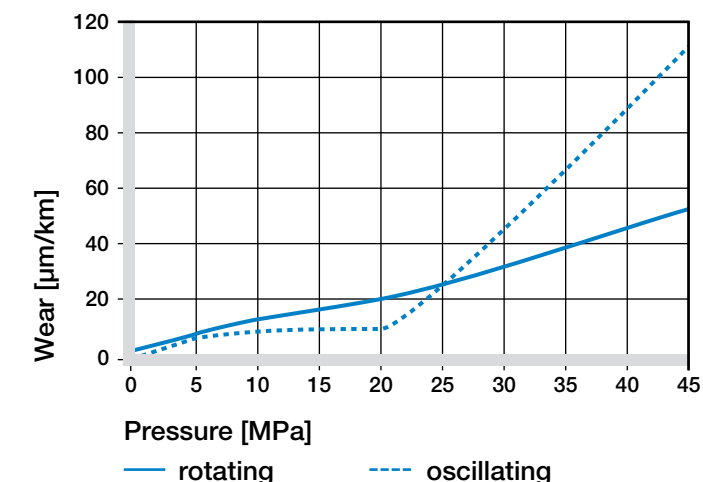


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® P210 | Dry       | Greases | Oil  | Water |
|---------------|-----------|---------|------|-------|
| C.o.f. µ      | 0.07–0.19 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® P210 plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® P210 is not attacked by most weak organic and inorganic acids.

► Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | –          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0          |
| Strong acids                    | –          |
| Diluted alkalines               | –          |
| Strong alkalines                | –          |

**+ resistant 0 conditionally resistant – not resistant**  
**All data given at room temperature [+20 °C]**

**Table 05: Chemical resistance**

Radiation Resistance

Plain bearings made of iglidur® P210 have limited use under radioactive radiation. They are resistant to radiation up to an intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® P210 plain bearings are partially UV resistant.

Vacuum

In a vacuum environment, any existing moisture in iglidur® P210 plain bearings is released as a vapour. Use in vacuum is limited.

Electrical Properties

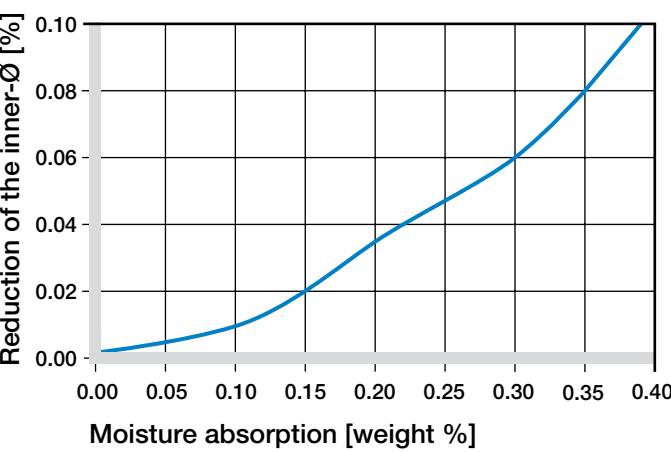
|                                                           |                             |
|-----------------------------------------------------------|-----------------------------|
| iglidur® P210 plain bearings are electrically insulating. |                             |
| Volume resistance                                         | $> 10^{12} \Omega\text{cm}$ |
| Surface resistance                                        | $> 10^{11} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® P210 plain bearings is approximately 0.3 % in standard atmosphere. The saturation limit in water is 0.5 %. This low moisture absorption is well below the values of iglidur® G.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.3 % weight |
| Max. water absorption       | 0.5 % weight |

**Table 06: Moisture absorption**



**Diagram 09: Effect of moisture absorption on plain bearings**

Installation Tolerances

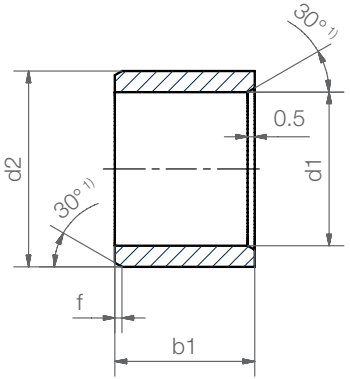
iglidur® P210 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, **page 75**

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® P210 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180          | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212          | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245          | 0 +0.040        |

**Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit**

Sleeve bearing



Order key

**P210SM-0608-06**

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® P210

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| P210SM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| P210SM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| P210SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| P210SM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| P210SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| P210SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► **page 75**



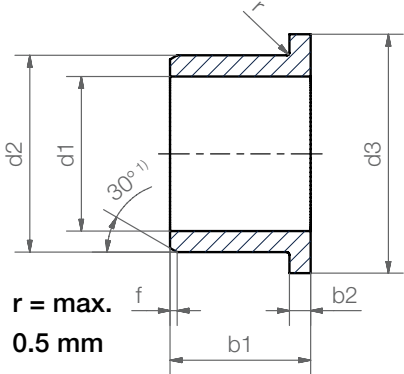
**delivery** from stock  
**time**



**prices** price list online  
www.igus.co.uk/en/p210



Flange bearing



Order key

P210FM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® P210

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| P210FM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| P210FM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| P210FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| P210FM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| P210FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| P210FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



## Versatile – iglidur® K



- Standard range from stock
- Lubrication- and maintenance-free
- Low moisture absorption
- Wear-resistant
- Cost-effective



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

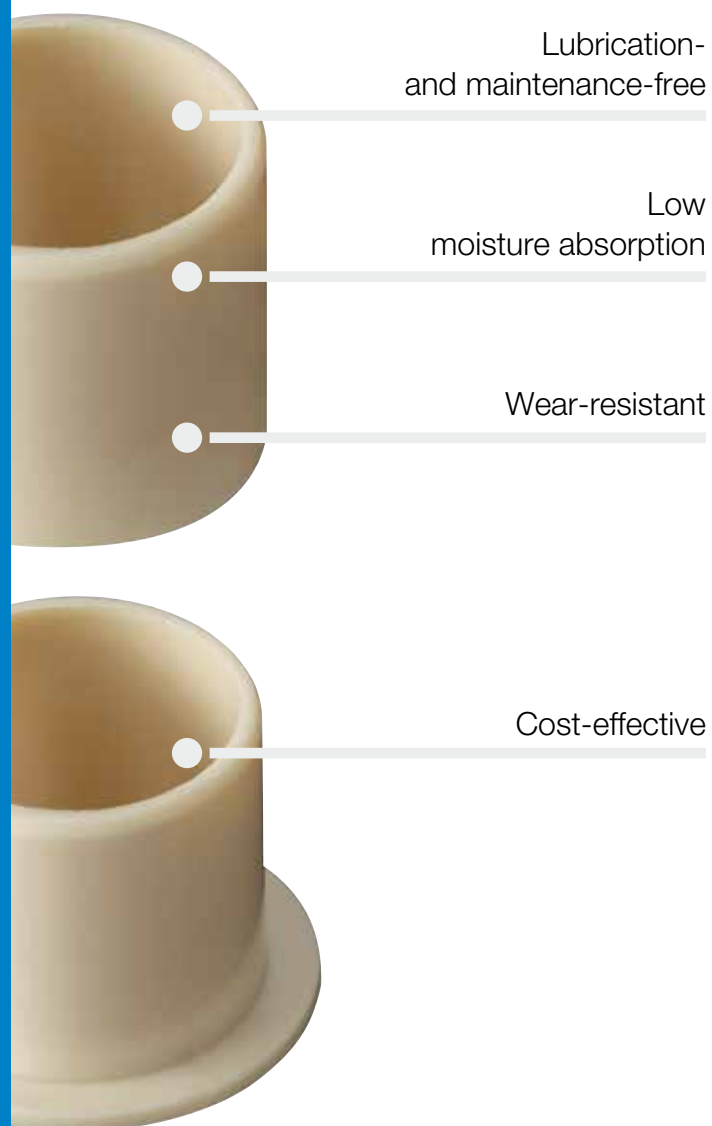


delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/p210](http://www.igus.co.uk/en/p210)

**Versatile.** iglidur® K is the new general purpose bearing for medium temperatures, low moisture absorption and good environmental resistance.



#### When to use it?

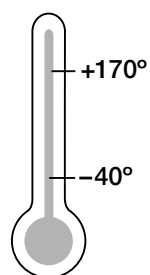
- When you need a cost-effective general purpose bearing
- For use in wet environments
- When good wear resistance is required at medium loads



#### When not to use it?

- When highest wear resistance is necessary  
▶ iglidur® W300, page 151
- If high media-resistance is required  
▶ iglidur® X6, page 307
- When a high-temperature bearing is needed  
▶ iglidur® H, page 353

#### Temperature



#### Product range

2 types  
Ø 6–20 mm  
more dimensions  
on request



#### Typical sectors of industry and application areas

- Printing industry ● Electronics industry
- Packaging ● Medical
- Polymer processing machines etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/satellite-receiver](http://www.igus.co.uk/satellite-receiver)



▶ [www.igus.co.uk/mechanical-hand](http://www.igus.co.uk/mechanical-hand)

| Material properties table                              |                                    |       |                    |
|--------------------------------------------------------|------------------------------------|-------|--------------------|
| General properties                                     |                                    | Unit  | iglidur® K         |
| Density                                                |                                    | g/cm³ | 1.52               |
| Colour                                                 |                                    |       | yellow beige       |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           |       | 0.1                |
| Max. water absorption                                  | % weight                           |       | 0.6                |
| Coefficient of sliding friction, dynamic against steel | μ                                  |       | 0.06–0.21          |
| pv value, max. (dry)                                   | MPa · m/s                          |       | 0.30               |
| Mechanical properties                                  |                                    |       |                    |
| Modulus of elasticity                                  | MPa                                |       | 3,500              |
| Tensile strength at +20 °C                             | MPa                                |       | 80                 |
| Compressive strength                                   | MPa                                |       | 60                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                |       | 50                 |
| Shore D hardness                                       |                                    |       | 72                 |
| Physical and thermal properties                        |                                    |       |                    |
| Max. long term application temperature                 | °C                                 |       | +170               |
| Max. short term application temperature                | °C                                 |       | +240               |
| Min. application temperature                           | °C                                 |       | –40                |
| Thermal conductivity                                   | W/m · K                            |       | 0.25               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> |       | 3                  |
| Electrical properties                                  |                                    |       |                    |
| Specific volume resistance                             | Ωcm                                |       | > 10 <sup>12</sup> |
| Surface resistance                                     | Ω                                  |       | > 10 <sup>12</sup> |

Table 01: Material properties table

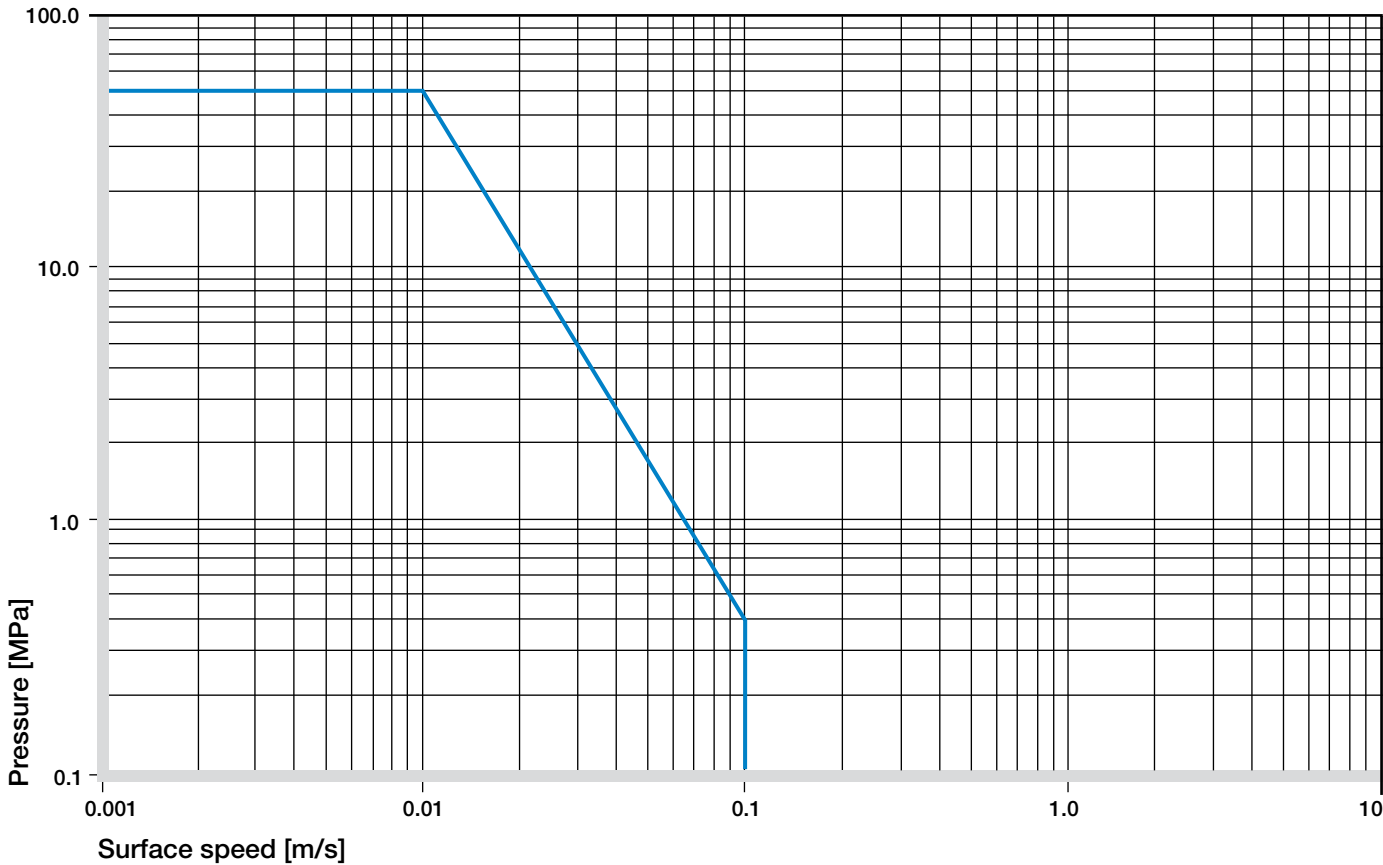


Diagram 01: Permissible pv values for iglidur® K with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® K is characterized by its good wear characteristics at low moisture absorption and good thermal and mechanical specifications. This supports a very universal application spectrum.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® K plain bearings decreases. Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +170 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

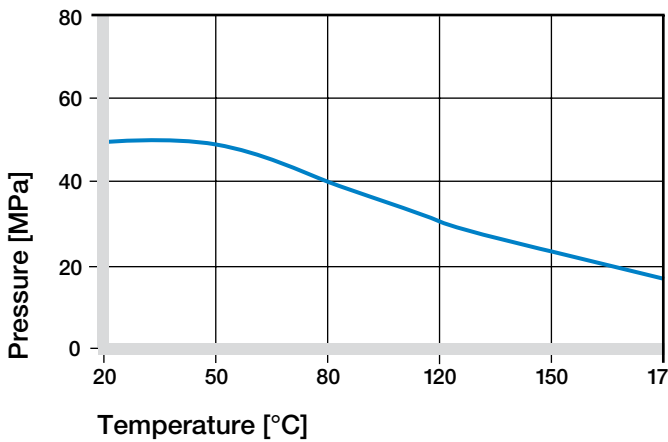


Diagram 02: Recommended maximum surface pressure as a function of temperature (50 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® K at radial loads. At the recommended maximum surface pressure of 50 MPa the deformation is less than 3 %. Plastic deformation can occur, this depends on the applied pressure.

► Surface Pressure, page 63

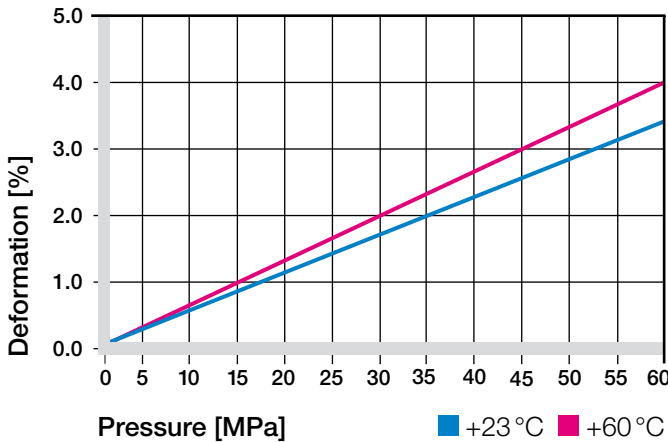


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® K has been developed for low to medium surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 3      |
| Short term | 2        | 1.4         | 4      |

Table 02: Maximum running speed

Temperatures

iglidur® K plain bearings can be used at temperatures from –40 °C up to +170 °C. The short term maximum temperature is +240 °C. The ambient temperatures of the application also have an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +100 °C.

► Application Temperatures, page 66

| iglidur® K                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | +170 °C                 |
| Max. short term                | +240 °C                 |
| Add. securing is required from | +70 °C                  |

Table 03: Temperature limits

Friction and Wear

Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction decreases with increasing pressure (Diagram 05), whereas an increase in surface speed causes an increase of the coefficient of friction (Diagram 04). A noticeable increase is found over 0.15 m/s.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69



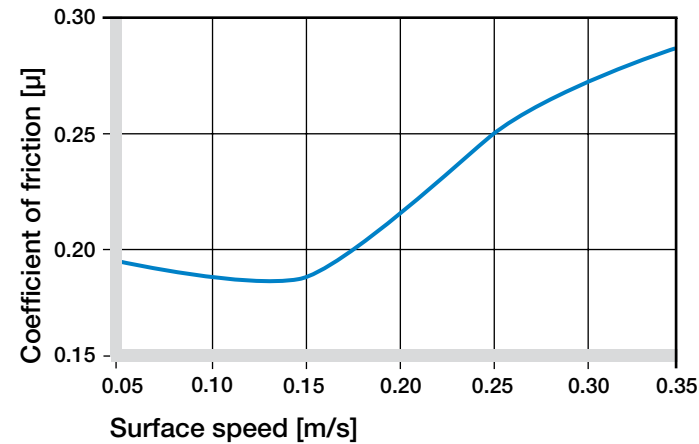


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

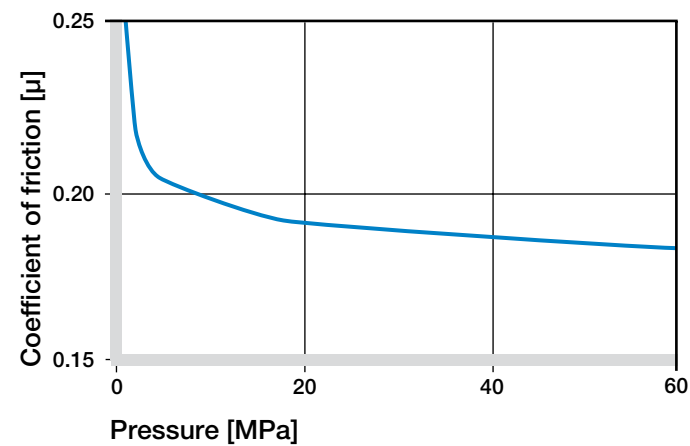


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

## Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® K a ground surface with an average roughness  $R_a = 0.15\text{--}0.20 \text{ }\mu\text{m}$  is recommended.

Diagrams 06 and 07 show results of testing different shaft materials with plain bearings made of iglidur® K. It can be seen from Diagram 07 that iglidur® K can be combined with a large number of different shaft materials. Only hard-chromed shafts are unsuitable. It is important to notice that with increasing loads, the recommended hardness of the shaft increases. The “soft” shafts tend to wear more easily and thus increase the wear of the overall system, if the loads exceed 2 MPa.

The comparison of rotational movements to oscillating movements shows that the wear is almost identical at a pressure up to 5 MPa. The higher the loads, the greater the difference.

► Shaft Materials, **page 71**

| iglidur® K   | Dry       | Greases | Oil  | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. $\mu$ | 0.06–0.21 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \text{ }\mu\text{m}$ , 50 HRC)

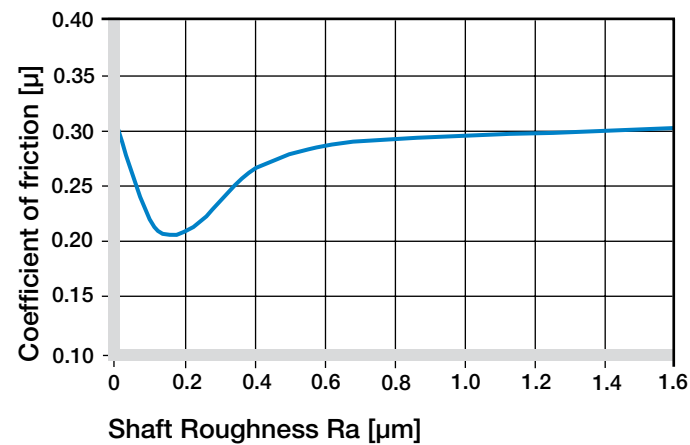


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

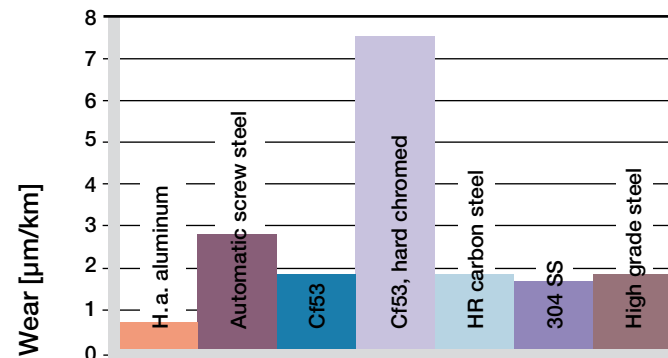


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

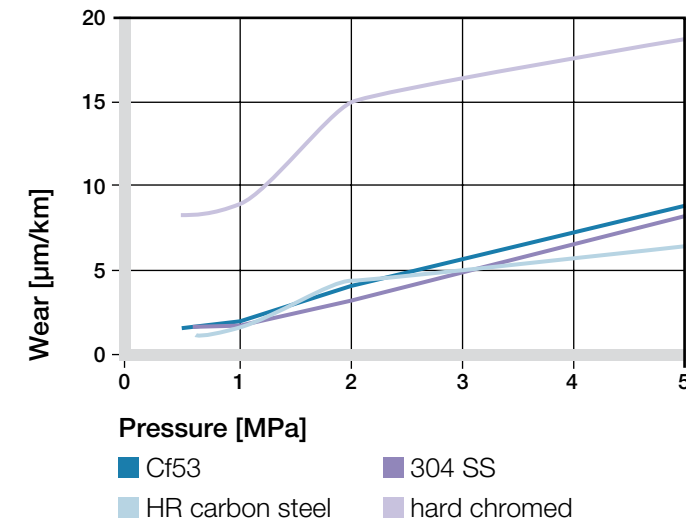


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

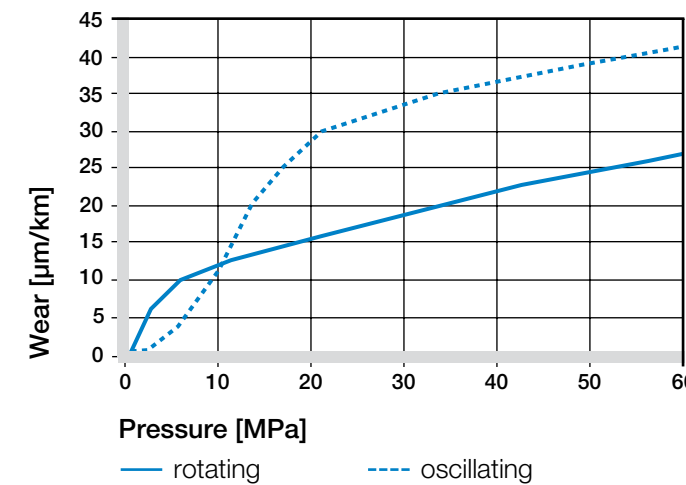


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

## Additional Properties

### Chemical Resistance

iglidur® K plain bearings are resistant to diluted alkaline and very weak acids, as well as fuels and all types of lubricants. The low moisture absorption also permits use in wet or damp environments.

► Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

**+ resistant 0 conditionally resistant – not resistant**

All data given at room temperature [ $+20 \text{ }^\circ\text{C}$ ]

Table 05: Chemical resistance

### Radiation Resistance

Plain bearings made from iglidur® K are resistant to radiation up to an intensity of  $5 \cdot 10^2 \text{ Gy}$ .

### UV Resistance

iglidur® K plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

### Vacuum

When used in a vacuum environment, the iglidur® K plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

### Electrical Properties

iglidur® K plain bearings are electrically insulating.

|                    |                                     |
|--------------------|-------------------------------------|
| Volume resistance  | $> 10^{12} \text{ }\Omega\text{cm}$ |
| Surface resistance | $> 10^{12} \text{ }\Omega$          |

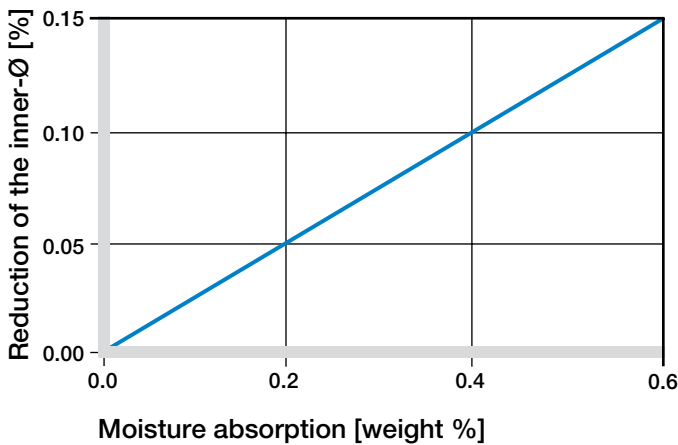
Moisture Absorption

The moisture absorption of iglidur® K plain bearings is approximately 0.1 % in the standard atmosphere. The saturation limit submerged in water is 0.6 %. These values are so low that the swelling only has to be considered in extreme cases.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23°C/50 % r.h     | 0.1 % weight |
| Max. water absorption | 0.6 % weight |

Table 06: Moisture absorption



Installation Tolerances

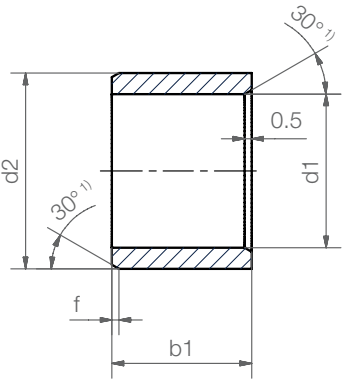
iglidur® K plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table). In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

► Testing Methods, [page 75](#)

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® K<br>E10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|------------------------|--------------------|
| up to 3             | 0–0.025          | +0.014 +0.054          | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.020 +0.068          | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.025 +0.083          | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.032 +0.102          | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.040 +0.124          | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.050 +0.150          | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.060 +0.180          | 0 +0.030           |
| > 80 to 120         | 0–0.087          | +0.072 +0.212          | 0 +0.035           |
| > 120 to 180        | 0–0.100          | +0.085 +0.245          | 0 +0.040           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| KSM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| KSM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| KSM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| KSM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| KSM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| KSM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► [page 75](#)

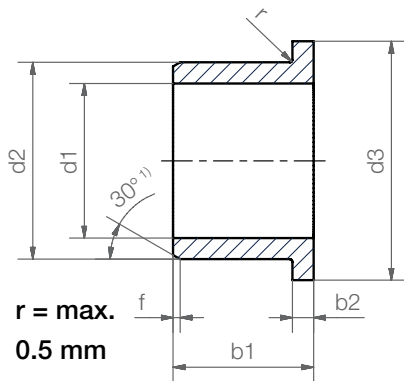


Order key

KSM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® K

Flange bearing



Order key

KFM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® K

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| KFM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| KFM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| KFM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| KFM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| KFM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| KFM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

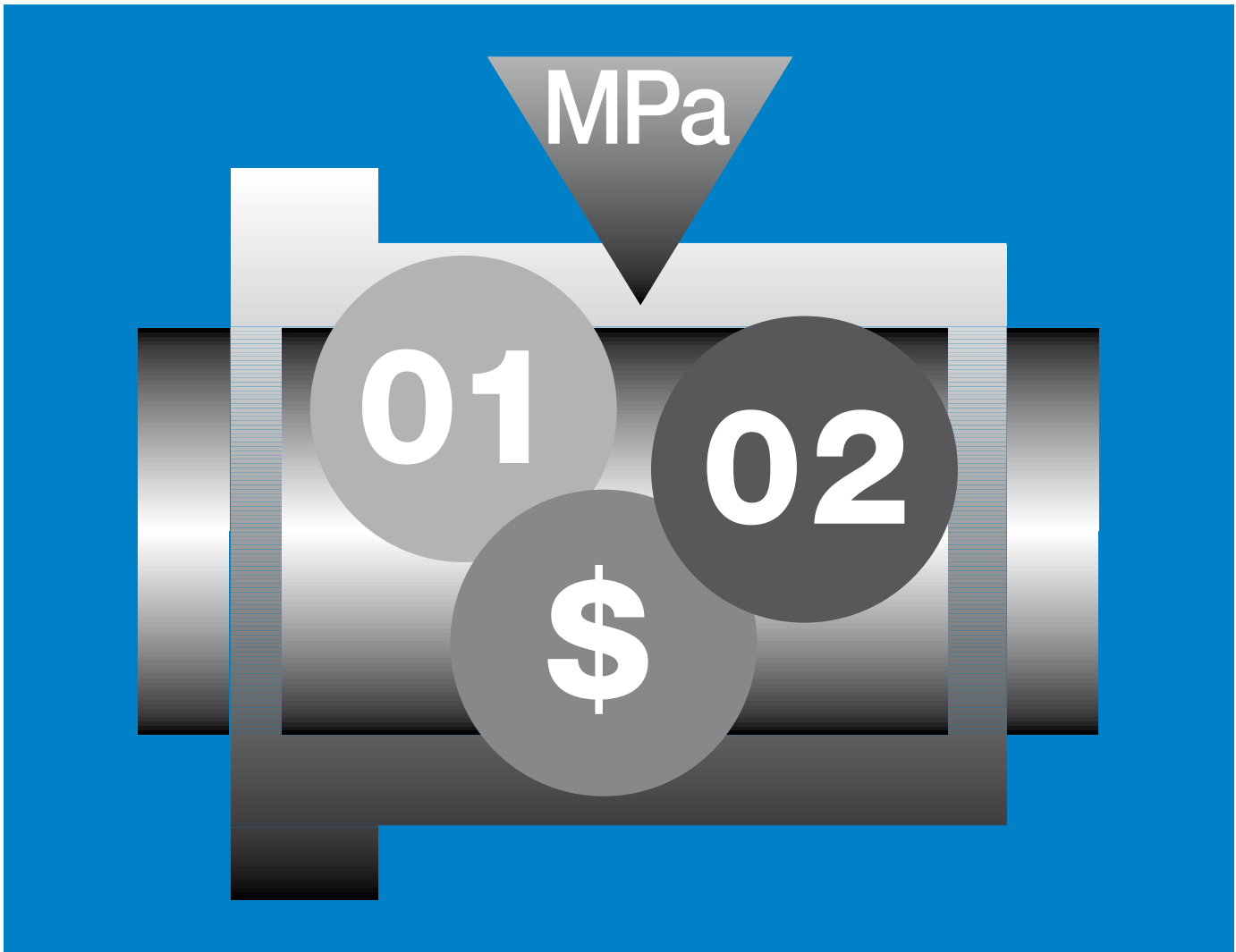
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/k



## Low-cost material for high quantities – iglidur® GLW



Applications with static loads

Maintenance-free dry running

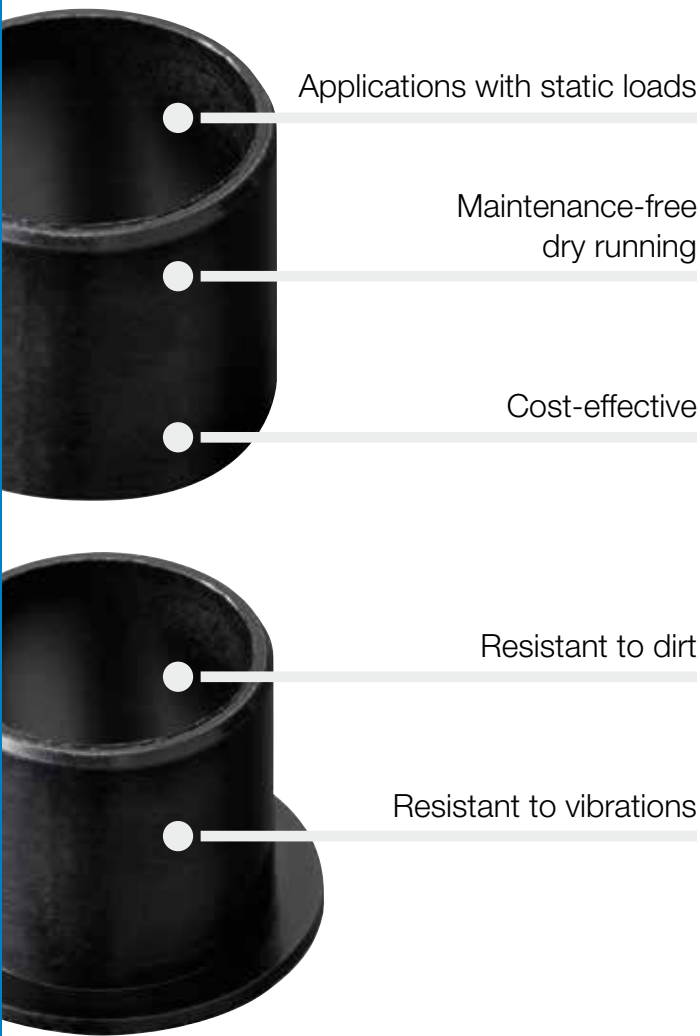
Cost-effective

Resistant to dirt

Resistant to vibrations



**Low-cost material for high quantities.** Low cost material for medium loads. iglidur® GLW plain bearings are preferred in applications with static load, where only occasional movement takes place.



**When to use it?**

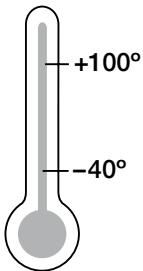
- When you need an economical universal bearing for mass production
- For high, primarily static loads
- For low to medium speeds



**When not to use it?**

- When mechanical reaming of the wall surface is necessary
  - ▶ iglidur® M250, page 127
- For primarily dynamic loads
  - ▶ iglidur® G, page 81
- When the highest wear resistance is necessary
  - ▶ iglidur® W300, page 151
- When temperatures continuously exceed +130 °C
  - ▶ iglidur K, page 215
- For underwater applications
  - ▶ iglidur H370, page 375

**Temperature**



**Product range**

on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® GLW       | Testing method |
| Density                                                | g/cm³                              | 1.36               |                |
| Colour                                                 |                                    | black              |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.3                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 5.5                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.1–0.24           |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.3                |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 7,700              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 235                | DIN 53452      |
| Compressive strength                                   | MPa                                | 74                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 80                 |                |
| Shore D hardness                                       |                                    | 78                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +100               |                |
| Max. short term application temperature                | °C                                 | +160               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 17                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>11</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

Table 01: Material properties table

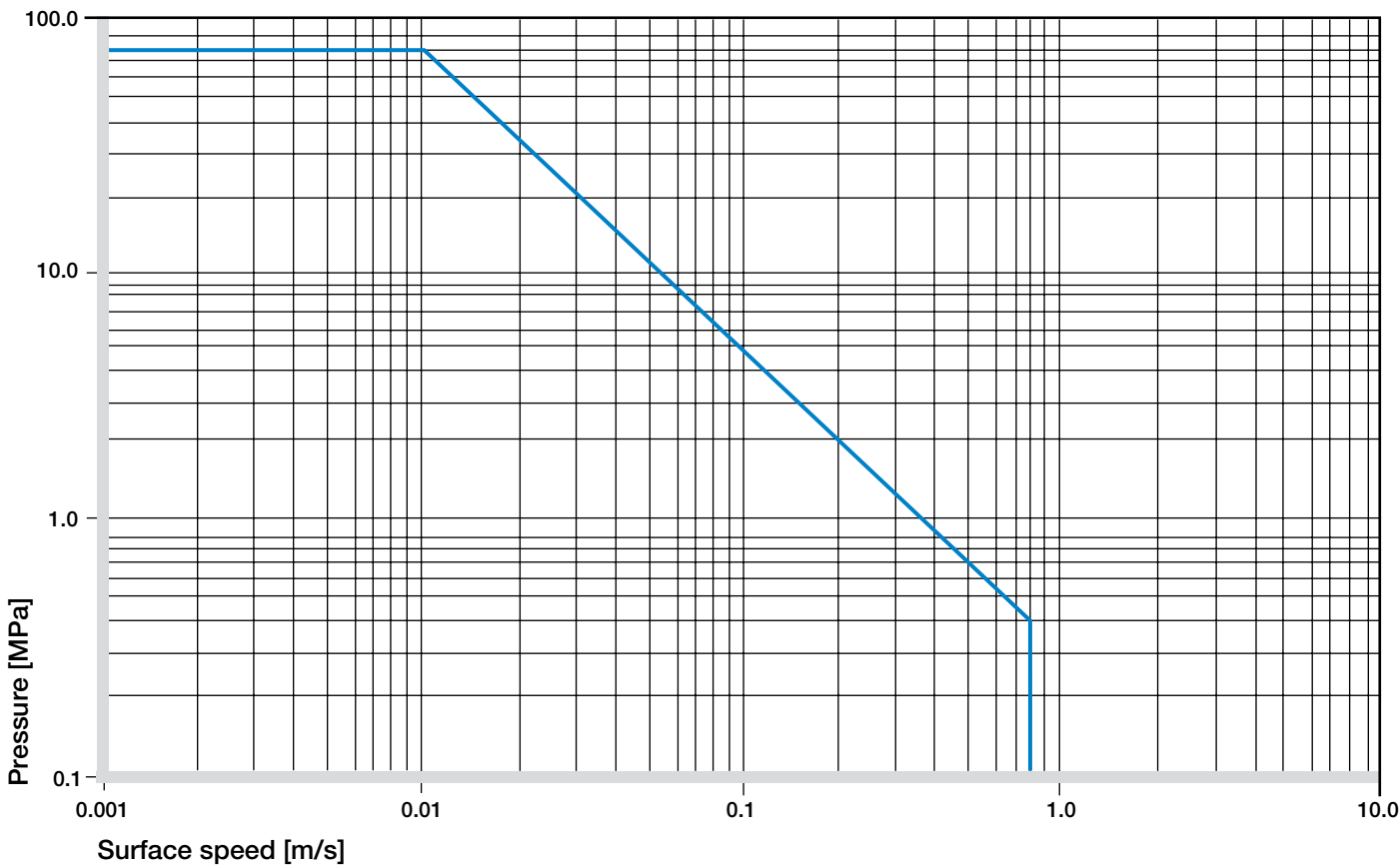


Diagram 01: Permissible pv values for iglidur® GLW with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

With plain bearings made of iglidur® GLW we can offer our customers an alternative to iglidur® G for mass production applications. Featuring similar mechanical designed as iglidur® G, iglidur® GLW plain bearings are primarily recommended for static loads. With regard to these applications, in which the dynamic properties of iglidur® G to a large extent are unimportant, iglidur® GLW presents a very cost-effective alternative.

### Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® GLW plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +100° C the permissible surface pressure is almost 30 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

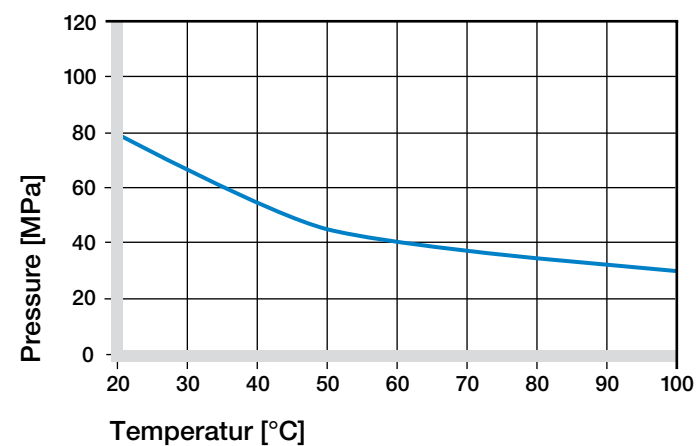


Diagram 02: Recommended maximum surface pressure as a function of temperature (80 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® GLW at radial loads. At the recommended maximum surface pressure of 70 MPa at room temperature, the deformation is less than 3 %. At this load the plastic deformation is minimal. However, it is also dependent on the duty cycle of the application.

► Surface Pressure, **page 63**

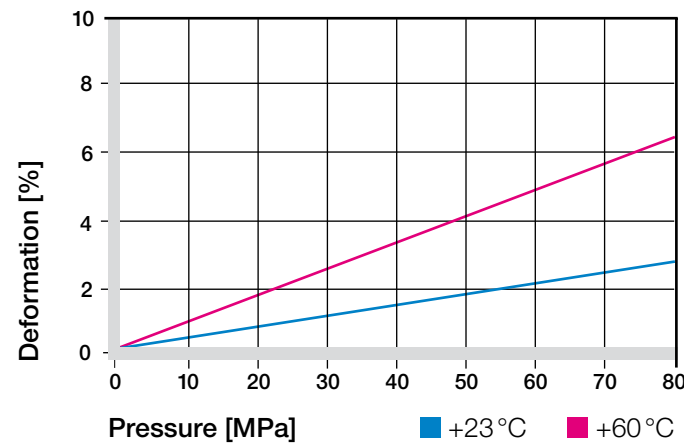


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

iglidur® GLW was developed for low to average surface speeds. In constant operation, a maximum speed of 0.8 m/s (rotating) or 2.5 m/s (linear) is permitted. Please note that the maximum values shown in table 02 are only possible at the lowest pressures. In practice, these values are rarely reached, due to the increasing temperatures approaching or exceeding the maximum permitted value.

► Surface Speed, **page 65**

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 2.5    |
| Short term | 1        | 0.7         | 3      |

Table 02: Maximum running speed

### Temperatures

To a large extent, the surrounding temperatures affect the properties of plain bearings. Diagram 02 shows the inverse relationship. With increasing temperatures in the bearing system, the wear also increases.

► Application Temperatures, **page 66**

| iglidur® GLW                   | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +100 °C                 |
| Max. short term                | +160 °C                 |
| Add. securing is required from | +80 °C                  |

Table 03: Temperature limits

### Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with increasing load. It is striking that the coefficient of friction  $\mu$  decreases with increasing pressure. This relationship explains the excellent suitability of iglidur® GLW plain bearings with regard to high loads.

► Coefficients of Friction and Surfaces, **page 68**

► Wear Resistance, **page 69**

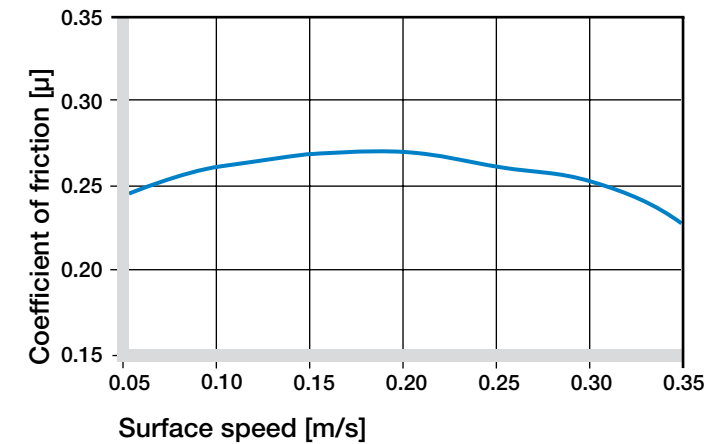


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75$  MPa

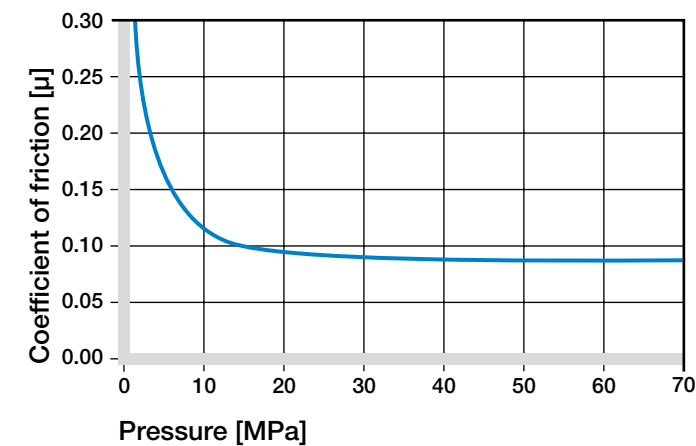


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01$  m/s

### Shaft Materials

To a large extent, friction and wear depend on the shaft material. Shafts that are too smooth increase both the coefficient of friction and the wear of the bearing. A ground surface with an average roughness  $R_a$  between 0.1 and 0.2  $\mu\text{m}$  is the most suitable (Diagram 06). The following diagrams show an extract of the results of tests with different shaft materials carried out with iglidur® GLW plain bearings. If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft Materials, **page 71**

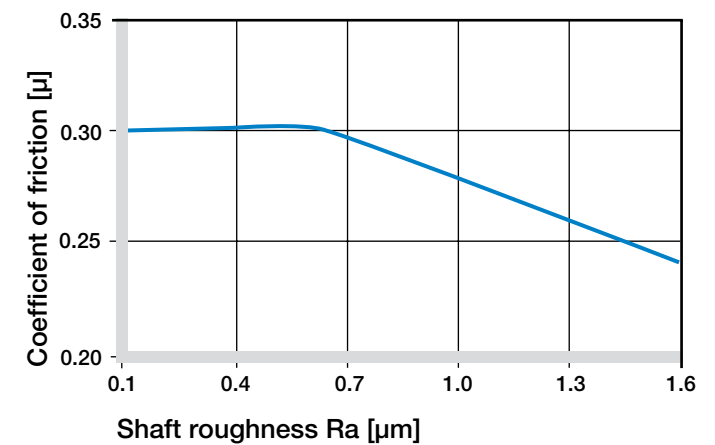


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

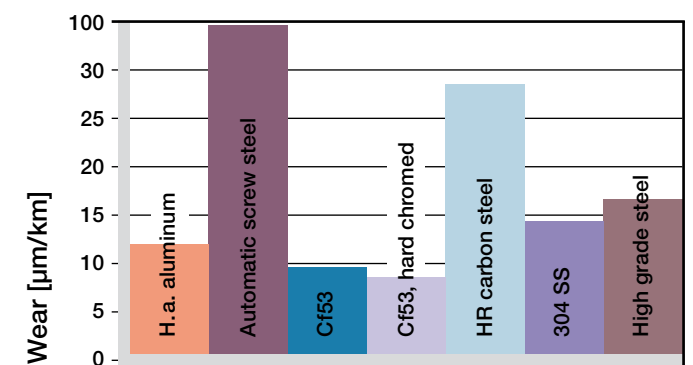


Diagram 07: Wear, rotating with different shaft materials, pressure,  $p = 1$  MPa,  $v = 0.3$  m/s

| iglidur® GLW | Dry       | Greases | Oil  | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. $\mu$ | 0.10–0.24 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1$   $\mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® GLW plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® GLW is not attacked by most organic and inorganic acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® GLW are resistant to radiation up to an intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® GLW plain bearings are permanently resistant to UV radiation.

Vacuum

In a vacuum environment iglidur® GLW plain bearings release gases. Use in a vacuum should be tested beforehand.

Electrical Properties

|                                                          |                             |
|----------------------------------------------------------|-----------------------------|
| iglidur® GLW plain bearings are electrically insulating. |                             |
| Volume resistance                                        | $> 10^{11} \Omega\text{cm}$ |
| Surface resistance                                       | $> 10^{11} \Omega$          |
| 10                                                       |                             |

Moisture Absorption

The moisture absorption of iglidur® GLW plain bearings is approximately 1.3 % in standard atmosphere. The saturation limit in water is 5.5 %. This must be taken into account with regard to the respective operating conditions.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 1.3 % weight |
| Max. water absorption | 5.5 % weight |

Table 06: Moisture absorption

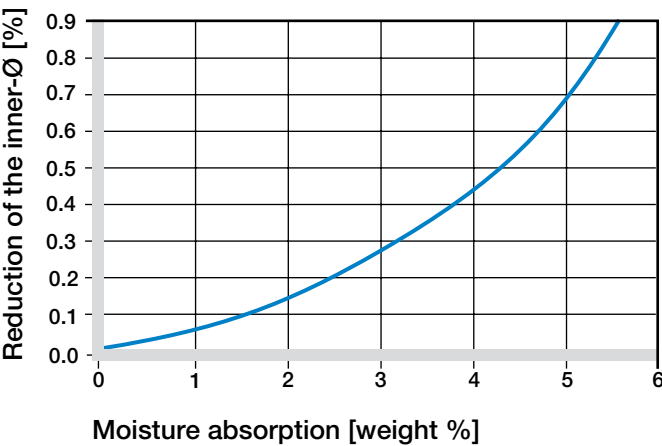


Diagram 08: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® GLW plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® GLW E10 [mm] | Housing H7 [mm] |
|------------------|---------------|-----------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054         | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068         | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083         | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102         | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124         | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150         | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180         | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212         | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245         | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® GLW plain bearings are made to special order. For high volume applications, please request iglidur® GLW plain bearings as an alternative to iglidur® G.





## iglidur® J260 ideal for plastic shafts

Standard range from stock ► from page 237



## iglidur® J3 runs up to three time longer than iglidur® J

Standard range from stock ► from page 247



## iglidur® J350 high temperatures, versatile

Standard range from stock ► from page 257



## iglidur® L250 for high speeds

Standard range from stock ► from page 267



## iglidur® R low-cost

Standard range from stock ► from page 277



## iglidur® D low-cost material with silicone

On request ► from page 287



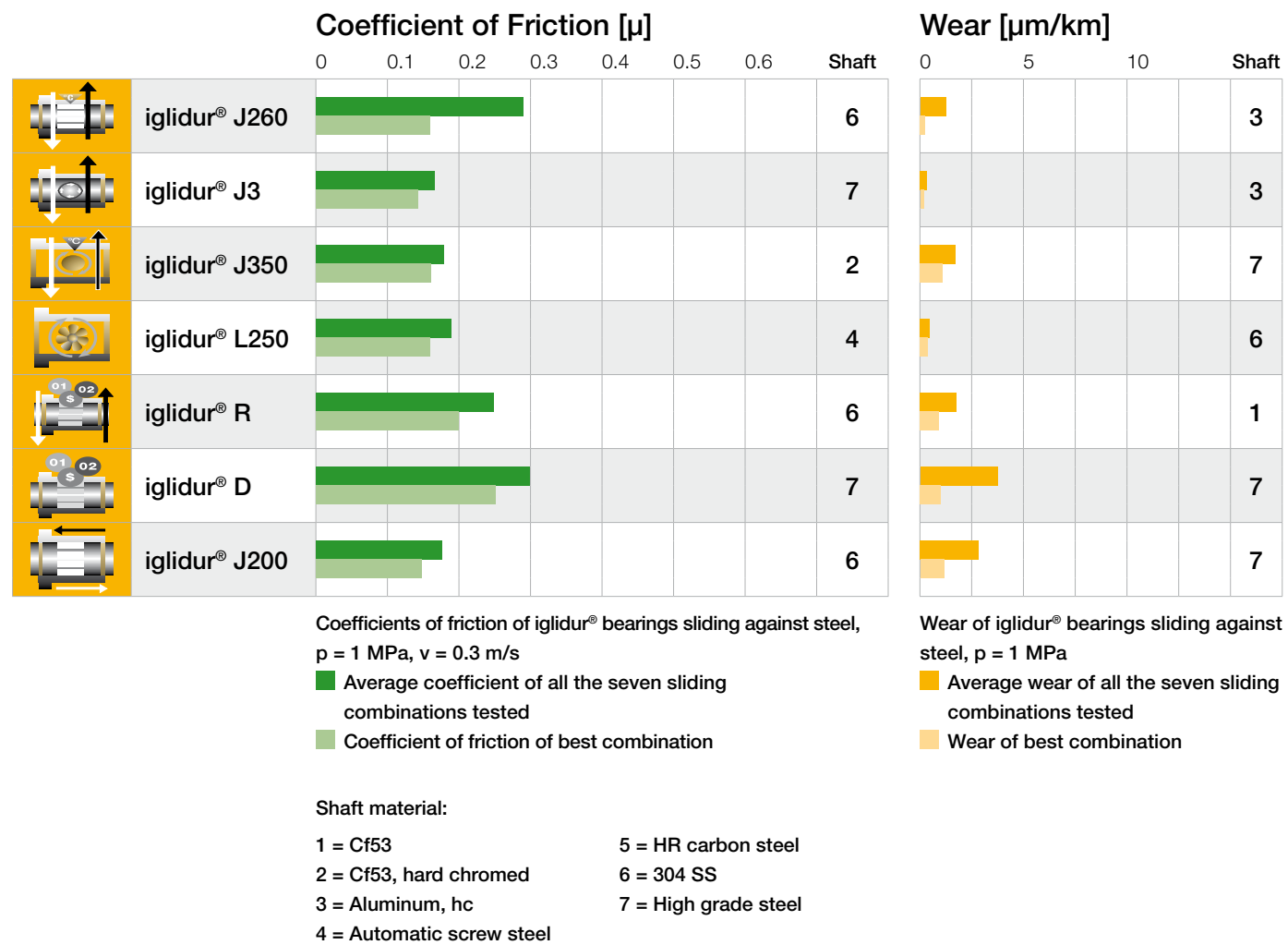
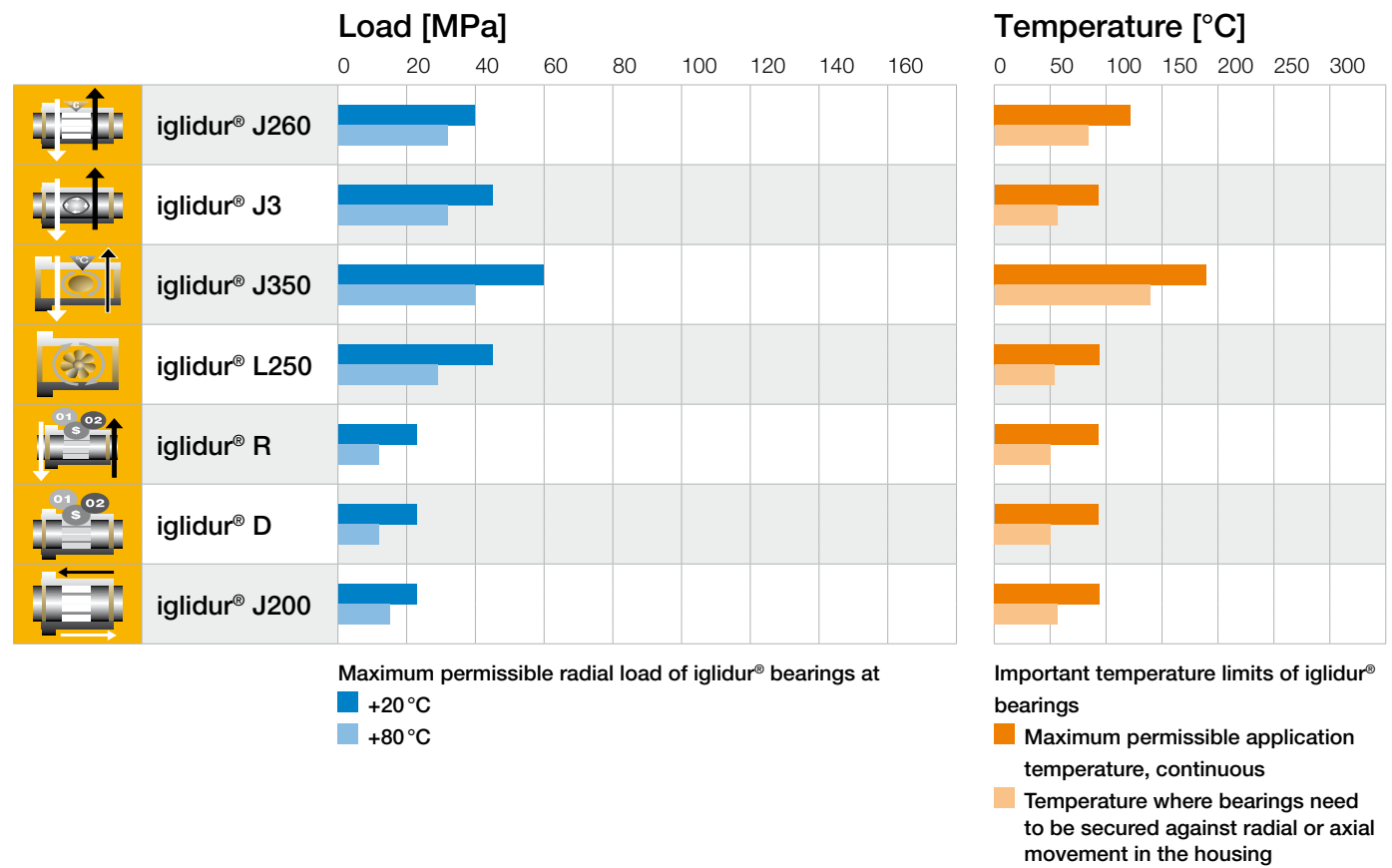
## iglidur® J200 specially for aluminum shafts

On request ► from page 295

iglidur®  
Specialists –  
For Long  
Service Life

|           |                         |
|-----------|-------------------------|
|           | Long life dry running   |
|           | For high loads          |
|           | For high temperatures   |
|           | Low friction/high speed |
|           | Dirt resistant          |
|           | Chemicals resistant     |
|           | Low water absorption    |
|           | Food-suitable           |
|           | Vibration-dampening     |
|           | Edge pressure           |
|           | For under water use     |
|           | Cost-effective          |
| from page |                         |

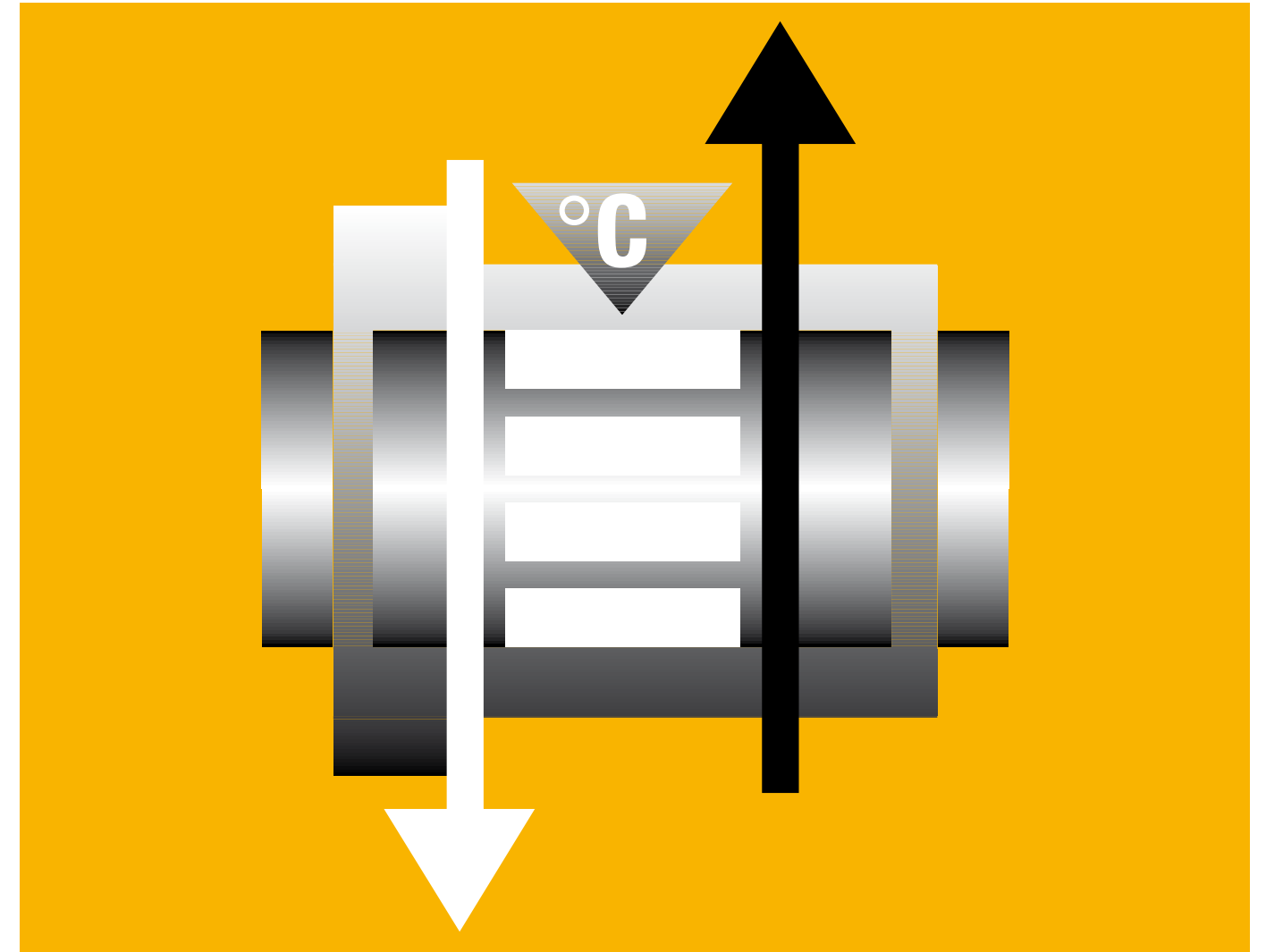
|                         | iglidur®<br>J260 | iglidur®<br>J3 | iglidur®<br>J350 | iglidur®<br>L250 | iglidur®<br>R | iglidur®<br>D | iglidur®<br>J200 |
|-------------------------|------------------|----------------|------------------|------------------|---------------|---------------|------------------|
| Long life dry running   | ●                | ●              | ●                | ●                | ●             |               | ●                |
| For high loads          |                  |                | ●                |                  |               |               |                  |
| For high temperatures   |                  |                | ●                |                  |               |               |                  |
| Low friction/high speed | ●                | ●              | ●                | ●                | ●             | ●             | ●                |
| Dirt resistant          |                  |                |                  |                  |               |               | ●                |
| Chemicals resistant     |                  |                | ●                |                  |               |               |                  |
| Low water absorption    | ●                | ●              | ●                |                  | ●             | ●             | ●                |
| Food-suitable           |                  |                |                  |                  |               |               |                  |
| Vibration-dampening     |                  |                |                  |                  |               |               |                  |
| Edge pressure           |                  | ●              | ●                | ●                | ●             | ●             | ●                |
| For under water use     |                  |                |                  |                  |               |               |                  |
| Cost-effective          |                  | ●              |                  |                  | ●             | ●             |                  |
| from page               | 237              | 247            | 257              | 267              | 277           | 287           | 295              |



| Material properties table                              |                                    |                    |                    |                    |                    |                    |                    |                   |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|
| General properties                                     | Unit                               | iglidur® J260      | iglidur® J3        | iglidur® J350      | iglidur® L250      | iglidur® R         | iglidur® D         | iglidur® J200     |
| Density                                                | g/cm³                              | 1.35               | 1.42               | 1.44               | 1.50               | 1.39               | 1.40               | 1.72              |
| Colour                                                 |                                    | yellow             | yellow             | yellow             | beige              | dark red           | green              | dark grey         |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2                | 0.3                | 0.3                | 0.7                | 0.2                | 0.3                | 0.2               |
| Max. water absorption                                  | % weight                           | 0.4                | 1.3                | 1.6                | 3.9                | 1.1                | 1.1                | 0.7               |
| Coefficient of sliding friction. dynamic against steel | μ                                  | 0.06–0.20          | 0.06–0.20          | 0.10–0.20          | 0.08–0.19          | 0.09–0.25          | 0.08–0.26          | 0.11–0.17         |
| pv value. max. (dry)                                   | MPa · m/s                          | 0.35               | 0.50               | 0.45               | 0.40               | 0.27               | 0.27               | 0.30              |
| Mechanical properties                                  |                                    |                    |                    |                    |                    |                    |                    |                   |
| Modulus of elasticity                                  | MPa                                | 2,200              | 2,700              | 2,000              | 1,950              | 1,950              | 2,000              | 2,800             |
| Tensile strength at +20 °C                             | MPa                                | 60                 | 70                 | 55                 | 67                 | 70                 | 72                 | 58                |
| Compressive strength                                   | MPa                                | 50                 | 60                 | 60                 | 47                 | 68                 | 70                 | 43                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 40                 | 45                 | 60                 | 45                 | 23                 | 23                 | 23                |
| Shore D hardness                                       |                                    | 77                 | 73                 | 80                 | 68                 | 77                 | 78                 | 70                |
| Physical and thermal properties                        |                                    |                    |                    |                    |                    |                    |                    |                   |
| Max. long term application temperature                 | °C                                 | +120               | +90                | +180               | +90                | +90                | +90                | +90               |
| Max. short term application temperature                | °C                                 | +140               | +120               | +220               | +180               | +110               | +110               | +120              |
| Min. application temperature                           | °C                                 | –100               | –50                | –100               | –40                | –50                | –50                | –50               |
| Thermal conductivity                                   | W/m · K                            | 0.24               | 0.25               | 0.24               | 0.24               | 0.25               | 0.25               | 0.24              |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 13                 | 13                 | 7                  | 10                 | 11                 | 11                 | 8                 |
| Electrical properties                                  |                                    |                    |                    |                    |                    |                    |                    |                   |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | > 10 <sup>12</sup> | > 10 <sup>13</sup> | > 10 <sup>10</sup> | > 10 <sup>12</sup> | > 10 <sup>14</sup> | > 10 <sup>8</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>10</sup> | > 10 <sup>12</sup> | > 10 <sup>10</sup> | > 10 <sup>11</sup> | > 10 <sup>12</sup> | > 10 <sup>14</sup> | > 10 <sup>8</sup> |

| Material resistance (at +20 °C) |                     |                     |                     |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Chemical resistance             | iglidur® J260       | iglidur® J3         | iglidur® J350       | iglidur® L250       | iglidur® R          | iglidur® D          | iglidur® J200       |
| Alcohol                         | + to 0              | +                   | +                   | + to 0              | +                   | +                   | +                   |
| Hydrocarbons                    | +                   | +                   | + to 0              | +                   | +                   | +                   | +                   |
| Greases, oils without additives | 0 to –              | +                   | +                   | +                   | +                   | +                   | +                   |
| Fuels                           | –                   | +                   | +                   | +                   | +                   | +                   | +                   |
| Diluted acids                   | –                   | 0 to –              | +                   | 0 to –              | 0 to –              | 0 to –              | 0 to –              |
| Strong acids                    | –                   | –                   | + to 0              | –                   | –                   | –                   | –                   |
| Diluted alkalines               | + to 0              | +                   | +                   | +                   | +                   | +                   | +                   |
| Strong alkalines                | + to 0              | + to 0              | +                   | 0                   | + to 0              | + to 0              | + to 0              |
| Radiation resistance [Gy] to    | 3 · 10 <sup>2</sup> | 1 · 10 <sup>4</sup> | 2 · 10 <sup>2</sup> | 3 · 10 <sup>4</sup> | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> |

+ resistant 0 conditionally resistant – not resistant



## Ideal for plastic shafts – iglidur® J260



Standard range from stock

Lubrication- and maintenance-free

Very good c. o. f. for low or medium loads

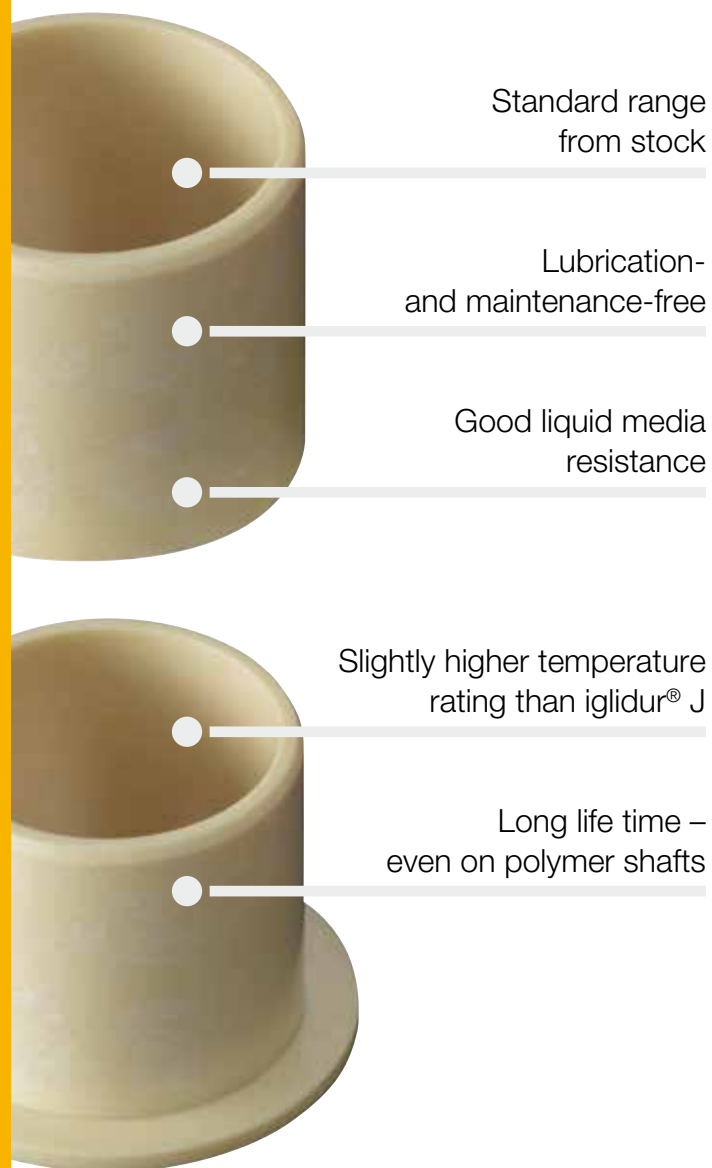
Good liquid media resistance

Slightly higher temperature rating than iglidur® J

Long life time – even on polymer shafts and other special cases



**Ideal for plastic shafts.** iglidur® J260 is a perfect material for long service life and best coefficient of friction with special operating conditions – first of all in contact with plastic shafts!



## When to use it?

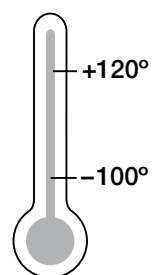
- When polymer shafts are used
- When the temperature rating of iglidur® J is not sufficient
- If bearings with low friction is required
- If good wear resistance is required at medium loads
- If good liquid media resistance is required



## When not to use?

- When high pressures occur  
▶ iglidur® Z, page 327
- When short term temperatures occur that are greater +120 °C  
▶ iglidur® J350, page 257
- When a low-cost bearing for occasional movements is necessary  
▶ iglidur® J, page 109

## Temperature



## Product range

2 types  
Ø 6–20 mm  
more dimensions  
on request

## Typical sectors of industry and application areas

- Automation ● Machine design
- Test engineering and quality assurance
- Robotics ● Eletronics industry etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/packaging-machines](http://www.igus.co.uk/packaging-machines)



▶ [www.igus.co.uk/printing-machines](http://www.igus.co.uk/printing-machines)



▶ [www.igus.co.uk/steering-systems](http://www.igus.co.uk/steering-systems)



| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® J260      |
| Density                                                |  | g/cm³                              | 1.35               |
| Colour                                                 |  |                                    | yellow             |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.2                |
| Max. water absorption                                  |  | % weight                           | 0.4                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.06–0.20          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.35               |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 2,200              |
| Tensile strength at +20 °C                             |  | MPa                                | 60                 |
| Compressive strength                                   |  | MPa                                | 50                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 40                 |
| Shore D hardness                                       |  |                                    | 77                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +120               |
| Max. short term application temperature                |  | °C                                 | +140               |
| Min. application temperature                           |  | °C                                 | –100               |
| Thermal conductivity                                   |  | W/m · K                            | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>–1</sup> · 10 <sup>–5</sup> | 13                 |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>12</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>10</sup> |

Table 01: Material properties table

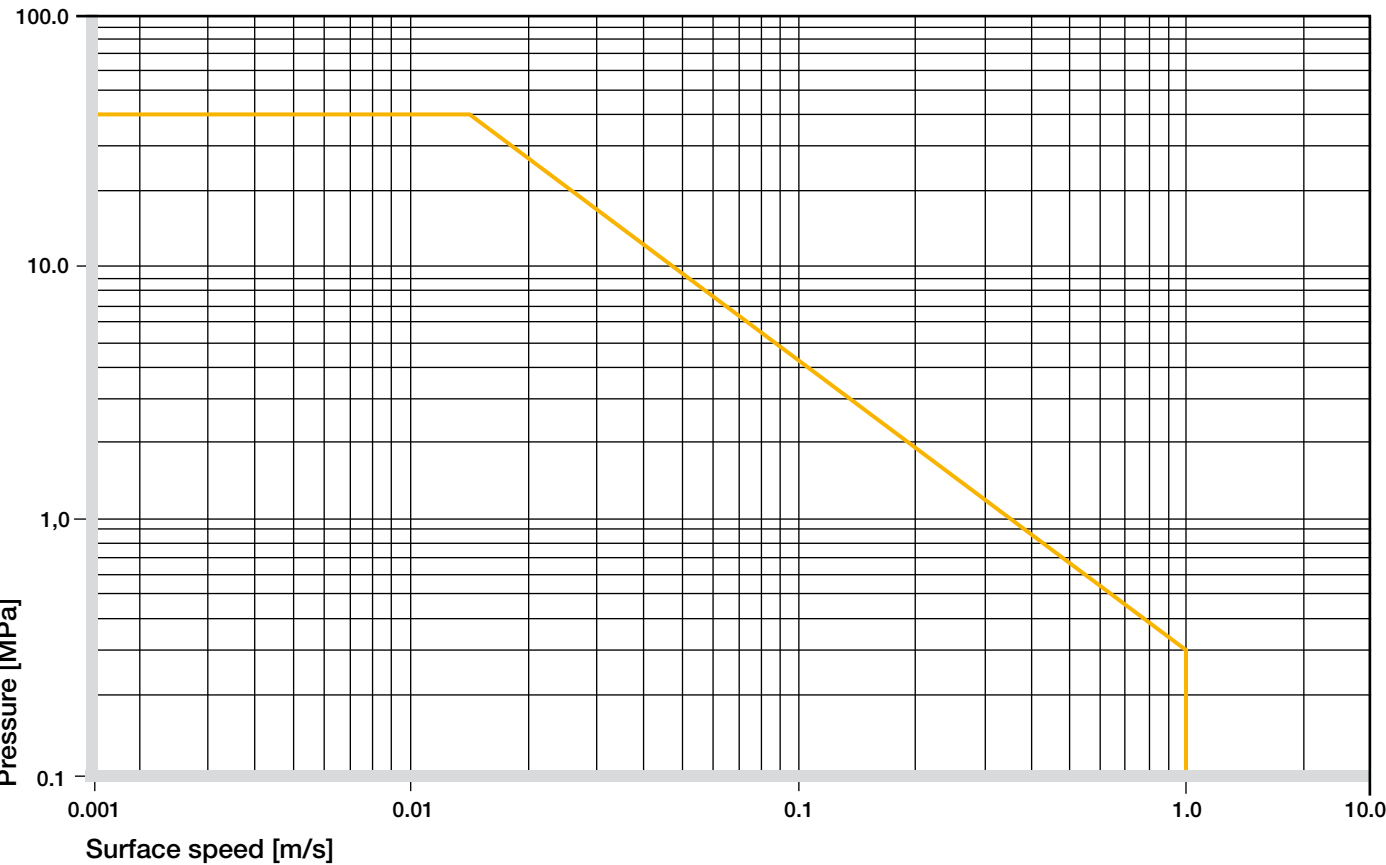


Diagram 01: Permissible pv values for iglidur® J260 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Similar to the classic, iglidur® J, iglidur® J260 is an endurance runner with outstanding wear behavior, but provides increased reserves at its longterm application temperature of 120 °C.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® J260 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +120 °C the permissible surface pressure is 24 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

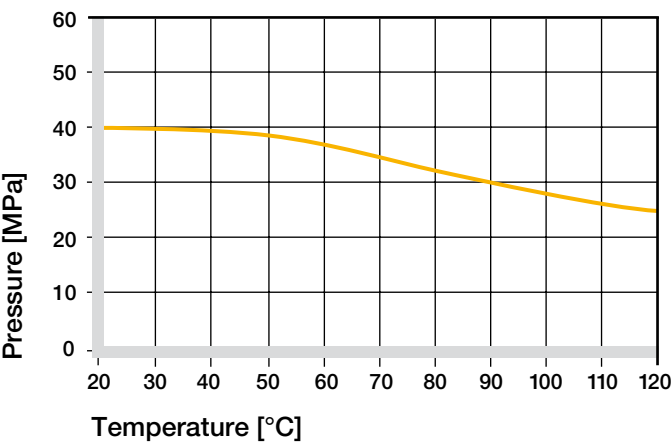


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® J260 at radial loads. At the maximum recommended surface pressure of 40 MPa at room temperature the deformation is less than 2,5 %. A possible deformation could be, among others, dependant on the duty cycle of the load.

Surface Pressure, page 63

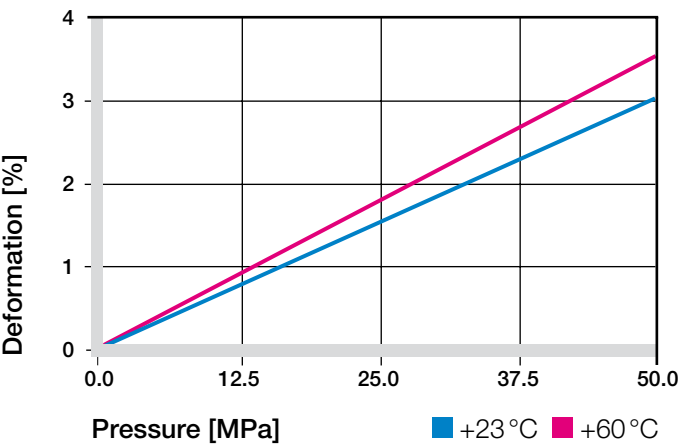


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J260 has been developed for low to medium surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 3      |
| Short term | 2        | 1.4         | 4      |

Table 02: Maximum running speed

Temperatures

iglidur® J260 plain bearings can be used at temperatures from –100 °C up to +120 °C. The short term maximum temperature is +140 °C. The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +80 °C.

Application Temperatures, page 66

| iglidur® J260                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –100 °C                 |
| Max. long term                 | +120 °C                 |
| Max. short term                | +140 °C                 |
| Add. securing is required from | +80 °C                  |

Table 03: Temperature limits

Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. The coefficient of friction decreases with increasing loads, whereas an increase in surface speed causes an increase of the coefficient of friction.

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

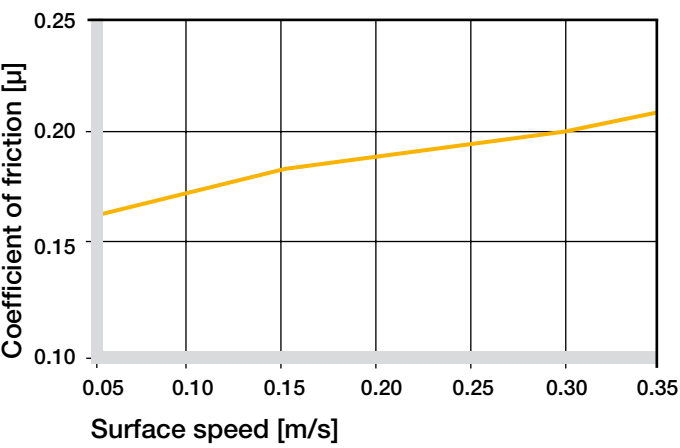


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

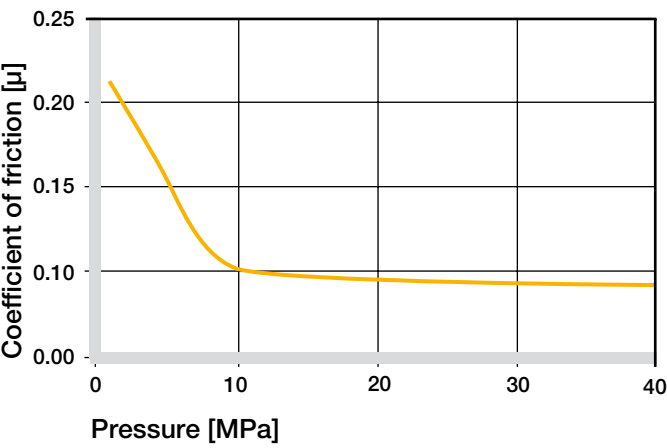


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® J260 a ground surface with an average roughness  $R_a = 0.8 \text{ μm}$  is recommended (Diagram 06). Diagrams 07 to 09 shows results of testing different shaft materials with plain bearings made of iglidur® J260. In Diagram 07 it shows that iglidur® J260 can be combined with various shaft materials. The hard anodized aluminum shafts came out best at low loads, but iglidur® J260 bearings show good service life even on simple Cf53, stainless steel and hard-chromed shafts. In this connection it is important to note that with increasing loads, the recommended hardness of the shaft increases. The “soft” shafts tend to wear more easily and thus increase the wear of the overall system, if the loads exceed 2 MPa. Diagram 08 shows that with increasing load the wear on hard-chromed shafts and V2A shafts rises less strongly than on Cf53 and St37 shafts. The comparison of rotation and oscillating in Diagram 09 makes it very clear where iglidur® J260 bearings are best used, especially in rotary operations.

- Shaft Materials, **page 71**

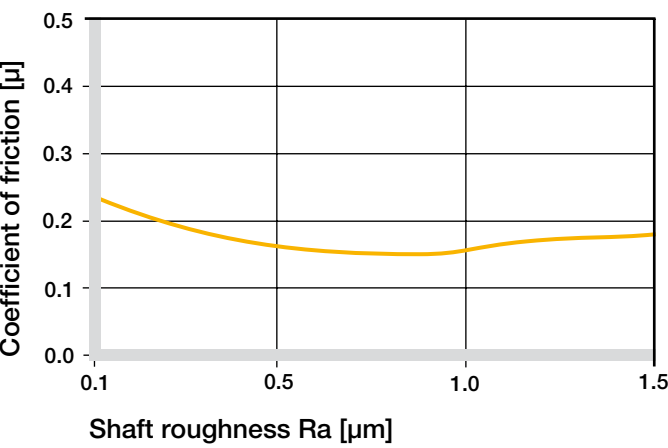


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

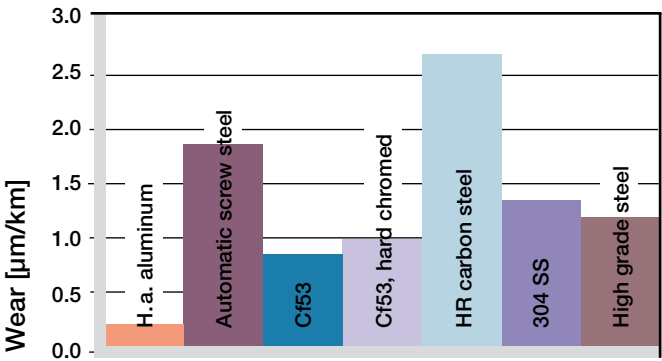


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

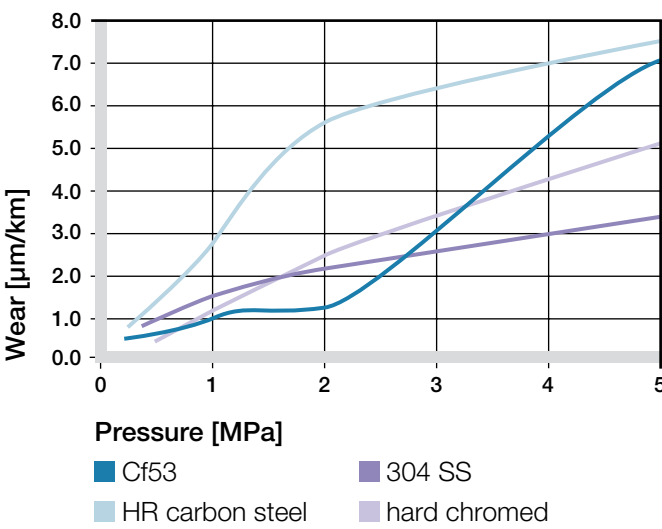


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

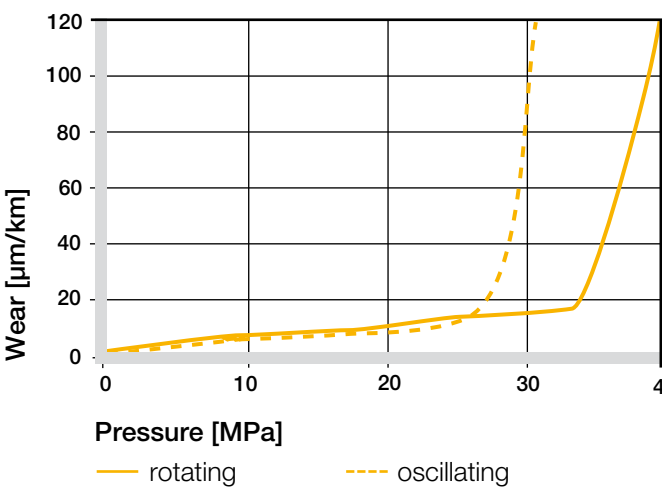


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® J260  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.06–0.20 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \text{ μm}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J260 plain bearings are resistant to diluted alkalis, hydrocarbons and alcohols. The very low moisture absorption also permits use in wet or damp environments.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | 0 to –     |
| Fuels                           | –          |
| Diluted acids                   | –          |
| Strong acids                    | –          |
| Diluted alkalines               | + to 0     |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature  $[+20 \text{ °C}]$

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of  $3 \cdot 10^2 \text{ Gy}$ .

UV Resistance

Partially resistant against UV rays.

Vacuum

In a vacuum, any moisture absorbed in the material would be outgassed. For this reason only dehumidified iglidur® J260 bearings are suitable for vacuum.



Electrical Properties

|                                                           |                         |
|-----------------------------------------------------------|-------------------------|
| iglidur® J260 plain bearings are electrically insulating. |                         |
| Volume resistance                                         | > 10 <sup>12</sup> Ωcm  |
| Surface resistance                                        | > 10 <sup>10</sup> Ω 10 |

Moisture Absorption

The moisture absorption of iglidur® J260 plain bearings is approximately 0.2 % in standard atmosphere. The saturation limit submerged in water is 0.4 %. These values are so low that design changes due to absorption can be ignored in most cases.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.2 % weight |
| Max. water absorption | 0.4 % weight |

Table 06: Moisture absorption

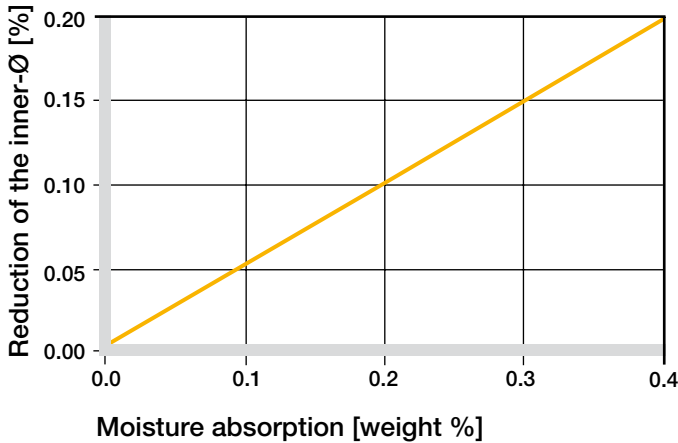


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

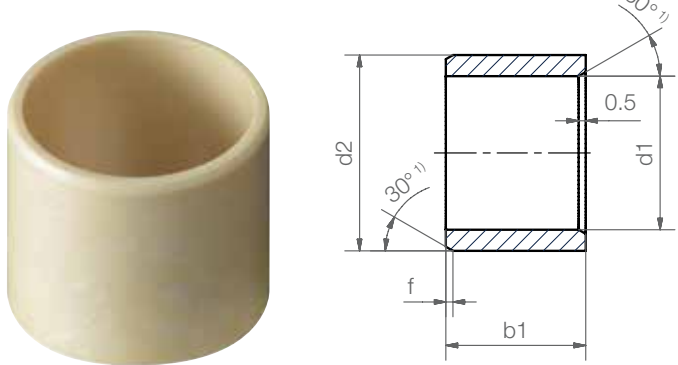
iglidur® J260 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table). In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® J260<br>E10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|---------------------------|--------------------|
| up to 3             | 0–0.025          | +0.014 +0.054             | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.020 +0.068             | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.025 +0.083             | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.032 +0.102             | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.040 +0.124             | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.050 +0.150             | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.060 +0.180             | 0 +0.030           |
| > 80 to 120         | 0–0.087          | +0.072 +0.212             | 0 +0.035           |
| > 120 to 180        | 0–0.100          | +0.085 +0.245             | 0 +0.040           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

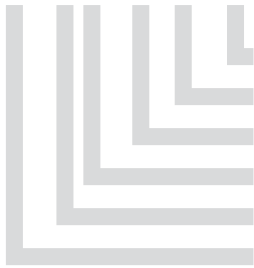
| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| J260SM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| J260SM-0810-06 | 8.0  | +0.025 +0.083 | 10.0 | 6.0       |
| J260SM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| J260SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| J260SM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| J260SM-1214-15 | 12.0 | +0.032 +0.102 | 14.0 | 15.0      |
| J260SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| J260SM-1820-12 | 18.0 | +0.032 +0.102 | 20.0 | 12.0      |
| J260SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75



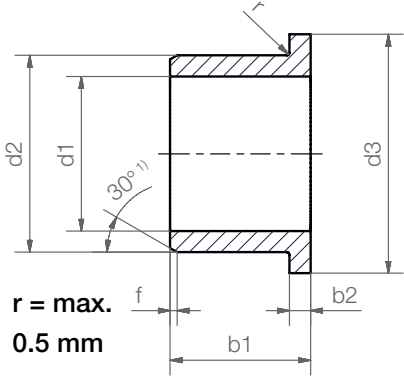
Order key

J260SM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® J260

Flange bearing



Order key

J260FM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® J260

Dimensions according to ISO 3547-1 and special dimensions

1) thickness < 1 mm: chamfer = 20°

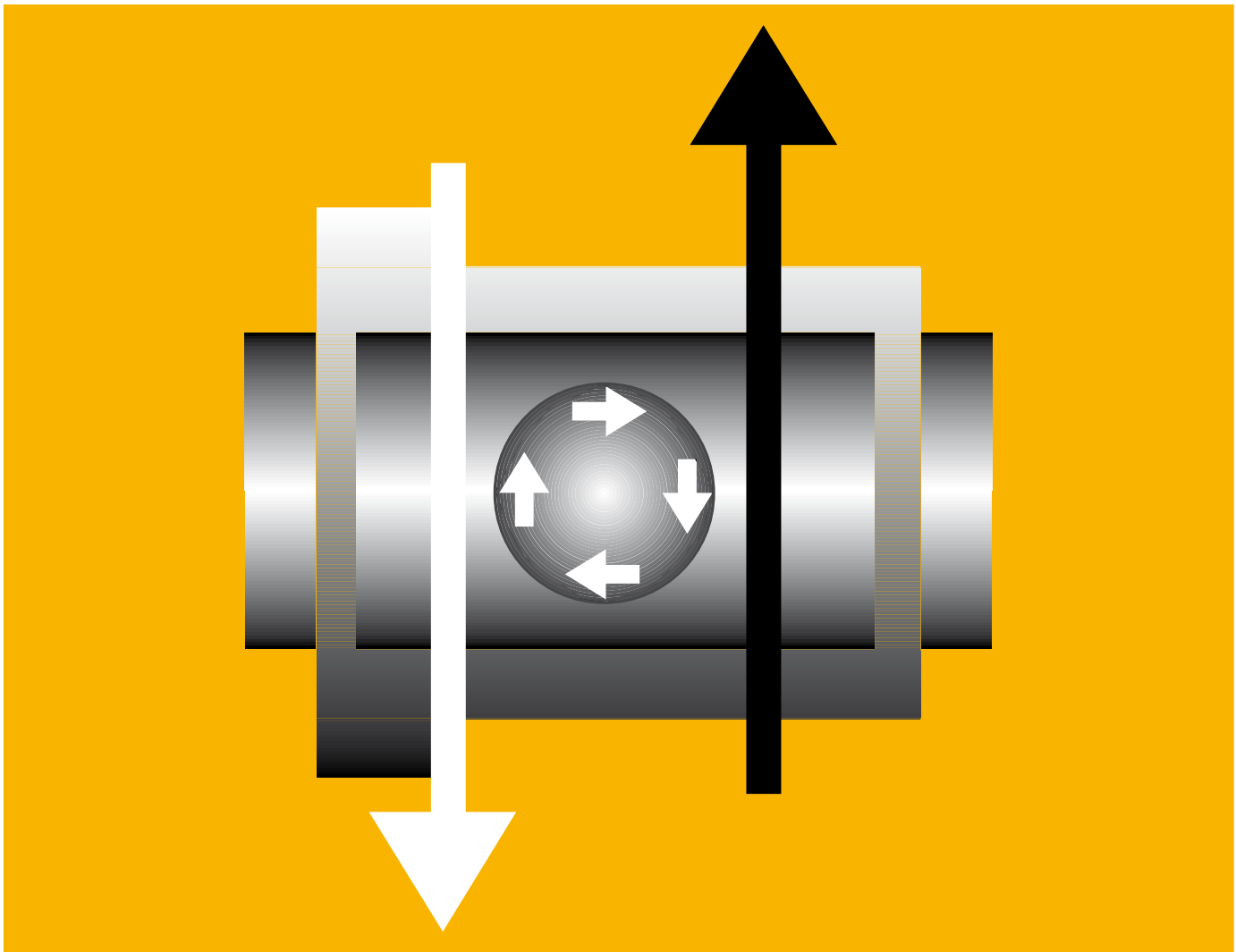
Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| J260FM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| J260FM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| J260FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| J260FM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| J260FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| J260FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Runs up to three times longer than  
iglidur® J – iglidur® J3



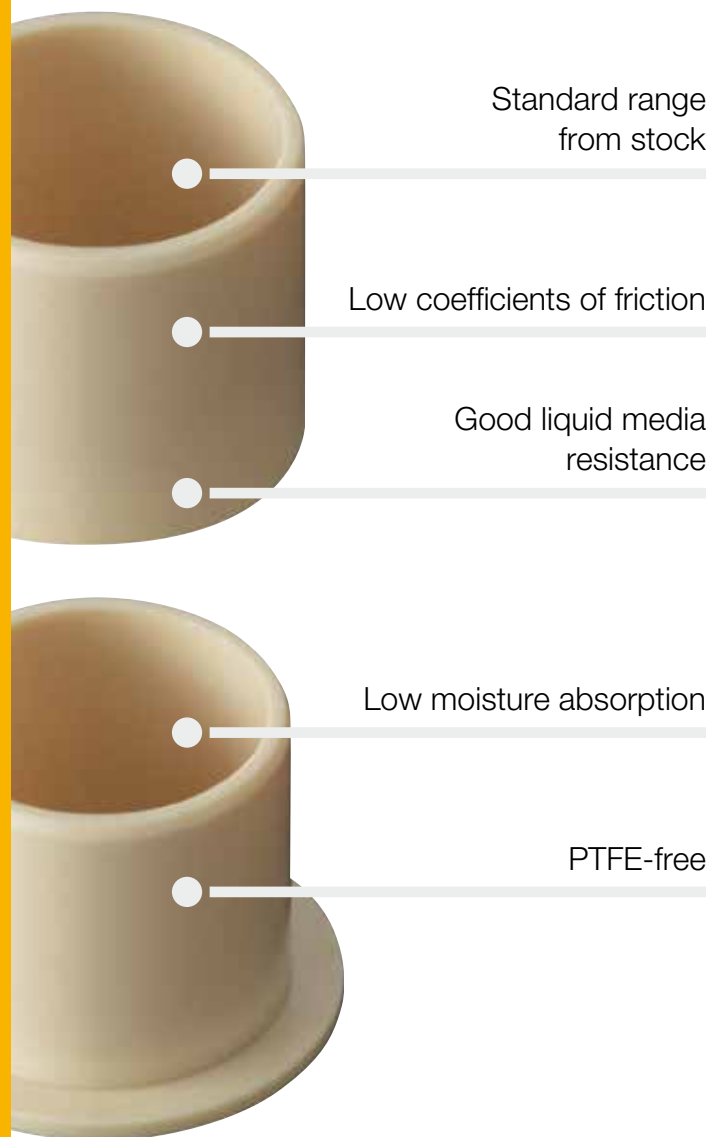
- Standard range from stock
- Lubrication- and maintenance-free
- Low coefficients of friction
- Good liquid media resistance
- Low moisture absorption
- PTFE-free

**Don't find your size?**  
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

**delivery from stock**  
**time**

**prices price list online**  
[www.igus.co.uk/en/j260](http://www.igus.co.uk/en/j260)

**Runs up to three times longer than iglidur® J.** iglidur® J3 is the new material with improved wear resistance at low to medium loads and high speed. The lifetime is up to three times longer than iglidur® J – the previous iglidur® champion.



#### When to use it?

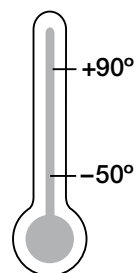
- If wear resistance (rotating or oscillating) of iglidur® J should be optimized
- If a really low coefficient of friction in dry run is necessary
- If high wear resistance at low temperatures is required
- If low moisture absorption is requested
- If good liquid media resistance is required



#### When not to use it?

- If you need a wear-resistant bearing for linear motion  
► iglidur® J, page 109
- If permanent temperatures exceed +90 °C  
► iglidur® J260, page 237
- If radial surface pressure is higher than 35 MPa  
► iglidur® W300, page 151

#### Temperature



#### Product range

2 types  
Ø 2–40 mm  
more dimensions  
on request

#### Typical sectors of industry and application areas

- Automation ● Printing industry
- Beverage technology ● Glass industry
- Aerospace engineering etc.

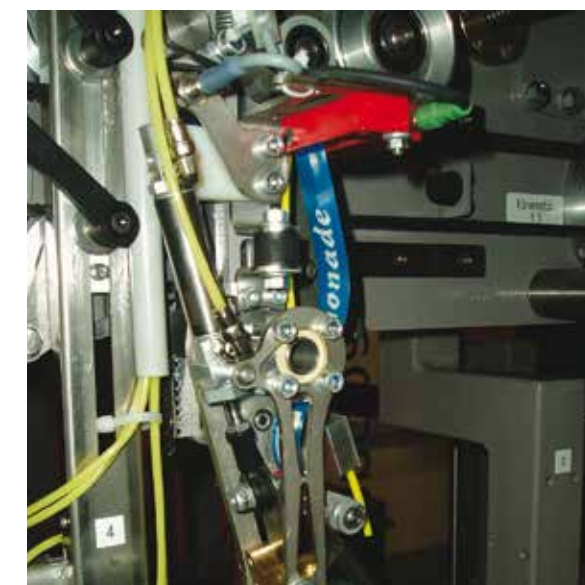


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► [www.igus.co.uk/flap-bearings](http://www.igus.co.uk/flap-bearings)



► [www.igus.co.uk/carrier-handle](http://www.igus.co.uk/carrier-handle)



| Material properties table                              |                                    |       |                    |
|--------------------------------------------------------|------------------------------------|-------|--------------------|
| General properties                                     |                                    | Unit  | iglidur® J3        |
| Density                                                |                                    | g/cm³ | 1.42               |
| Colour                                                 |                                    |       | yellow             |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           |       | 0.3                |
| Max. water absorption                                  | % weight                           |       | 1.3                |
| Coefficient of sliding friction, dynamic against steel | μ                                  |       | 0.06–0.20          |
| pv value, max. (dry)                                   | MPa · m/s                          |       | 0.5                |
| Mechanical properties                                  |                                    |       |                    |
| Modulus of elasticity                                  | MPa                                |       | 2,700              |
| Tensile strength at +20 °C                             | MPa                                |       | 70                 |
| Compressive strength                                   | MPa                                |       | 60                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                |       | 45                 |
| Shore D hardness                                       |                                    |       | 73                 |
| Physical and thermal properties                        |                                    |       |                    |
| Max. long term application temperature                 | °C                                 |       | +90                |
| Max. short term application temperature                | °C                                 |       | +120               |
| Min. application temperature                           | °C                                 |       | –50                |
| Thermal conductivity                                   | W/m · K                            |       | 0.25               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> |       | 13                 |
| Electrical properties                                  |                                    |       |                    |
| Specific volume resistance                             | Ωcm                                |       | > 10 <sup>12</sup> |
| Surface resistance                                     | Ω                                  |       | > 10 <sup>12</sup> |

Table 01: Material properties table

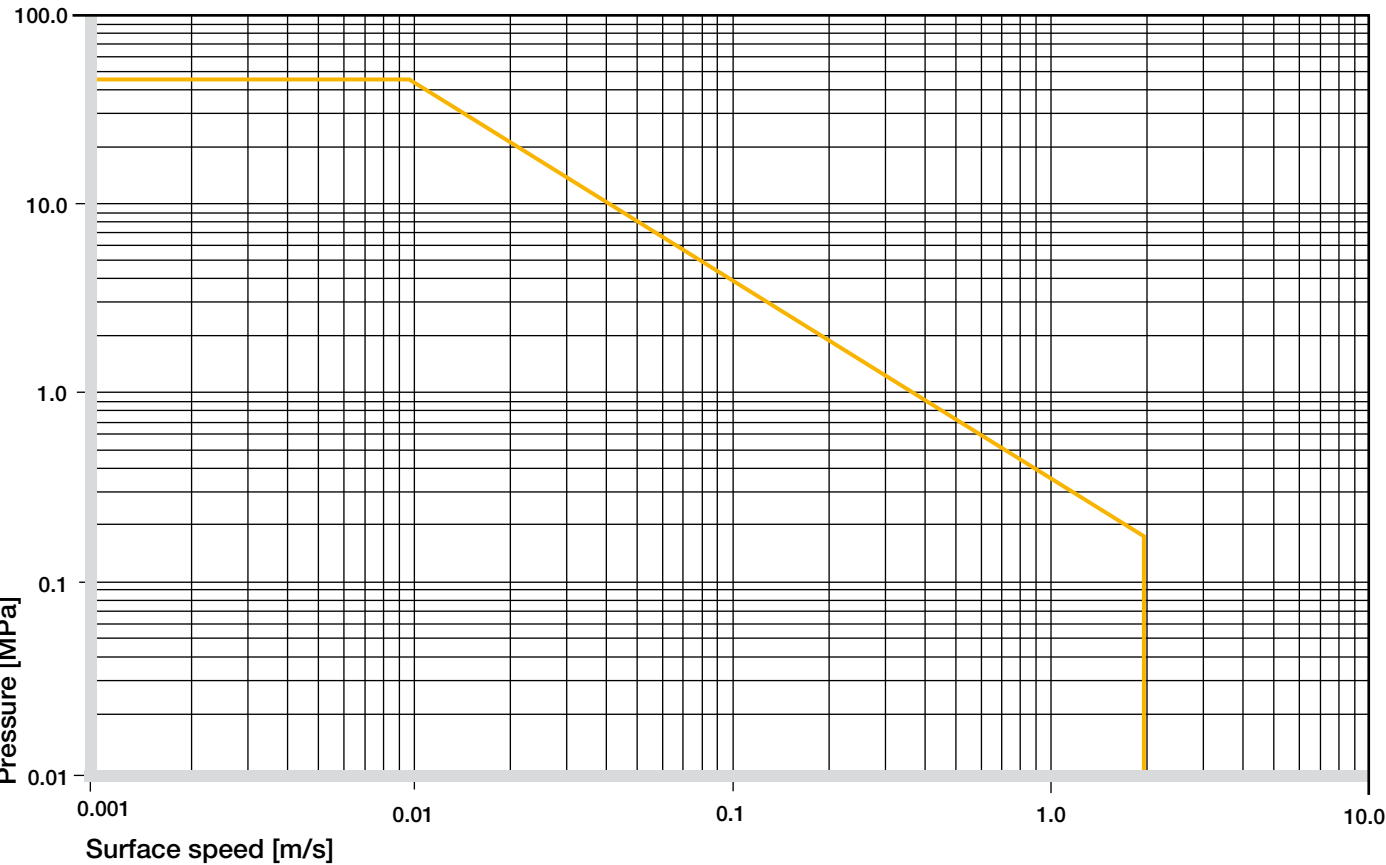


Diagram 01: Permissible pv values for iglidur® J3 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

With respect to its general mechanical and thermal specifications, iglidur® J3 is directly comparable to our classic, iglidur® J.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® J3 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 30 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

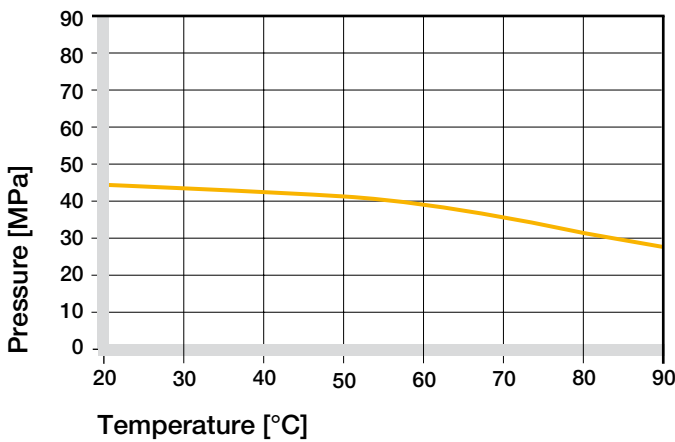


Diagram 02: Recommended maximum surface pressure as a function of temperature (45 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® J3 at radial loads. At the maximum recommended surface pressure of 45 MPa at room temperature, the deformation is less than 6 %. A possible deformation could be, among others, dependent on the duty cycle of the load.

Surface Pressure, page 63

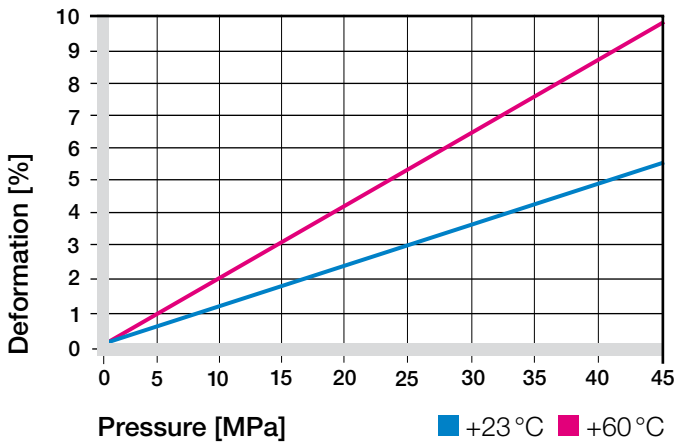


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J3 has been developed for medium to high surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.5      | 1.1         | 8      |
| Short term | 3        | 2.1         | 10     |

Table 02: Maximum running speed

Temperatures

iglidur® J3 plain bearings can be used at temperatures from –50 °C up to +90 °C. The short term maximum temperature is +120 °C. The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +90 °C.

Application Temperatures, page 66

| iglidur® J3                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +120 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. The coefficient of friction decreases with increasing loads, as it shows a clear minimum at surface speeds up to 0.15 m/s (s. Diagram. 04 and 05).

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

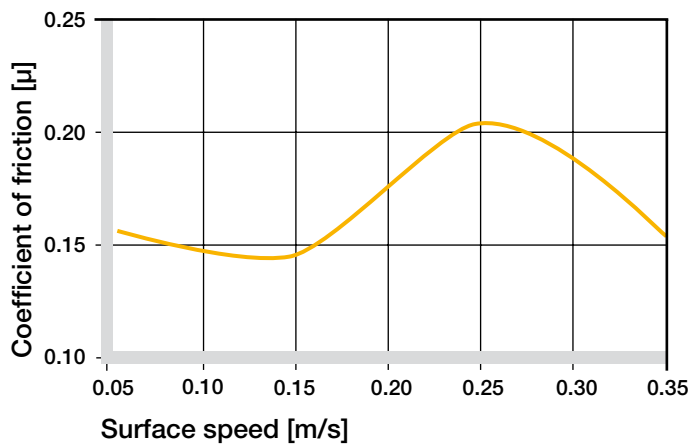


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

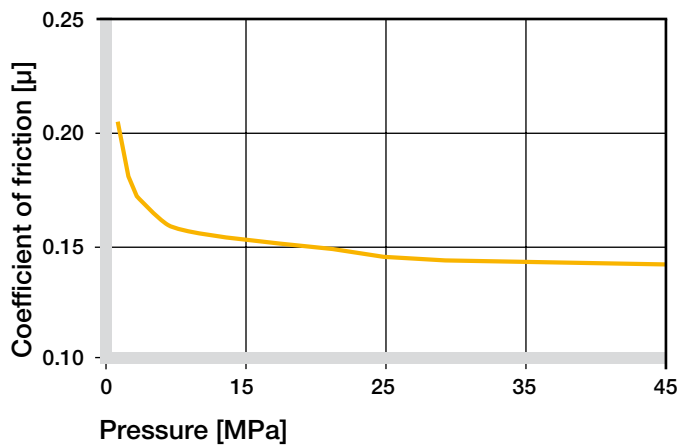


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® J3 a ground surface with an average roughness  $R_a = 0.1\text{--}0.3 \text{ }\mu\text{m}$  is recommended. (s. Diagram 06). Diagrams 07 to 09 shows results of testing different shaft materials with plain bearings made of iglidur® J3. In Diagram 07 it shows that iglidur® J3 can be combined with various shaft materials. At low pressures, hard anodized aluminum shafts, X90 stainless steel and Cf53 steel shafts proved to be the best. But even in combination with other shaft materials, except for free cutting steel, iglidur® J3 bearings achieve excellent wear values. Diagram 08 shows that the difference between shaft materials increase with increasing loads. Hard chromed or 304 SS-shafts are best at pressures from 2 MPa in rotation movement. Diagram 09 shows rotating and oscillating tests in comparison. With higher load, the wear increases more for rotating than for oscillating movements.

- Shaft Materials, **page 71**

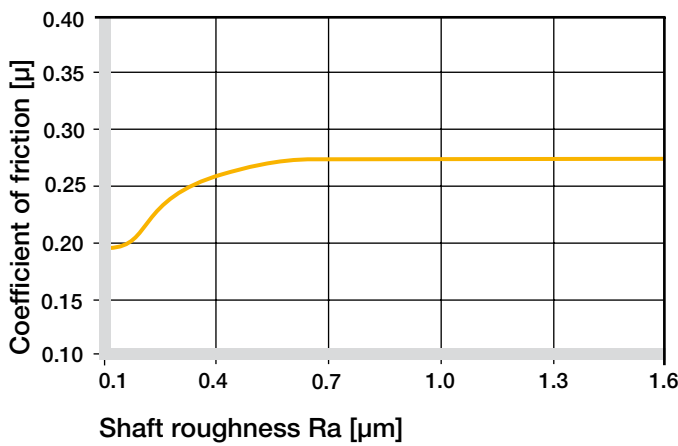


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

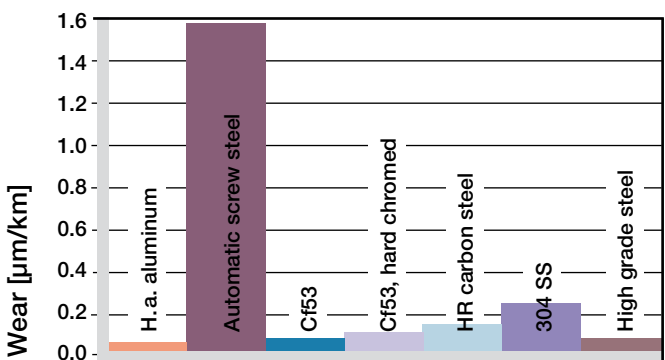


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

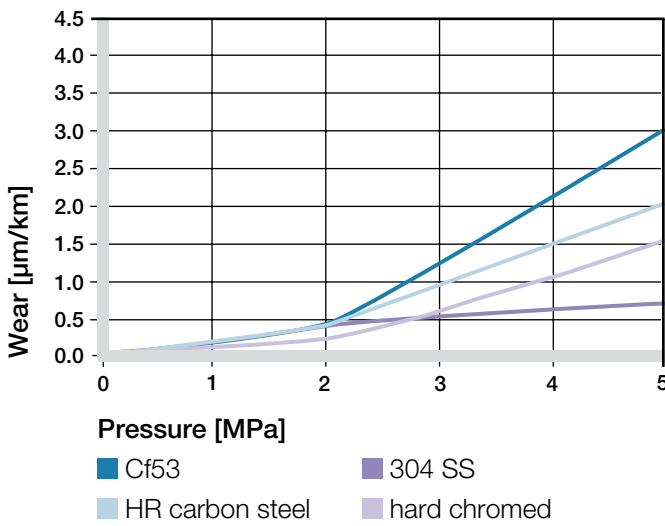


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

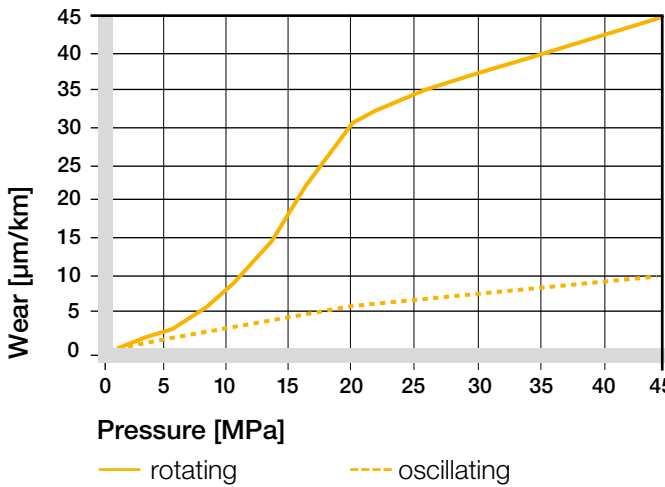


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® J3    | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.06–0.20 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \text{ }\mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J3 bearings are resistant to diluted alkalis and very weak acids as well as to fuels and all kinds of lubricants. The low humidity absorption allows them to be used in wet or humid environments. iglidur® J3 bearings are also resistant to conventional detergents used in the food industry.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalis                 | +          |
| Strong alkalis                  | + to 0     |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature  $[+20 \text{ }^\circ\text{C}]$

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of  $1 \cdot 10^4 \text{ Gy}$ .

UV Resistance

iglidur® J3 plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

Vacuum

In vacuum applications, any absorbed moisture content is degassed. For this reason only dehumidified iglidur® J3 bearings are suitable for use in a vacuum.

Electrical Properties

|                                                         |                         |
|---------------------------------------------------------|-------------------------|
| iglidur® J3 plain bearings are electrically insulating. |                         |
| Volume resistance                                       | > 10 <sup>12</sup> Ωcm  |
| Surface resistance                                      | > 10 <sup>12</sup> Ω 10 |

Moisture Absorption

The moisture absorption of iglidur® J3 plain bearings is approximately 0.3 % in the standard atmosphere. The saturation limit submerged in water is 1.3 %. These values are so low that design changes due to absorption are only necessary in extreme cases.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.3 % weight |
| Max. water absorption | 1.3 % weight |

Table 06: Moisture absorption

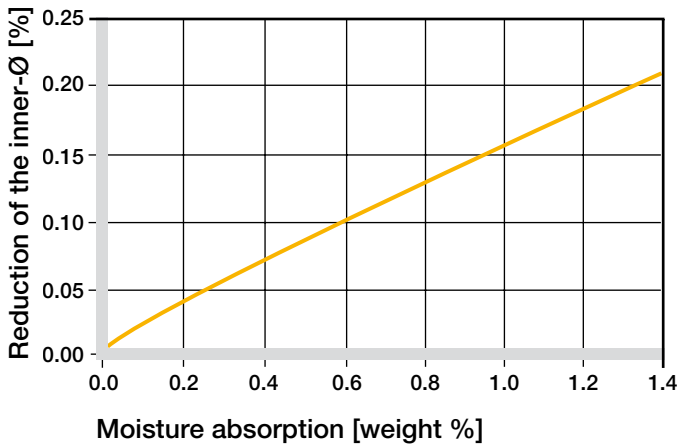


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

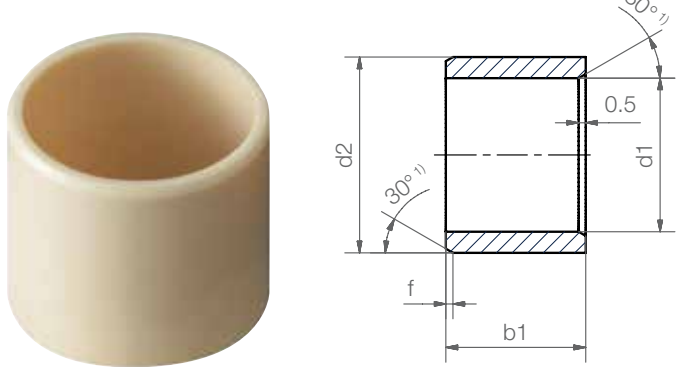
iglidur® J3 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table). In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® J3<br>E10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|-------------------------|--------------------|
| up to 3             | 0–0.025          | +0.014 +0.054           | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.020 +0.068           | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.025 +0.083           | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.032 +0.102           | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.040 +0.124           | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.050 +0.150           | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.060 +0.180           | 0 +0.030           |
| > 80 to 120         | 0–0.087          | +0.072 +0.212           | 0 +0.035           |
| > 120 to 180        | 0–0.100          | +0.085 +0.245           | 0 +0.040           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| J3SM-0304-05 | 3.0  | +0.014 +0.054 | 4.5  | 5.0       |
| J3SM-0507-05 | 5.0  | +0.020 +0.068 | 7.0  | 5.0       |
| J3SM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| J3SM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| J3SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| J3SM-1214-15 | 12.0 | +0.032 +0.102 | 14.0 | 15.0      |
| J3SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| J3SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| J3SM-2528-30 | 25.0 | +0.040 +0.124 | 28.0 | 30.0      |
| J3SM-3034-30 | 30.0 | +0.040 +0.124 | 34.0 | 30.0      |
| J3SM-3539-40 | 35.0 | +0.050 +0.150 | 39.0 | 40.0      |
| J3SM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 40.0      |

\* after pressfit. Testing methods ► page 75



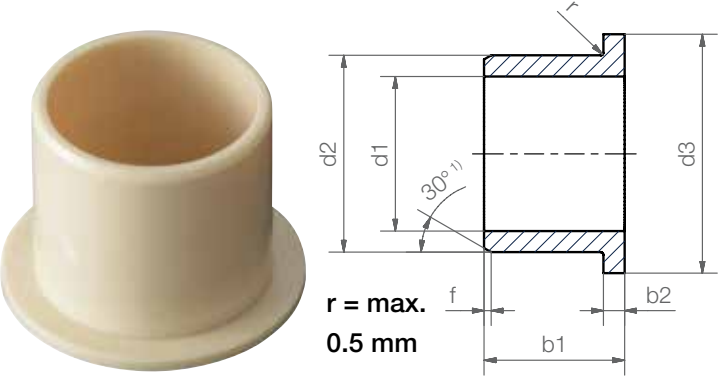
Order key

J3SM-0304-05

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® J3



Flange bearing



Order key

J3FM-0304-05

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® J3

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number     | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-----------------|------|---------------|------|-----------|-----------|-------------|
| J3FM-0203505-05 | 2.0  | +0.014 +0.054 | 3.5  | 5.0       | 5.0       | 0.75        |
| J3FM-0304-05    | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 5.0       | 0.75        |
| J3FM-0507-05    | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 5.0       | 1.0         |
| J3FM-0608-06    | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| J3FM-0810-10    | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| J3FM-1012-10    | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| J3FM-1214-12    | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| J3FM-1618-17    | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| J3FM-2023-21    | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |
| J3FM-2528-21    | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 21.5      | 1.5         |
| J3FM-3034-26    | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 26.0      | 2.0         |
| J3FM-3539-26    | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 26.0      | 2.0         |
| J3FM-4044-40    | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 40.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

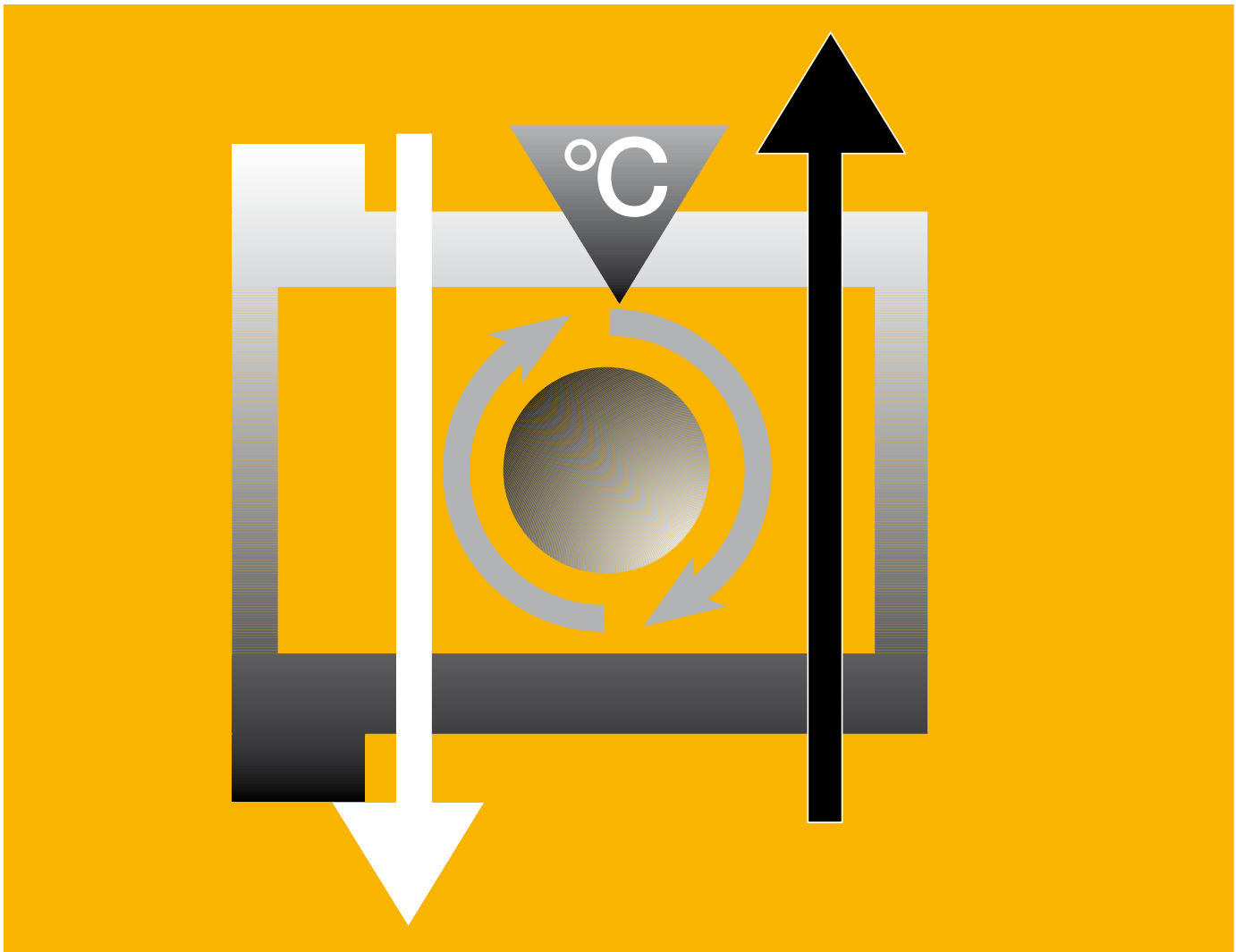
► [www.igus.co.uk/iglidur-specialbearings](http://www.igus.co.uk/iglidur-specialbearings)



delivery from stock  
time



prices price list online  
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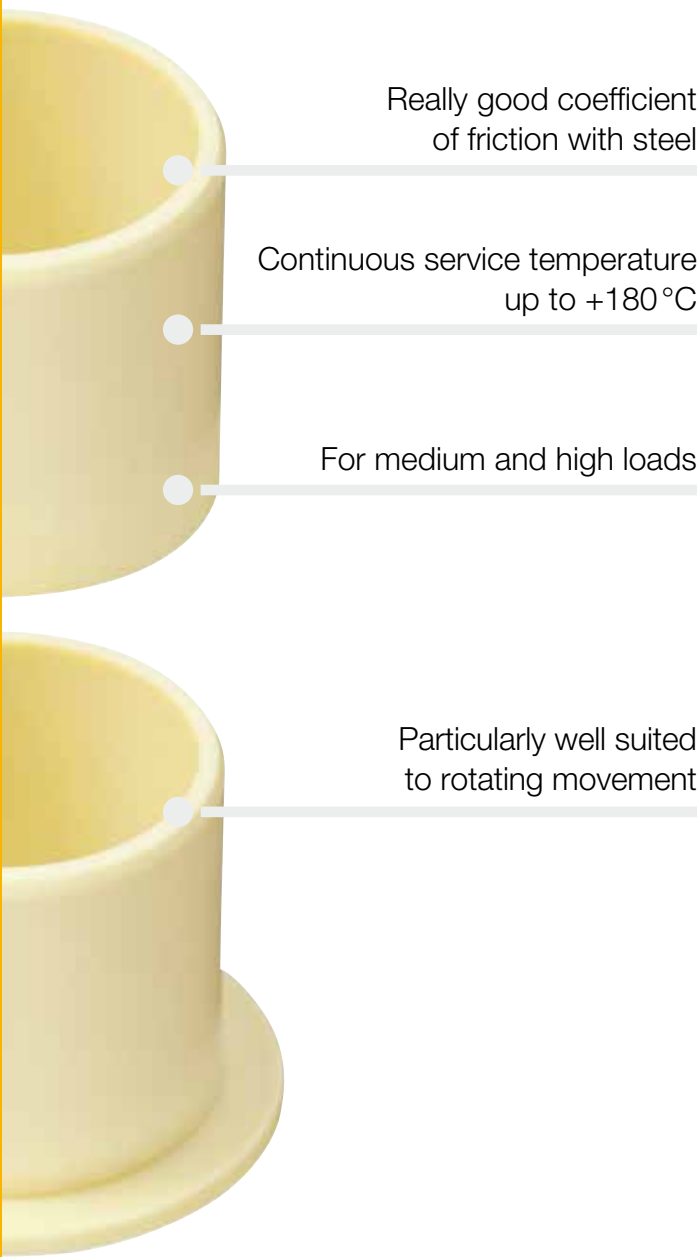


High temperatures, versatile –  
iglidur® J350

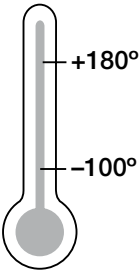


- Excellent coefficient of friction against steel
- Continuous service temperature up to +180°C
- For medium and high loads
- Particularly well suited to rotating movement

**High temperatures, versatile.** An outstanding bearing for rotating applications – and for a wide range of different shaft materials: With iglidur® J350 bearings, the lifetime can often be increased for applications between 1 and 50 MPa. In addition, the high temperature resistance makes it a very versatile material.



Temperature



When to use it?

- If a high wear-resistant bearing for rotating movement at medium and high loads is required
- If an economic bearing is required for use at high temperatures.
- If pressfit up to +150 °C is necessary
- If high wear resistance is required at high loads
- If the bearing is exposed to shock loading



When not to use it?

- If permanent temperatures exceed +180 °C  
▶ iglidur® X, page 173
- If low friction is required  
▶ iglidur® J, page 109
- When a cost-effective bearing with a low friction is needed  
▶ iglidur® D, page 287  
▶ iglidur® R, page 277
- With high rotational speeds  
▶ iglidur® J, page 109

Product range

2 styles  
Ø 6–30 mm  
more dimensions  
on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® J350      | Testing method |
| Density                                                | g/cm³                              | 1.44               |                |
| Colour                                                 |                                    | yellow             |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 1.6                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.1–0.2            |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.45               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 2,000              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 55                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 60                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 60                 |                |
| Shore D hardness                                       |                                    | 80                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +180               |                |
| Max. short term application temperature                | °C                                 | +220               |                |
| Min. application temperature                           | °C                                 | –100               |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 7                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>10</sup> | DIN 53482      |

Table 01: Material properties table

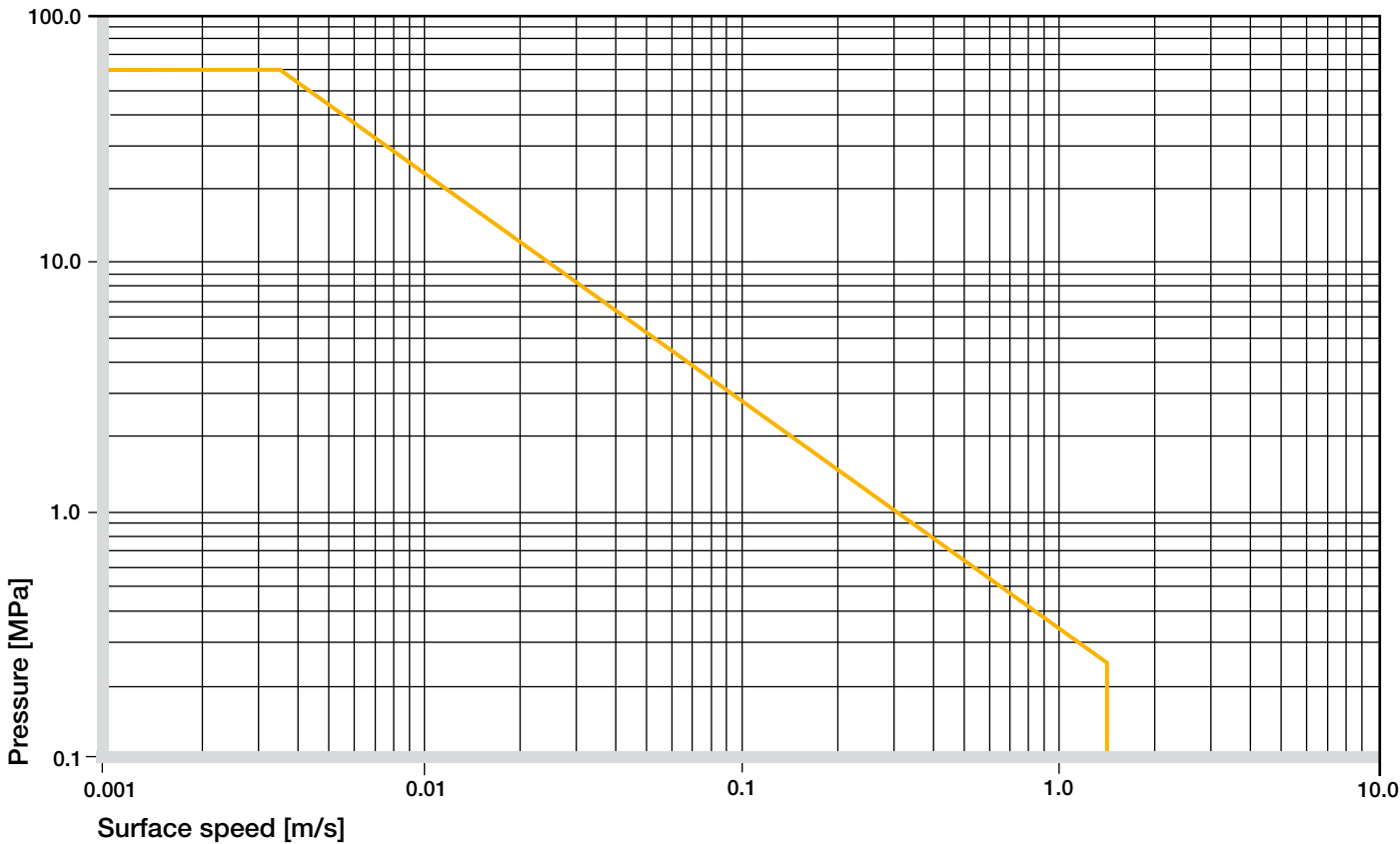


Diagram 01: Permissible pv values for iglidur® J350 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing



iglidur® J350 blends universally good wear resistance, flexibility and temperature resistance into a very versatile iglidur® material with a broad application spectrum.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® J350 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +180°C the permissible surface pressure is 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

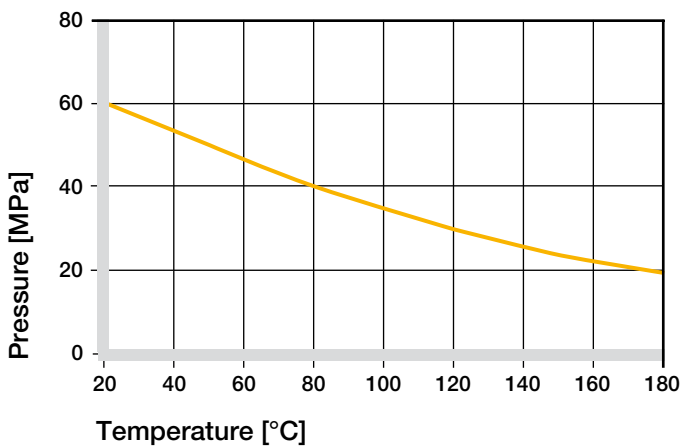


Diagram 02: Recommended maximum surface pressure as a function of temperature (60 MPa at +20°C)

iglidur® J350 bearings are adequate for medium and high loads. Diagram 03 shows the elastic deformation under different temperatures. It shows the material behaviour submitted to a short term load. The surrounding temperatures are only noticeable at 60 MPa.

► Surface Pressure, page 63

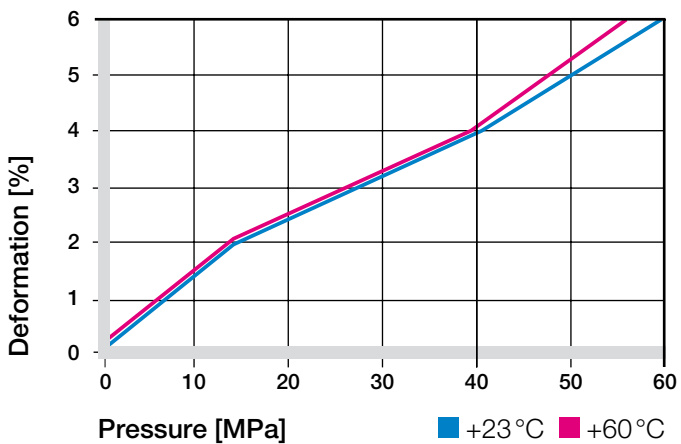


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J350 has been developed for low and medium speeds in rotating and oscillating use. The wear rate is much better with rotating movement. iglidur® J350 plain bearings can also be used for linear motion.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.3      | 1           | 4      |
| Short term | 3        | 2,3         | 8      |

Table 02: Maximum running speed

Temperatures

The temperature resistance of iglidur® J250 allows universal applications in many different industries. The short term maximum temperature is +220°C. At temperatures above +140°C the bearing should be mechanically fixed in the bore. Higher temperatures may result in a loss of the pressfit of the plain bearings, potentially allowing the bearing to drift within the housing bore.

The wear-rate of iglidur® J350 bearings changes very little at high temperatures. In some cases, the wear even decreases at +100°C. Generally, the wear figures between +20°C and +150°C are very similar.

The iglidur® J350 is a highly wear-resistant bearing material, which can also be used at higher temperatures. The combination of excellent tribological and thermal properties fills a gap in the group of long life materials.

► Application Temperatures, page 66

| iglidur® J350                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -100 °C                 |
| Max. long term                 | +180 °C                 |
| Max. short term                | +220 °C                 |
| Add. securing is required from | +140 °C                 |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction of iglidur® J350 in dry operation on a steel shaft is very good. It is even lower at high speed, which makes the material very suitable for permanently dry-running application at high rotation speed, as can be seen in diagram 04.

iglidur® J350 bearings are clearly superior to other bearing materials in rotating applications over 2 MPa. The lifetime of iglidur® J350 can be several times higher.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

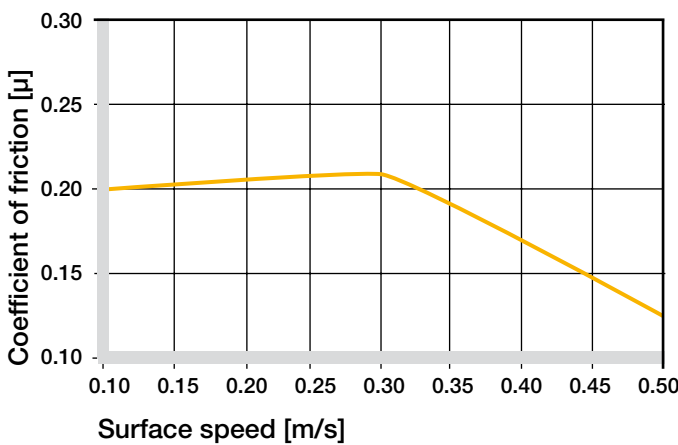


Diagram 04: Coefficient of friction as a function of the running speed, p = 1 MPa

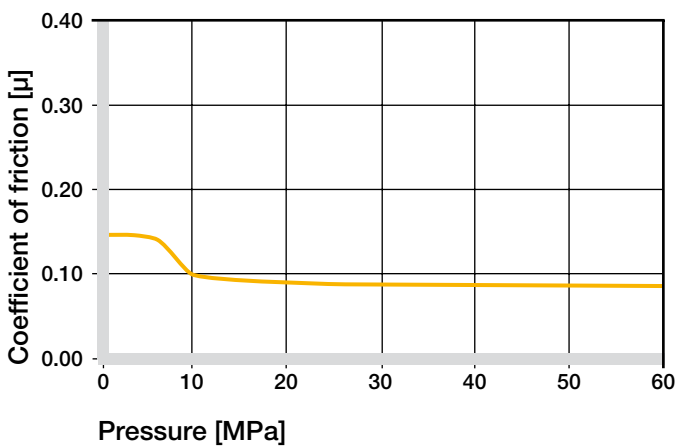


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagram 06 and 07 shows results of testing different shaft materials with plain bearings made of iglidur® J350.

iglidur® J350 plain bearings can be combined with various shaft materials.

One shaft – bearing combination stands out when looking at the wear results of the test: iglidur® J350 with soft stainless steel (V2A). Not many bearing materials are suitable for use with this rather difficult soft stainless steel material (V2A) and achieve good wear results. Also, iglidur® J350 shows good properties with hard-anodized aluminum shafts.

If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft Materials, page 71

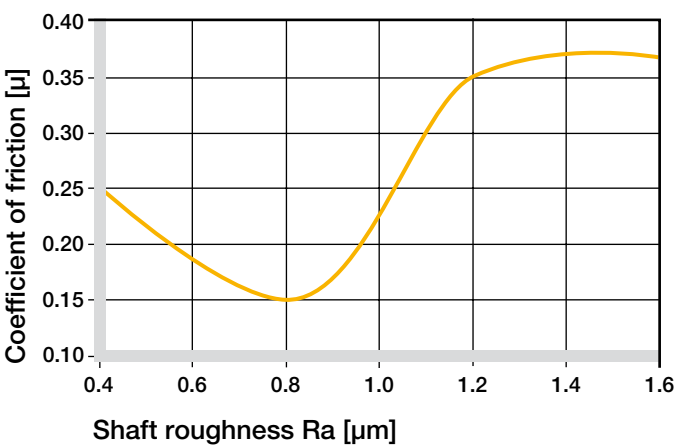


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



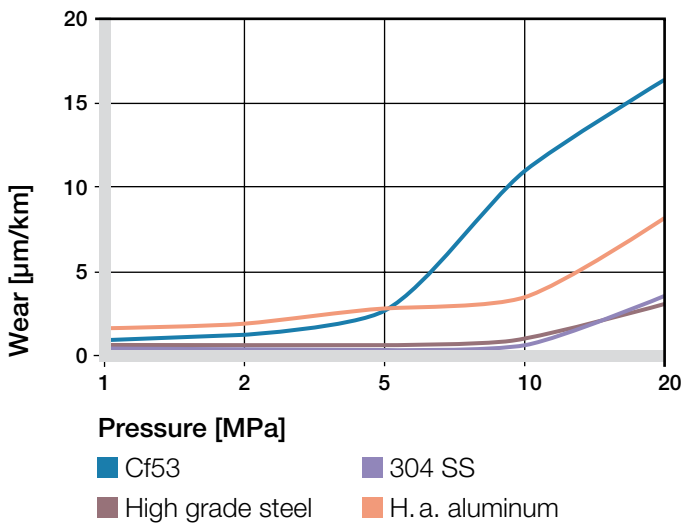


Diagram 07: Wear with different shaft materials in rotational operation, as a function of the pressure

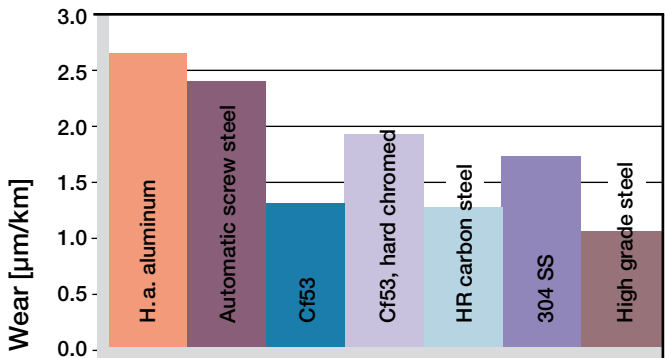


Diagram 08: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

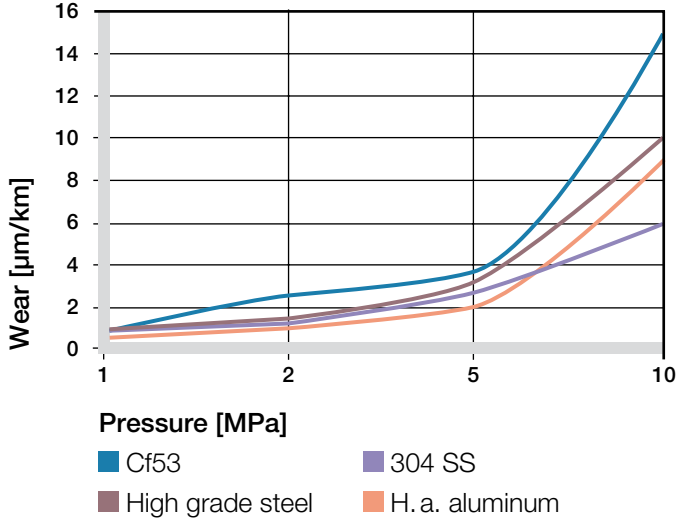


Diagram 09: Wear with oscillating movement of different shaft materials according to applied load

| iglidur® J350 | Dry     | Greases | Oil  | Water |
|---------------|---------|---------|------|-------|
| C.o.f. µ      | 0.1–0.2 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J350 plain bearings are resistant to diluted alkalines and acids, alcohols, cleaning agents and lubricants. iglidur® J350 will be attacked by esters, ketones, chlorinated hydrocarbons, and other solvents, please refer to the chemical resistance chart at the back of this catalogue.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | + to 0     |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | + to 0     |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® J350 are resistant to radiation up to an intensity of 2 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® J350 plain bearings are conditionally resistant to UV radiation.

Vacuum

iglidur® J260 plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

Electrical Properties

iglidur® J350 plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>13</sup> Ωcm |
| Surface resistance | > 10 <sup>10</sup> Ω   |

Moisture Absorption

The humidity absorption of iglidur® J350 is low and can be ignored when using standard-bearings. Even when saturated with water, iglidur® J350 does not absorb more than 1.6 % of water (by weight).

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.3 % weight |
| Max. water absorption       | 1.6 % weight |

Table 06: Moisture absorption

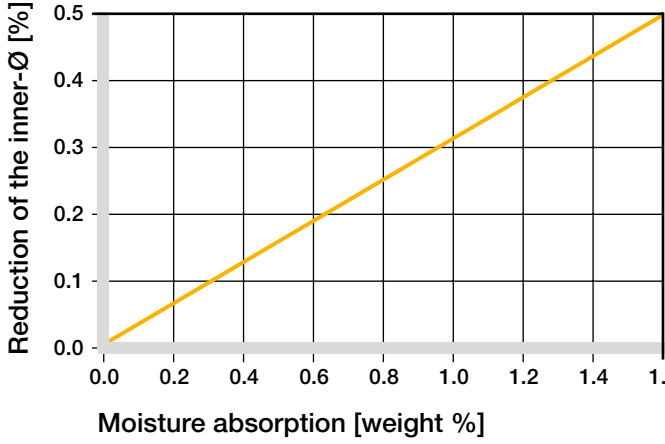


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

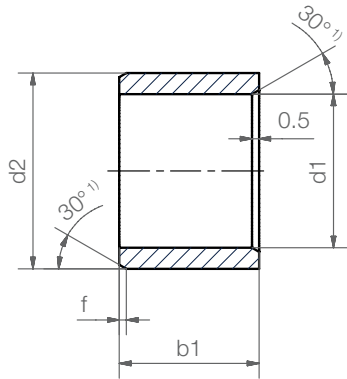
iglidur® J350 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® J350 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150          | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

J350SM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® J350

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

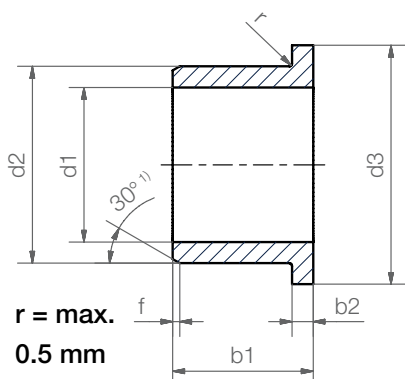
|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| J350SM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| J350SM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| J350SM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| J350SM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 12.0      |
| J350SM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| J350SM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

J350FM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® J350

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| J350FM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| J350FM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| J350FM-1012-07 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 7.0       | 1.0         |
| J350FM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 10.0      | 1.0         |
| J350FM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| J350FM-1618-17 | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| J350FM-2023-21 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| J350FM-3034-37 | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 37.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



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time



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time



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**For high speeds – iglidur® L250**



Standard range from stock

Recommended for rotating applications

Very low coefficients of friction

Excellent wear resistance



**For high speeds.** Plain bearings for high speed rotation applications, especially for fan- and motors.



## When to use it?

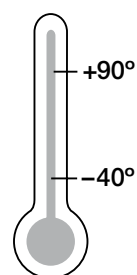
- For rotating applications at high speed
- If highest service life is required
- Low load applications
- If low noise level is required
- For very low coefficients of friction



## When not to use it?

- When high pressure loads occur
  - ▶ iglidur® Q, page 541
  - ▶ iglidur® W300, page 151
- When sustained temperatures above +90 °C is a condition
  - ▶ iglidur® V400, page 317
- When low moisture absorption is required
  - ▶ iglidur® H1, page 365
  - ▶ iglidur® J, page 109

## Temperature



## Product range

2 styles  
Ø 6–20 mm  
more dimensions  
on request

## Typical sectors of industry and application areas

- Automotive ● Electronics industry
- Mechatronics ● Optical industry
- Test engineering and quality assurance etc.



Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/light-aircraft](http://www.igus.co.uk/light-aircraft)



| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® L250      |
| Density                                                |  | g/cm³                              | 1.50               |
| Colour                                                 |  |                                    | beige              |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.7                |
| Max. water absorption                                  |  | % weight                           | 3.9                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.08–0.19          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.4                |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 1,950              |
| Tensile strength at +20 °C                             |  | MPa                                | 67                 |
| Compressive strength                                   |  | MPa                                | 47                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 45                 |
| Shore D hardness                                       |  |                                    | 68                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +90                |
| Max. short term application temperature                |  | °C                                 | +180               |
| Max. ambient temperature, short term <sup>1)</sup>     |  | °C                                 | +200               |
| Min. application temperature                           |  | °C                                 | −40                |
| Thermal conductivity                                   |  | W/m · K                            | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>−1</sup> · 10 <sup>−5</sup> | 10                 |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>10</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>11</sup> |

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table

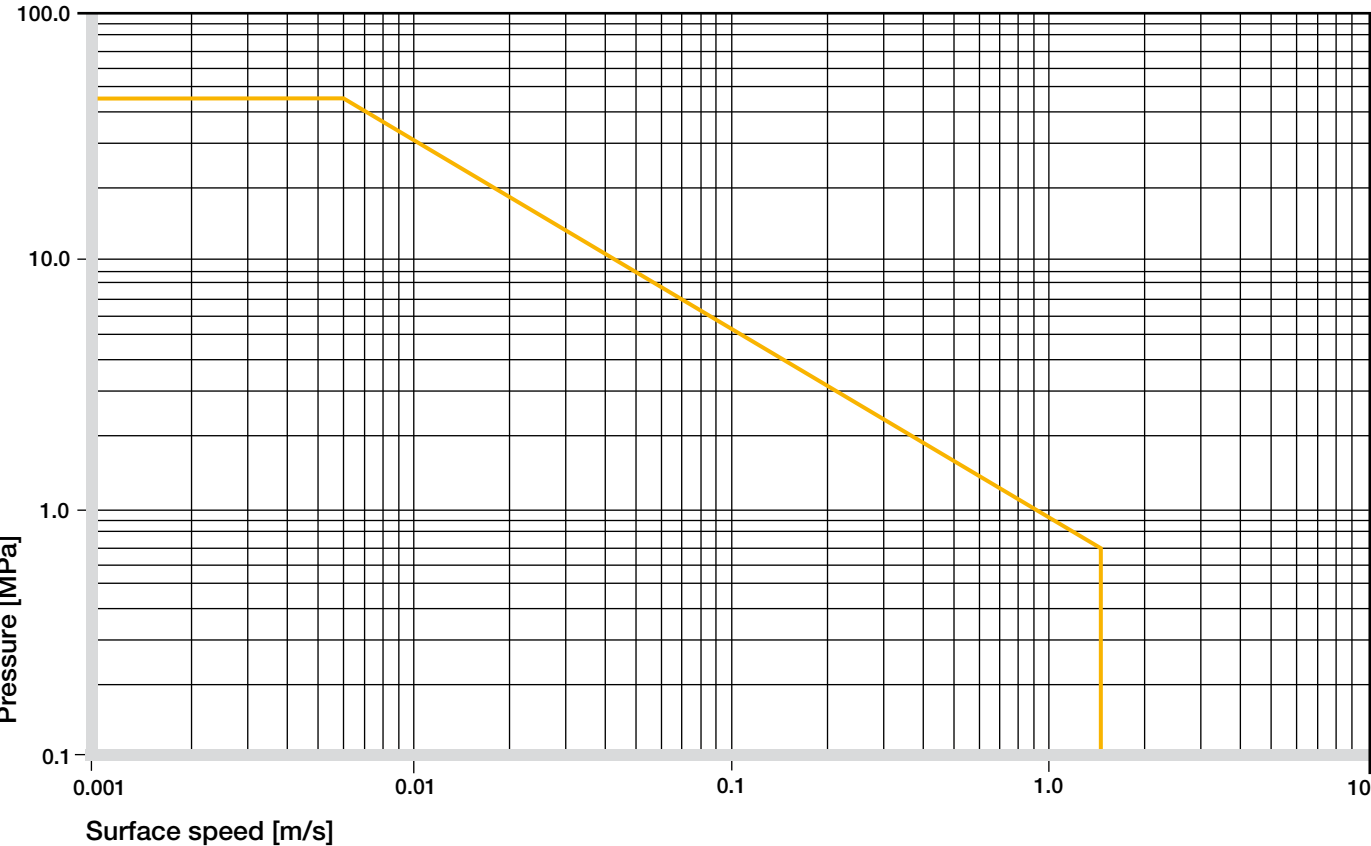


Diagram 01: Permissible pv values for iglidur® L250 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® L250 is a bearing material for high rotary speeds and low coefficients of friction. The iglidur® L250 material can feature these advantages particularly with low loads.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® L250 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

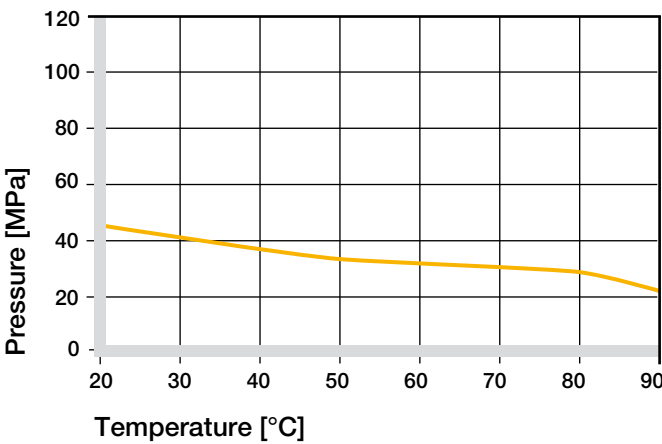


Diagram 02: Recommended maximum surface pressure as a function of temperature (45 MPa at +20 °C)

Applications which feature these advantages are fans, small motors, fast-running sensors or the magnet technology.

Surface Pressure, page 63

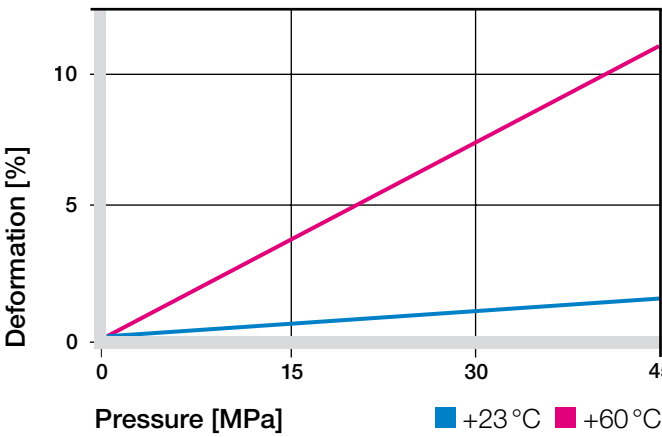


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® L250 has been developed especially for high surface speeds with low loads. Besides the physical limit, which is preset by the heating of the bearing, the coefficients of wear also act limitingly if rapidly high glide paths emerge at high peripheral speeds and the permitted wear limit is thus reached earlier. The great advantages of the iglidur® L250 bearings are seen right here. The wear rate is very low, thus making the material an ideal solution for extreme glide paths. The maximum speeds can be gathered from Table 02.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 2      |
| Short term | 1.5      | 1.1         | 3      |

Table 02: Maximum running speed

Temperatures

The iglidur® L250 bearings can be used in temperatures up to 180 °C for the short-term. Note that a mechanical securing of the bearing is recommended from temperatures of 55 °C. Higher temperatures can also cause the bearing to lose its press-fit seating and move in the bore.

Application Temperatures, page 66

| iglidur® L250                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | −40 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +180 °C                 |
| Add. securing is required from | +55 °C                  |

Table 03: Temperature limits

Friction and Wear

Low coefficients of friction form an essential reason for the excellent features of the iglidur® L250 bearings. In the best pairing (with V2A shafts), friction coefficients of 0.14 are already reached with low loads. Coefficients of friction under 0.1 was measured already below 10 MPa. To utilize the excellent coefficients of wear in the application, loads over 5 MPa should be avoided according to shaft material.

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

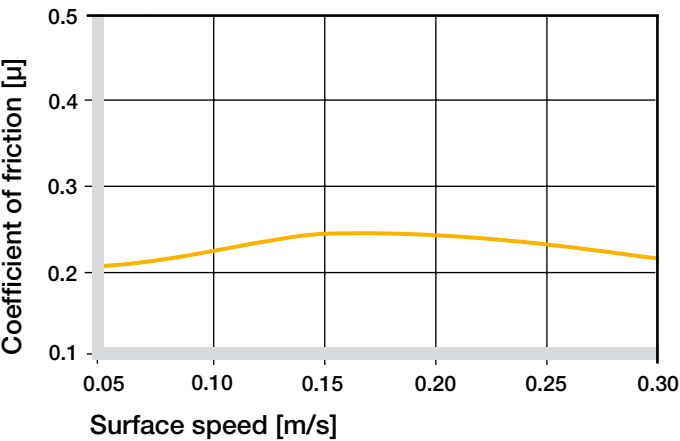


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

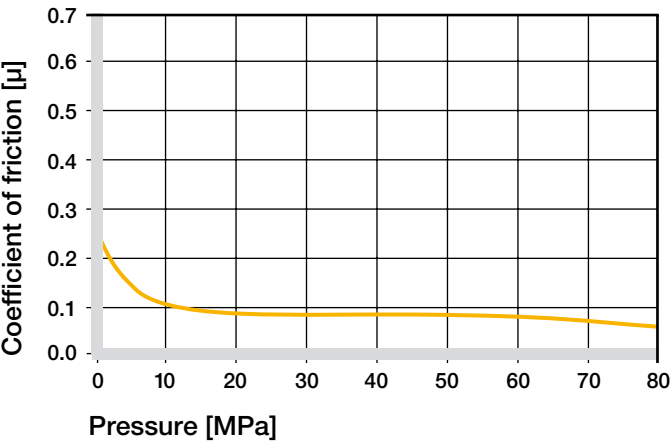


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

As seen in Diagram 07, many shafts are recommendable for low loads and low rotations. The good coefficients of friction are additionally retained over a wide range of recommendable shaft surfaces finish. For loads higher than 1 MPa, particular attention should be paid to the shaft material used.

- Shaft Materials, **page 71**

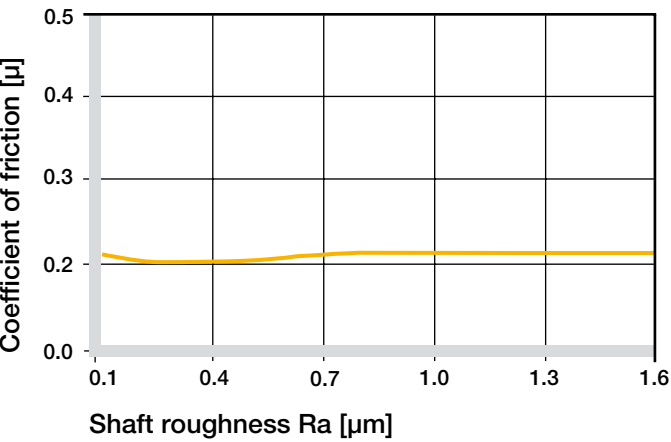


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

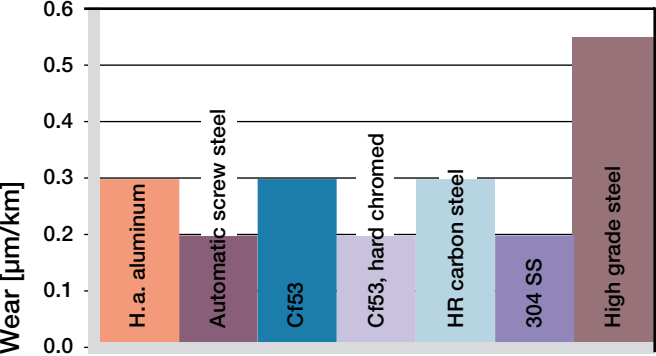


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

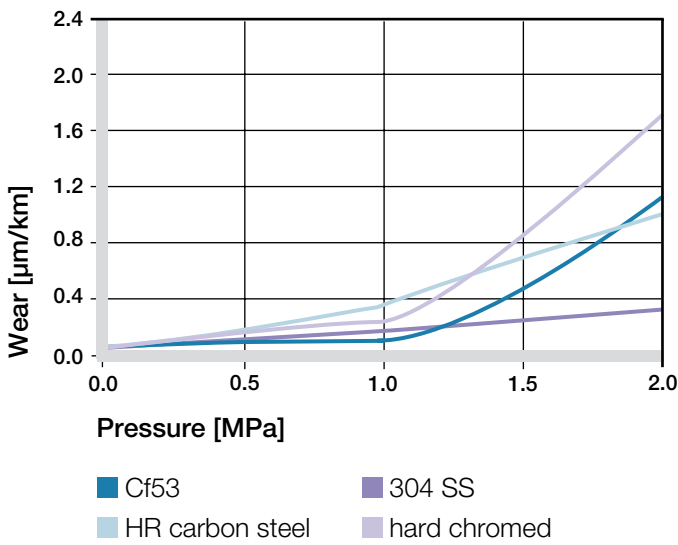


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

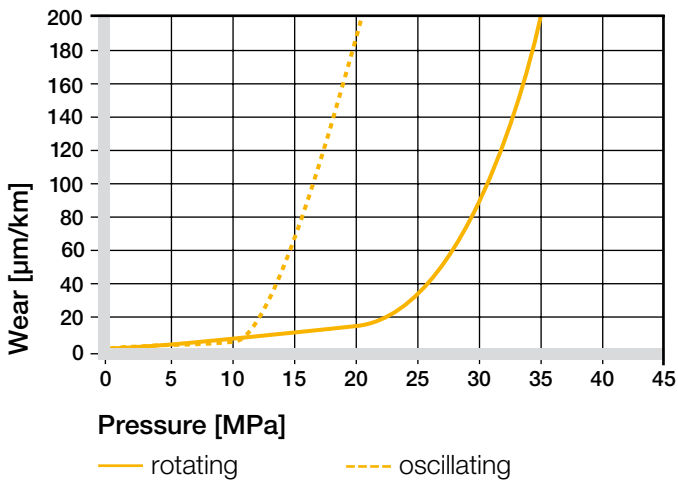


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® L250 | Dry       | Greases | Oil  | Water |
|---------------|-----------|---------|------|-------|
| C.o.f. μ      | 0.08–0.19 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 μm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® L250 plain bearings are resistant to diluted alkalines and very weak acids, as well as to solvents and all types of lubricants.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® L250 are resistant to radiation up to a radiation intensity of  $3 \cdot 10^4$  Gy. Higher radiation affects the material and may result in a significant decrease in mechanical properties.

UV Resistance

When subjected to UV radiation, iglidur® L250 plain bearings change colour. The hardness, compression strength, and wear resistance of the material, however, are not affected.

Vacuum

When used in a vacuum, the existing humidity may out gas. Therefore, only dehumidified bearings of iglidur® L250 are suitable for a vacuum application.

Electrical Properties

|                                                           |                             |
|-----------------------------------------------------------|-----------------------------|
| iglidur® L250 plain bearings are electrically insulating. |                             |
| Volume resistance                                         | > $10^{10} \Omega\text{cm}$ |
| Surface resistance                                        | > $10^{11} \Omega$          |



Moisture Absorption

With regard to applications where the smallest bearing clearances are concerned, please take the moisture absorption into consideration.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.7 % weight |
| Max. water absorption | 3.9 % weight |

Table 06: Moisture absorption

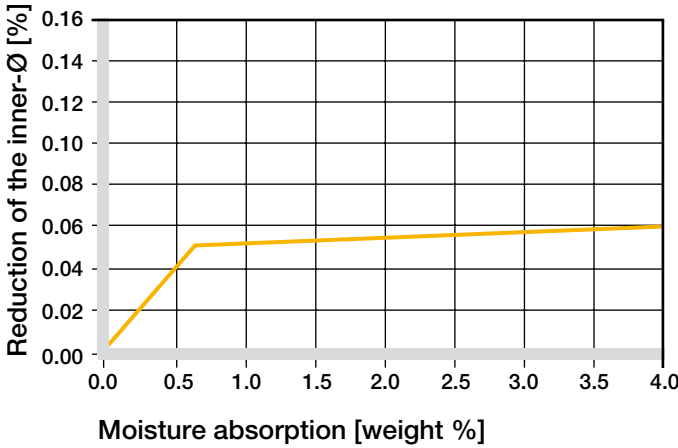


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

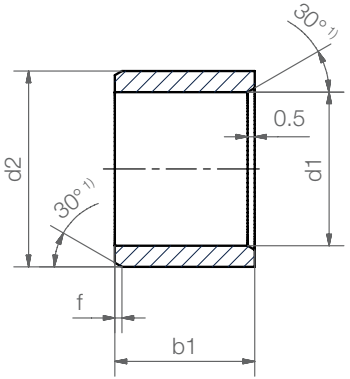
iglidur® L250 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® L250 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180          | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212          | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245          | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

L250SM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® L250

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| L250SM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| L250SM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| L250SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| L250SM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| L250SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| L250SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

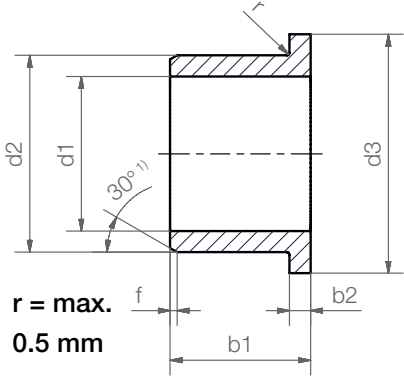


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www.igus.co.uk/en/l250

Flange bearing



Order key

L250FM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® L250

Dimensions according to ISO 3547-1 and special dimensions

1) thickness < 1 mm: chamfer = 20°

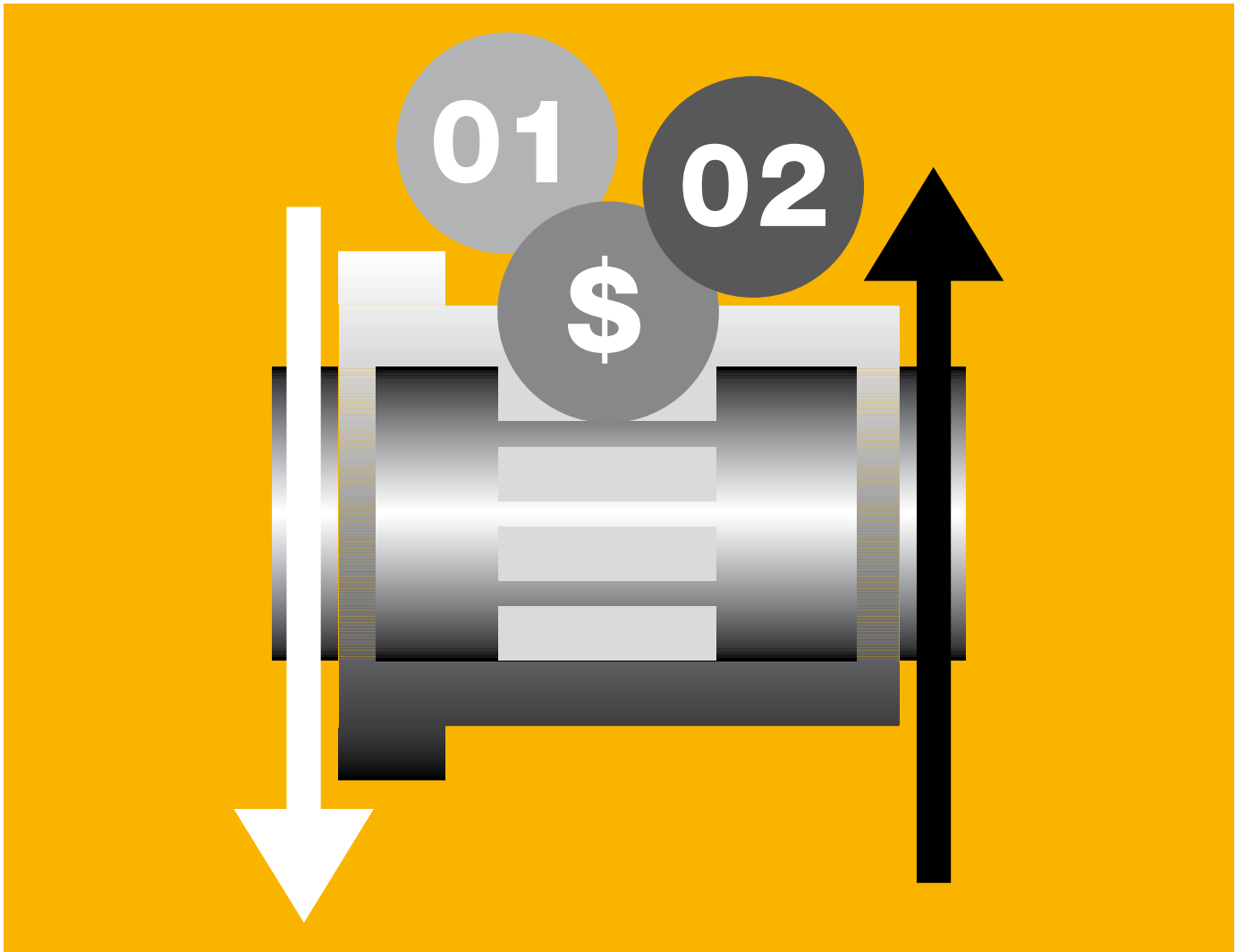
Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3   | b1   | b2    |
|----------------|------|---------------|------|------|------|-------|
|                |      |               |      | d13  | h13  | -0.14 |
| L250FM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0 | 6.0  | 1.0   |
| L250FM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0   |
| L250FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0   |
| L250FM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0   |
| L250FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0   |
| L250FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5   |

\* after pressfit. Testing methods ► page 75



Low-cost – iglidur® R



- Standard range from stock
- Good wear resistance
- Low friction when running dry
- Very cost-effective
- Low wear rate



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

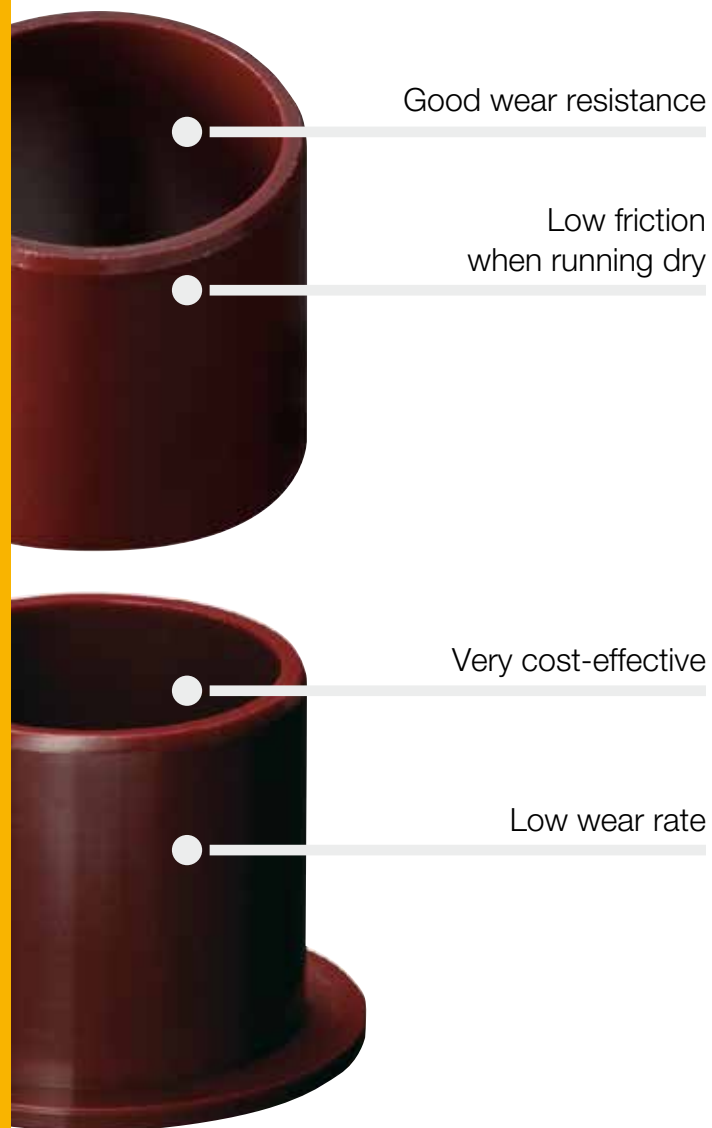


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time



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**Low-cost.** Low-cost-material with low coefficients of friction and good wear resistance at low to medium loads.



## When to use it?

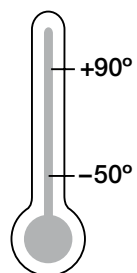
- If high wear resistance at low load is required
- If you are looking for a very cost-effective bearing
- If low friction at dry operation is required
- If edge loads occur
- If you are looking for low water absorption
- If PTFE and silicone are prohibited in the application



## When not to use it?

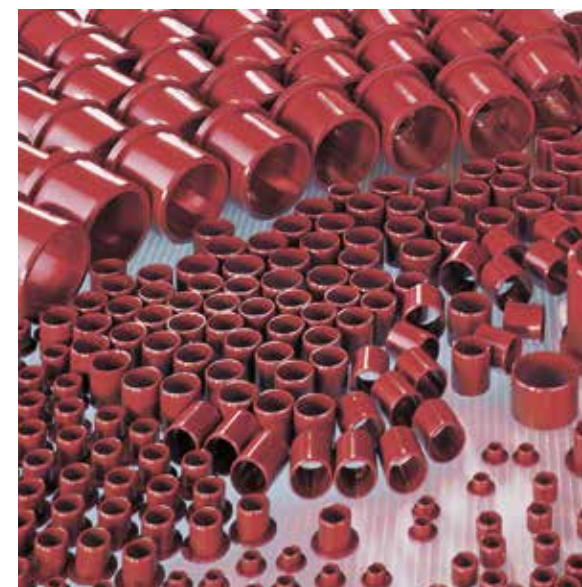
- If high pressure occurs  
▶ iglidur® G, page 81
- If permanent temperatures exceed +90 °C  
▶ iglidur® G, page 81  
▶ iglidur® P, page 195
- If best wear resistance is required  
▶ iglidur® J, page 109

## Temperature



## Product range

2 types  
Ø 2–35 mm  
more dimensions  
on request



## Typical sectors of industry and application areas

- Sports and leisure ● Model making
- Automotive ● Mechatronics
- Camera technology etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

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▶ [www.igus.co.uk/rickshaw](http://www.igus.co.uk/rickshaw)



▶ [www.igus.co.uk/office-chair](http://www.igus.co.uk/office-chair)



| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® R         |
| Density                                                |  | g/cm³                              | 1.39               |
| Colour                                                 |  |                                    | dark red           |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.2                |
| Max. water absorption                                  |  | % weight                           | 1.1                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.09–0.25          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.27               |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 1,950              |
| Tensile strength at +20 °C                             |  | MPa                                | 70                 |
| Compressive strength                                   |  | MPa                                | 68                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 23                 |
| Shore D hardness                                       |  |                                    | 77                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +90                |
| Max. short term application temperature                |  | °C                                 | +110               |
| Min. application temperature                           |  | °C                                 | –50                |
| Thermal conductivity                                   |  | W/m · K                            | 0.25               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>–1</sup> · 10 <sup>–5</sup> | 11                 |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>12</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>12</sup> |

Table 01: Material properties table

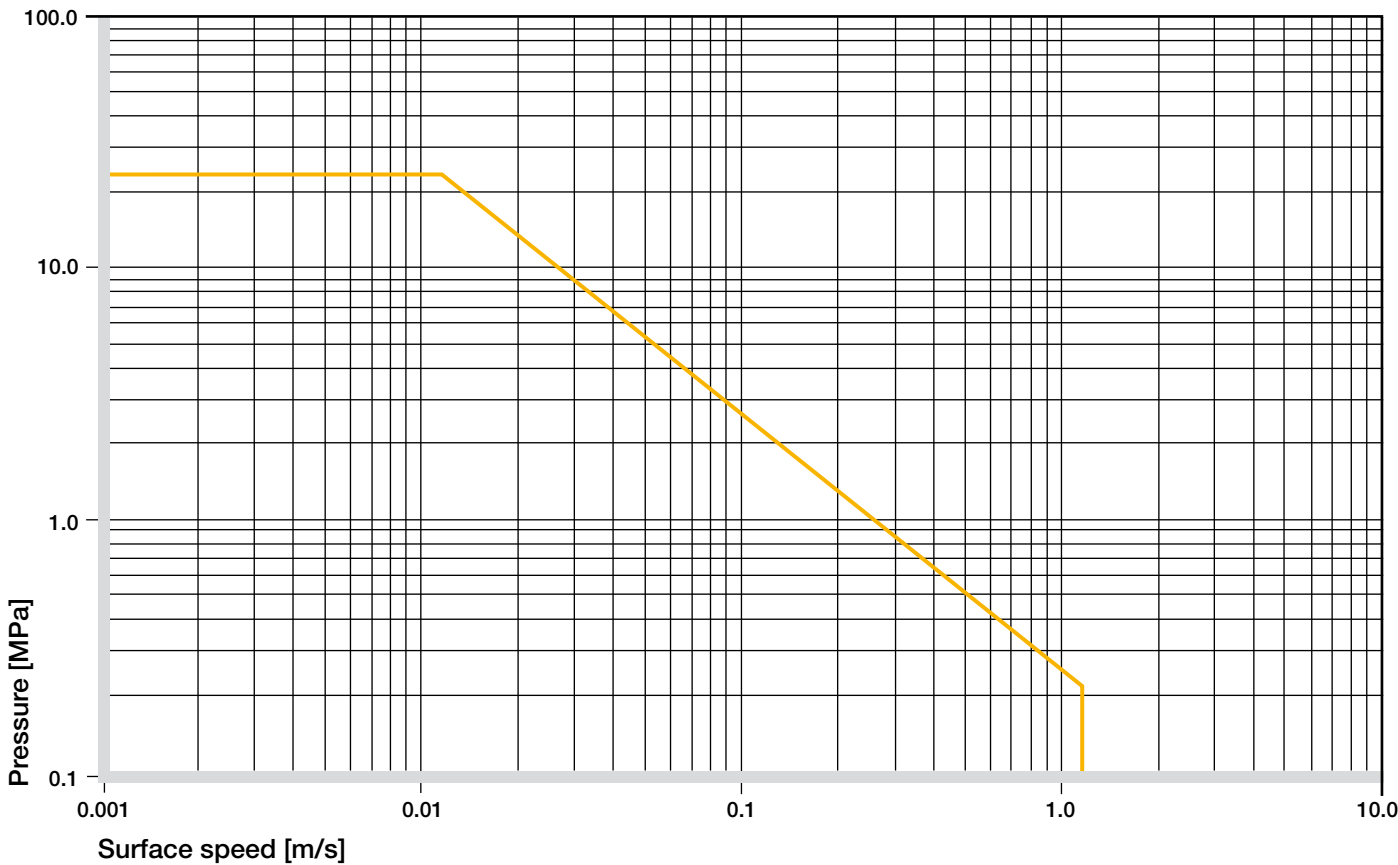


Diagram 01: Permissible pv values for iglidur® R with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

The development of the iglidur® R as a bearing material focused on high performance and very low cost. Especially in the dry operation low coefficients of friction and wear were to be achieved. Bearings made of iglidur® R are selectively supported by a combination of solid lubricants. The PTFE- and silicon-free material achieves extremely low coefficients of friction in dry operation and runs largely free of stick-slip effects.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® R plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is around 11 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

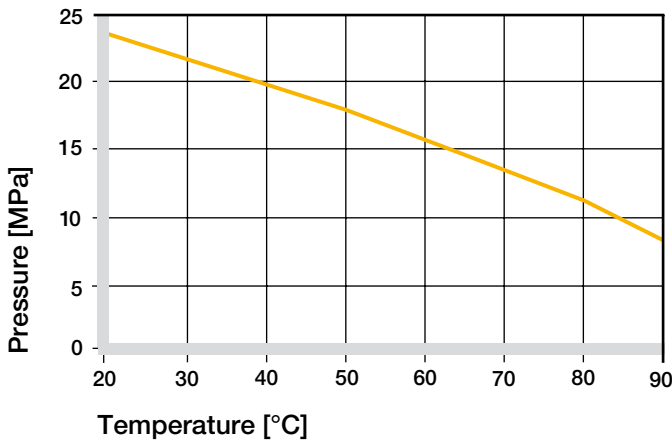


Diagram 02: Recommended maximum surface pressure as a function of temperature (23 MPa at +20 °C)

iglidur® R plain bearings in the first place were developed for low to average radial loads – Diagram 03 shows the elastic deformation of iglidur® R at radial loads. At the maximum permissible load of 23 MPa, the deformation is approximately 4 %. Plastic deformation is not detectable up to this value. However, it is also dependent on the service time.

► Surface Pressure, page 63

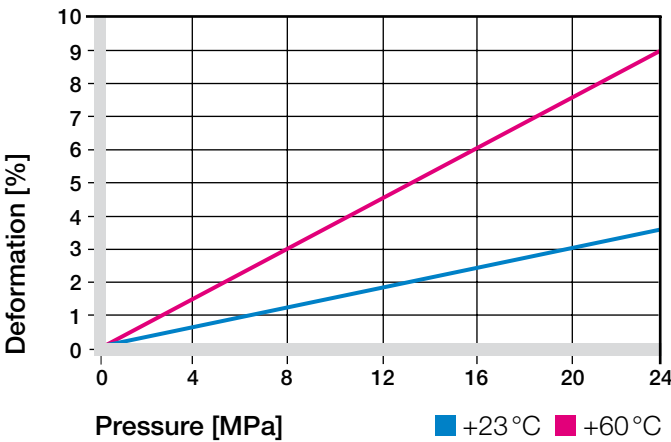


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® R bearings are suitable for high surface speeds. Speeds of up to 10 m/s are permitted in linear motions! Here too the specified maximum values can be achieved only with minimum pressure loads. The specified values show the speed at which due to friction an increase in temperature up to the longterm permitted value can occur.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 3.5    |
| Short term | 1.2      | 1           | 5      |

Table 02: Maximum running speed

Temperatures

The short term maximum temperature is +110 °C, the long term maximum temperature is +90 °C. With increasing temperatures, the compressive strength of iglidur® R bearings decreases. Diagram 02 clarifies this relationship. The ambient temperature in the application also has an impact on the wear of the bearing, an increase in temperature will result in an increase in wear.

► Application Temperatures, page 66

| iglidur® R                | Application temperature |
|---------------------------|-------------------------|
| minimum                   | –50 °C                  |
| Max. long term            | +90 °C                  |
| Max. short term           | +110 °C                 |
| Add. securing is required | +50 °C                  |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction decreases like the wear resistance with increasing load. In contrast, a higher surface speed has less impact on the coefficient of friction of an iglidur® R bearing. iglidur® R is suitable for applications in which high pv values are given mainly through the high surface speed and not as much through the surface pressure. The coefficient of friction of iglidur® R plain bearings depends greatly on the shaft roughness.

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

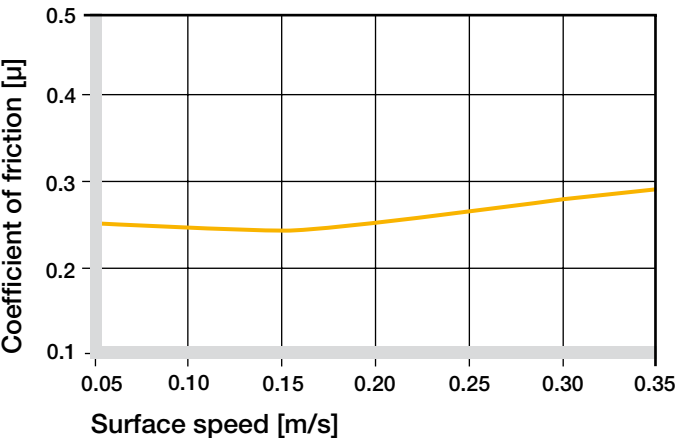


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

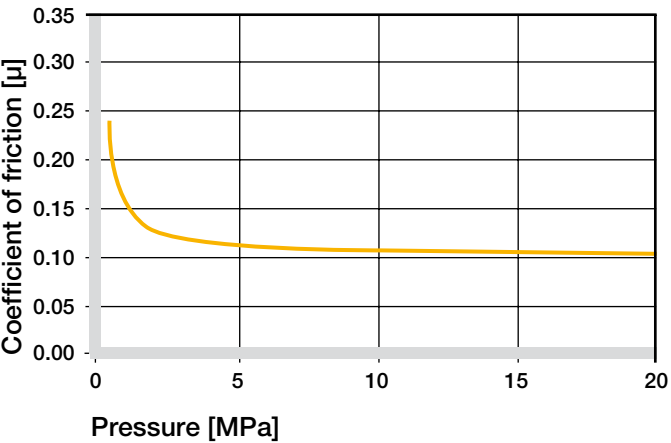


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagram 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® R. At 0.3 m/s and 1 MPa, the X90 and Cf53 shafts are the best materials. With increasing loads the iglidur® R bearings feature the best wear behavior with Cf53 and V2A shafts. In oscillating applications, the hard chromed shaft proves to be the ideal material. If the shaft material you plan on using is not shown in these test results, please contact us.

- Shaft Materials, **page 71**

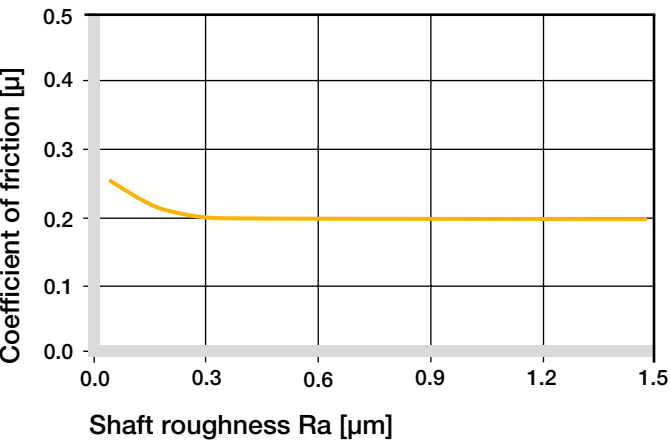


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

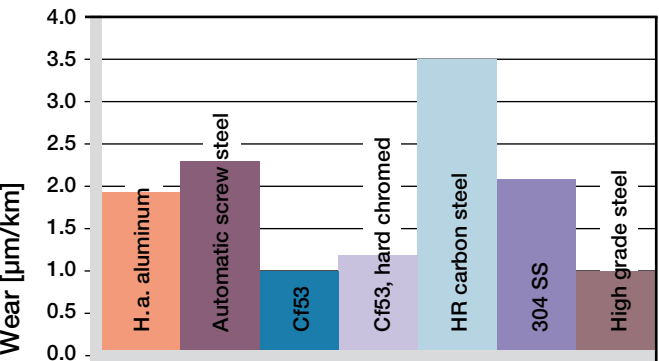


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

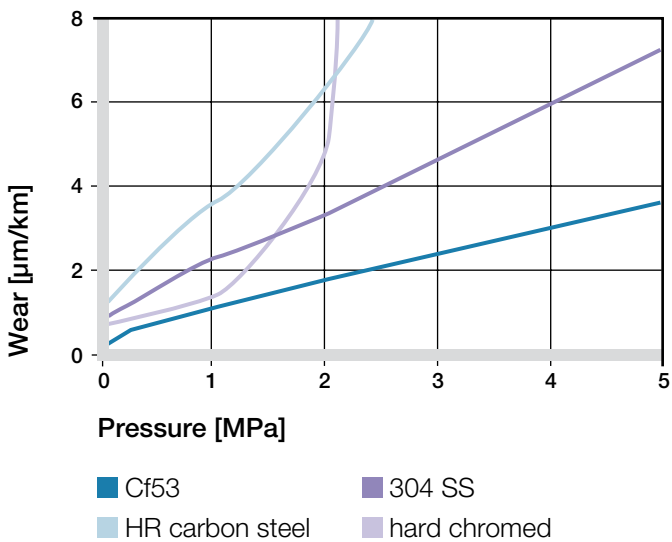


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

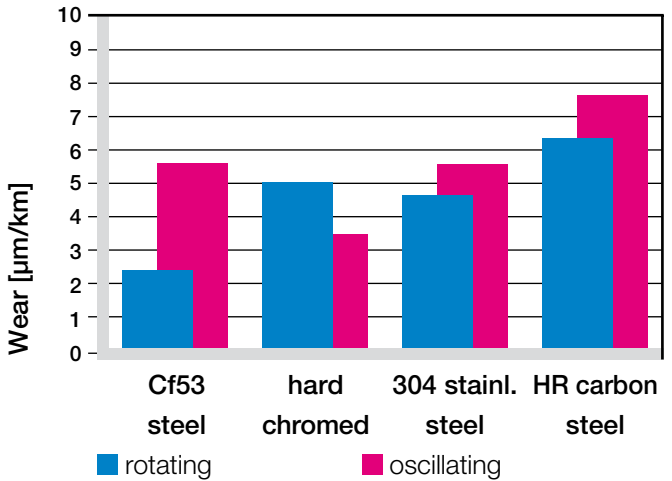


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® R | Dry       | Greases | Oil  | Water |
|------------|-----------|---------|------|-------|
| C. o. f. μ | 0.09–0.25 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 μm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® R bearings can be used in various environmental conditions and in contact with numerous chemicals. Table 05 gives an overview of the chemical resistance of iglidur® R bearings at room temperature.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® R are resistant to radiation up to an intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® R plain bearings are resistant to UV radiation, but the tribological properties are reduced by permanent exposure.

Vacuum

In a vacuum environment, iglidur® R plain bearings release gases. It is only possible to use iglidur® R in vacuum to a limited extent.

Electrical Properties

|                                                        |                             |
|--------------------------------------------------------|-----------------------------|
| iglidur® R plain bearings are electrically insulating. |                             |
| Volume resistance                                      | $> 10^{12} \Omega\text{cm}$ |
| Surface resistance                                     | $> 10^{12} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® R plain bearings is approximately 0.2 % in the standard atmosphere. The saturation limit submerged in water is 1.1 %. This must be taken into account along with other environmental influences.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.2 % weight |
| Max. water absorption | 1.1 % weight |

Table 06: Moisture absorption

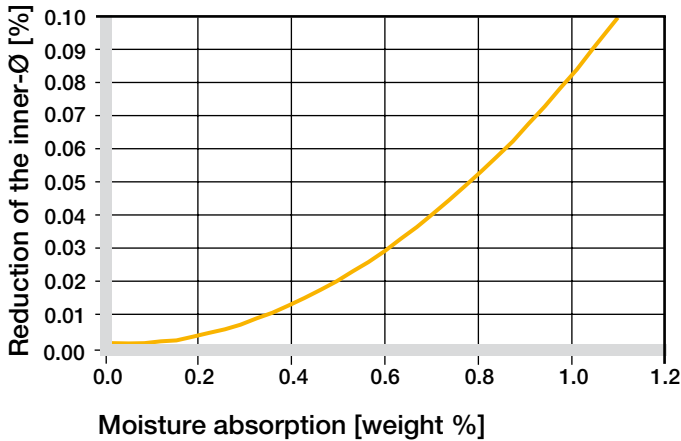


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

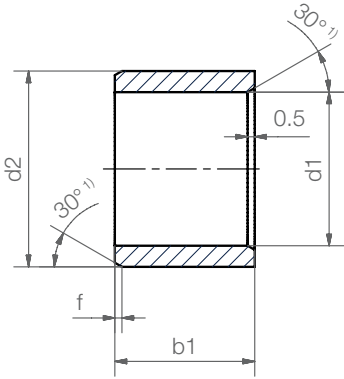
iglidur® R plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® R E10 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180       | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212       | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245       | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

RSM-0203-07

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® R

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| RSM-0203-07 | 2.0  | +0.014 +0.054 | 3.6  | 7.0       |
| RSM-0405-04 | 4.0  | +0.020 +0.068 | 5.5  | 4.0       |
| RSM-0507-05 | 5.0  | +0.020 +0.068 | 7.0  | 5.0       |
| RSM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| RSM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| RSM-1012-05 | 10.0 | +0.025 +0.083 | 12.0 | 5.0       |
| RSM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| RSM-1012-15 | 10.0 | +0.025 +0.083 | 12.0 | 15.0      |
| RSM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| RSM-1416-15 | 14.0 | +0.032 +0.102 | 16.0 | 15.0      |
| RSM-1517-15 | 15.0 | +0.032 +0.102 | 17.0 | 15.0      |
| RSM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| RSM-1820-25 | 18.0 | +0.032 +0.102 | 20.0 | 25.0      |
| RSM-2023-15 | 20.0 | +0.040 +0.124 | 23.0 | 15.0      |
| RSM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| RSM-2528-25 | 25.0 | +0.040 +0.124 | 28.0 | 25.0      |
| RSM-2832-12 | 28.0 | +0.040 +0.124 | 32.0 | 12.0      |
| RSM-3034-25 | 30.0 | +0.040 +0.124 | 34.0 | 25.0      |
| RSM-3034-30 | 30.0 | +0.040 +0.124 | 34.0 | 30.0      |
| RSM-3539-30 | 35.0 | +0.050 +0.150 | 39.0 | 30.0      |

\* after pressfit. Testing methods ► page 75



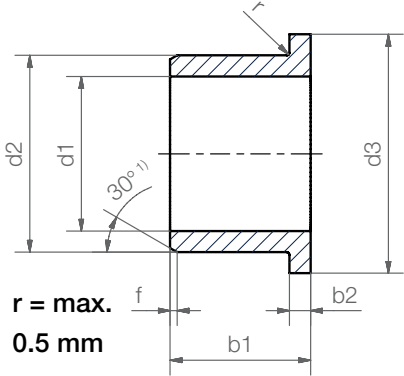
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prices price list online  
www.igus.co.uk/en/r

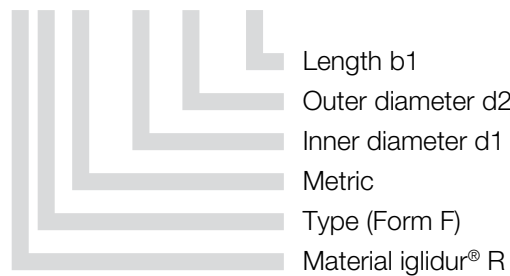


Flange bearing



Order key

RFM-0608-06



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1 -Tolerance* | d2   | d3   | b1<br>h13 | b2   |
|----------------|------|----------------|------|------|-----------|------|
| RFM-0405-04    | 4.0  | +0.020 +0.068  | 5.5  | 9.5  | 4.0       | 0.75 |
| RFM-0507-05    | 5.0  | +0.020 +0.068  | 7.0  | 11.0 | 5.0       | 1.0  |
| RFM-0608-06    | 6.0  | +0.020 +0.068  | 8.0  | 12.0 | 6.0       | 1.0  |
| RFM-0810-05    | 8.0  | +0.025 +0.083  | 10.0 | 15.0 | 5.0       | 1.0  |
| RFM-0810-10    | 8.0  | +0.025 +0.083  | 10.0 | 15.0 | 10.0      | 1.0  |
| RFM-1012-10    | 10.0 | +0.025 +0.083  | 12.0 | 18.0 | 10.0      | 1.0  |
| RFM-1012-18    | 10.0 | +0.025 +0.083  | 12.0 | 18.0 | 18.0      | 1.0  |
| RFM-1214-10    | 12.0 | +0.032 +0.102  | 14.0 | 20.0 | 10.0      | 1.0  |
| RFM-1214-12    | 12.0 | +0.032 +0.102  | 14.0 | 20.0 | 12.0      | 1.0  |
| RFM-1416-17    | 14.0 | +0.032 +0.102  | 16.0 | 22.0 | 17.0      | 1.0  |
| RFM-1517-17    | 15.0 | +0.032 +0.102  | 17.0 | 23.0 | 17.0      | 1.0  |
| RFM-1618-17    | 16.0 | +0.032 +0.102  | 18.0 | 24.0 | 17.0      | 1.0  |
| RFM-1820-17    | 18.0 | +0.032 +0.102  | 20.0 | 26.0 | 17.0      | 1.0  |
| RFM-2023-21    | 20.0 | +0.040 +0.124  | 23.0 | 30.0 | 21.5      | 1.5  |
| RFM-222529-045 | 22.0 | +0.040 +0.124  | 25.0 | 29.0 | 4.5       | 1.5  |
| RFM-2528-21    | 25.0 | +0.040 +0.124  | 28.0 | 35.0 | 21.5      | 1.5  |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

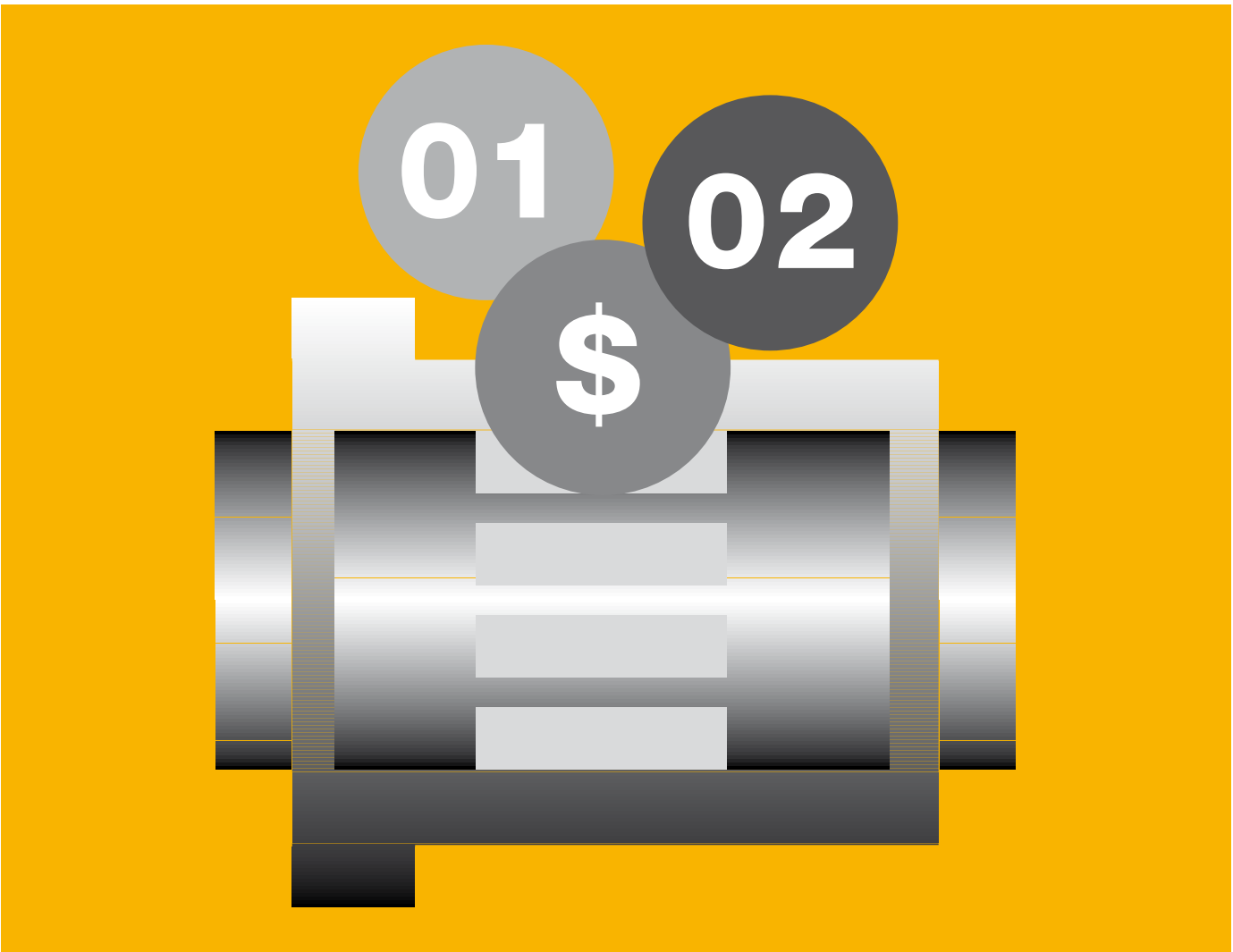
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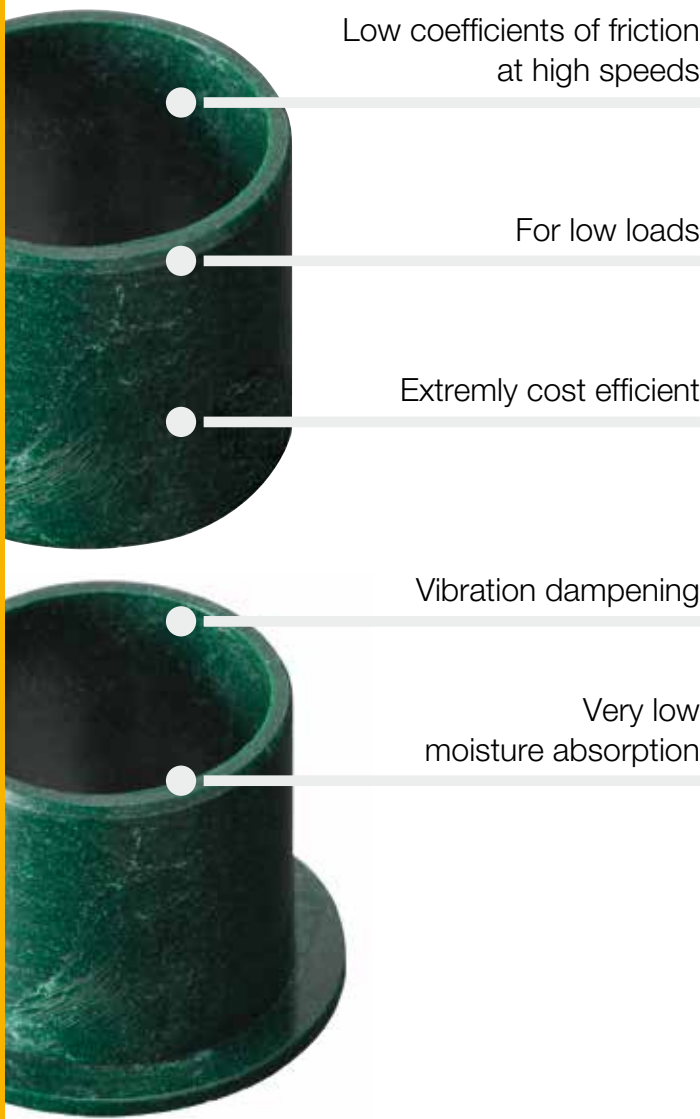


# Low-cost material with silicone – iglidur® D

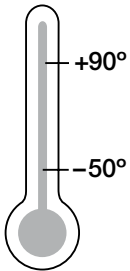


- Low coefficients of friction at high speeds
- For low loads
- Extremely cost-effective
- Vibration dampening
- Very low moisture absorption

**Low-cost material with silicone.** Low-cost-material with low coefficients of friction and good wear resistance at low loads.



Temperature



**When to use it?**

- When very low coefficients of friction are needed
- For high speeds
- For low load
- When a very low-priced bearing is required



**When not to use it?**

- When high pressure loads occur
  - ▶ iglidur® G, page 81
- When the part should be free of silicon
  - ▶ iglidur® J, page 109
  - ▶ iglidur® R, page 277
- When constant temperatures of more than +90 °C occur
  - ▶ iglidur® G, page 81
  - ▶ iglidur® P, page 195

**Product range**

on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® D         | Testing method |
| Density                                                | g/cm³                              | 1.40               |                |
| Colour                                                 |                                    | green              |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 1.1                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.08–0.26          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.27               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 2,000              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 72                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 70                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 23                 |                |
| Shore D hardness                                       |                                    | 78                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +90                |                |
| Max. short term application temperature                | °C                                 | +110               |                |
| Min. application temperature                           | °C                                 | –50                |                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 11                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>14</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>14</sup> | DIN 53482      |

Table 01: Material properties table

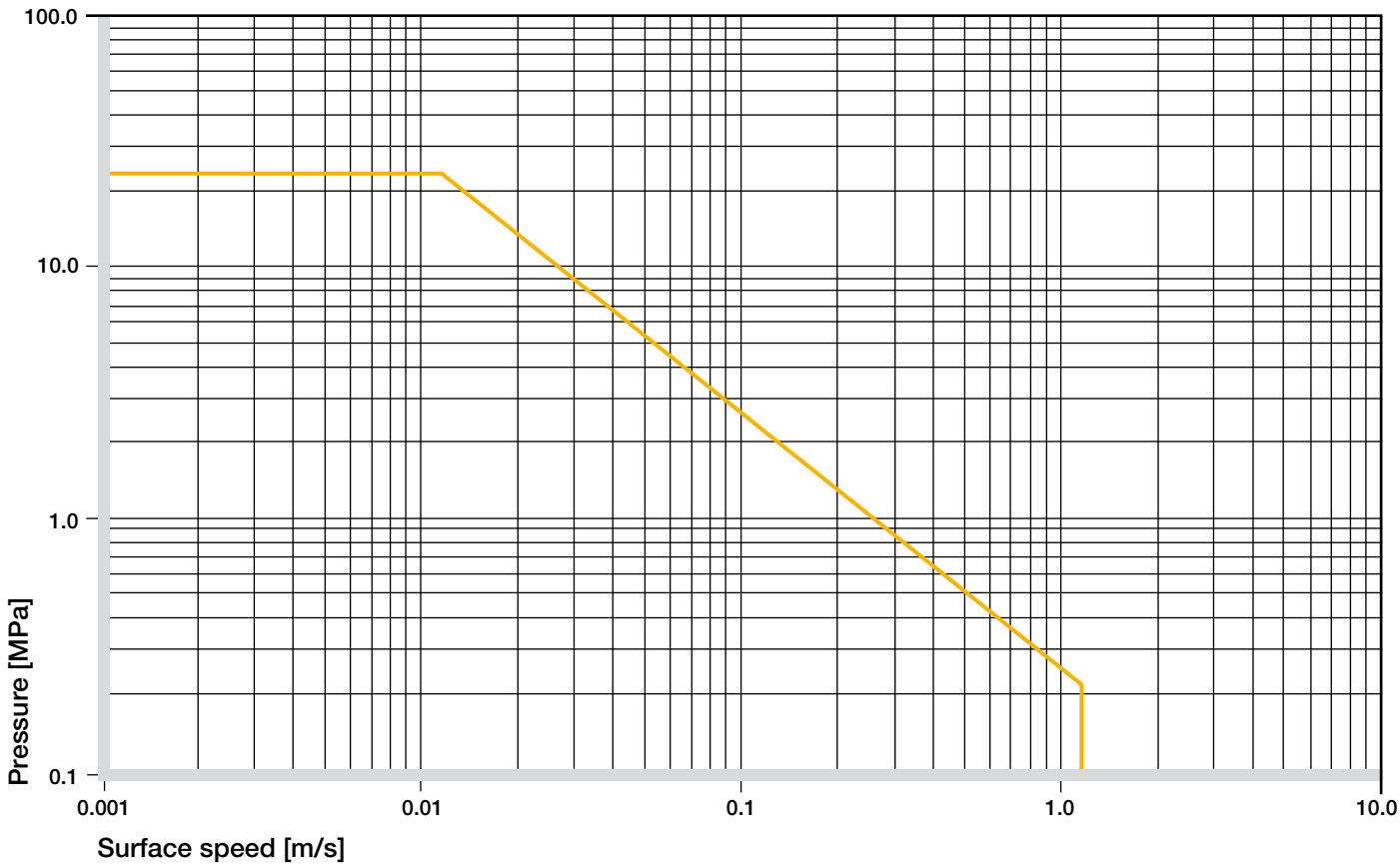


Diagram 01: Permissible pv values for iglidur® D with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing



During the development process of iglidur® D as a bearing material, high performance and a very low price were the top requirements. In particular, low coefficients of friction were needed at high speeds in the dry run. Plain bearings made of iglidur® D are supported by a combination of solid lubricants. This material containing silicone achieves excellently low friction values in dry operation and runs with virtually no stick-slip.

## Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® D plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost +100 MPa.

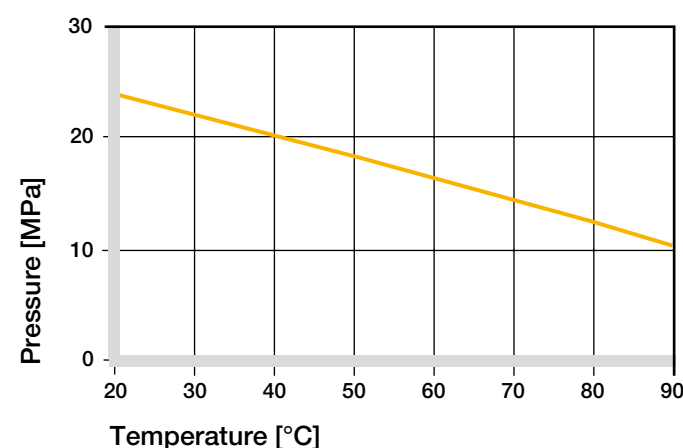


Diagram 02: Recommended maximum surface pressure as a function of temperature (23 MPa at +20 °C)

iglidur® D bearings were specially developed for low radial loads. Diagram 03 shows the elastic deformation of iglidur® D during radial loading. At the recommended maximum surface pressure of 23 MPa the deformation is less than 3 %. Plastic deformation is not detectable up to this value. However, it is also dependent on the service time.

► Surface Pressure, page 63

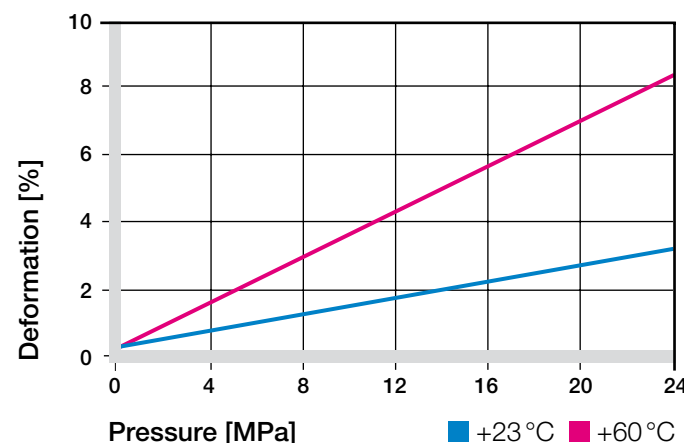


Diagram 03: Deformation under pressure and temperature

## Permissible Surface Speeds

iglidur® D bearings are suitable for high surface speeds. Speeds of up to 10 m/s are permitted in linear motions! Here too the specified maximum values can be achieved only with minimum pressure loads. The specified values show the speed at which due to friction an increase in temperature up to the longterm permitted value can occur.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.5      | 1.1         | 8      |
| Short term | 3        | 2.1         | 10     |

Table 02: Maximum running speed

## Temperatures

The short-term permitted maximum temperature is +110 °C, and the longterm application temperature is +90 °C. With increasing temperatures, the compressive strength of iglidur® D bearings decreases. Diagram 02 clarifies this relationship. The ambient application temperature has a direct impact on bearing wear, an increase in temperature results in an increase in wear.

► Application Temperatures, page 66

| iglidur® D                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +110 °C                 |
| Add. securing is required from | +50 °C                  |

Table 03: Temperature limits

## Friction and Wear

The coefficient of friction decreases like the wear resistance with increasing load. In contrast, a higher surface speed rarely affects the coefficient of friction of an iglidur® D bearing. iglidur® D is suitable for applications in which high pv values are achieved mainly through the high surface speed and not as much through the surface pressure. The coefficient of friction of the iglidur D bearings is highly dependant on the shaft surface finish. In the Ra range between 0.4 and 0.6 µm, the coefficient of friction attains the optimum value. With values below and above this range, the friction of the bearing system rapidly rises.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

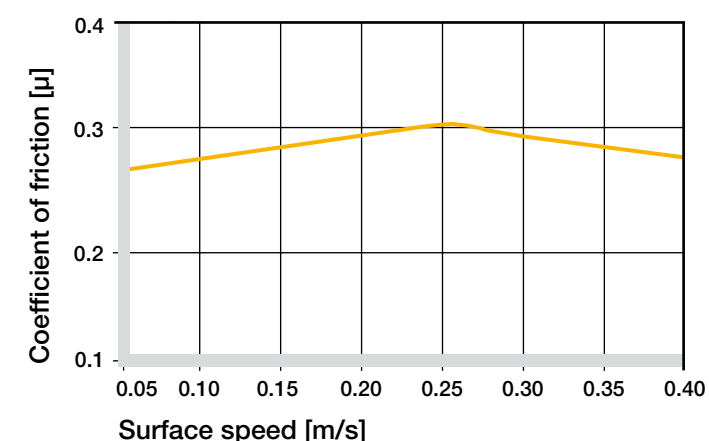


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

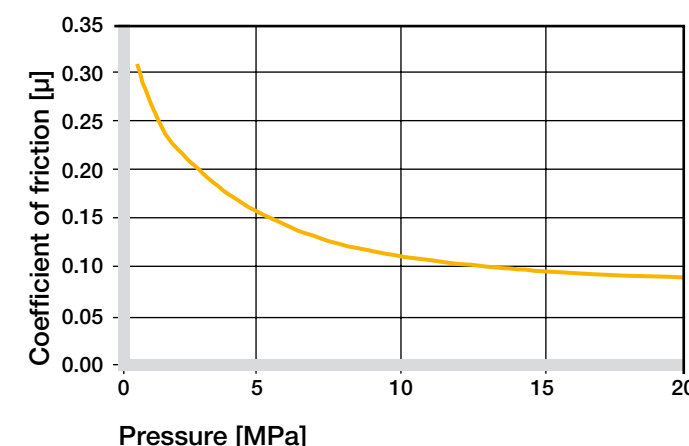


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

## Shaft Materials

Diagram 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® D. Please contact us if you would like to use a shaft material not included in this list.

► Shaft Materials, page 71

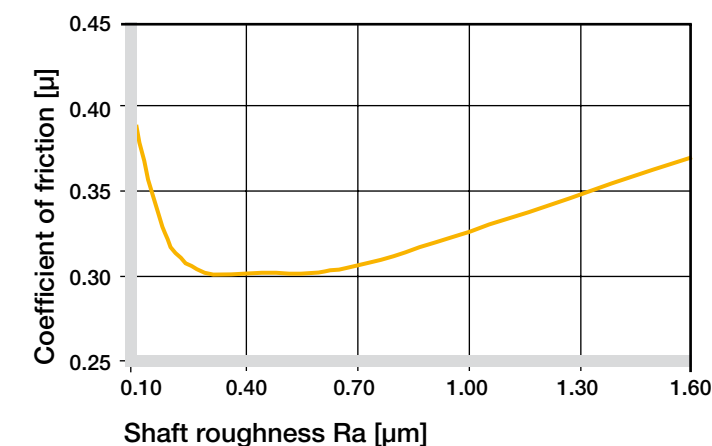


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

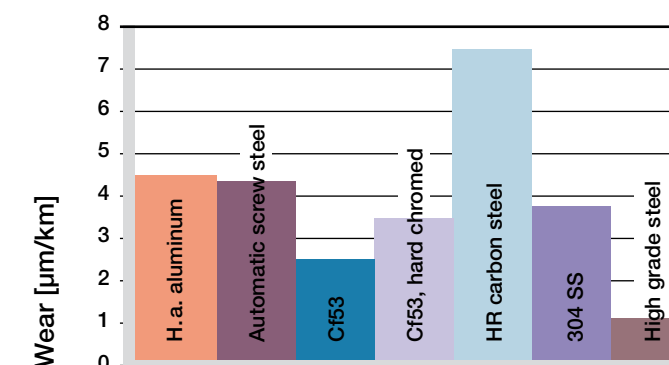


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s



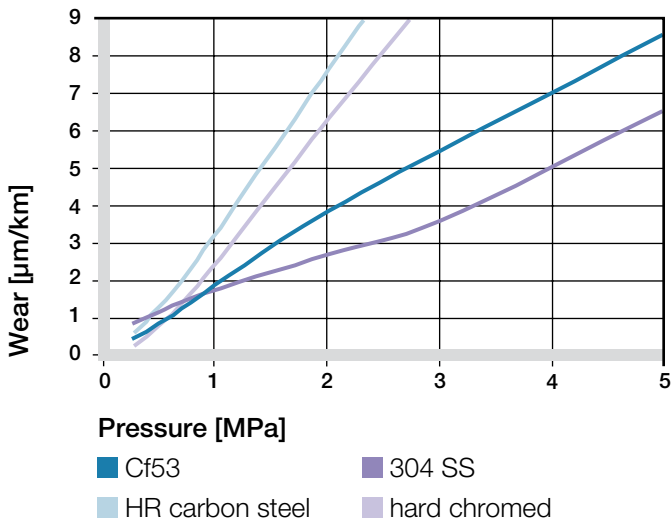


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

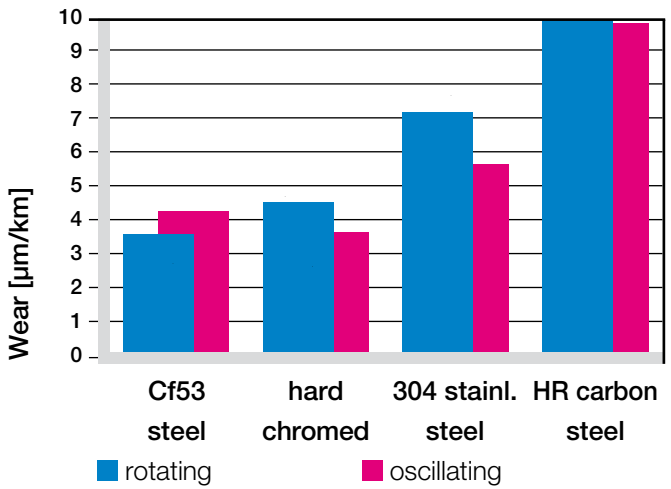


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® D | Dry       | Greases | Oil  | Water |
|------------|-----------|---------|------|-------|
| C.o.f. µ   | 0.08–0.26 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® D plain bearings are resistant to very weak acids, diluted alkaline, fuels and all types of lubricants.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® D are resistant to radiation up to an intensity of 3 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® D plain bearings are resistant to UV radiation, but the tribological properties are reduced by permanent exposure.

Vacuum

In a vacuum environment, iglidur® D plain bearings release gases. It is only possible to use in a vacuum to a limited extent.

Electrical Properties

iglidur® D plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>14</sup> Ωcm |
| Surface resistance | > 10 <sup>14</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® D plain bearings is approximately 0.3 % in standard atmosphere. The saturation limit in water is 1.1 %. This low moisture absorption allows for design in wet environments.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.3 % weight |
| Max. water absorption       | 1.1 % weight |

Table 06: Moisture absorption

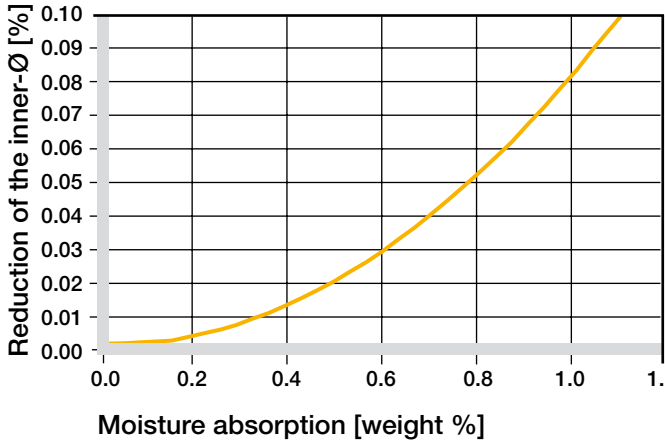


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® D plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

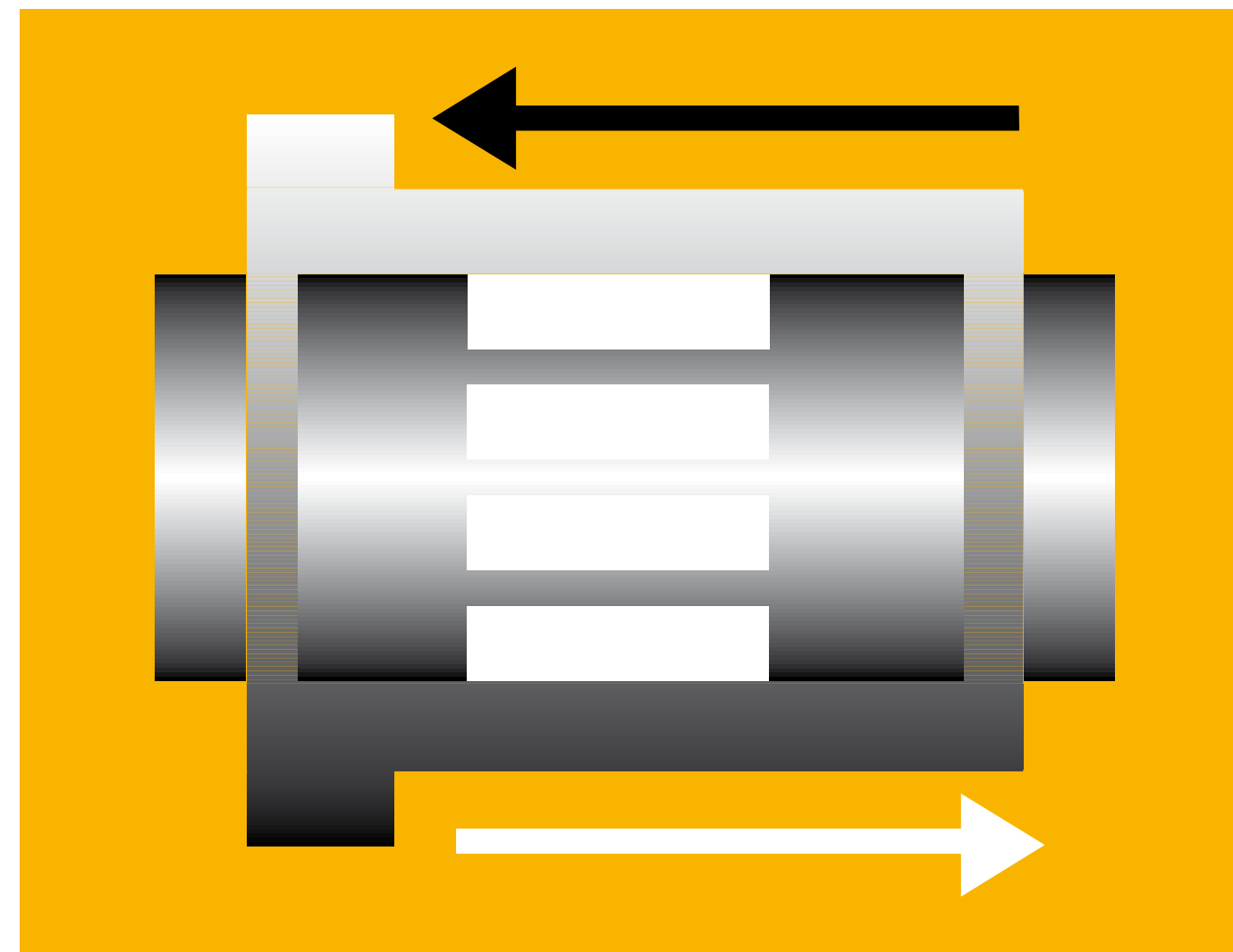
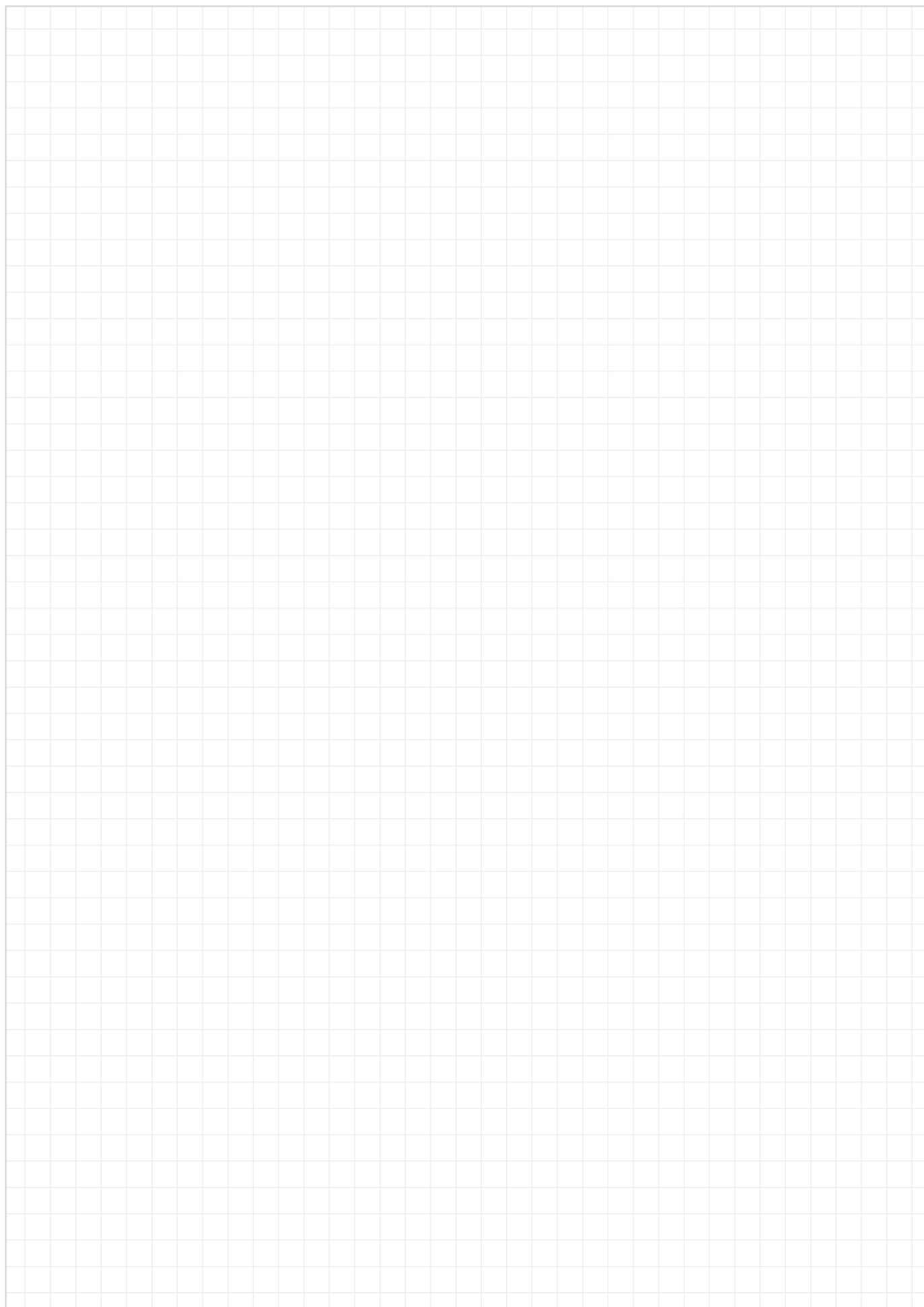
► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® D E10 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180       | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212       | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245       | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® D plain bearings are manufactured to special order.



## Specially for aluminum shafts – iglidur® J200



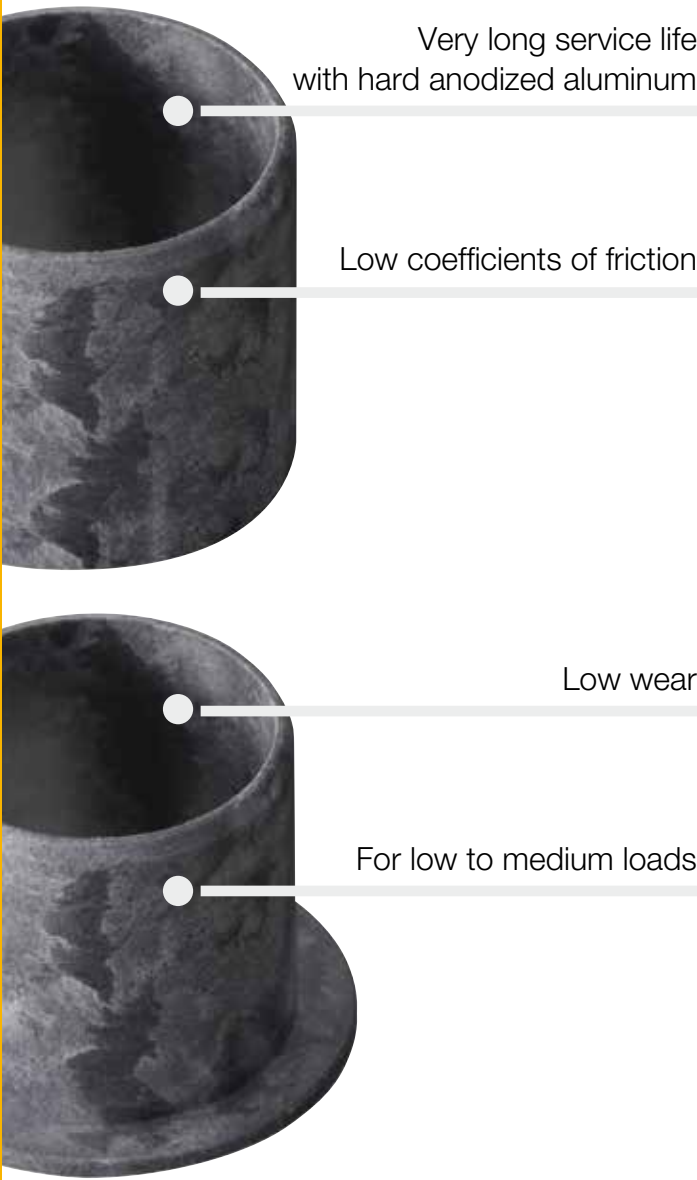
Very long service life with hard anodized  
aluminium

Low coefficients of friction

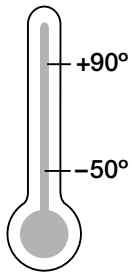
Low wear

For low to medium loads

**Specially for aluminum shafts.** The specialist for low friction-values and minimal wear with hard anodized aluminum shaft.



Temperature



**When to use it?**

- For applications with anodized aluminum shafts
- When lowest coefficients of friction are required
- If long service life with low wear is required



**When not to use it?**

- For steel shafts
  - ▶ iglidur® J, page 109
  - ▶ iglidur® W300, page 151
- When temperatures are continuously higher than +90 °C
  - ▶ iglidur® V400, page 317
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81
  - ▶ iglidur® P, page 195

**Product range**

on request

| Material properties table                              |                                    |                   |                |
|--------------------------------------------------------|------------------------------------|-------------------|----------------|
| General properties                                     | Unit                               | iglidur® J200     | Testing method |
| Density                                                | g/cm³                              | 1.72              |                |
| Colour                                                 |                                    | dark grey         |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2               | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.7               |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.11–0.17         |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.30              |                |
| Mechanical properties                                  |                                    |                   |                |
| Modulus of elasticity                                  | MPa                                | 2,800             | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 58                | DIN 53452      |
| Compressive strength                                   | MPa                                | 43                |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 23                |                |
| Shore D hardness                                       |                                    | 70                | DIN 53505      |
| Physical and thermal properties                        |                                    |                   |                |
| Max. long term application temperature                 | °C                                 | +90               |                |
| Max. short term application temperature                | °C                                 | +120              |                |
| Maximum ambient temperature, short term                | °C                                 | +140              |                |
| Min. application temperature                           | °C                                 | –50               |                |
| Thermal conductivity                                   | W/m · K                            | 0.24              | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 8                 | DIN 53752      |
| Electrical properties                                  |                                    |                   |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>8</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>8</sup> | DIN 53482      |

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table

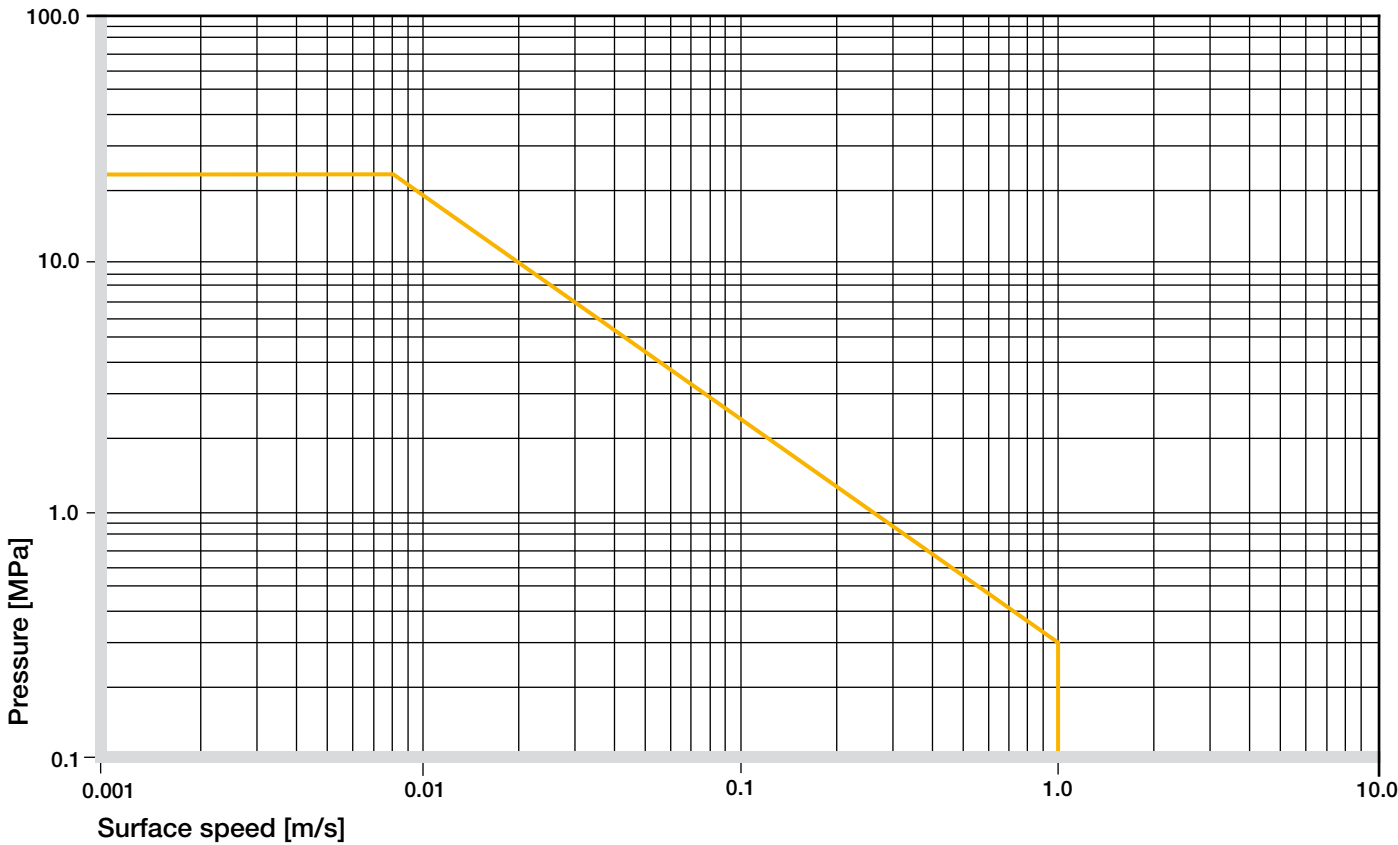


Diagram 01: Permissible pv values for iglidur® J200 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing





iglidur® J200 is the result of the development of extremely low friction plain bearing materials. When using plain bearings in linear motion, friction can be critical. Many materials can give low coefficients of friction under high loads, but iglidur® J200 can give excellent friction values even at low loads.

### Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® J200 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90°C the permissible surface pressure is almost 15 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

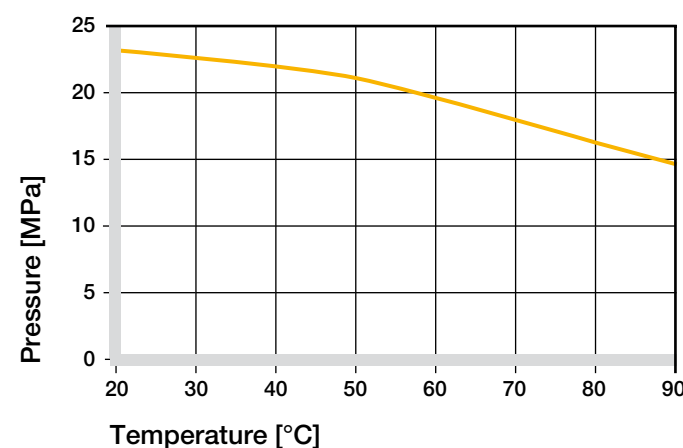


Diagram 02: Recommended maximum surface pressure of a function of temperature (23 MPa at +20°C)

Diagram 03 shows the deformation of the material at room temperature to the recommended maximum limit. At the recommended maximum surface pressure of 23 MPa the deformation is less than 3,5 %. A plastic deformation up to this value can be ignored, but it depends on the duration of the applied force.

► Surface Pressure, [page 63](#)

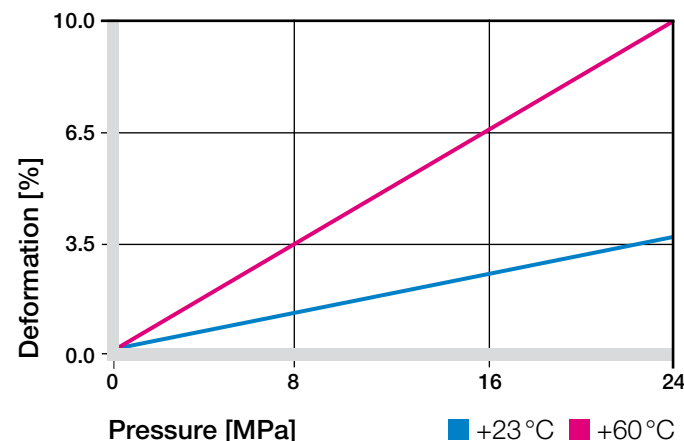


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

iglidur® J200 attains high surface speeds through its excellent coefficients of friction. Continuous rotary speeds of 1 m/s are possible. The permitted speeds are clearly higher yet in linear movements or in short-term operation. Speeds of over 15 m/s were successfully tested in linear movements.

► Surface Speed, [page 65](#)

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 10     |
| Short term | 1.5      | 1.1         | 15     |

Table 02: Maximum running speed

### Temperatures

The bearings made of iglidur® J200 were not developed for high temperatures. The maximum permitted temperature of +120°C should not be exceeded. Thereby the ambient temperature generated by friction has to be added. From +60°C onward, the bearing should be mechanically fastened, so that the danger of bushings creeping out of the bores is avoided. The wear resistance also declines disproportionately from +70°C.

► Application Temperatures, [page 66](#)

| iglidur® J200                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -50°C                   |
| Max. long term                 | +90°C                   |
| Max. short term                | +120°C                  |
| Add. securing is required from | +60°C                   |

Table 03: Temperature limits

### Friction and Wear

iglidur® J200 presents the lowest coefficients of friction of all iglidur® materials. The average coefficient of friction of all measurements, even with different shaft materials, is 0.11  $\mu$ . The use of hard anodized aluminum as a shaft material is also of importance.

The comparison to the other iglidur® materials reveals that iglidur® J200 plain bearings are more suitable for lower loads. The influence of sliding speed and load on the wear is small. The change of the coefficient of friction at high loads is in the normal range (diagram. 04 and 05). The optimum shaft roughness is between 0.2 and 0.4  $\mu$  Ra. The influence of the shaft material on the wear is significant. Even at low loads, we recommend to have a closer look into the wear database.

► Coefficients of Friction and Surfaces, [page 68](#)

► Wear Resistance, [page 69](#)

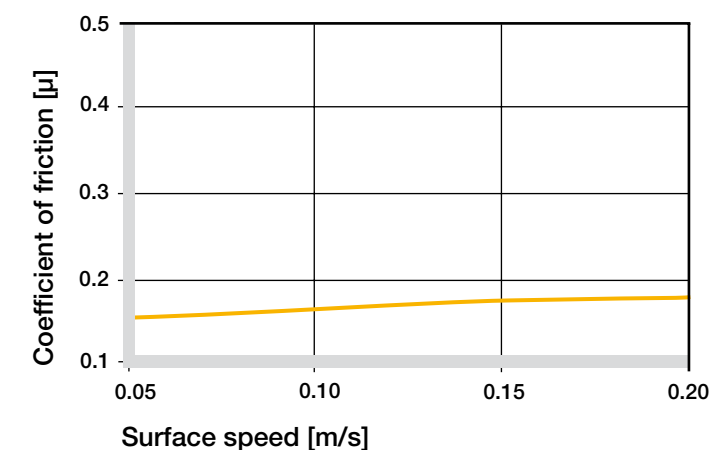


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

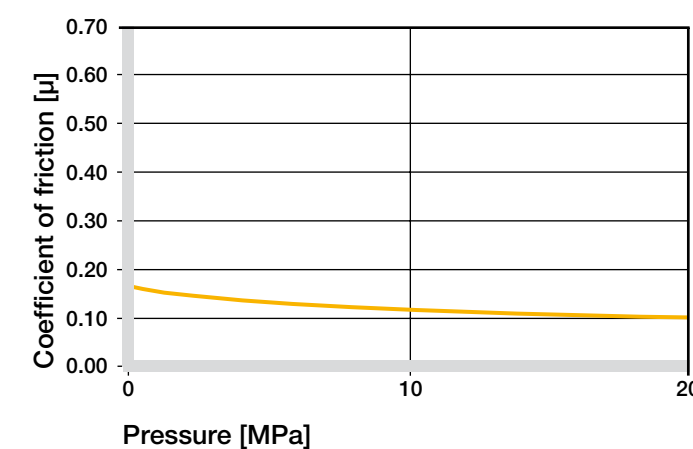


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### Shaft Materials

The shaft material used has a great impact on the wear resistance. In fact, all shaft materials (smooth or hardened) are suitable for use with iglidur® J200, but the best results are achieved with hard anodized aluminum. In particular when used in linear motion, this running surface has proven its value.

► Shaft Materials, [page 71](#)

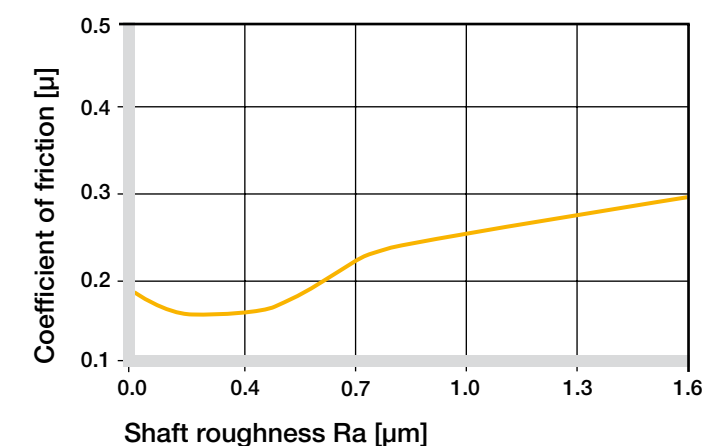


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

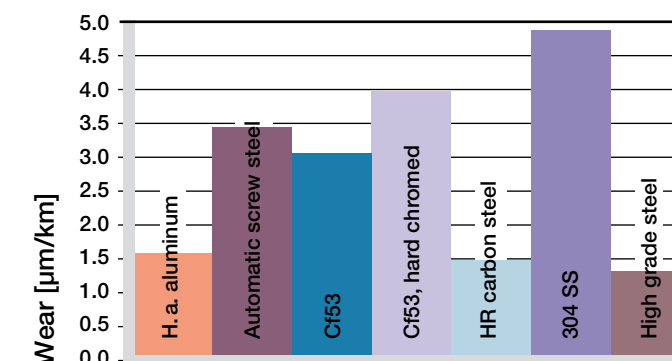


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

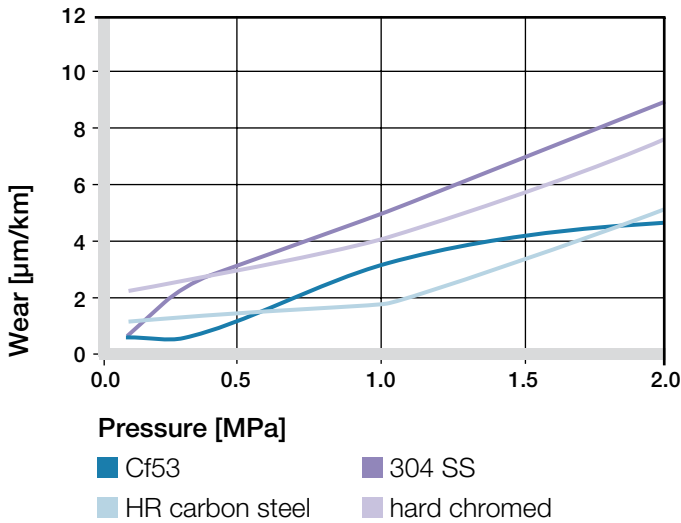


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

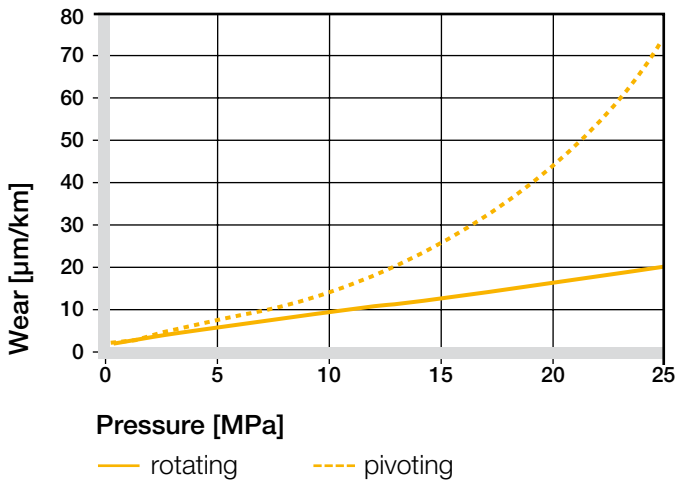


Diagram 09: Wear for pivoting and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® J200  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.11–0.17 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J200 plain bearings are resistant to diluted alkalines, as well as to solvents and all types of lubricants.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® J200 are radiation resistant up to a radiation intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® J200 plain bearings are very resistant to the impact of UV radiation.

Vacuum

Use in a vacuum is only possible to a limited extent. Also, only dehumidified bearings made from iglidur® J200 should be tested in a vacuum.

Electrical Properties

|                                                           |                          |
|-----------------------------------------------------------|--------------------------|
| iglidur® J200 plain bearings are electrically insulating. |                          |
| Volume resistance                                         | $> 10^8 \Omega\text{cm}$ |
| Surface resistance                                        | $> 10^8 \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® J200 plain bearings in standard atmosphere is approximately 0.2 %. The saturation limit in water is 0.7 %. Due to these low values considering expansion by moisture absorption is only required in extreme cases.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.2 % weight |
| Max. water absorption | 0.7 % weight |

Table 06: Moisture absorption

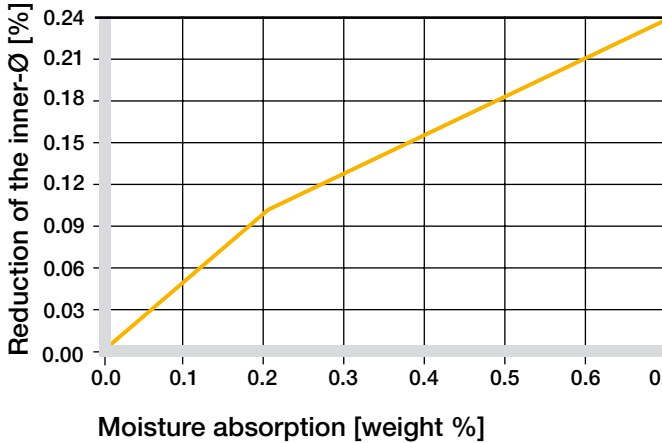


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® J200 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® J200 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180          | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212          | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245          | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

At present, iglidur® J200 plain bearings are made to special order.



## iglidur® X6

runs up to six times  
longer than iglidur® X

Standard range from stock ► from page 307



## iglidur® V400

for soft shafts, up to +200°C

Standard range from stock ► from page 317



## iglidur® Z

For high dynamic loads,  
wear resistant

Standard range from stock ► from page 327



## iglidur® UW500

for hot liquids

On request ► from page 341

### iglidur®- Specialists – High Temperatures

 Long life dry running

 For high loads

 For high temperatures

 Low friction/high speed

 Dirt resistant

 Chemicals resistant

 Low water absorption

 Food-suitable

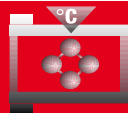
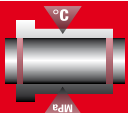
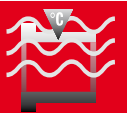
 Vibration-dampening

 Edge pressure

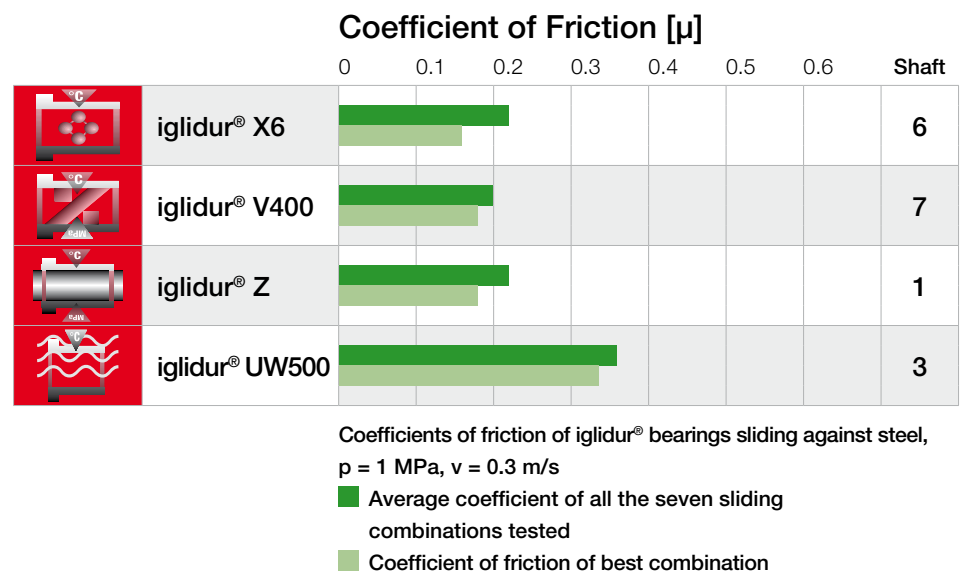
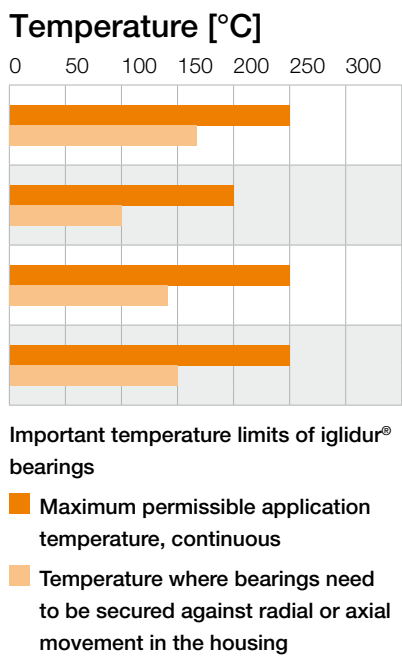
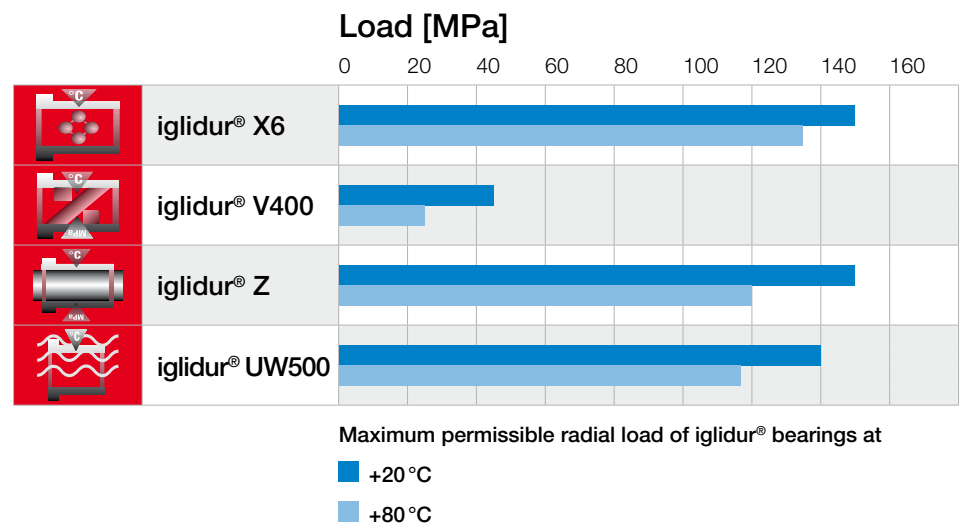
 For under water use

 Cost-effective

from page

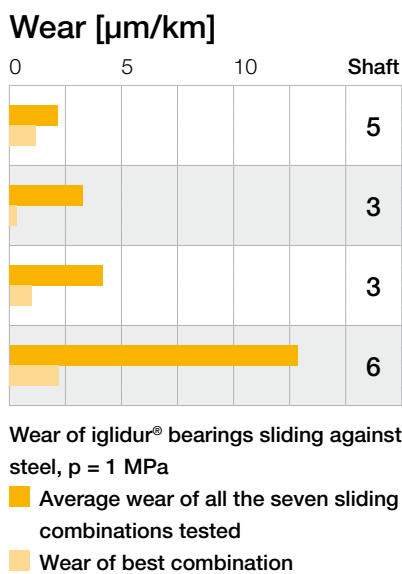
|                         |  |  |  |  |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         | iglidur® X6                                                                         | iglidur® V400                                                                       | iglidur® Z                                                                          | iglidur® UW500                                                                      |
| Long life dry running   | ●                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     |
| For high loads          | ●                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |
| For high temperatures   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Low friction/high speed | ●                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     |
| Dirt resistant          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Chemicals resistant     | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Low water absorption    | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Food-suitable           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vibration-dampening     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Edge pressure           |                                                                                     | ●                                                                                   | ●                                                                                   |                                                                                     |
| For under water use     |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   |
| Cost-effective          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| from page               | 307                                                                                 | 317                                                                                 | 327                                                                                 | 341                                                                                 |





Shaft material:

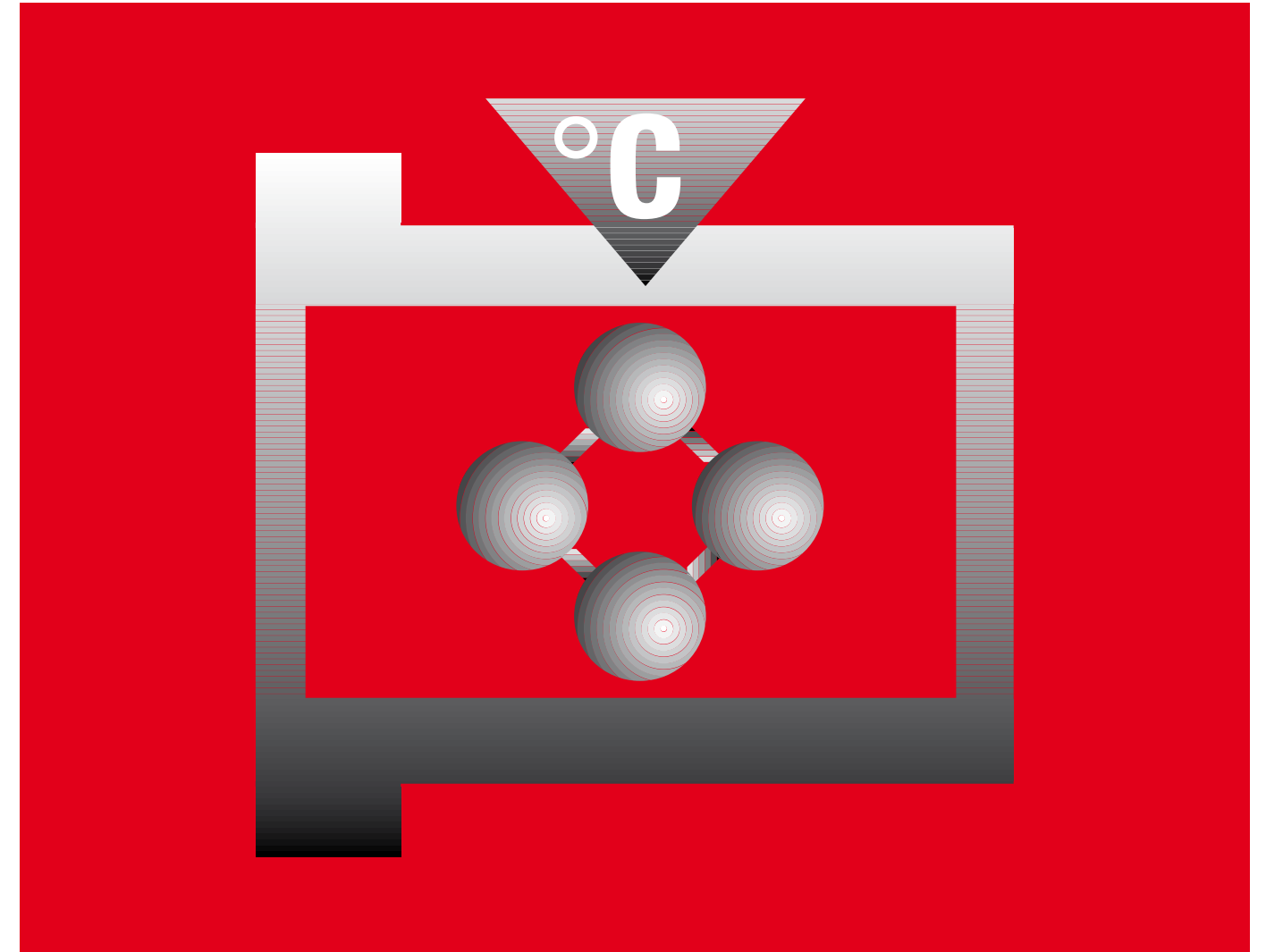
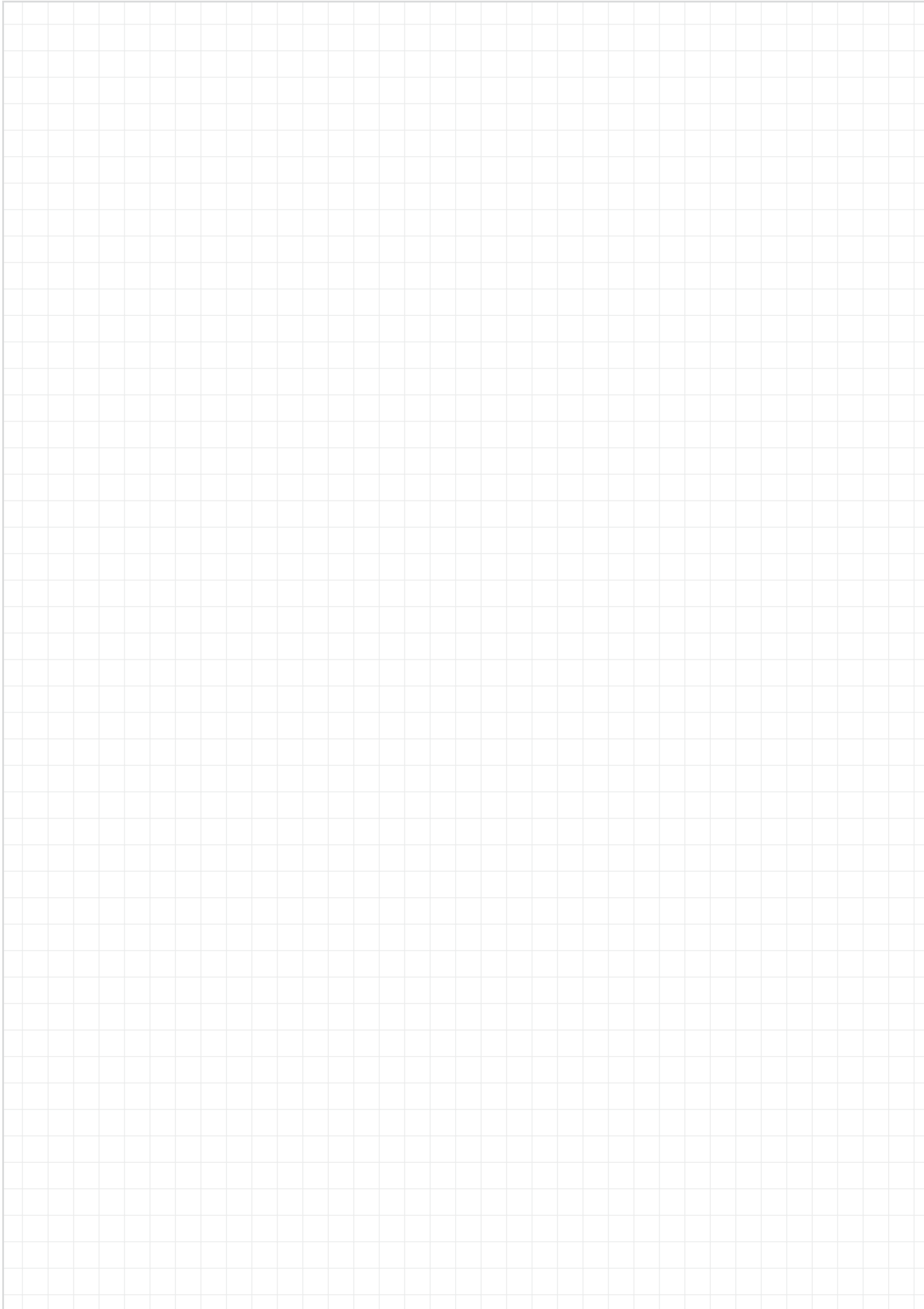
|                           |                      |
|---------------------------|----------------------|
| 1 = Cf53                  | 5 = HR carbon steel  |
| 2 = Cf53, hard chromed    | 6 = 304 SS           |
| 3 = Aluminum, hc          | 7 = High grade steel |
| 4 = Automatic screw steel |                      |



| Material properties table                              |                                    |                   |                    |                    |                   |
|--------------------------------------------------------|------------------------------------|-------------------|--------------------|--------------------|-------------------|
| General properties                                     | Unit                               | iglidur® X6       | iglidur® V400      | iglidur® Z         | iglidur® UW500    |
| Density                                                | g/cm³                              | 1.53              | 1.51               | 1.40               | 1.49              |
| Colour                                                 |                                    | dark blue         | white              | brown              | black             |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.1               | 0.1                | 0.3                | 0.1               |
| Max. water absorption                                  | % weight                           | 0.5               | 0.2                | 1.1                | 0.5               |
| Coefficient of sliding friction. dynamic against steel | μ                                  | 0.09–0.25         | 0.15–0.20          | 0.06–0.14          | 0.20–0.36         |
| pv value. max. (dry)                                   | MPa · m/s                          | 1.35              | 0.5                | 0.84               | 0.35              |
| Mechanical properties                                  |                                    |                   |                    |                    |                   |
| Modulus of elasticity                                  | MPa                                | 16,000            | 4,500              | 2,400              | 16,000            |
| Tensile strength at +20 °C                             | MPa                                | 290               | 95                 | 95                 | 260               |
| Compressive strength                                   | MPa                                | 190               | 47                 | 65                 | 140               |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 150               | 45                 | 150                | 140               |
| Shore D hardness                                       |                                    | 89                | 74                 | 81                 | 86                |
| Physical and thermal properties                        |                                    |                   |                    |                    |                   |
| Max. long term application temperature                 | °C                                 | +250              | +200               | +250               | +250              |
| Max. short term application temperature                | °C                                 | +315              | +240               | +310               | +300              |
| Min. application temperature                           | °C                                 | –100              | –50                | –100               | –100              |
| Thermal conductivity                                   | W/m · K                            | 0.55              | 0.24               | 0.62               | 0.60              |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 1.1               | 3                  | 4                  | 4                 |
| Electrical properties                                  |                                    |                   |                    |                    |                   |
| Specific volume resistance                             | Ωcm                                | < 10 <sup>5</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> | < 10 <sup>9</sup> |
| Surface resistance                                     | Ω                                  | < 10 <sup>3</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> | < 10 <sup>9</sup> |

| Material resistance (at +20 °C) |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|
| Chemical resistance             | iglidur® X6         | iglidur® V400       | iglidur® Z          | iglidur® UW500      |
| Alcohol                         | +                   | +                   | 0                   | +                   |
| Hydrocarbons                    | +                   | +                   | +                   | +                   |
| Greases, oils without additives | +                   | +                   | +                   | +                   |
| Fuels                           | +                   | +                   | +                   | +                   |
| Diluted acids                   | +                   | +                   | +                   | +                   |
| Strong acids                    | +                   | +                   | –                   | +                   |
| Diluted alkalines               | +                   | +                   | +                   | +                   |
| Strong alkalines                | +                   | –                   | –                   | +                   |
| Radiation resistance [Gy] to    | 2 · 10 <sup>5</sup> | 2 · 10 <sup>4</sup> | 1 · 10 <sup>5</sup> | 1 · 10 <sup>5</sup> |

+ resistant   0 conditionally resistant   – not resistant



**Runs up to six times longer than  
iglidur® X – iglidur® X6**



Standard range from stock

Lubrication and maintenance-free

Long term service temperature up to +250 °C

Up to 50 % better press fit than iglidur® X

High compressive strength

Very good chemical resistance

PTFE-free

**Runs up to six times longer than iglidur® X.** Due to nano-technology, iglidur® X6 shows up to six times better performance than iglidur® X in many oscillating and rotating applications – even at temperatures over +100 °C.



## When to use it?

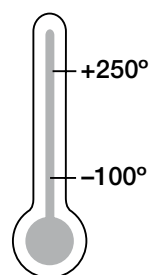
- If temperatures are higher than +150 °C
- When the wear performance of iglidur® X in oscillation and rotation is not sufficient.
- If the pressfit should be improved over iglidur® X
- If high media-resistance is required
- If you need a bearing which is free of PTFE



## When not to use it?

- When you need a cost-effective universal bearing  
▶ iglidur® G, page 81
- If you need a bearing for underwater use  
▶ iglidur® UW500, page 341  
▶ iglidur® H370, page 375
- When a wear-resistant high temperature bearing for linear movements is needed.  
▶ iglidur® Z, page 327

## Temperature



## Product range

2 types  
Ø 3–40 mm  
more dimensions  
on request



## Typical sectors of industry and application areas

- Glass industry ● Food industry
- Fluid technology ● Textile technology
- Machine building etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online  
▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/pies](http://www.igus.co.uk/pies)



▶ [www.igus.co.uk/baking-oven](http://www.igus.co.uk/baking-oven)





| Material properties table                              |  |                                    |                   |
|--------------------------------------------------------|--|------------------------------------|-------------------|
| General properties                                     |  | Unit                               | iglidur® X6       |
| Density                                                |  | g/cm³                              | 1.53              |
| Colour                                                 |  |                                    | dark blue         |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.1               |
| Max. water absorption                                  |  | % weight                           | 0.5               |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.09–0.25         |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 1.35              |
| Mechanical properties                                  |  |                                    |                   |
| Modulus of elasticity                                  |  | MPa                                | 16,000            |
| Tensile strength at +20 °C                             |  | MPa                                | 290               |
| Compressive strength                                   |  | MPa                                | 190               |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 150               |
| Shore D hardness                                       |  |                                    | 89                |
| Physical and thermal properties                        |  |                                    |                   |
| Max. long term application temperature                 |  | °C                                 | +250              |
| Max. short term application temperature                |  | °C                                 | +315              |
| Max. ambient temperature, short term <sup>1)</sup>     |  | °C                                 | +315              |
| Min. application temperature                           |  | °C                                 | −100              |
| Thermal conductivity                                   |  | W/m · K                            | 0.55              |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>−1</sup> · 10 <sup>−5</sup> | 1.1               |
| Electrical properties <sup>2)</sup>                    |  |                                    |                   |
| Specific volume resistance                             |  | Ωcm                                | < 10 <sup>5</sup> |
| Surface resistance                                     |  | Ω                                  | < 10 <sup>3</sup> |

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible  
<sup>2)</sup> The good conductivity of this product might lead to the corrosion of metallic counterparts under certain conditions.

Table 01: Material properties table

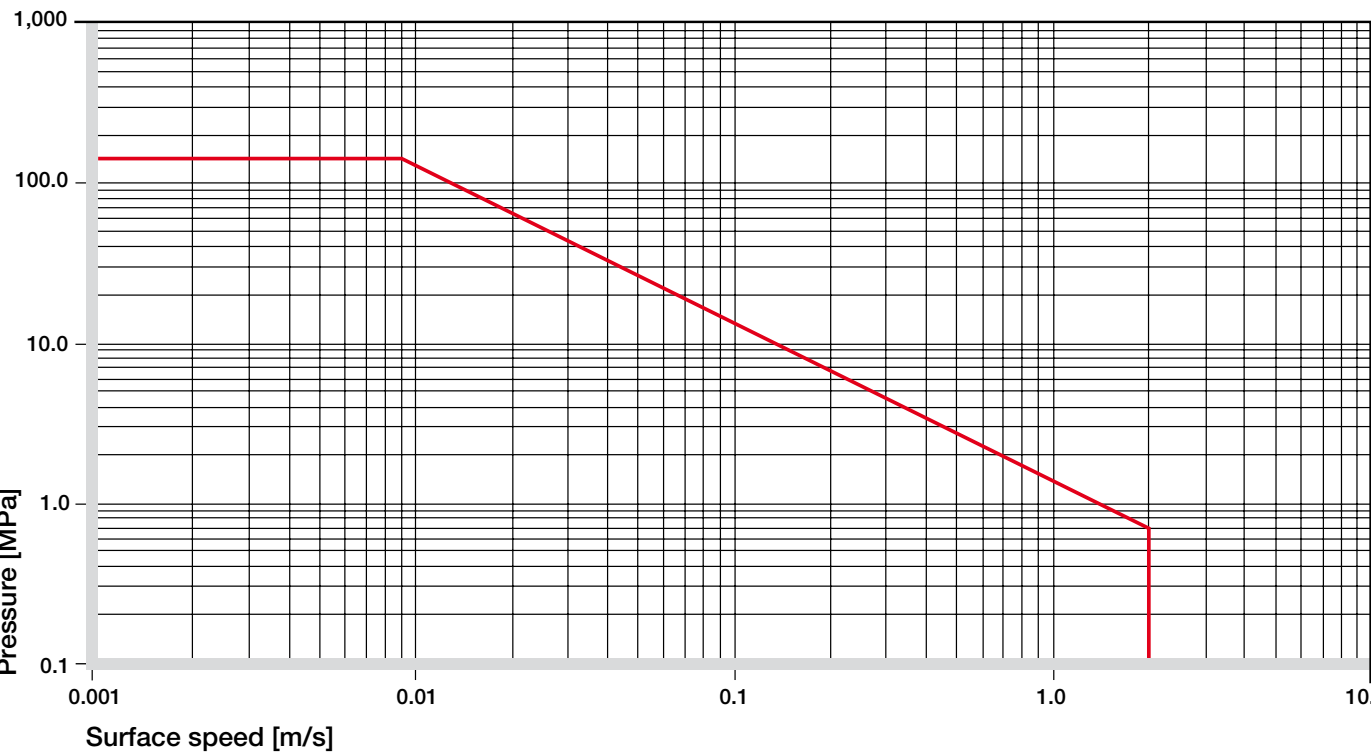


Diagram 01: Permissible pv values for iglidur® X6 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

With respect to its general mechanical and thermal specifications, iglidur® X6 is directly comparable to our high-temperature classic, iglidur® X, and may even provide advantages, such as its wear behavior.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® X6 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +250 °C the permissible surface pressure is almost 50 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

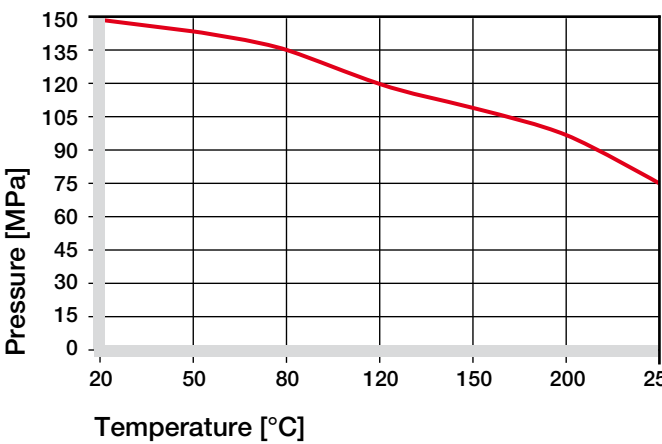


Diagram 02: Recommended maximum surface pressure as a function of temperature (150 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® X6 at radial loads. At a surface pressure of 100 MPa the deformation is less than 2 % at room temperature. A possible deformation could be, among others, dependent on the duty cycle of the pressure.

Surface Pressure, page 63

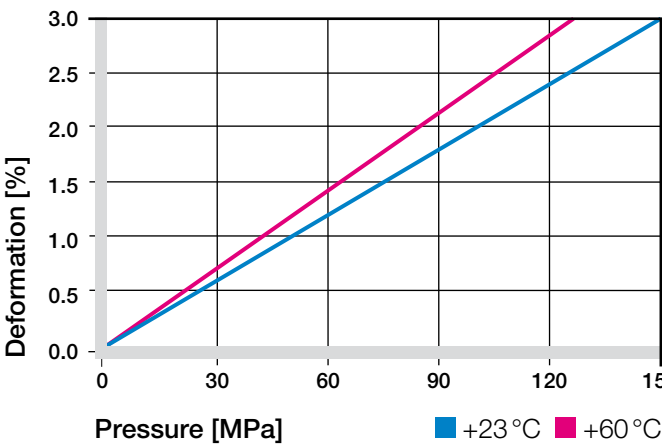


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The high temperature resistance and good thermal conductivity values mean that iglidur® X6 is suitable for high speed applications. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.5      | 1.1         | 5      |
| Short Term | 3.5      | 2.5         | 10     |

Table 02: Maximum running speed

Temperatures

The ambient temperatures greatly influence the wear performance of plastic bearings. The temperature resistance of iglidur® X6 is among the highest in the iglidur® range. In many tests it has shown a six times higher wear performance compared to the established high-temperature specialist iglidur® X. Also, the temperature induced relaxation of the bearing in the housing bore is much lower so that iglidur® X6 required additional axial securing only above +165 °C.

Application Temperatures, page 66

| iglidur® X6                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | −100 °C                 |
| Max. long term                 | +250 °C                 |
| Max. short term                | +315 °C                 |
| Add. securing is required from | +165 °C                 |

Table 03: Temperature limits

Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. The coefficient of friction of iglidur® X6 declines with higher pressure and is practically constant for pressures above 30 MPa. A higher speed of the shaft also results in a lower coefficient of friction (Diagram. 04 and 05).

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

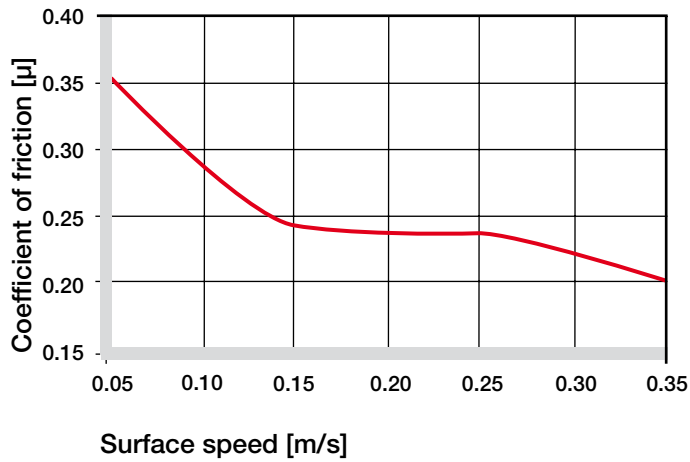


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

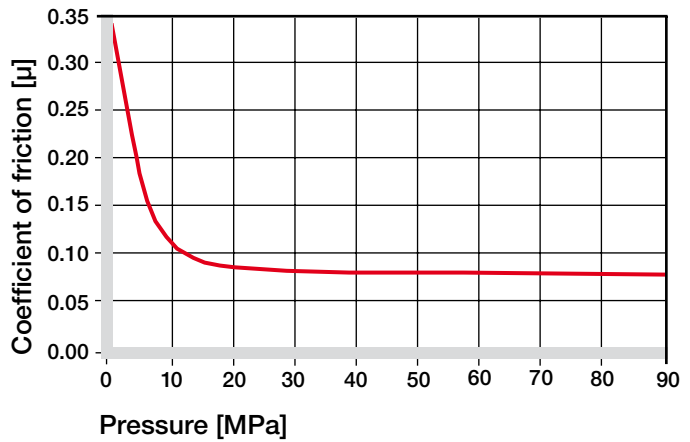


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. The best case for iglidur® X6 is a ground surface with an average roughness  $Ra = 0.4\text{--}0.7 \text{ μm}$  (Diagram 06). Diagrams 07 and 09 show results of testing different shaft materials with plain bearings made of iglidur® X6. In Diagram 07 it shows that iglidur® X6 can be combined with various shaft materials.

The best performance is achieved with the plain shaft materials free cutting steel and plain steel 1.0037. At higher loads, we recommend harder steel qualities. Non-hardened steel shafts can be worn by the bearing at pressures over 2 Mpa.

The wear database shows that iglidur® X6 is more suitable for rotating than for oscillating applications. If the shaft material you plan on using is not shown in these test results, please contact us.

- Shaft Materials, **page 71**

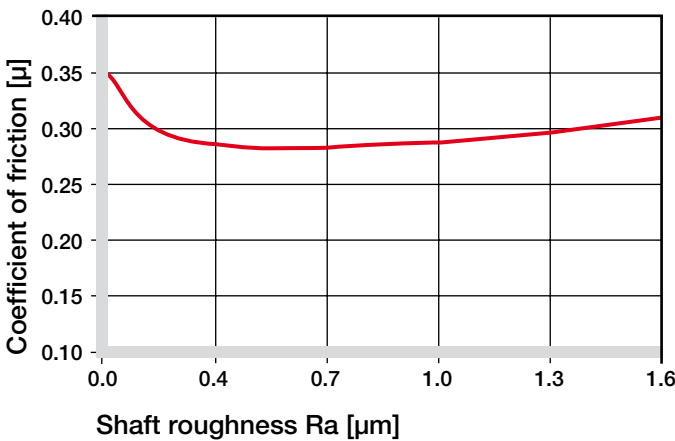


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

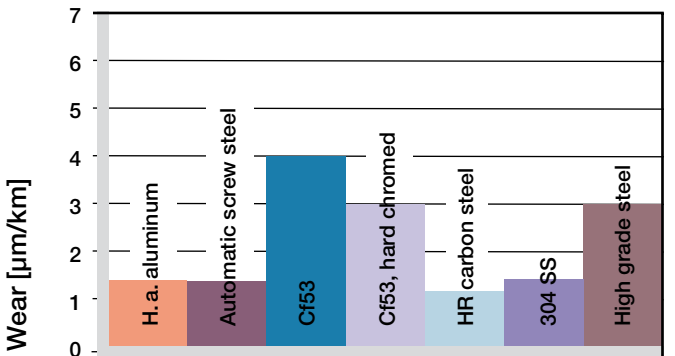


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

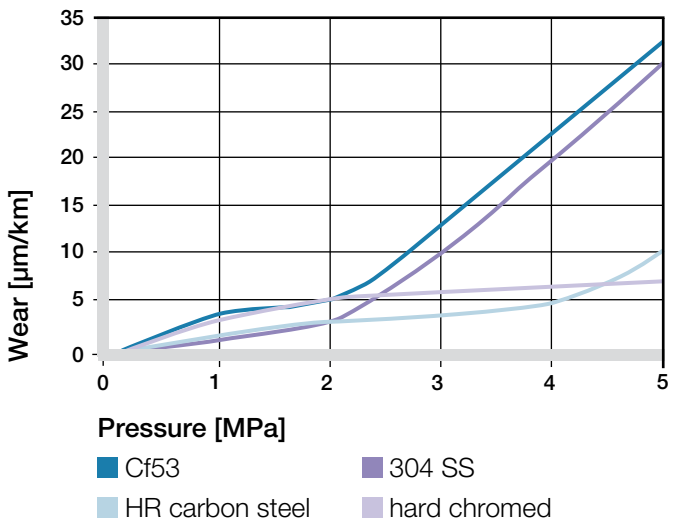


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

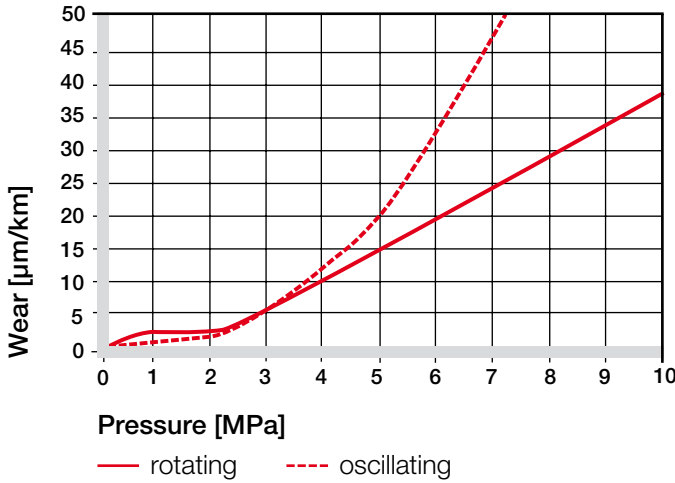


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® X6 | Dry       | Greases | Oil  | Water |
|-------------|-----------|---------|------|-------|
| C.o.f. μ    | 0.09–0.25 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $Ra = 1 \text{ μm}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® X6 bearings have almost universal chemical resistance. They are affected only by concentrated nitric acid and sulphuric acid. Due to the low water absorbtion, the material can be used in humid environment without problems. iglidur® X6 is resistant to most typical detergents used in the food and packaging industries.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of  $2 \cdot 10^5 \text{ Gy}$ .

UV Resistance

Partly resistant against UV rays.

Vacuum

In a vacuum environment iglidur® X6 plain bearings can be used virtually without restrictions. Outgassing takes place to a very limited extent.

Electrical Properties

|                                                         |                      |
|---------------------------------------------------------|----------------------|
| iglidur® X6 plain bearings are electrically insulating. |                      |
| Volume resistance                                       | < $10^5 \text{ Ωcm}$ |
| Surface resistance                                      | < $10^3 \text{ Ω}$   |

Moisture Absorption

The moisture absorption of iglidur® X6 plain bearings is approximately 0.1 % in the standard atmosphere. The saturation limit submerged in water is 0.5 %. These values are so low that the swelling only has to be considered in extreme applications.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.1 % weight |
| Max. water absorption | 0.5 % weight |

Table 06: Moisture absorption

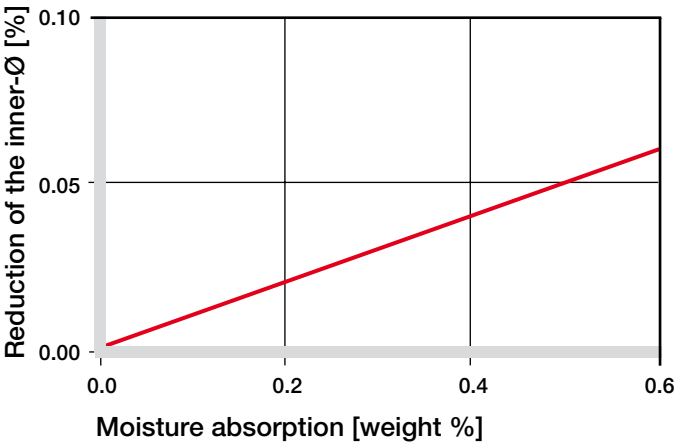


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

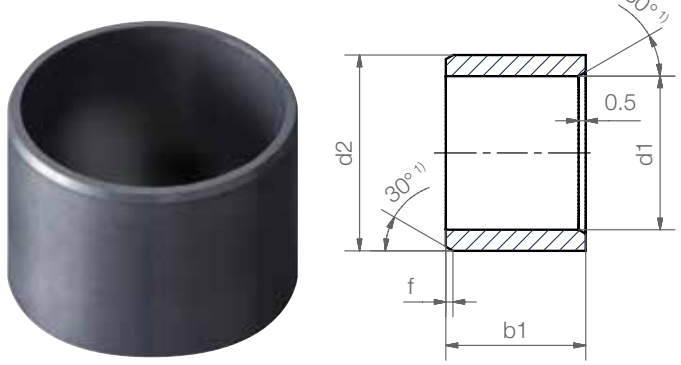
iglidur® X6 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table). In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® X6<br>F10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|-------------------------|--------------------|
| up to 3             | 0–0.025          | +0.006 +0.046           | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.010 +0.058           | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.013 +0.071           | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.016 +0.086           | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.020 +0.104           | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.025 +0.125           | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.030 +0.150           | 0 +0.030           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| X6SM-0304-03 | 3.0  | +0.006 +0.046 | 4.5  | 3.0       |
| X6SM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 5.0       |
| X6SM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| X6SM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| X6SM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| X6SM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 12.0      |
| X6SM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| X6SM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |
| X6SM-2528-30 | 25.0 | +0.020 +0.104 | 28.0 | 30.0      |
| X6SM-3034-30 | 30.0 | +0.020 +0.104 | 34.0 | 30.0      |
| X6SM-3539-40 | 35.0 | +0.025 +0.125 | 39.0 | 40.0      |
| X6SM-4044-40 | 40.0 | +0.025 +0.125 | 44.0 | 40.0      |

\* after pressfit. Testing methods ► page 75



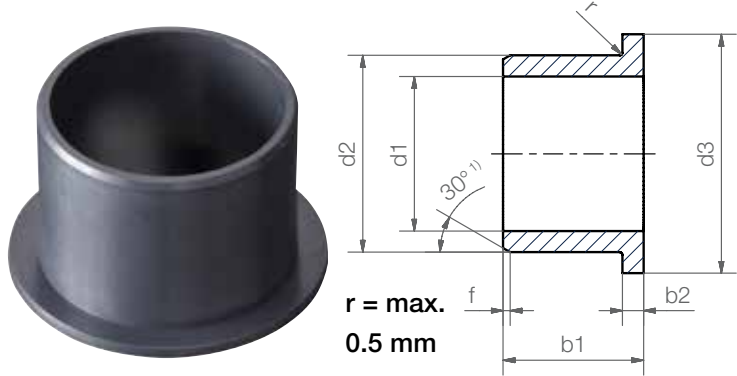
Order key

X6SM-0304-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® X6



Flange bearing



Order key

X6FM-0304-05

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® X6

Dimensions according to ISO 3547-1 and special dimensions

1) thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|--------------|------|---------------|------|-----------|-----------|-------------|
| X6FM-0304-05 | 3.0  | +0.006 +0.046 | 4.5  | 7.5       | 5.0       | 0.75        |
| X6FM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 11.0      | 5.0       | 1.0         |
| X6FM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| X6FM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| X6FM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 10.0      | 1.0         |
| X6FM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| X6FM-1618-17 | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| X6FM-2023-21 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| X6FM-2528-21 | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 21.5      | 1.5         |
| X6FM-3034-40 | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 40.0      | 2.0         |
| X6FM-3539-26 | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 26.0      | 2.0         |
| X6FM-4044-40 | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 40.0      | 2.0         |

\* after pressfit. Testing methods ► page 75

Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

delivery from stock  
time

prices price list online  
www.igus.co.uk/en/x6

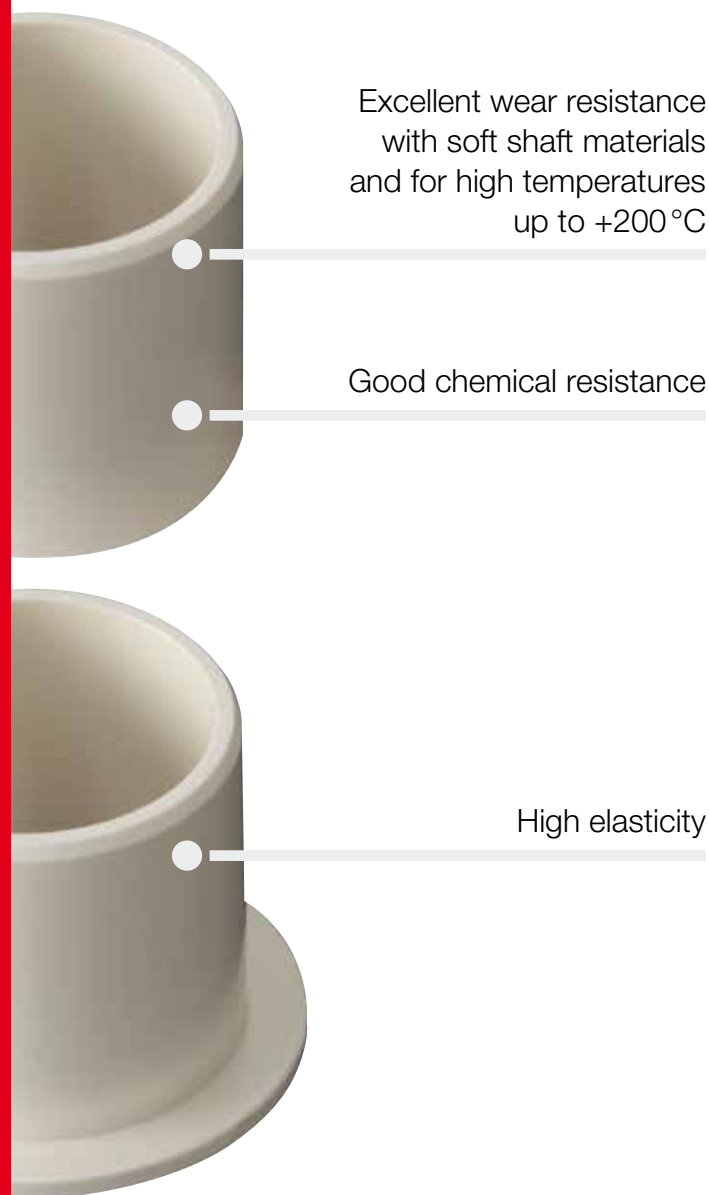


For soft shafts, up to +200 °C –  
iglidur® V400



- Standard range from stock
- Excellent wear resistance with soft shaft materials and for temperatures up to +200 °C
- Good chemical resistance
- High elasticity

**For soft shafts, up to +200°C.** Highly wear-resistant bearing for soft shafts and temperatures up to +200°C with low moisture absorption and excellent resistance to chemicals.



## When to use it?

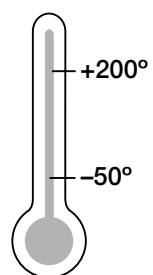
- When extreme wear resistance is required with soft shafts
- For applications at temperatures higher than +100°C
- When vibrations and edge pressure are present
- When the bearing should be resistant to chemicals



## When not to use it?

- For hardened shafts  
▶ iglidur® W300, page 151
- For applications at normal temperatures  
▶ iglidur® G, page 81  
▶ iglidur® J, page 109  
▶ iglidur® W300, page 151
- When a cost-effective universal bearing is required  
▶ iglidur® G, page 81

## Temperature



## Product range

2 types  
Ø 6–20 mm  
more dimensions  
on request



## Typical sectors of industry and application areas

- Plant construction ● Automotive
- Automation ● Aerospace engineering
- Mechatronics etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

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▶ [www.igus.co.uk/blown-film-line](http://www.igus.co.uk/blown-film-line)

| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® V400      |
| Density                                                |  | g/cm³                              | 1.51               |
| Colour                                                 |  |                                    | white              |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.1                |
| Max. water absorption                                  |  | % weight                           | 0.2                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.15–0.20          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.50               |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 4,500              |
| Tensile strength at +20 °C                             |  | MPa                                | 95                 |
| Compressive strength                                   |  | MPa                                | 47                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 45                 |
| Shore D hardness                                       |  |                                    | 74                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +200               |
| Max. short term application temperature                |  | °C                                 | +240               |
| Max. ambient temperature, short term <sup>1)</sup>     |  | °C                                 | +250               |
| Min. application temperature                           |  | °C                                 | –50                |
| Thermal conductivity                                   |  | W/m · K                            | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>–1</sup> · 10 <sup>–5</sup> | 3                  |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>12</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>12</sup> |

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table

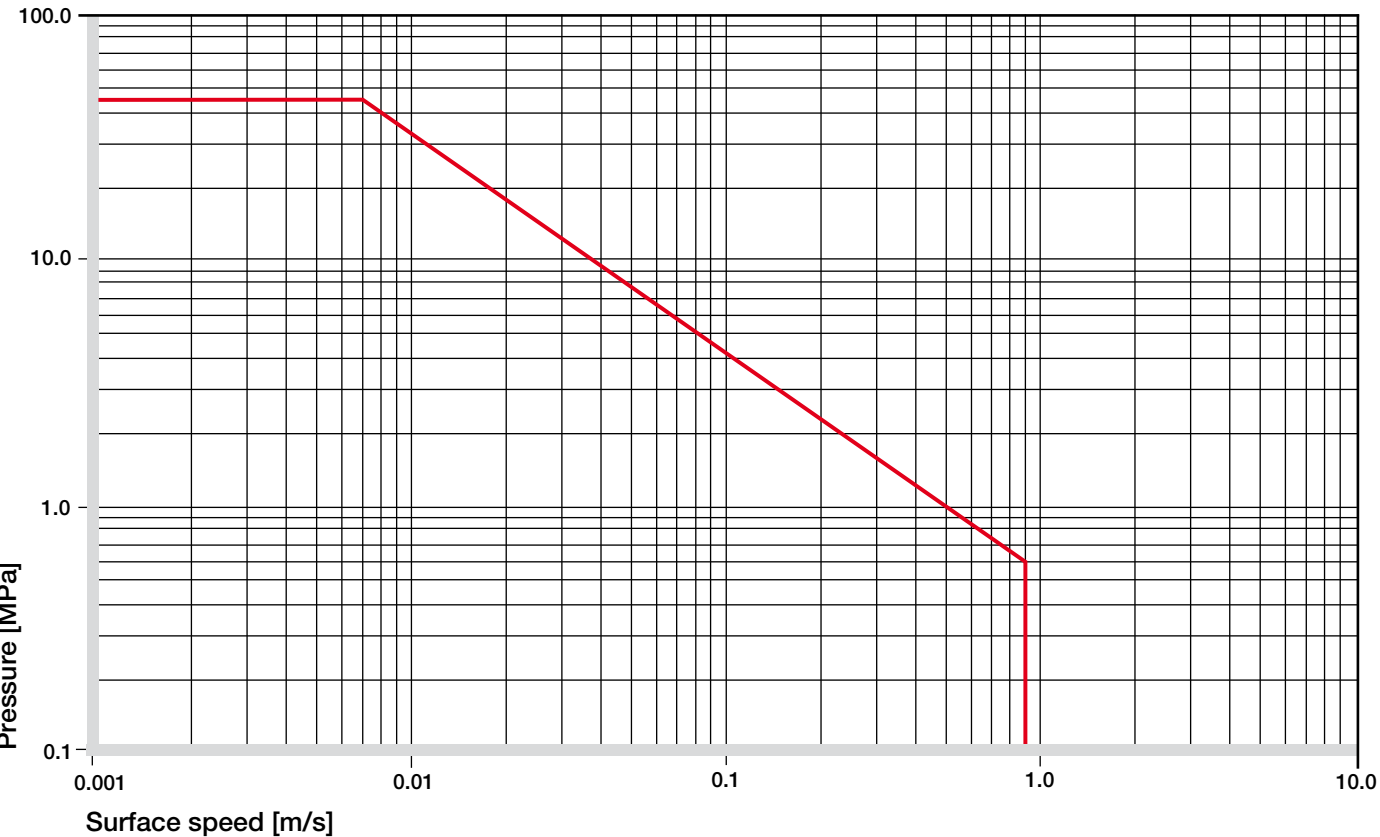


Diagram 01: Permissible pv values for iglidur® V400 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® V400 bearings are not suitable for high pressures or static high loads. However they are characterized by a high wear resistance all the way up to the maximum recommended surface pressure.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® V400 plain bearings decreases. The Diagram 02 shows this inverserelationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

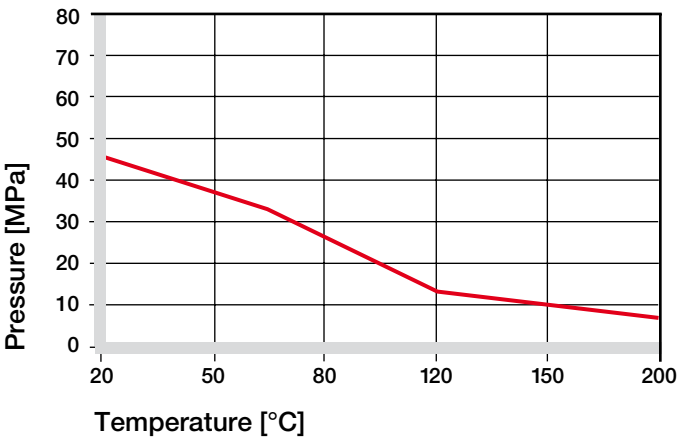


Diagram 02: Recommended maximum surface pressure as a function of temperature (45 MPa at +20 °C)

Moreover the limit of the permitted loads at +100 °C is still high with 20 MPa. The high elasticity is shown in Diagram 03.

Surface Pressure, page 63

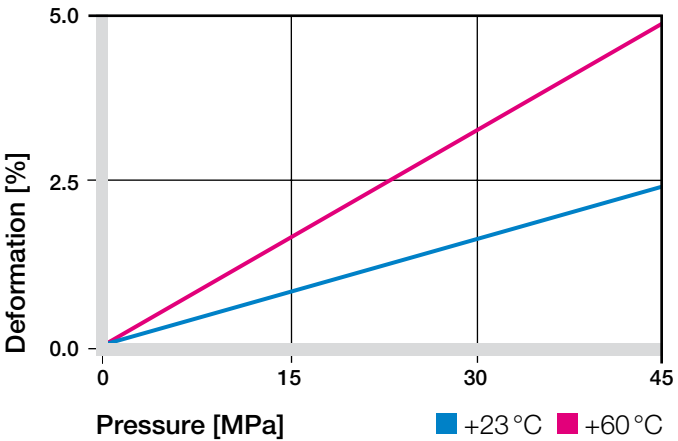


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® V400 also permits high surface speeds due to the high temperature resistance. The very favorable coefficients of friction of the bearing enable maximum surface speeds up to 1.3 m/s. Even higher are the permitted speeds for linear movement and 3 m/s can be attained on the short term.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.9      | 0.6         | 2      |
| Short term | 1.3      | 0.9         | 3      |

Table 02: Maximum running speed

Temperatures

The longterm maximum permissible application temperature is +200 °C, although at these temperatures the bearings have to be mechanically secured. Then, however, the wear resistance of the bearings is very good and adopts a leading position among all iglidur® materials. The compressive strength of iglidur® V400 plain bearings decreases with increasing temperatures. Diagram 02 clarifies this connection.

Application Temperatures, page 66

| iglidur® V400                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –50 °C                  |
| Max. long term                 | +200 °C                 |
| Max. short term                | +240 °C                 |
| Add. securing is required from | +100 °C                 |

Table 03: Temperature limits



Friction and Wear

The coefficient of friction is dependent on the bearing’s stressing capacity. When pv values exceed the permitted range, the bearings respond with a rise in coefficient of friction. As long as the loads are in the permitted range, the coefficient of friction of the bearing is very low. Furthermore, the coefficients of friction of iglidur® V400 are very constant. No other iglidur® bearing material exhibits a lower variance in the coefficients of friction, even when the shaft material is altered.

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

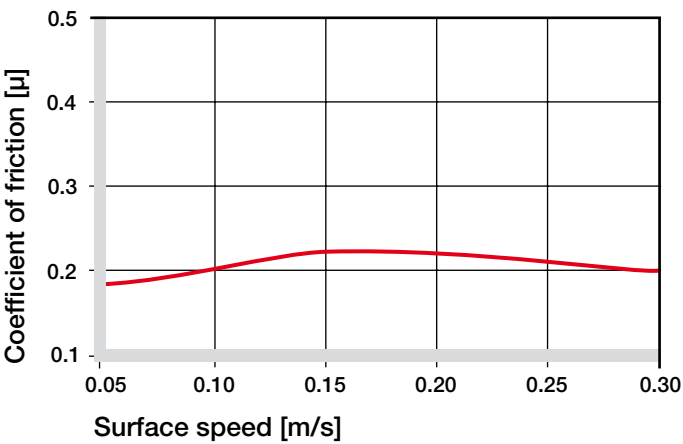


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

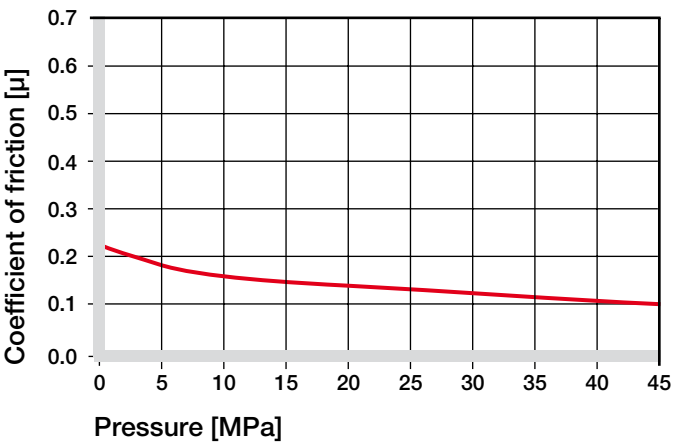


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

The influence of the shaft material on the wear resistance is bigger than on the friction. Here, even at low loads (0.75 MPa), significant differences occur, as shown in Diagram 07. With regard to wear, iglidur® V400 is better suitable for rotating applications rather than oscillating applications.

- Shaft Materials, **page 71**

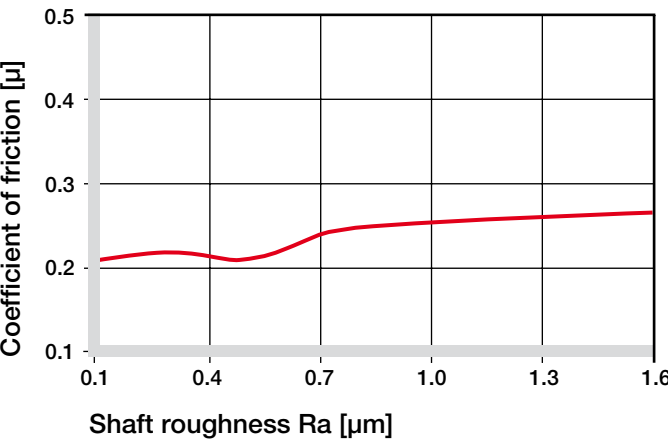


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

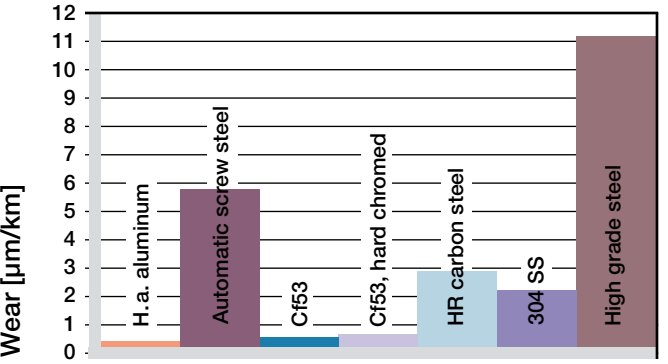


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

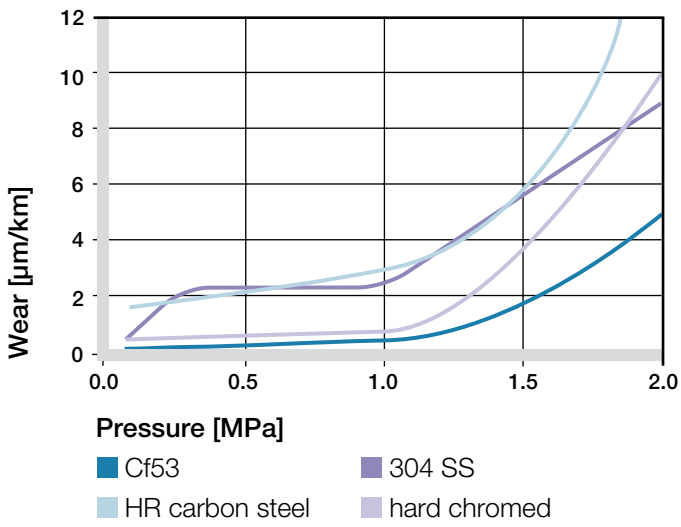


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

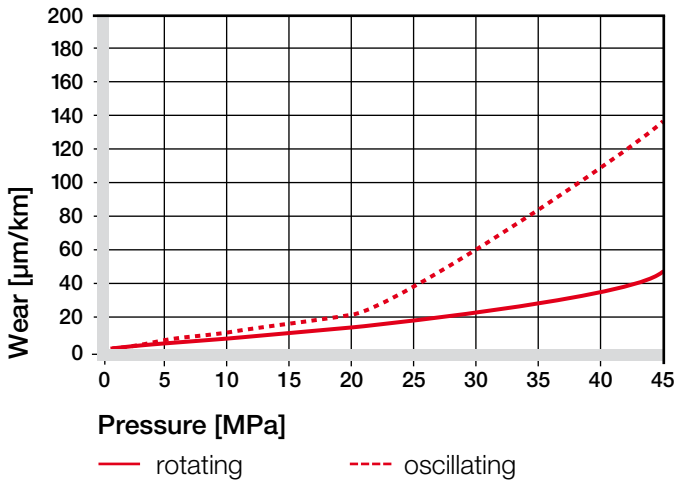


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® V400 | Dry       | Greases | Oil  | Water |
|---------------|-----------|---------|------|-------|
| C.o.f. µ      | 0.15–0.20 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® V400 plain bearings feature good chemical resistance. They are resistant to detergents, greases, oils, alcohol, solvents, diluted bases, as well as to diluted acids.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| Strong alkalines                | –          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® V400 are resistant to a radiation intensity of  $2 \cdot 10^4$  Gy. Higher radiation affects the material and can result in a loss of important mechanical characteristics.

UV Resistance

iglidur® V400 plain bearings are resistant to UV radiation to a large extent.

Vacuum

In the vacuum, iglidur® V400 plain bearings can only be used to a limited extent. Outgassing takes place.

Electrical Properties

|                                                           |                        |
|-----------------------------------------------------------|------------------------|
| iglidur® V400 plain bearings are electrically insulating. |                        |
| Volume resistance                                         | > 10 <sup>12</sup> Ωcm |
| Surface resistance                                        | > 10 <sup>12</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® V400 plain bearings is only 0.2 % after saturation in water.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.1 % weight |
| Max. water absorption       | 0.2 % weight |

Table 06: Moisture absorption

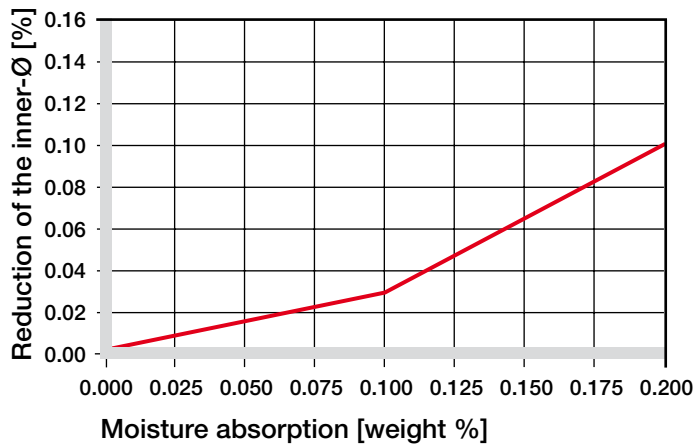


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

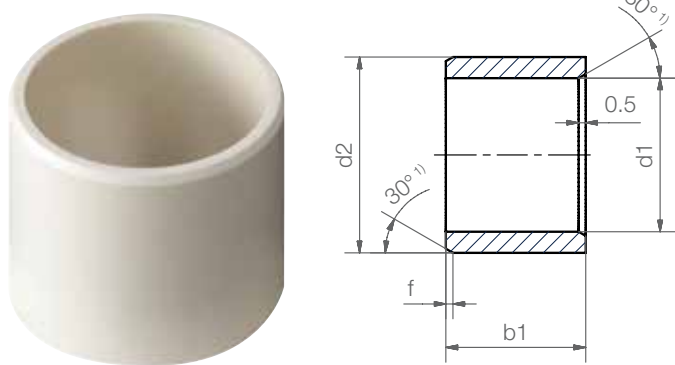
iglidur® V400 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® V400 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150          | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| VSM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| VSM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| VSM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| VSM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 12.0      |
| VSM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| VSM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75



Order key

VSM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® V400



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

► [www.igus.co.uk/iglidur-specialbearings](http://www.igus.co.uk/iglidur-specialbearings)

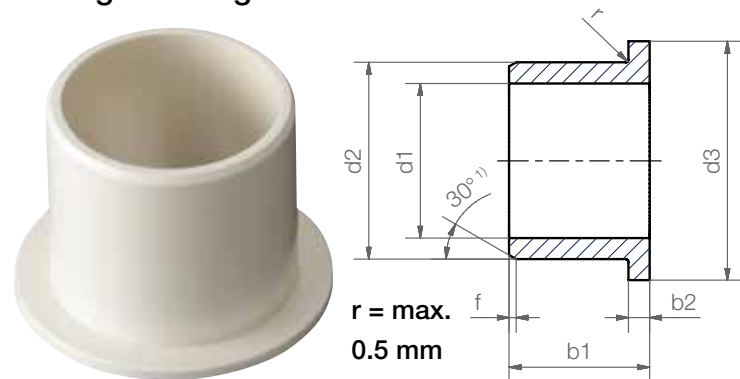


delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/v400](http://www.igus.co.uk/en/v400)

## Flange bearing



Order key

VFM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® V400

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

## Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| VFM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| VFM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| VFM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 10.0      | 1.0         |
| VFM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| VFM-1618-17 | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| VFM-1820-20 | 18.0 | +0.020 +0.104 | 20.0 | 26.0      | 20.0      | 1.0         |
| VFM-2023-21 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



## Don't find your size?

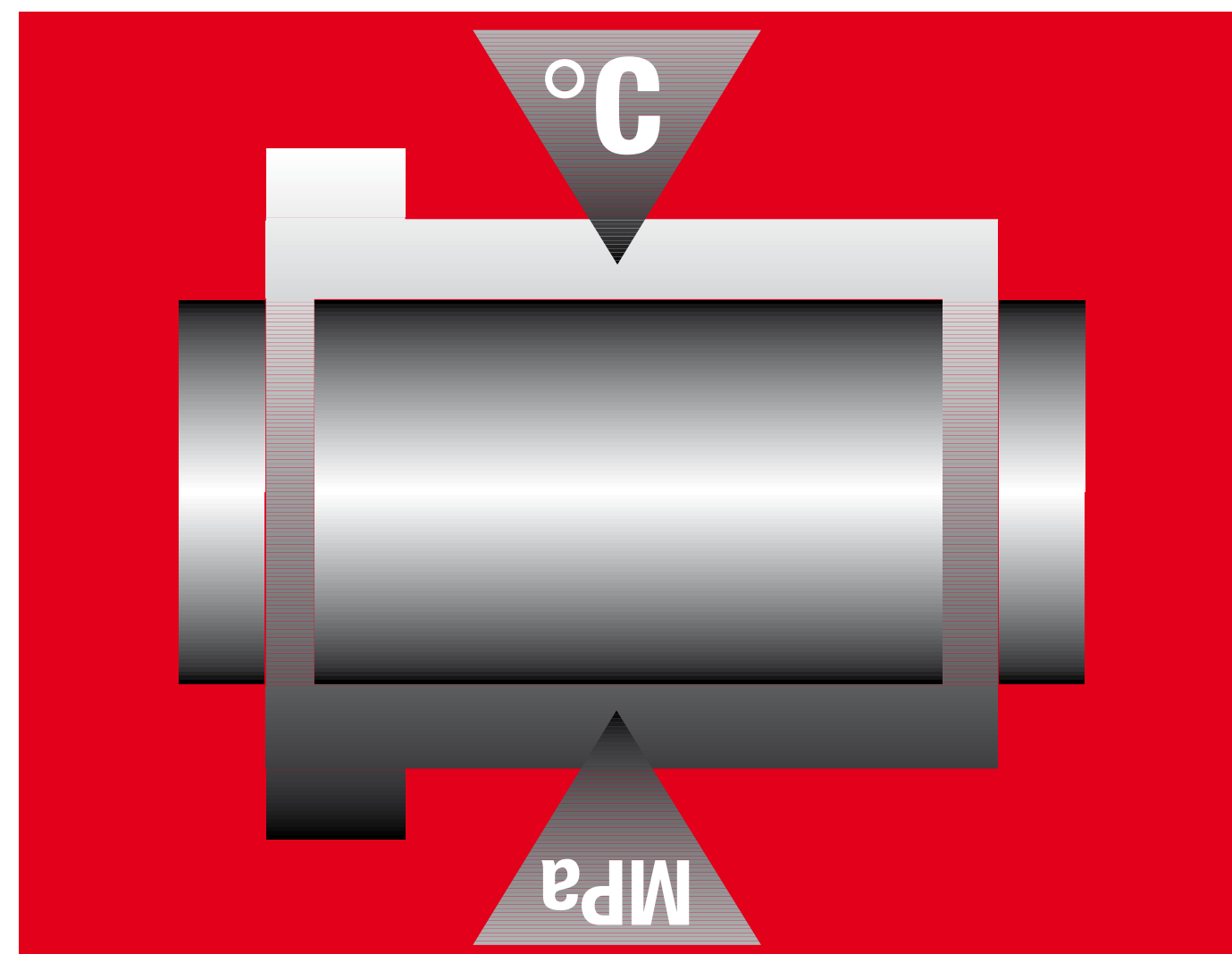
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



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# For high dynamic loads, wear resistant – iglidur® Z



Standard range from stock

Excellent wear resistance especially with high loads

High thermal resistance

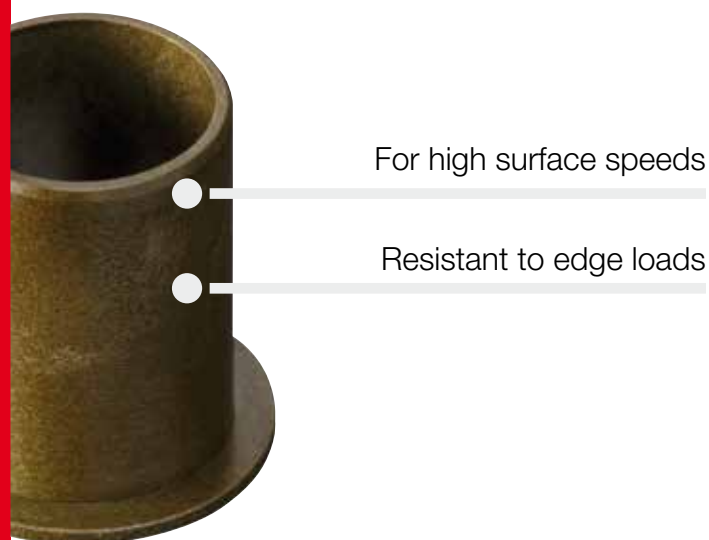
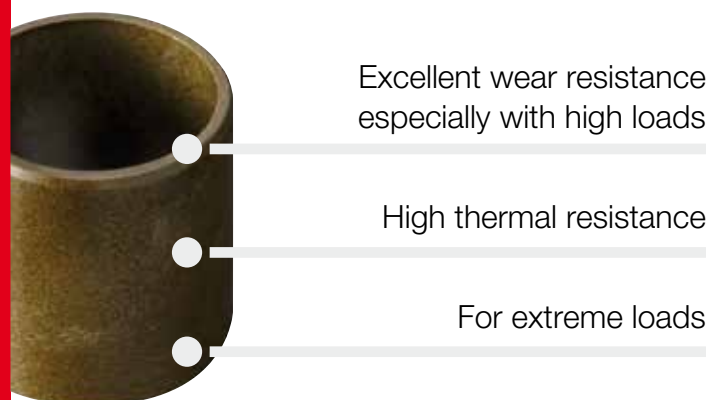
For extreme loads

For high surface speeds

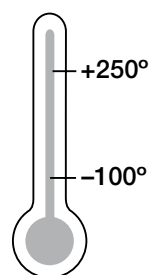
Resistant to edge loads



**For high dynamic loads, wear resistant.** Extremely high compressive strength coupled with high elasticity enables iglidur® Z bearings to attain their prominent features in association with soft shafts, edge loads and impacts. The bearings are at the same time suitable for temperatures up to +250°C.



Temperature



## When to use it?

- For continuous temperatures up to +250 °C long term or +310 °C short term
- When high wear resistance is required especially under high radial loads
- For high surface speeds
- For edge loading in connection with high surface pressures



## When not to use it?

- For low loads and temperatures  
► iglidur® P, page 195
- When a cost-effective general purpose bearing is sought  
► iglidur® G, page 81
- When electrically conductive bearings are needed  
► iglidur® F, page 509  
► iglidur® H, page 353  
► iglidur® H370, page 375

## Product range

3 types  
Ø 4–120 mm  
more dimensions  
on request



## Typical sectors of industry and application areas

- Construction machinery
- Machine building ● Textile technology
- Aerospace engineering
- Glass industry etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

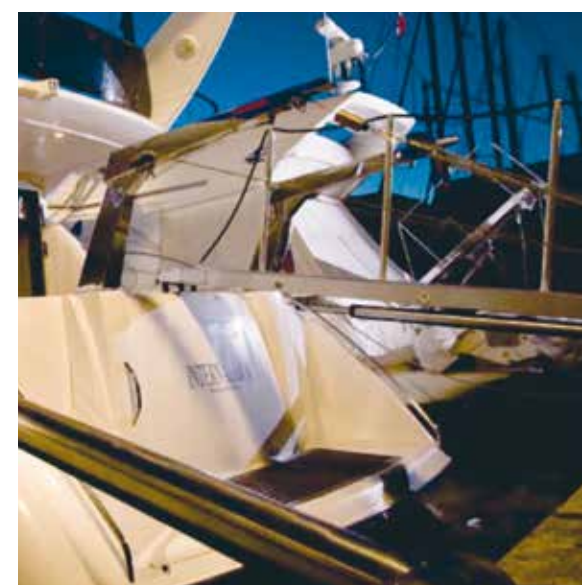
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► [www.igus.co.uk/railroad-platform](http://www.igus.co.uk/railroad-platform)



Material properties table

| General Properties                                     | Unit                               | iglidur <sup>®</sup> Z | Testing method |
|--------------------------------------------------------|------------------------------------|------------------------|----------------|
| Density                                                | g/cm <sup>3</sup>                  | 1.40                   |                |
| Colour                                                 |                                    | brown                  |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                    | DIN 53495      |
| Max. water absorption                                  | % weight                           | 1.1                    |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.06–0.14              |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.84                   |                |
| Mechanical properties                                  |                                    |                        |                |
| Modulus of elasticity                                  | MPa                                | 2,400                  | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 95                     | DIN 53452      |
| Compressive strength                                   | MPa                                | 65                     |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 150                    |                |
| Shore D hardness                                       |                                    | 81                     | DIN 53505      |
| Physical and thermal properties                        |                                    |                        |                |
| Max. long term application temperature                 | °C                                 | +250                   |                |
| Max. short term application temperature                | °C                                 | +310                   |                |
| Min. application temperature                           | °C                                 | –100                   |                |
| Thermal conductivity                                   | W/m · K                            | 0.62                   | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> | 4                      | DIN 53752      |
| Electrical properties                                  |                                    |                        |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>11</sup>     | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup>     | DIN 53482      |

Table 01: Material properties table

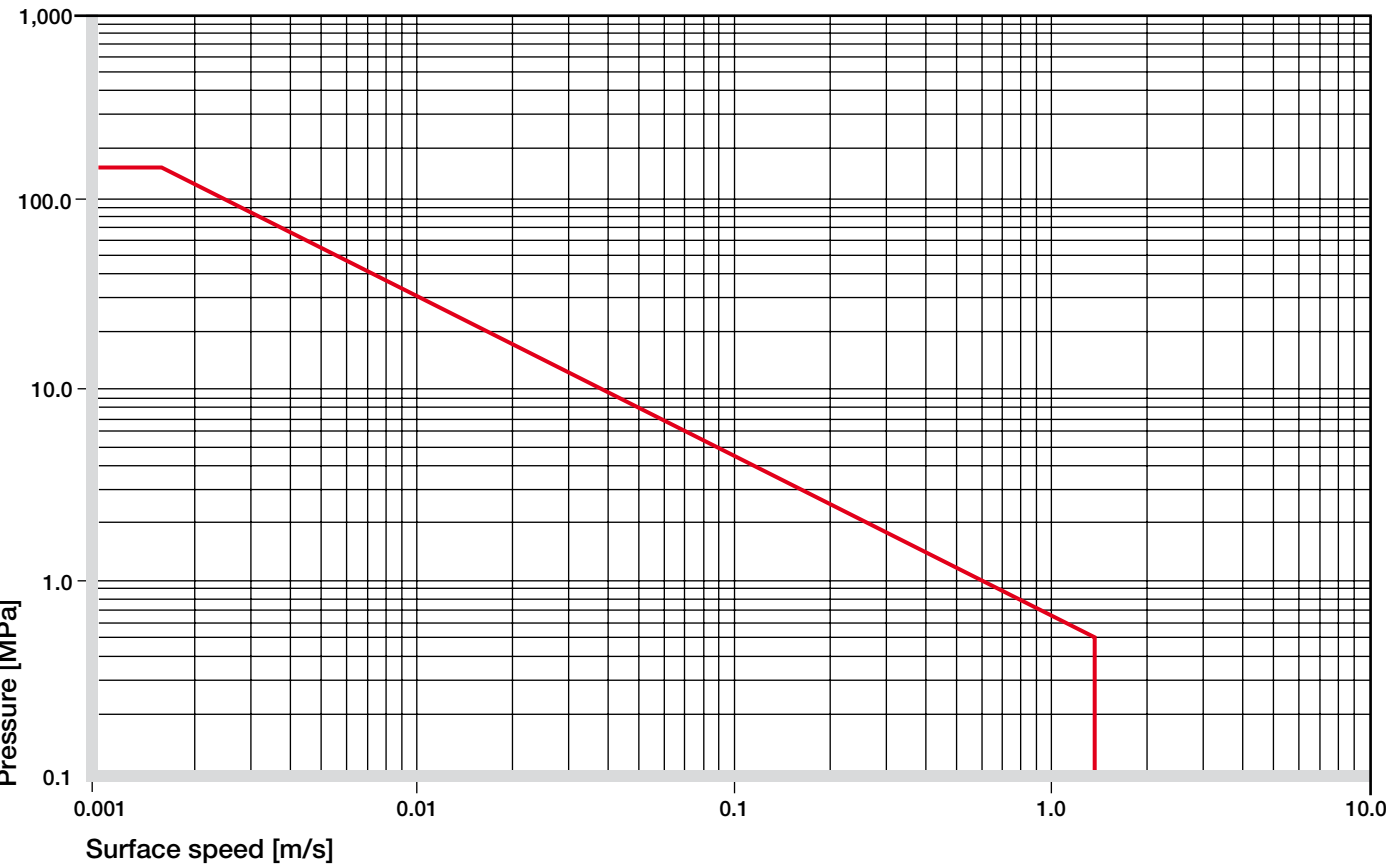


Diagram 01: Permissible pv values for iglidur<sup>®</sup> Z with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

In addition to iglidur<sup>®</sup> X, iglidur<sup>®</sup> Z is among the best selling iglidur<sup>®</sup> high-temperature materials. Specifically worth noting is the outstanding wear behavior under extreme conditions (high loads and temperatures).

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur<sup>®</sup> Z plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +250 °C the permissible surface pressure is almost 45 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

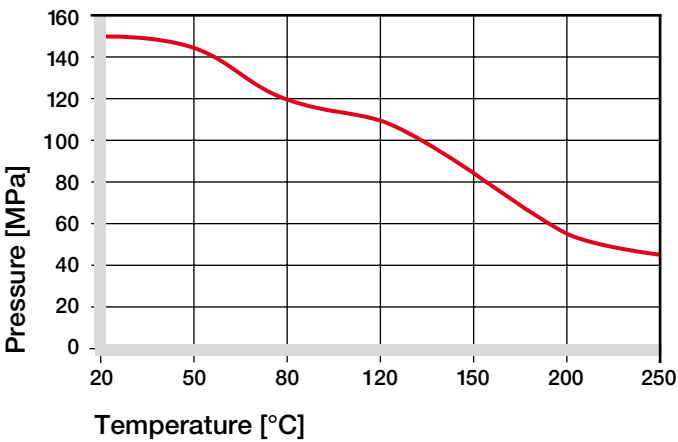


Diagram 02: Recommended maximum surface pressure as a function of temperature (150 MPa at +20 °C)

iglidur<sup>®</sup> Z is suited for both average and high speeds due to its high thermal resistance. Diagram 03 shows the elastic deformation of iglidur<sup>®</sup> Z at radial loads. At the recommended maximum surface pressure of 150 MPa the deformation is ca. 5.5 %.

Surface Pressure, page 63

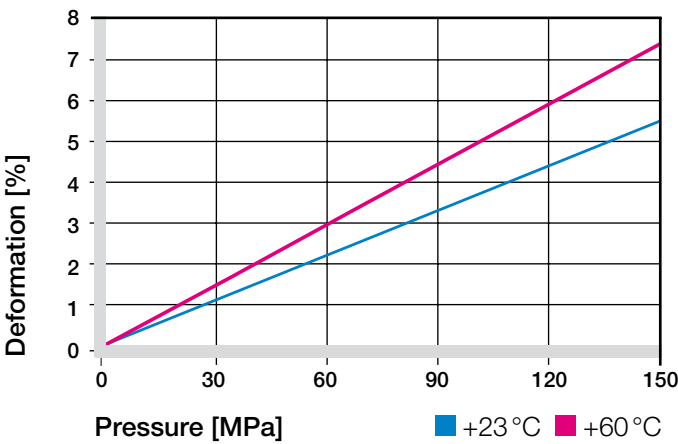


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur<sup>®</sup> Z is a high temperature bearing material, which is suited for applications with very high specific loads. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.5      | 1.1         | 5      |
| Short term | 3.5      | 2.5         | 6      |

Table 02: Maximum running speed

Temperatures

The maximum permissible short term temperature is +310 °C. This is among the highest thermal resistance of any iglidur<sup>®</sup> material. Abb. 02 shows this relationship. The ambient temperatures in the bearing system also have an effect on the bearing wear. With increasing temperatures, the wear rate increases. At high temperatures iglidur<sup>®</sup> Z is also the most wear resistant material when running dry.

Application Temperatures, page 66

| iglidur <sup>®</sup> Z         | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –100 °C                 |
| Max. long term                 | +250 °C                 |
| Max. short term                | +310 °C                 |
| Add. securing is required from | +145 °C                 |

Table 03: Temperature limits

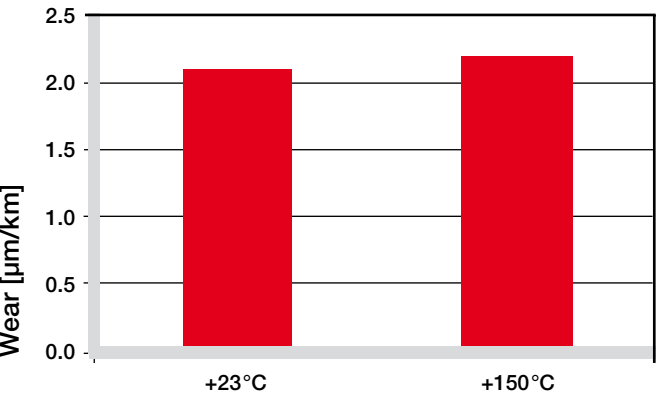


Diagram 04: Wear as a function of temperature, rotation with p = 0.75 MPa, v = 0.5 m/s (CF53 hardened and ground steel)



## Friction and Wear

The coefficient of friction declines just as the wear resistance with increasing load.

Friction and wear also depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. iglidur® Z proves to be relatively insensitive with regard to the shaft surface. The best suited is a smoothed surface with an average surface finish coefficient of friction 0.4 to 0.7 µm, if the friction should be minimized.

► Coefficients of Friction and Surfaces, **page 68**

► Wear Resistance, **page 69**

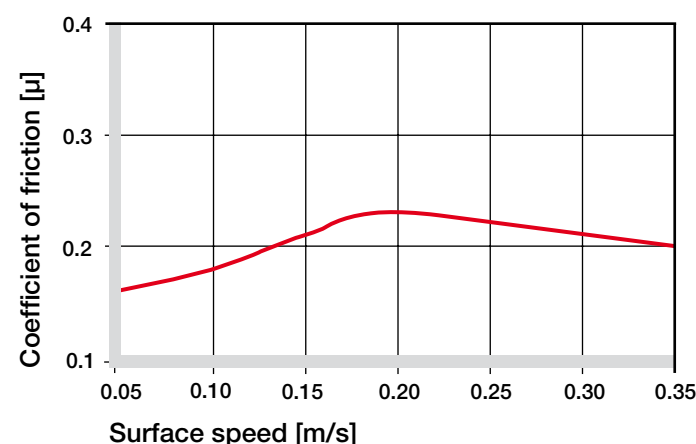


Diagram 05: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

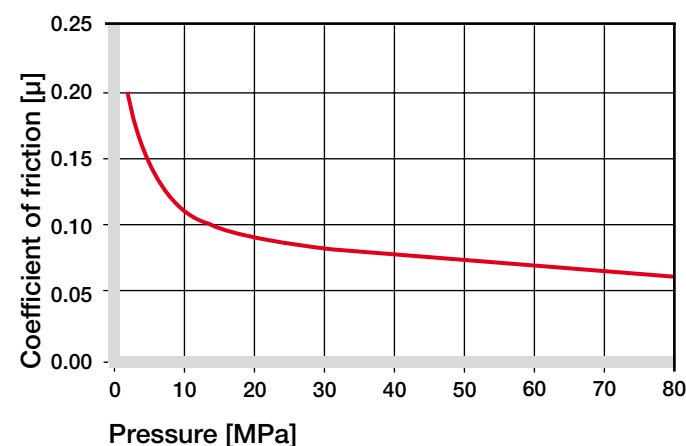


Diagram 06: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

## Shaft Materials

Diagrams 08-11 show wear rates in the lower load range, which are very similar to those of other wear-resistant iglidur® materials. However, in the upper load range iglidur® Z outperforms all other materials in wear resistance. Provided a Cf53 hardened and ground steel shaft is used, the wear is at 45 MPa still only 15 µm/km.

At low loads iglidur® Z plain bearings wear less in oscillating operation than in rotation. 304 Stainless Steel and hard chromed shaft are of interest here.

► Shaft Materials, **page 71**

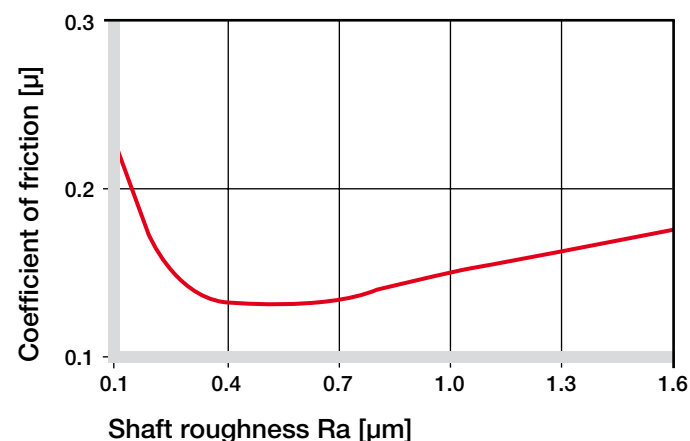


Diagram 07: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

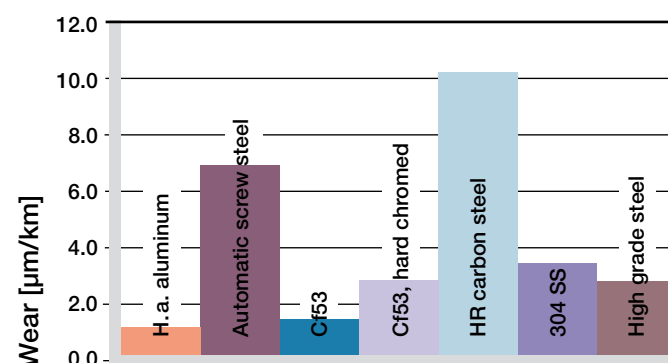


Diagram 08: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

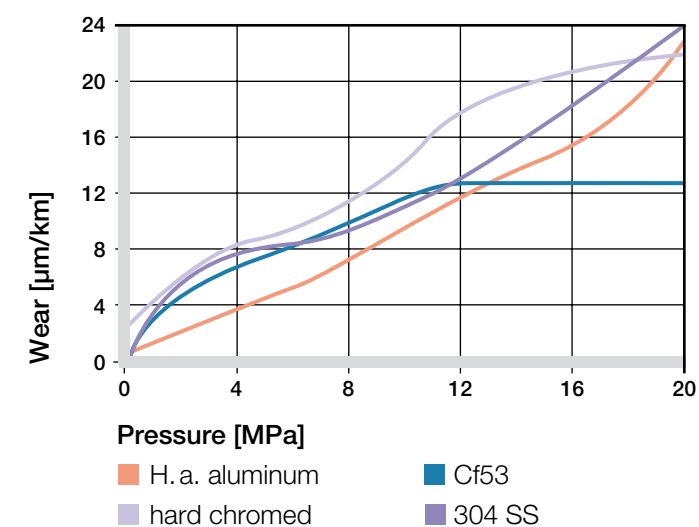


Diagram 09: Wear with different shaft materials in rotational operation, as a function of the pressure

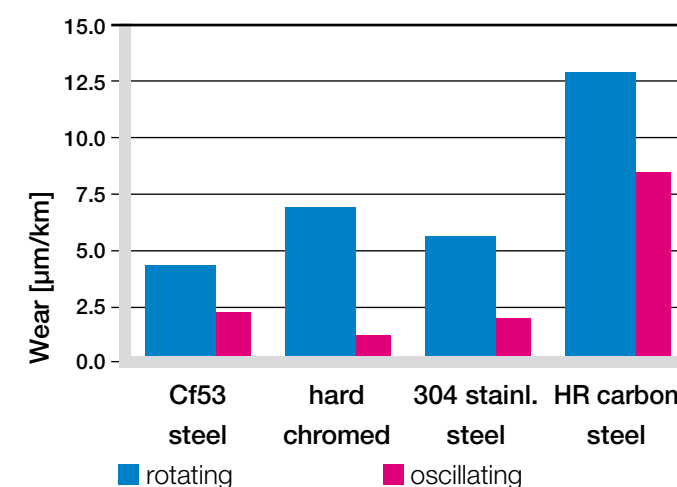


Diagram 10: Wear for rotating and oscillating applications with different shaft materials,  $p = 2 \text{ MPa}$

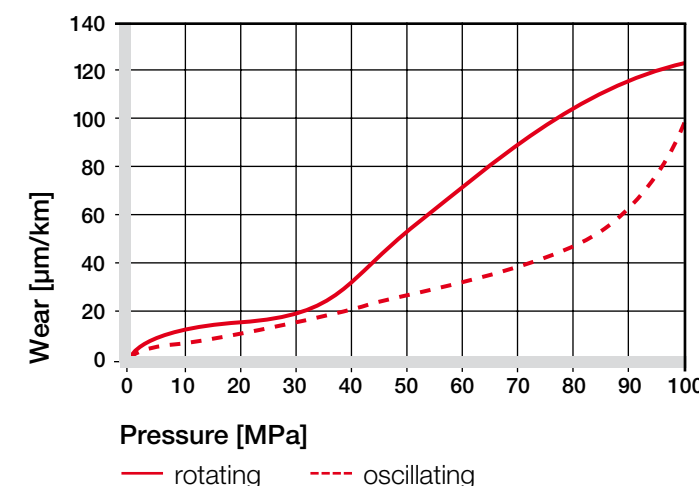


Diagram 11: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® Z     | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.06–0.14 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \text{ µm}$ , 50 HRC)

## Additional Properties

### Chemical Resistance

iglidur® Z plain bearings have a very good resistance to chemicals. They have an excellent resistance against organic solvents, fuels, oils and greases. The material is only partially resistant against weak acids.

► Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | 0          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | –          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature  $[+20 \text{ °C}]$

Table 05: Chemical resistance

### Radiation Resistance

Plain bearings made from iglidur® Z are resistant to radiation up to an intensity of  $1 \cdot 10^5 \text{ Gy}$ .

### UV Resistance

UV radiation causes approximately 50 % decline of the tribological properties (wear resistance) of plain bearings made from iglidur® Z.

### Vacuum

For use in a vacuum environment, moisture content is released as vapour. Therefore, only dehumidified bearings made of iglidur® Z are suitable for a vacuum environment.

### Electrical Properties

iglidur® Z plain bearings are electrically insulating.

|                    |                         |
|--------------------|-------------------------|
| Volume resistance  | $> 10^{11} \text{ Ωcm}$ |
| Surface resistance | $> 10^{11} \text{ Ω}$   |



Moisture Absorption

The moisture absorption of iglidur® Z plain bearings is approximately 0.3 % in standard atmosphere. The saturation limit in water is 1.1 %.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.3 % weight |
| Max. water absorption       | 1.1 % weight |

Table 06: Moisture absorption

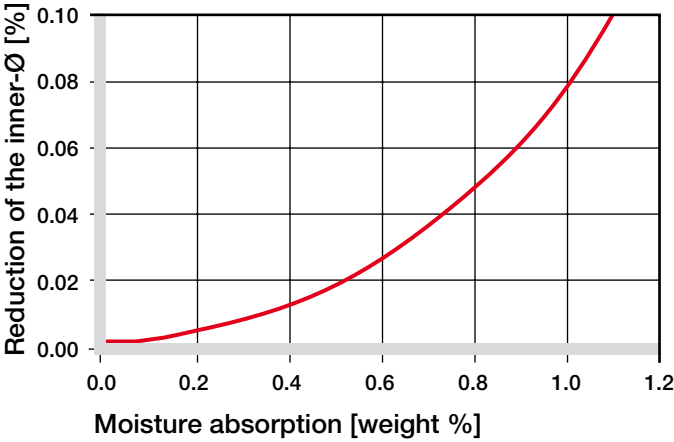


Diagram 12: Effect of moisture absorption on plain bearings

Installation Tolerances

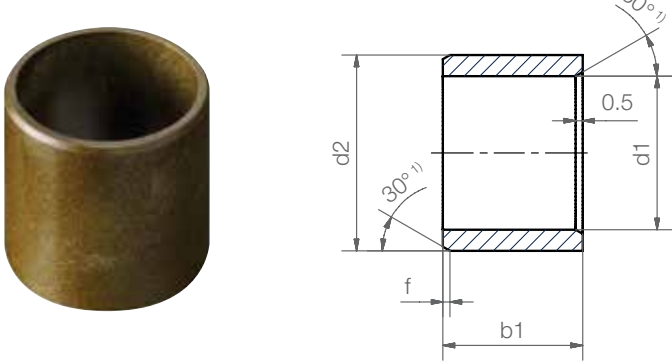
iglidur® Z plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® Z F10 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150       | 0 +0.030        |
| > 80 to 120      | 0–0.100       | +0.036 +0.176       | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| ZSM-0405-04 | 4.0  | +0.010 +0.058 | 5.5  | 4.0       |
| ZSM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 5.0       |
| ZSM-0507-09 | 5.0  | +0.010 +0.058 | 7.0  | 9.0       |
| ZSM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| ZSM-0608-08 | 6.0  | +0.010 +0.058 | 8.0  | 8.0       |
| ZSM-0608-12 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      |
| ZSM-0610-06 | 6.0  | +0.010 +0.058 | 10.0 | 6.0       |
| ZSM-0810-06 | 8.0  | +0.013 +0.071 | 10.0 | 6.0       |
| ZSM-0810-08 | 8.0  | +0.013 +0.071 | 10.0 | 8.0       |
| ZSM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| ZSM-1012-08 | 10.0 | +0.013 +0.071 | 12.0 | 8.0       |
| ZSM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| ZSM-1012-12 | 10.0 | +0.013 +0.071 | 12.0 | 12.0      |
| ZSM-1214-08 | 12.0 | +0.016 +0.086 | 14.0 | 8.0       |
| ZSM-1214-15 | 12.0 | +0.016 +0.086 | 14.0 | 15.0      |
| ZSM-1416-20 | 14.0 | +0.016 +0.086 | 16.0 | 20.0      |
| ZSM-1517-15 | 15.0 | +0.016 +0.086 | 17.0 | 15.0      |
| ZSM-1517-20 | 15.0 | +0.016 +0.086 | 17.0 | 20.0      |
| ZSM-1517-22 | 15.0 | +0.016 +0.086 | 17.0 | 22.0      |
| ZSM-1618-12 | 16.0 | +0.016 +0.086 | 18.0 | 12.0      |
| ZSM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| ZSM-1820-20 | 18.0 | +0.016 +0.086 | 20.0 | 20.0      |
| ZSM-1820-24 | 18.0 | +0.016 +0.086 | 20.0 | 24.0      |
| ZSM-2023-10 | 20.0 | +0.020 +0.104 | 23.0 | 10.0      |
| ZSM-2023-15 | 20.0 | +0.020 +0.104 | 23.0 | 15.0      |
| ZSM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |
| ZSM-2023-30 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      |
| ZSM-2023-35 | 20.0 | +0.020 +0.104 | 23.0 | 35.0      |

\* after pressfit. Testing methods ► page 75



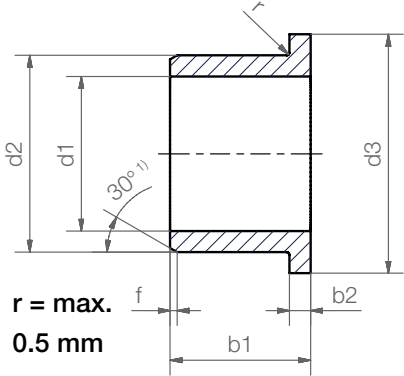
Order key

ZSM-0405-04

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® Z

| Part number         | d1    | d1-Tolerance* | d2    | b1<br>h13 |
|---------------------|-------|---------------|-------|-----------|
| ZSM-2224-30         | 22.0  | +0.020 +0.104 | 24.0  | 30.0      |
| ZSM-2225-20         | 22.0  | +0.020 +0.104 | 25.0  | 20.0      |
| ZSM-2528-15         | 25.0  | +0.020 +0.104 | 28.0  | 15.0      |
| ZSM-2528-20         | 25.0  | +0.020 +0.104 | 28.0  | 20.0      |
| ZSM-2528-30         | 25.0  | +0.020 +0.104 | 28.0  | 30.0      |
| ZSM-2528-48         | 25.0  | +0.020 +0.104 | 28.0  | 48.0      |
| ZSM-2630-34         | 26.0  | +0.020 +0.104 | 30.0  | 34.0      |
| ZSM-2834-29         | 28.0  | +0.020 +0.104 | 34.0  | 29.0      |
| ZSM-3034-20         | 30.0  | +0.020 +0.104 | 34.0  | 20.0      |
| ZSM-3034-30         | 30.0  | +0.020 +0.104 | 34.0  | 30.0      |
| ZSM-3034-40         | 30.0  | +0.020 +0.104 | 34.0  | 40.0      |
| ZSM-3539-20         | 35.0  | +0.025 +0.125 | 39.0  | 20.0      |
| ZSM-4044-15         | 40.0  | +0.025 +0.125 | 44.0  | 15.0      |
| ZSM-4044-40         | 40.0  | +0.025 +0.125 | 44.0  | 40.0      |
| ZSM-4044-47         | 40.0  | +0.025 +0.125 | 44.0  | 47.0      |
| ZSM-4550-40         | 45.0  | +0.025 +0.125 | 50.0  | 40.0      |
| ZSM-5055-50         | 50.0  | +0.025 +0.125 | 55.0  | 50.0      |
| ZSM-5055-60         | 50.0  | +0.025 +0.125 | 55.0  | 60.0      |
| ZSM-5560-60         | 55.0  | +0.030 +0.150 | 60.0  | 60.0      |
| ZSM-6065-60         | 60.0  | +0.030 +0.150 | 65.0  | 60.0      |
| ZSM-7075-70         | 70.0  | +0.030 +0.150 | 75.0  | 70.0      |
| ZSM-8085-60         | 80.0  | +0.030 +0.150 | 85.0  | 60.0      |
| ZSM-8085-80 New!    | 80.0  | +0.030 +0.150 | 85.0  | 80.0      |
| ZSM-8590-60 New!    | 85.0  | +0.036 +0.176 | 90.0  | 60.0      |
| ZSM-8590-100 New!   | 85.0  | +0.036 +0.176 | 90.0  | 100.0     |
| ZSM-95100-60 New!   | 95.0  | +0.036 +0.176 | 100.0 | 60.0      |
| ZSM-100105-100      | 100.0 | +0.036 +0.176 | 105.0 | 100.0     |
| ZSM-120125-100 New! | 120.0 | +0.036 +0.176 | 125.0 | 100.0     |

Flange bearing



Order key

ZFM-0405-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® Z

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| ZFM-0405-04   | 4.0  | +0.010 +0.058 | 5.5  | 9.5       | 4.0       | 0.75        |
| ZFM-0507-05   | 5.0  | +0.010 +0.058 | 7.0  | 11.0      | 5.0       | 1.0         |
| ZFM-0608-08   | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 8.0       | 1.0         |
| ZFM-0810-055  | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 5.5       | 1.0         |
| ZFM-0810-09   | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 9.0       | 1.0         |
| ZFM-1012-05   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 5.0       | 1.0         |
| ZFM-1012-09   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 9.0       | 1.0         |
| ZFM-1012-15   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 15.0      | 1.0         |
| ZFM-101315-05 | 10.0 | +0.013 +0.071 | 13.0 | 15.0      | 5.5       | 1.5         |
| ZFM-1214-09   | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 9.0       | 1.0         |
| ZFM-1214-12   | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| ZFM-1214-20   | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 20.0      | 1.0         |
| ZFM-1416-17   | 14.0 | +0.016 +0.086 | 16.0 | 22.0      | 17.0      | 1.0         |
| ZFM-1517-11   | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 11.0      | 1.0         |
| ZFM-1517-15   | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 15.0      | 1.0         |
| ZFM-151723-23 | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 23.0      | 1.0         |
| ZFM-1618-12   | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 12.0      | 1.0         |
| ZFM-1820-04   | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 4.0       | 1.0         |
| ZFM-1820-17   | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 17.0      | 1.0         |
| ZFM-2022-21   | 20.0 | +0.020 +0.104 | 22.0 | 30.0      | 21.0      | 1.0         |
| ZFM-2023-11   | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 11.5      | 1.5         |
| ZFM-2023-155  | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 15.5      | 1.5         |
| ZFM-2023-16   | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 16.5      | 1.5         |
| ZFM-2023-21   | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| ZFM-2023-31   | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 31.5      | 1.5         |

\* after pressfit. Testing methods ► page 75

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Flange bearing

Dimensions [mm]

| Part number               | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------------------|------|---------------|------|-----------|-----------|-------------|
| ZFM-2528-16               | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 16.5      | 1.5         |
| ZFM-2528-21               | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 21.5      | 1.5         |
| ZFM-2528-31               | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 31.5      | 1.5         |
| ZFM-3034-13               | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 13.0      | 2.0         |
| ZFM-3034-20               | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 20.0      | 2.0         |
| ZFM-3034-26               | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 26.0      | 2.0         |
| ZFM-3034-37               | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 37.0      | 2.0         |
| ZFM-3539-26               | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 26.0      | 2.0         |
| ZFM-4044-20               | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 20.0      | 2.0         |
| ZFM-4044-40               | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 40.0      | 2.0         |
| ZFM-4550-50               | 45.0 | +0.025 +0.125 | 50.0 | 58.0      | 50.0      | 2.0         |
| ZFM-5055-20               | 50.0 | +0.025 +0.125 | 55.0 | 63.0      | 20.0      | 2.0         |
| ZFM-5055-50               | 50.0 | +0.025 +0.125 | 55.0 | 63.0      | 50.0      | 2.0         |
| ZFM-6065-50               | 60.0 | +0.030 +0.150 | 65.0 | 73.0      | 50.0      | 2.5         |
| ZFM-7580-50               | 75.0 | +0.030 +0.150 | 80.0 | 88.0      | 50.0      | 2.5         |
| ZFM-758094-65 <b>New!</b> | 75.0 | +0.030 +0.150 | 80.0 | 94.0      | 65.0      | 3.0         |

\* after pressfit. Testing methods ► page 75



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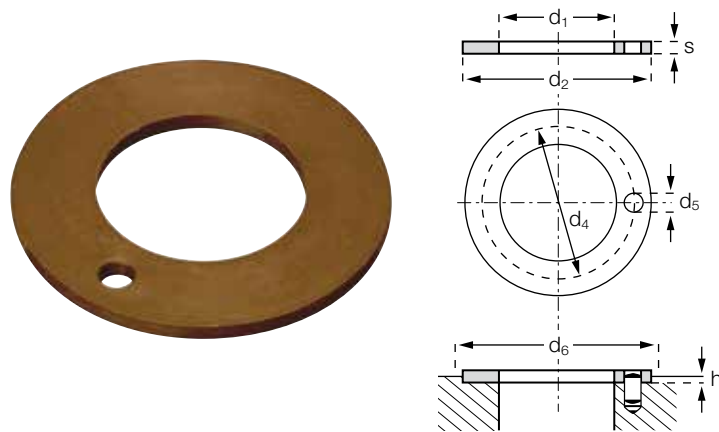
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Order key

ZTM-1527-015



Thickness s  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form T)  
Material iglidur® Z

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

| Part number  | d1    | d2    | s     | d4             | d5               | h            | d6    |
|--------------|-------|-------|-------|----------------|------------------|--------------|-------|
|              | +0.25 | -0.25 | -0.05 | -0.12<br>+0.12 | +0.375<br>+0.125 | +0.2<br>-0.2 | +0.12 |
| ZTM-1430-015 | 14.0  | 30.0  | 1.5   | 25+/-0.20      | 2+0.10           | 1.0          | 30.0  |
| ZTM-1527-015 | 15.0  | 27.0  | 1.5   | **             | **               | 1.0          | 27.0  |
| ZTM-1535-015 | 15.0  | 35.0  | 1.5   | **             | **               | 1.0          | 35.0  |
| ZTM-1623-015 | 16.0  | 23.0  | 1.5   | **             | **               | 1.0          | 23.0  |
| ZTM-2838-015 | 28.0  | 38.0  | 1.5   | **             | **               | 1.0          | 38.0  |
| ZTM-3254-015 | 32.0  | 54.0  | 1.5   | 43.0           | 4.0              | 1.0          | 54.0  |
| ZTM-6290-020 | 62.0  | 90.0  | 2.0   | **             | **               | 1.5          | 90.0  |

\*\* design without fixing bore



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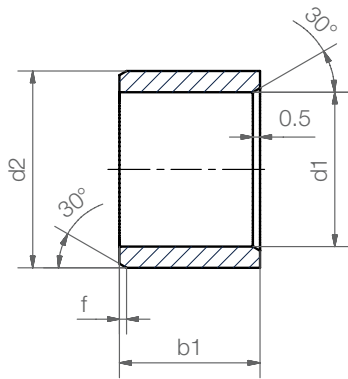


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Sleeve bearings



Order key

ZSI-0203-03



Length b1  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form S)  
Material iglidur® Z

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       | max.   | min.   | max.         | min.   | max.       | min.   |
| ZSI-0203-03 | 1/8   | 3/16    | 3/16  | .1269  | .1251  | .1878        | .1873  | .1243      | .1236  |
| ZSI-0506-06 | 5/16  | 3/8     | 3/8   | .3148  | .3125  | .3753        | .3747  | .3115      | .3106  |
| ZSI-0607-04 | 3/8   | 15/32   | 1/4   | .3768  | .3745  | .4691        | .4684  | .3740      | .3731  |
| ZSI-0607-06 | 3/8   | 15/32   | 3/8   | .3768  | .3745  | .4691        | .4684  | .3740      | .3731  |
| ZSI-0607-08 | 3/8   | 15/32   | 1/2   | .3768  | .3745  | .4691        | .4684  | .3740      | .3731  |
| ZSI-0708-08 | 7/16  | 17/32   | 1/2   | .4399  | .4371  | .5316        | .5309  | .4365      | .4355  |
| ZSI-0809-12 | 1/2   | 19/32   | 3/4   | .5024  | .4996  | .5941        | .5934  | .4990      | .4980  |
| ZSI-0810-12 | 1/2   | 5/8     | 3/4   | .5034  | .5006  | .6260        | .6250  | .5000      | .4990  |
| ZSI-1011-12 | 5/8   | 23/32   | 3/4   | .6274  | .6246  | .7192        | .7184  | .6240      | .6230  |
| ZSI-1214-12 | 3/4   | 7/8     | 3/4   | .7532  | .7499  | .8755        | .8747  | .7491      | .7479  |
| ZSI-1214-16 | 3/4   | 7/8     | 1     | .7532  | .7499  | .8755        | .8747  | .7491      | .7479  |
| ZSI-1416-16 | 7/8   | 1       | 1     | .8782  | .8749  | 1.0005       | .9997  | .8741      | .8729  |
| ZSI-1618-16 | 1     | 1 1/8   | 1     | 1.0032 | .9999  | 1.1255       | 1.1247 | .9991      | .9979  |
| ZSI-1618-24 | 1     | 1 1/8   | 1 1/2 | 1.0032 | .9999  | 1.1255       | 1.1247 | .9991      | .9979  |
| ZSI-1820-24 | 1 1/8 | 1 9/32  | 1 1/2 | 1.1279 | 1.1246 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| ZSI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.2537 | 1.2498 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| ZSI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 1.5037 | 1.4998 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| ZSI-2831-32 | 1 3/4 | 1 15/16 | 2     | 1.7536 | 1.7497 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| ZSI-3235-16 | 2     | 2 3/16  | 1     | 2.0040 | 1.9993 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| ZSI-3235-32 | 2     | 2 3/16  | 2     | 2.0040 | 1.9993 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| ZSI-3639-32 | 2 1/4 | 2 7/16  | 2     | 2.2556 | 2.2519 | 2.4377       | 2.4365 | 2.2507     | 2.2489 |

\* after pressfit. Testing methods ► page 75



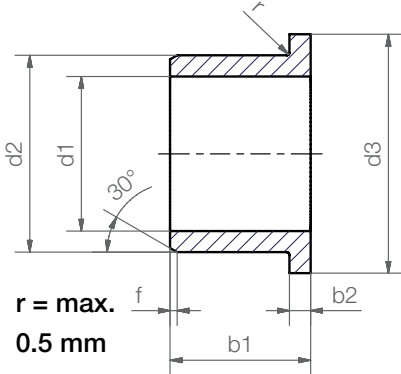
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Flange bearing



Order key

ZFI-0607-08



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® Z

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1    | d2      | b1   | d3    | b2   | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |         |      |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| ZFI-0607-08 | 3/8   | 15/32   | 1/2  | .687  | .046 | .3768  | .3745  | .4691        | .4684  | .3740      | .3731  |
| ZFI-0809-08 | 1/2   | 19/32   | 1/2  | .875  | .046 | .5024  | .4996  | .5941        | .5934  | .4990      | .4980  |
| ZFI-1012-08 | 5/8   | 3/4     | 3/4  | 1.000 | .046 | .6284  | .6256  | .7510        | .7500  | .6250      | .6240  |
| ZFI-1214-12 | 3/4   | 7/8     | 3/4  | 1.125 | .062 | .7532  | .7499  | .8755        | .8747  | .7491      | .7479  |
| ZFI-1214-16 | 3/4   | 7/8     | 1    | 1.125 | .062 | .7532  | .7499  | .8755        | .8747  | .7491      | .7479  |
| ZFI-1416-12 | 7/8   | 1       | 1    | 1.250 | .062 | .8782  | .8749  | 1.0005       | .9997  | .8741      | .8729  |
| ZFI-1416-16 | 7/8   | 1       | 1    | 1.250 | .062 | .8782  | .8749  | 1.0005       | .9997  | .8741      | .8729  |
| ZFI-1618-08 | 1     | 1 1/8   | 1    | 1.375 | .062 | 1.0032 | .9999  | 1.1255       | 1.1247 | .9991      | .9979  |
| ZFI-1618-16 | 1     | 1 1/8   | 1    | 1.375 | .062 | 1.0032 | .9999  | 1.1255       | 1.1247 | .9991      | .9979  |
| ZFI-1820-12 | 1 1/8 | 1 9/32  | 11/2 | 1.562 | .078 | 1.1279 | 1.1246 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| ZFI-1820-24 | 1 1/8 | 1 9/32  | 11/2 | 1.562 | .078 | 1.1279 | 1.1246 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| ZFI-2022-20 | 1 1/4 | 1 13/32 | 11/4 | 1.687 | .078 | 1.2537 | 1.2498 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| ZFI-2022-24 | 1 1/4 | 1 13/32 | 11/4 | 1.687 | .078 | 1.2537 | 1.2498 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| ZFI-2426-24 | 1 1/2 | 1 21/32 | 11/2 | 2.000 | .078 | 1.5037 | 1.4998 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| ZFI-2831-32 | 1 3/4 | 1 15/16 | 2    | 2.375 | .093 | 1.7536 | 1.7497 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| ZFI-3235-32 | 2     | 2 3/16  | 2    | 2.625 | .093 | 2.0040 | 1.9993 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |

\* after pressfit. Testing methods ► page 75



Don't find your size?

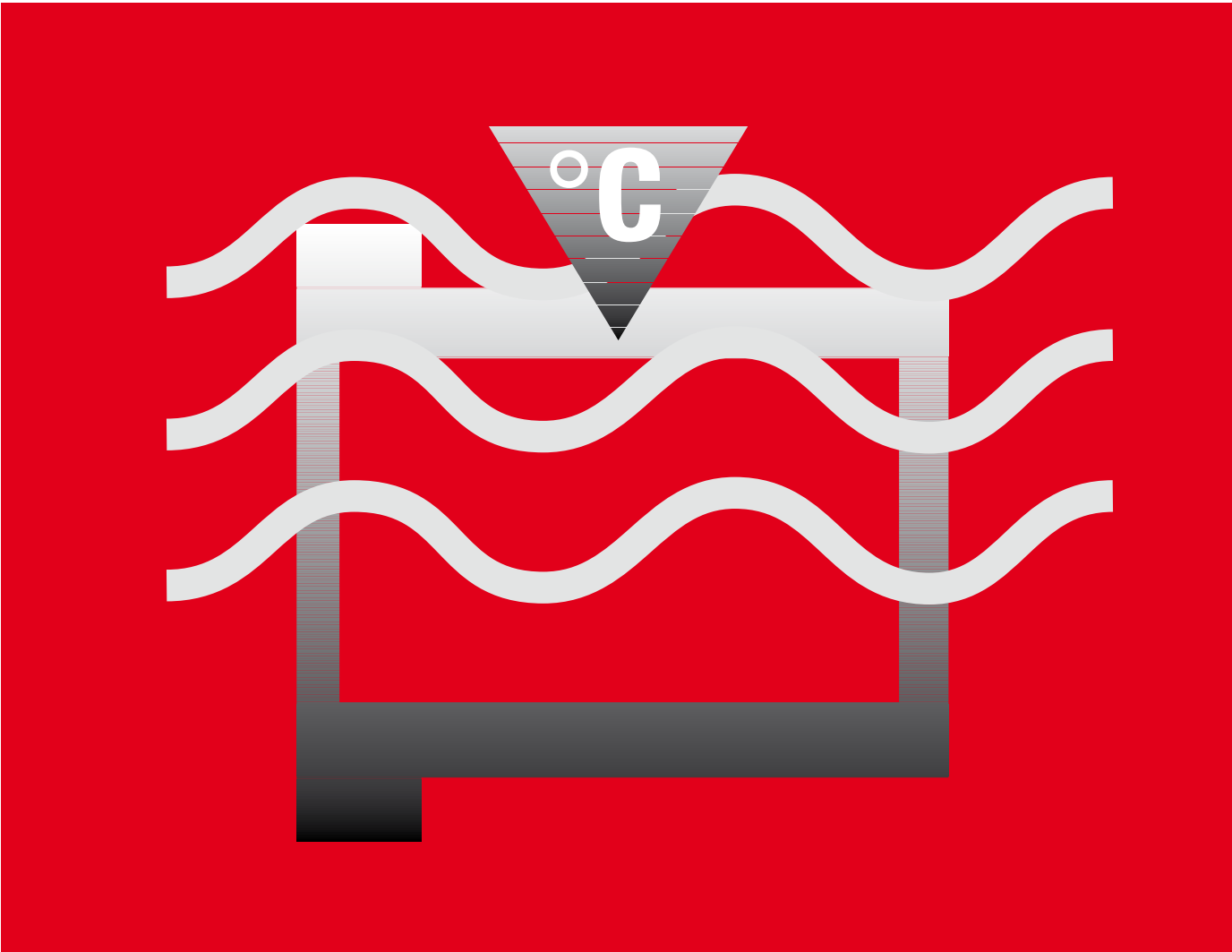
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/z



For hot liquids – iglidur® UW500



For underwater use at high temperatures  
For fast and constant movements

**For hot liquids.** iglidur® UW500 was developed for underwater applications at temperatures up to +250 °C. In addition, the bearings will run in chemicals which would act as a lubricant.



**When to use it?**

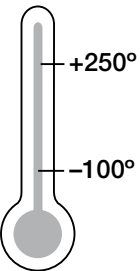
- When bearings need to be used in liquids
- For high speeds
- For high temperatures
- When a high chemical resistance is required



**When not to use it?**

- When a cost-effective underwater bearing is required
  - ▶ iglidur® UW, page 565
- When a cost-efficient underwater bearing is sought for rare operations
  - ▶ iglidur® H, page 353
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81

**Temperature**



**Product range**

on request

**Material properties table**

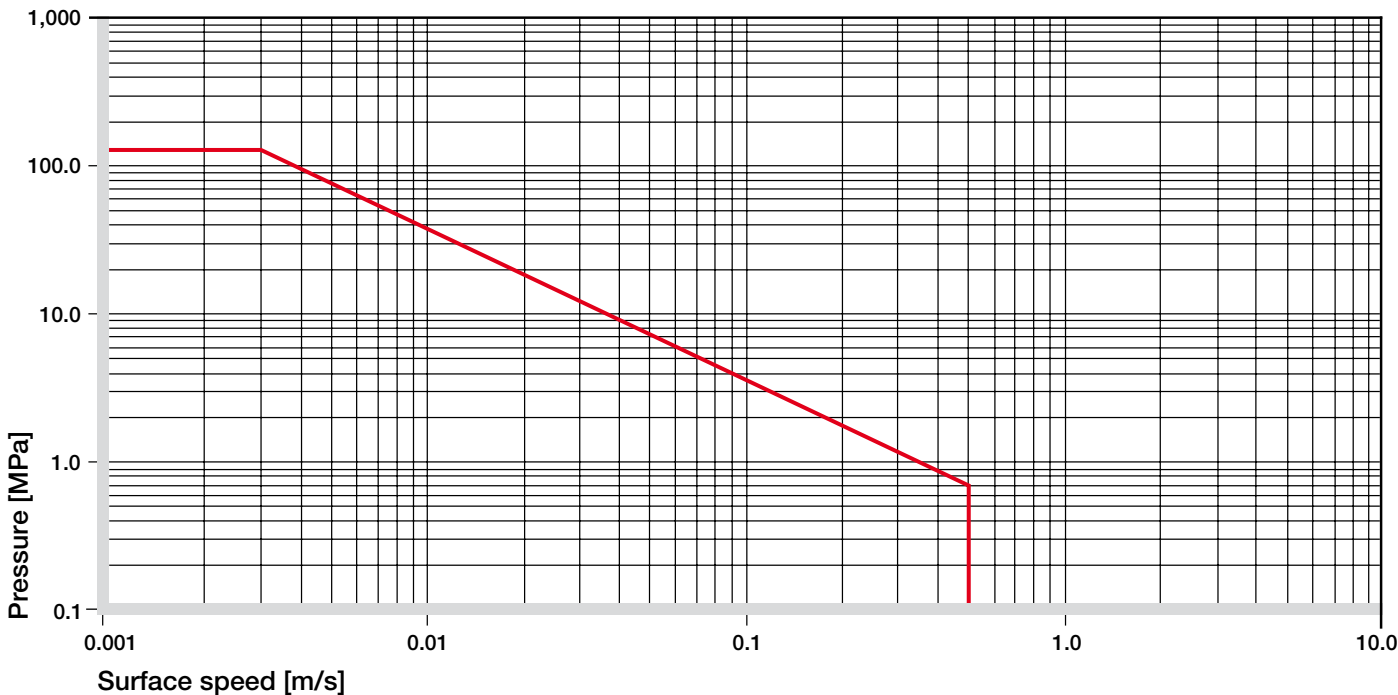
| General properties                                     | Unit       | iglidur® UW 500 | Testing method |
|--------------------------------------------------------|------------|-----------------|----------------|
| Density                                                | g/cm³      | 1.49            |                |
| Colour                                                 |            | black           |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight   | 0.1             | DIN 53495      |
| Max. water absorption³)                                | % weight   | 0.5             |                |
| Coefficient of sliding friction, dynamic against steel | μ          | 0.20–0.36       |                |
| pv value, max. (dry)                                   | MPa · m/s  | 0.35            |                |
| <b>Mechanical properties</b>                           |            |                 |                |
| Modulus of elasticity                                  | MPa        | 16,000          | DIN 53457      |
| Tensile strength at +20 °C                             | MPa        | 260             | DIN 53452      |
| Compressive strength                                   | MPa        | 140             |                |
| Max. recommended surface pressure (+20 °C)             | MPa        | 140             |                |
| Shore D hardness                                       |            | 86              | DIN 53505      |
| <b>Physical and thermal properties</b>                 |            |                 |                |
| Max. long term application temperature                 | °C         | +250            |                |
| Max. short term application temperature                | °C         | +300            |                |
| Min. application temperature¹)                         | °C         | +315            |                |
| untere Anwendungstemperatur                            | °C         | –100            |                |
| Thermal conductivity                                   | W/m · K    | 0.60            | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K⁻¹ · 10⁻⁵ | 4               | DIN 53752      |
| <b>Electrical properties²)</b>                         |            |                 |                |
| Specific volume resistance                             | Ωcm        | < 10⁹           | DIN IEC 93     |
| Surface resistance                                     | Ω          | < 10⁹           | DIN 53482      |

¹) Without additional load; no sliding movement; relaxation possible

²) The good conductivity of this plastic material under certain circumstances can favour the formation of corrosion on the metallic contact component

³) With respect to the use of the material in direct contact with water, it has to be pointed out that all results have been attained under laboratory conditions DW (fully demineralised water). We therefore recommend custom-designed tests under real application conditions.

**Table 01: Material properties table**



**Diagram 01: Permissible pv values for iglidur® UW500 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing**



The plain bearings of iglidur® UW500 were developed for underwater applications with high temperatures. Examples for this are water pumps in automotive engineering, but also the field of medical engineering and related fields. Unless the underwater operation is explicitly stated, the information in this chapter describes iglidur® UW500 when running dry.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® UW500 plain bearings decreases. The Diagram 02 shows this inverse relationship. At +250 °C the permissible surface pressure is almost 35 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

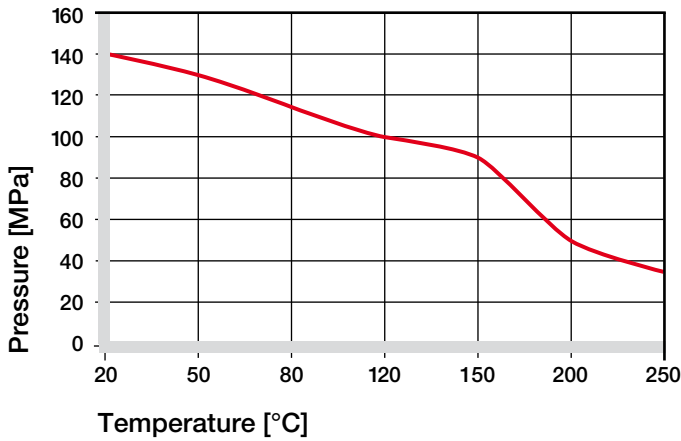


Diagram 02: Recommended maximum surface pressure as a function of temperature (140 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® UW500 bearings at radial loads. Diagram 01 on the preceding page shows the maximum pv values at room temperature. The high pv values are attained by the high temperature resistance.

► Surface Pressure, page 63

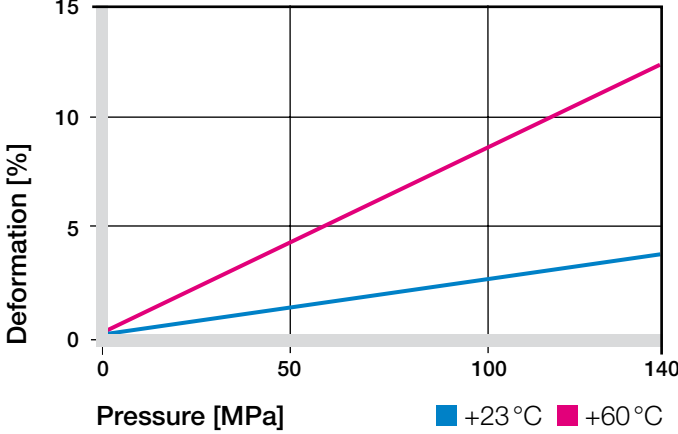


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® UW500 bearings can be used both dry running and in media like water in a wide range of conditions. Through a hydrodynamic lubrication, attained under water with high speeds, surface speeds far above 2 m/s can be achieved. In dry operation the iglidur® UW500 bearings can be used anyhow up to 1.5 m/s on the short term.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 2      |
| Short term | 1.5      | 1.1         | 3      |

Table 02: Maximum running speed

Temperatures

iglidur® UW500 can be used in applications with permanent temperatures of +150 °C. If the bearings are fixed specially, the temperatures can even be higher than +200 °C. iglidur® UW500 are among the most temperature-resistant iglidur materials, tolerating temperatures of up to +250 °C permanently. Short-term it can even be heated up to +300 °C. Nonetheless, the pressfit can be loosened over a temperature of +150 °C due to relaxation. We therefore recommend to secure the bearing axially if these temperatures are reached in the application.

► Application Temperatures, page 66

| iglidur® UW500            | Application temperature |
|---------------------------|-------------------------|
| Minimum                   | -100 °C                 |
| Max. long term            | +250 °C                 |
| Max. short term           | +300 °C                 |
| Add. securing is required | +150 °C                 |

Table 03: Temperature limits

Friction and Wear

With increasing load the friction of the bearing system with iglidur® UW500 bearings declines. Instead of that the coefficient of friction rises with increasing speed. This illustrates the excellent suitability of iglidur® UW500 bearings with high loads. Friction and wear also depend to a high degree on the shaft surface. Extremely smooth and extremely coarse shafts enhance the coefficient of friction of the bearing. Ideal are smoothed surfaces with an average surface finish of Ra of 0.1 to 0.4.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

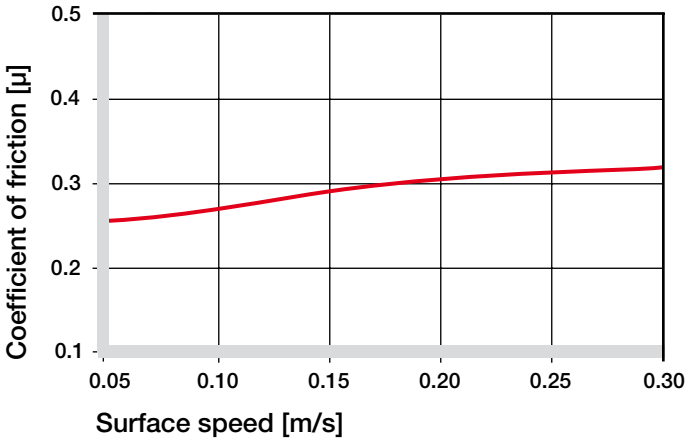


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

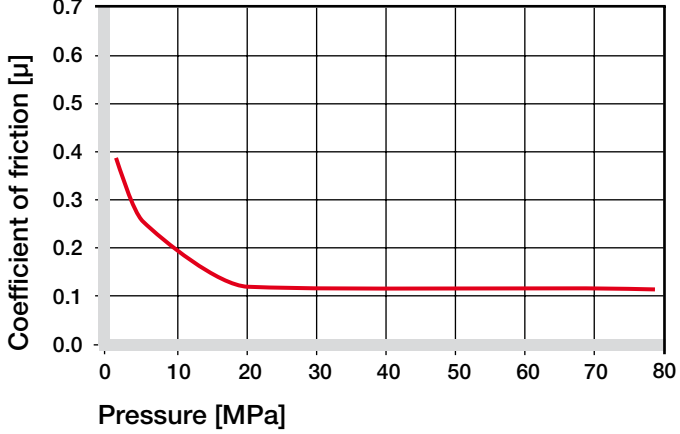


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

The Diagrams 06–09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® UW500.

► Shaft Materials, page 71

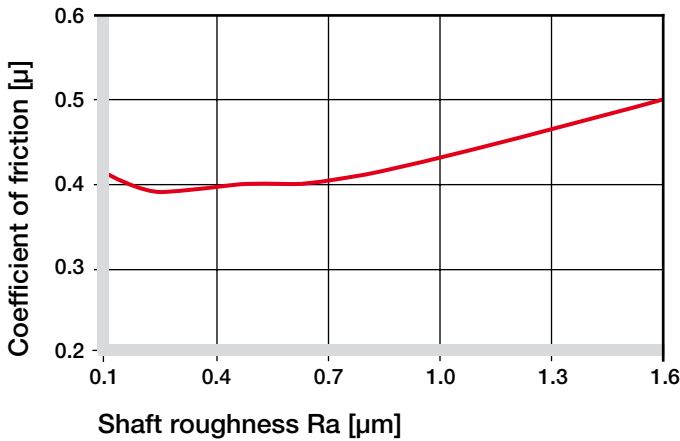


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



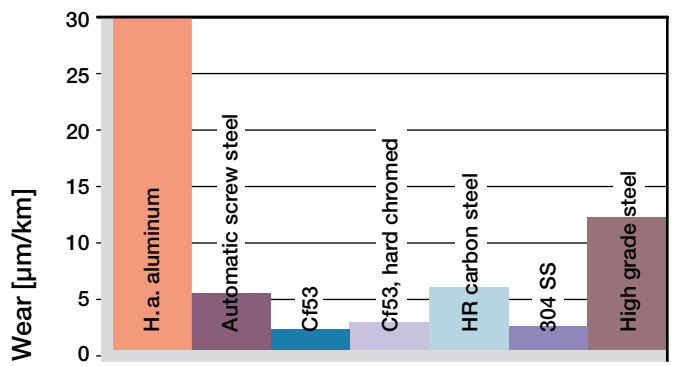


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

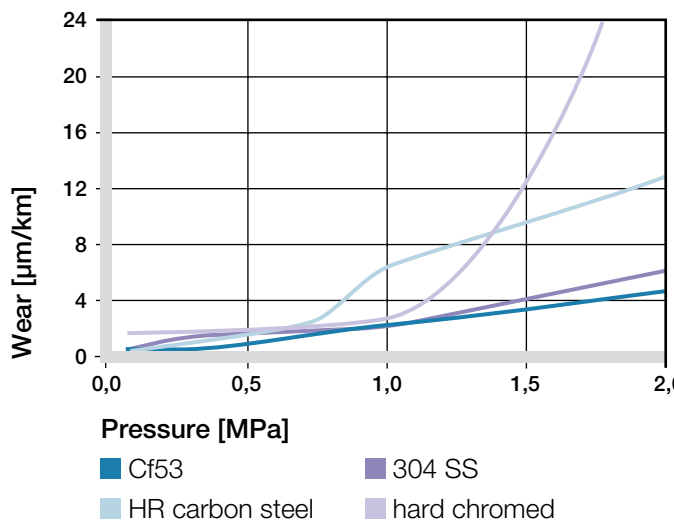


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

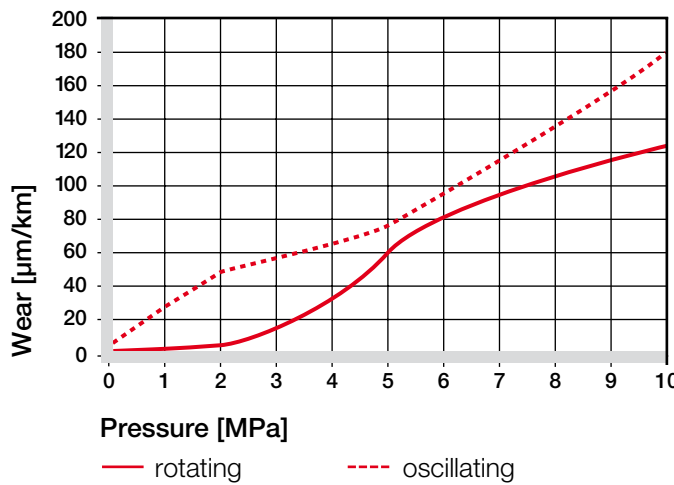


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® UW500 | Dry      | Greases | Oil  | Water |
|----------------|----------|---------|------|-------|
| C. o. f. $\mu$ | 0.2–0.36 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® UW500 bearings have almost universal chemical resistance. They are affected only by concentrated nitric acid and sulfuric acid.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® UW500 are radiation resistant up to a radiation intensity of  $1 \cdot 10^5$  Gy. With regard to radiation, iglidur® UW500 is one of the most resistant materials of the iglidur® range.

iglidur® UW500 is very resistant to hard gamma radiation and endures a radiation dose of 1,000 Mrad without noticeable losses of its characteristics. The material also endures an alpha or beta radiation 10,000 Mrad with practically no effect.

UV Resistance

Under UV radiation and other atmospheric influences, the excellent material characteristics of iglidur® UW500 are not affected.

Vacuum

Also in vacuum atmosphere, iglidur® UW500 plain bearings can be used almost without restrictions. Outgassing only takes place to a minor degree.

Electrical Properties

|                                                            |                           |
|------------------------------------------------------------|---------------------------|
| iglidur® UW500 plain bearings are electrically conductive. |                           |
| Volume resistance                                          | $< 10^9 \Omega \text{cm}$ |
| Surface resistance                                         | $< 10^9 \Omega 10$        |

Moisture Absorption

The moisture absorption of iglidur® UW500 plain bearings is extremely low. In standard atmosphere it is below 0.1 % by weight. Therefore, even with regard to applications under water, iglidur® UW500 plain bearings can be used without adjusting the fitting conditions. The maximum moisture absorption is 0.5 % by weight.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.1 % weight |
| Max. water absorption       | 0.5 % weight |

Table 06: Moisture absorption

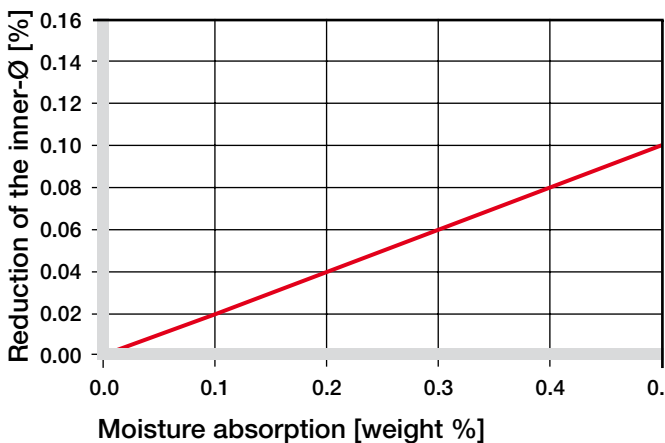


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® UW500 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® UW500 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|-------------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046           | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058           | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071           | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086           | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104           | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125           | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150           | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® UW500 plain bearings are manufactured to special order.



## iglidur® H universal

Standard range from stock ► from page 353



## iglidur® H1 long life operation

Standard range from stock ► from page 365



## iglidur® H370 under water

Standard range from stock ► from page 375



## iglidur® C500 Up to 250°C, wear resistant

Standard range from stock ► from page 389



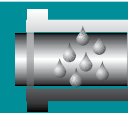
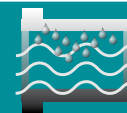
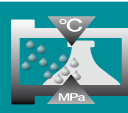
## iglidur® H2 low-cost

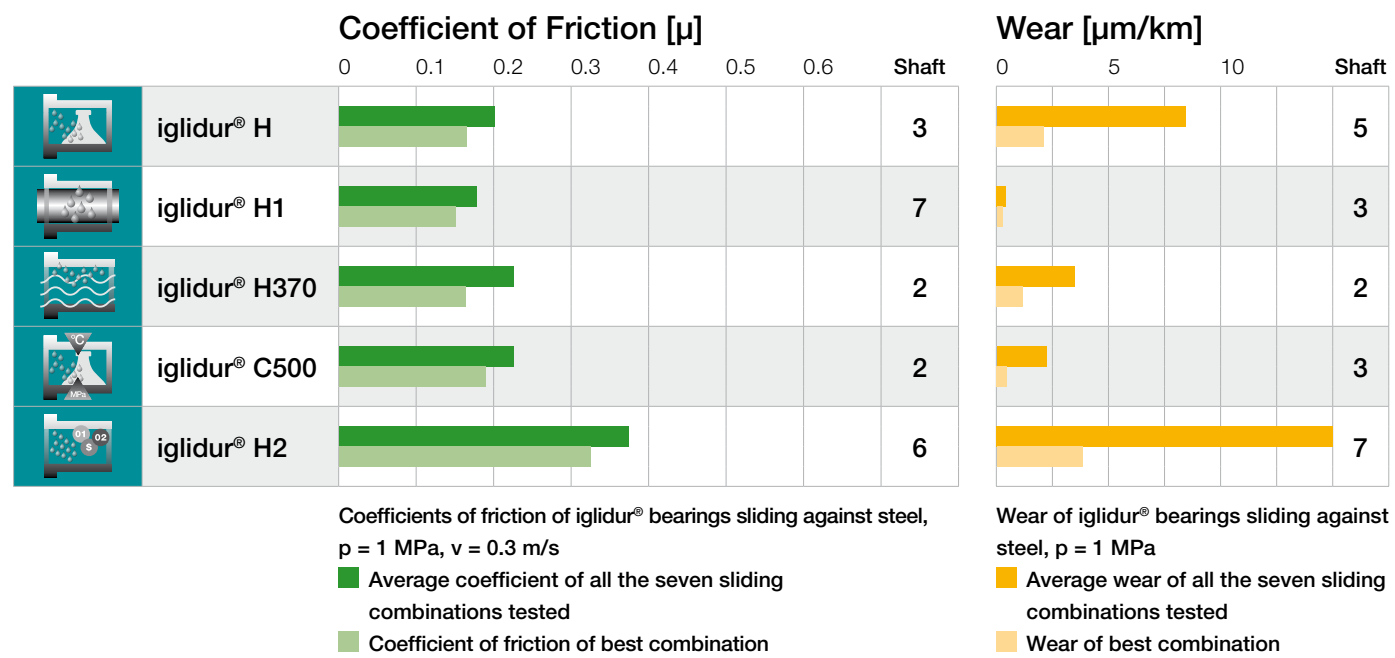
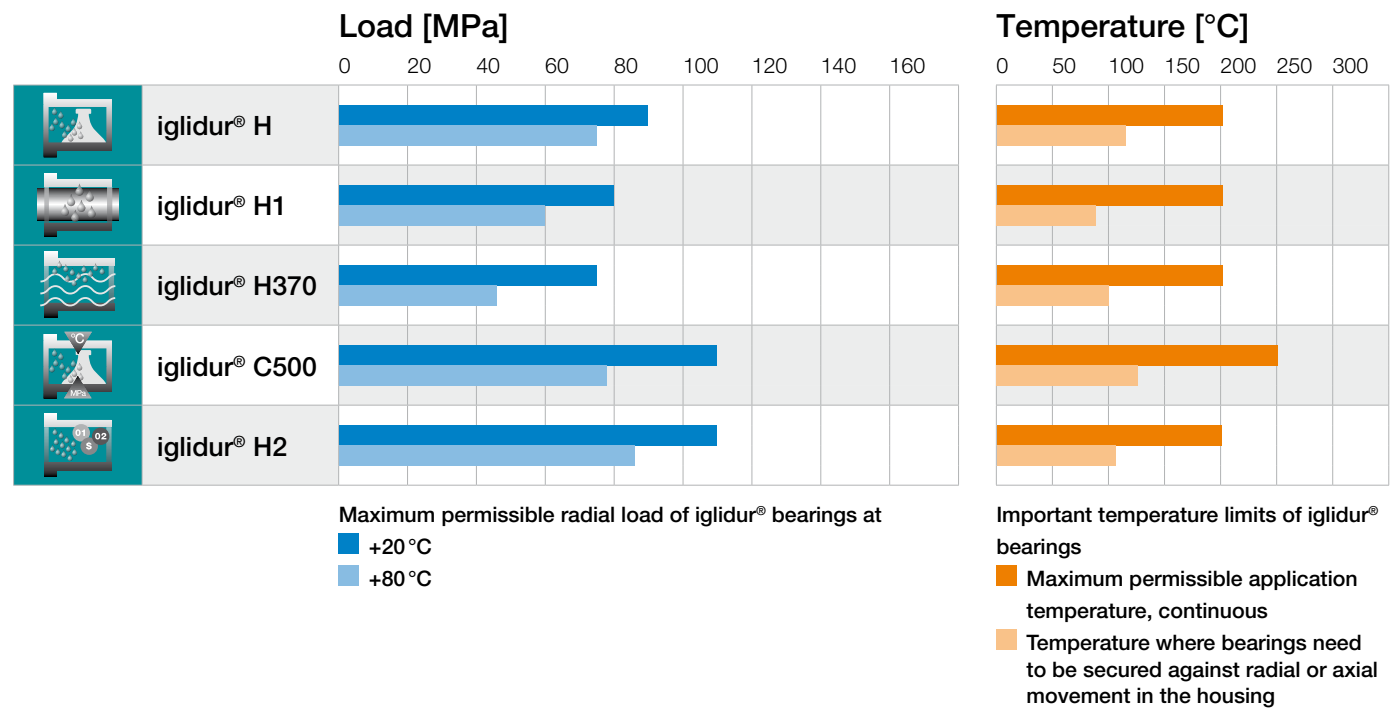
On request ► from page 399

### iglidur®- Specialists – High Resistance to Liquid Media

-  Long life dry running
-  For high loads
-  For high temperatures
-  Low friction/high speed
-  Dirt resistant
-  Chemicals resistant
-  Low water absorption
-  Food-suitable
-  Vibration-dampening
-  Edge pressure
-  For under water use
-  Cost-effective

from page

|                         |  |  |  |  |  |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         | iglidur®<br>H                                                                       | iglidur®<br>H1                                                                      | iglidur®<br>H370                                                                    | iglidur®<br>C500                                                                    | iglidur®<br>H2                                                                      |
| Long life dry running   |                                                                                     | ●                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |
| For high loads          |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   |                                                                                     |
| For high temperatures   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Low friction/high speed |                                                                                     | ●                                                                                   | ●                                                                                   |                                                                                     |                                                                                     |
| Dirt resistant          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Chemicals resistant     | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Low water absorption    | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Food-suitable           |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vibration-dampening     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Edge pressure           |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   |                                                                                     |
| For under water use     | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Cost-effective          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| from page               | 353                                                                                 | 365                                                                                 | 375                                                                                 | 389                                                                                 | 399                                                                                 |



Shaft material:

1 = Cf53

2 = Cf53, hard chromed

3 = Aluminum, hc

4 = Automatic screw steel

5 = HR carbon steel

6 = 304 SS

7 = High grade steel

| Material properties table                        |                                    |                   |                    |                   |                    |                    |
|--------------------------------------------------|------------------------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
| General properties                               | Unit                               | iglidur® H        | iglidur® H1        | iglidur® H370     | iglidur® C500      | iglidur® H2        |
| Density                                          | g/cm³                              | 1.71              | 1.53               | 1.66              | 1.37               | 1.72               |
| Colour                                           |                                    | grey              | cream              | grey              | magenta            | brown              |
| Max. moisture absorption at +23 °C/50 % r.h.     | % weight                           | 0.1               | 0.1                | 0.1               | 0.3                | 0.1                |
| Max. water absorption                            | % weight                           | 0.3               | 0.3                | 0.1               | 0.5                | 0.2                |
| Coef. of sliding friction, dynamic against steel | μ                                  | 0.07–0.2          | 0.06–0.20          | 0.07–0.17         | 0.07–0.19          | 0.07–0.3           |
| pv value, max. (dry)                             | MPa · m/s                          | 1.37              | 0.8                | 0.74              | 0.7                | 0.58               |
| Mechanical properties                            |                                    |                   |                    |                   |                    |                    |
| Modulus of elasticity                            | MPa                                | 12,500            | 2,800              | 11,100            | 3,000              | 10,300             |
| Tensile strength at +20 °C                       | MPa                                | 175               | 55                 | 135               | 100                | 210                |
| Compressive strength                             | MPa                                | 81                | 78                 | 79                | 110                | 109                |
| Max. recommended surface pressure (+20 °C)       | MPa                                | 90                | 80                 | 75                | 110                | 110                |
| Shore D hardness                                 |                                    | 87                | 77                 | 82                | 81                 | 88                 |
| Physical and thermal properties                  |                                    |                   |                    |                   |                    |                    |
| Max. long term application temperature           | °C                                 | +200              | +200               | +200              | +250               | +200               |
| Max. short term application temperature          | °C                                 | +240              | +240               | +240              | +300               | +240               |
| Min. application temperature                     | °C                                 | –40               | –40                | –40               | –100               | –40                |
| Thermal conductivity                             | W/m · K                            | 0.6               | 0.24               | 0.5               | 0.24               | 0.24               |
| Coefficient of thermal expansion (at +23 °C)     | K <sup>-1</sup> · 10 <sup>-5</sup> | 4                 | 6                  | 5                 | 9                  | 4                  |
| Electrical properties                            |                                    |                   |                    |                   |                    |                    |
| Specific volume resistance                       | Ωcm                                | < 10 <sup>5</sup> | > 10 <sup>12</sup> | < 10 <sup>5</sup> | > 10 <sup>14</sup> | > 10 <sup>15</sup> |
| Surface resistance                               | Ω                                  | < 10 <sup>2</sup> | > 10 <sup>11</sup> | < 10 <sup>5</sup> | > 10 <sup>13</sup> | > 10 <sup>14</sup> |

| Material resistance (at +20 °C) |                     |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Chemical resistance             | iglidur® H          | iglidur® H1         | iglidur® H370       | iglidur® C500       | iglidur® H2         |
| Alcohol                         | +                   | +                   | +                   | +                   | +                   |
| Hydrocarbons                    | +                   | +                   | +                   | +                   | +                   |
| Greases, oils without additives | +                   | +                   | +                   | +                   | +                   |
| Fuels                           | +                   | +                   | +                   | +                   | +                   |
| Diluted acids                   | + to 0              | + to 0              | + to 0              | +                   | + to 0              |
| Strong acids                    | + to –              | + to –              | + to –              | +                   | + to –              |
| Diluted alkalines               | +                   | +                   | +                   | +                   | +                   |
| Strong alkalines                | +                   | + bis –             | +                   | +                   | +                   |
| Radiation resistance [Gy] to    | 2 · 10 <sup>2</sup> | 2 · 10 <sup>2</sup> | 2 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 2 · 10 <sup>2</sup> |

+ resistant 0 conditionally resistant – not resistant





## Universal – iglidur® H



Standard range from stock

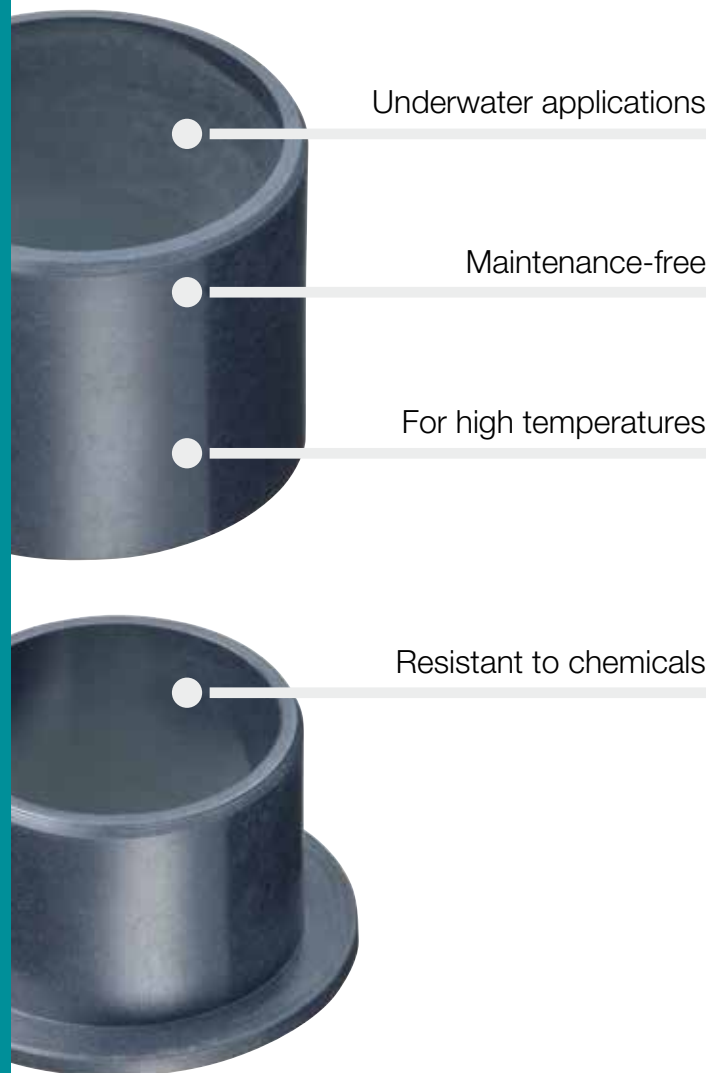
Underwater applications

Maintenance-free

For high temperatures

Resistant to chemicals

**Universal.** Resistant to chemicals and suitable for temperatures up to +200°C. Very low coefficients of friction when used with hardened shafts.



#### When to use it?

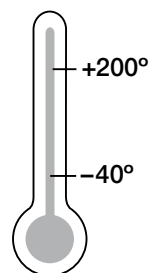
- Suitable for underwater applications
- When high temperature resistance is necessary
- For high mechanical loading
- For applications in contact with chemicals



#### When not to use it?

- When extremely high wear resistance under water is required  
► iglidur® H370, page 375
- When universal resistance to chemicals is needed  
► iglidur® X, page 173
- For the maximum pressure at higher temperatures  
► iglidur® X, page 173  
► iglidur® Z, page 327

#### Temperature



#### Product Range

2 types  
Ø 3–70 mm  
more dimensions  
on request



#### Typical sectors of industry and application areas

- Offshore ● Marine engineering
- Beverage technology ● Medical
- Mechatronics etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain bearings online

► [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



► [www.igus.co.uk/cup-filling-line](http://www.igus.co.uk/cup-filling-line)



► [www.igus.co.uk/pneumatic-lifting](http://www.igus.co.uk/pneumatic-lifting)



► [www.igus.co.uk/hull-cleaning](http://www.igus.co.uk/hull-cleaning)

| Material properties table                              |  |                                    |                   |
|--------------------------------------------------------|--|------------------------------------|-------------------|
| General properties                                     |  | Unit                               | iglidur® H        |
| Density                                                |  | g/cm³                              | 1.71              |
| Colour                                                 |  |                                    | grey              |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.1               |
| Max. water absorption                                  |  | % weight                           | 0.3               |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.07–0.2          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 1.37              |
| Mechanical properties                                  |  |                                    |                   |
| Modulus of elasticity                                  |  | MPa                                | 12,500            |
| Tensile strength at +20 °C                             |  | MPa                                | 175               |
| Compressive strength                                   |  | MPa                                | 81                |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 90                |
| Shore D hardness                                       |  |                                    | 87                |
| Physical and thermal properties                        |  |                                    |                   |
| Max. long term application temperature                 |  | °C                                 | +200              |
| Max. short term application temperature                |  | °C                                 | +240              |
| Min. application temperature                           |  | °C                                 | –40               |
| Thermal conductivity                                   |  | W/m · K                            | 0.6               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>–1</sup> · 10 <sup>–5</sup> | 4                 |
| Electrical properties <sup>1)</sup>                    |  |                                    |                   |
| Specific volume resistance                             |  | Ωcm                                | < 10 <sup>5</sup> |
| Surface resistance                                     |  | Ω                                  | < 10 <sup>2</sup> |

<sup>1)</sup> The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact component.

Table 01: Material properties table

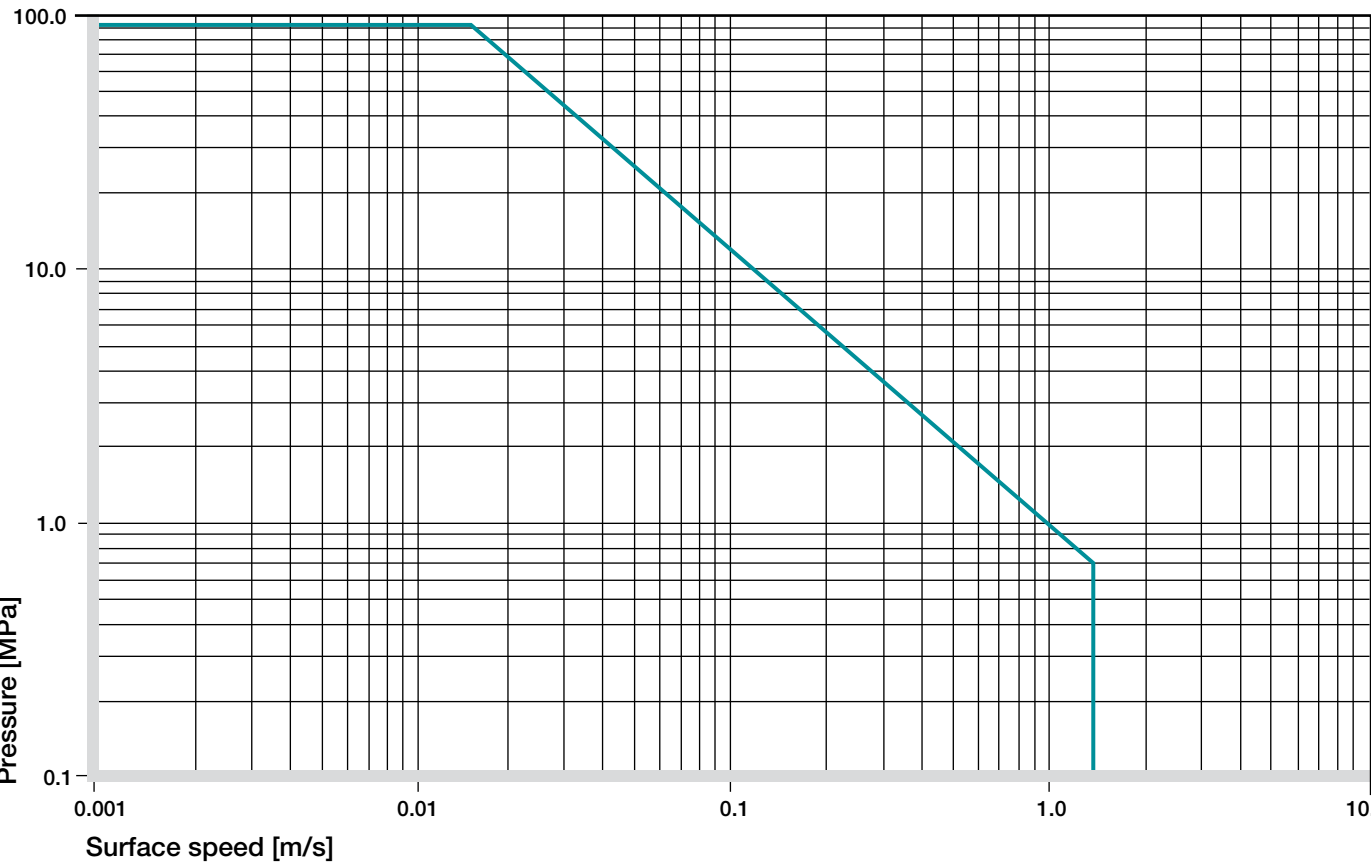


Diagram 01: Permissible pv values for iglidur® H with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® H is a fibre-reinforced thermoplastic material especially developed for applications in high atmospheric humidity or under water. Bearings made of iglidur® H can be used completely free of lubrication; in wet applications, the surrounding media acts as additional lubricant.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® H plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

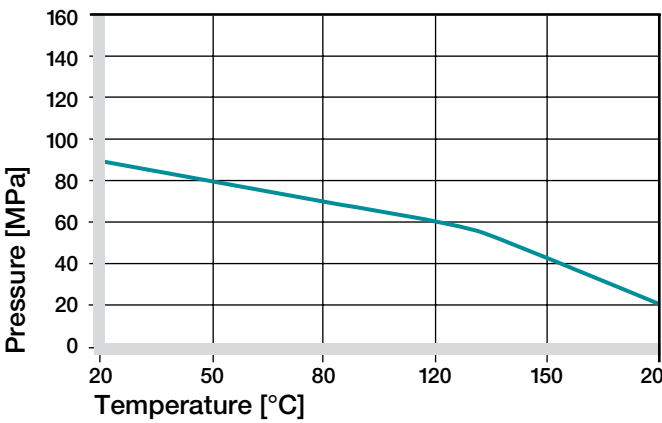


Diagram 02: Recommended maximum surface pressure as a function of temperature (90 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® H at radial loads. At the recommended maximum surface pressure of 90 MPa the deformation is about 2.5 %.

Surface Pressure, page 63

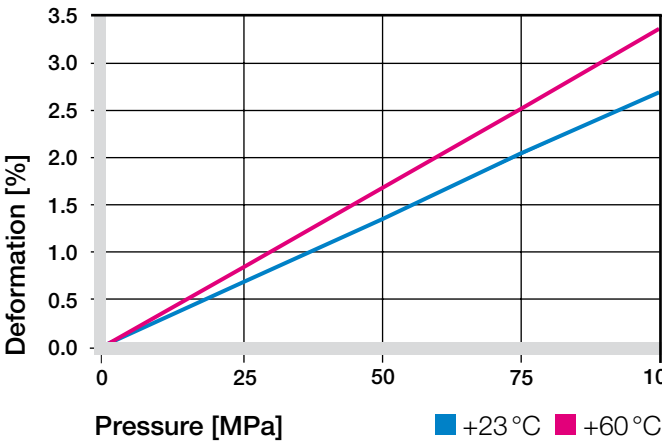


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speed is dependent on whether the temperature in the bearing location rises or not. Running dry, iglidur® H can be used at a maximum surface speed of 1 m/s (rotating) and 4 m/s (linear) respectively. Linear movements enable higher surface speeds, as a large area of the shaft contributes to the cooling.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 3      |
| Short term | 1.5      | 1.1         | 4      |

Table 02: Maximum running speed

Temperatures

iglidur® H is an extremely temperature resistant material. With a maximum permissible short term temperature of +240 °C iglidur® H plain bearings may be used in heat treated applications at low loads. With increasing temperatures, the compressive strength of iglidur® H plain bearings decreases. Diagram 02 shows this relationship. The ambient temperatures prevalent in the bearing system also have an effect on the bearing wear.

Application Temperatures, page 66

| iglidur® H                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | + 200 °C                |
| Max. short term                | + 240 °C                |
| Add. securing is required from | + 120 °C                |

Table 03: Temperature limits



Friction and Wear

Both the wear rate and the coefficient of friction values change depending on the pressure. Interestingly, the friction coefficient  $\mu$  lowers slightly with the increase of surface speed at constant load (see Diagrams 04 and 05). The choice of the shaft material to run against iglidur® H bearings is critical, as this has a large impact on the wear and friction values. More than  $Ra = 0.1 \mu\text{m}$  shaft surface finish raises the coefficient of friction. For applications with high loads, we recommend hardened and ground surfaces with an average surface finish of  $Ra = 0.3$  to  $0.4 \mu\text{m}$ .

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

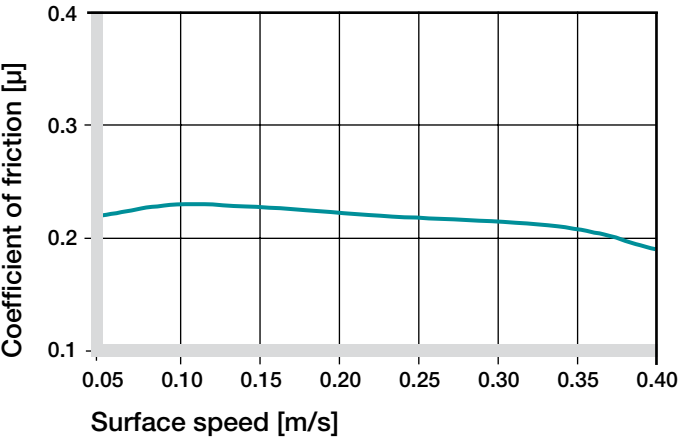


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

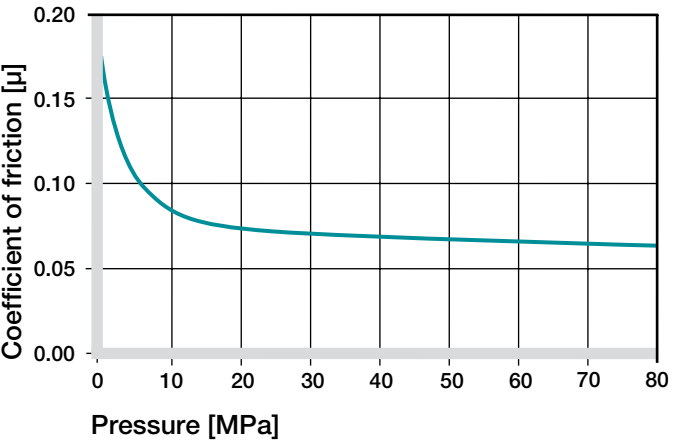


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

Diagrams 07 to 09 show the test results of iglidur® H bearings running against various shaft materials. The iglidur® H bearings give different results when used in rotating and pivoting applications. The CF53 and St37 shafts give the best wear values in rotary applications, whereas the V2A shafts (which are not so good for rotation) give the best results in oscillating applications. Hard chromed shafts only give an advantage at low pressures when used with iglidur® H bearings.

- Shaft Materials, **page 71**

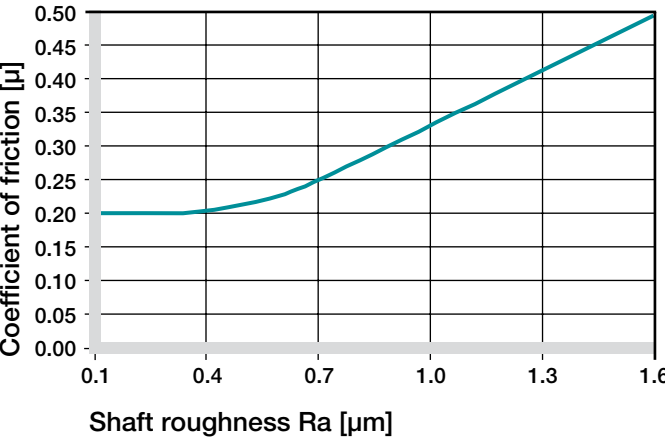


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

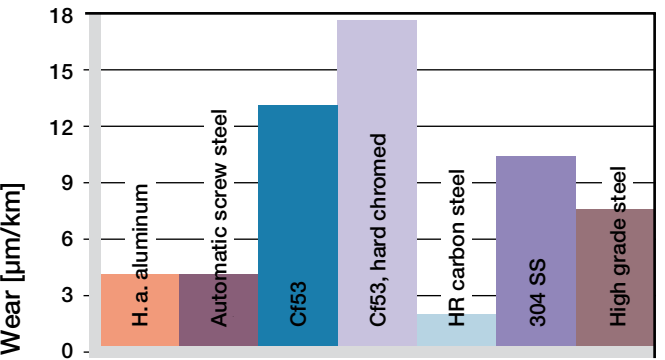


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

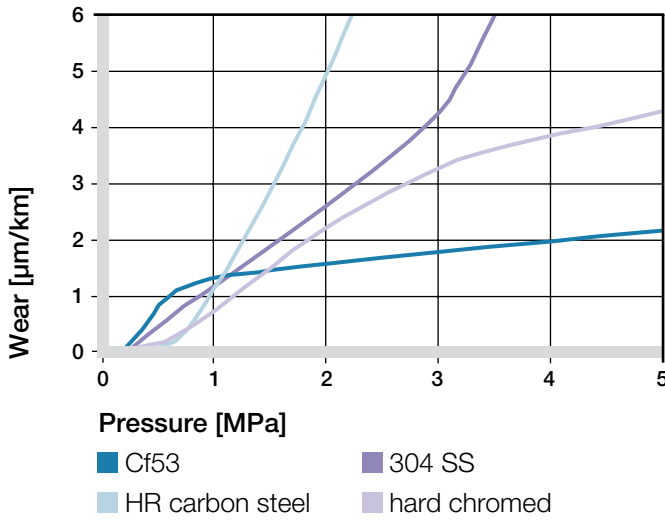


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

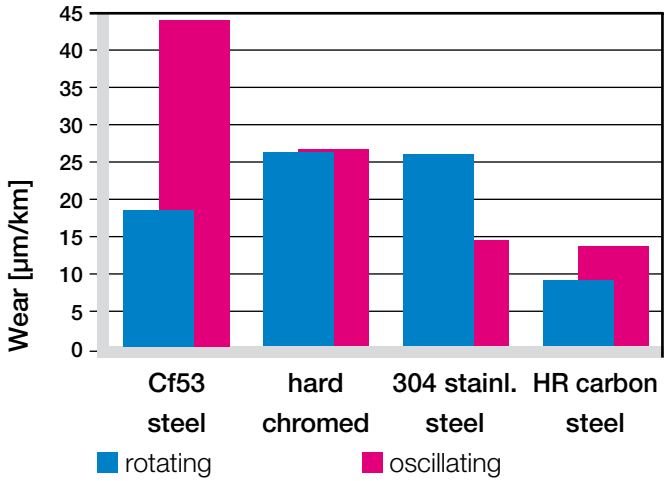


Diagram 09: Wear for rotating and oscillating applications with different shaft materials,  $p = 2 \text{ MPa}$

| iglidur® H   | Dry      | Greases | Oil  | Water |
|--------------|----------|---------|------|-------|
| C.o.f. $\mu$ | 0.07–0.2 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $Ra = 1 \mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H plain bearings have a good resistance to chemicals. Thus, even aggressive chemicals can act as lubricants. Plain bearings made of iglidur® H are not resistant to hot, oxidizing acids.

- Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | + to 0     |
| Strong acids                    | + to –     |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature  $[+20^\circ\text{C}]$

Table 05: Chemical resistance

Radiation Resistance

iglidur® H withstands both neutron as well as gamma particle radiation without noticeable loss to the excellent mechanical properties. Plain bearings made from iglidur® H are resistant to radiation up to an intensity of  $2 \cdot 10^2 \text{ Gy}$ .

UV Resistance

iglidur® H plain bearings are only conditionally resistant against UV radiation. Under the effects of weathering, the surface of iglidur® H becomes rougher, and the compressive strength of the material decreases.

Vacuum

For use in a vacuum environment, it must be taken into account that a small amount of moisture is released as vapour.

Electrical Properties

|                                                  |                          |
|--------------------------------------------------|--------------------------|
| iglidur® H bearings are electrically conductive. |                          |
| Volume resistance                                | $< 10^5 \Omega\text{cm}$ |
| Surface resistance                               | $< 10^2 \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® H plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is 0.3 %. iglidur® H is very well suited for use in wet applications.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.1 % weight |
| Max. water absorption       | 0.3 % weight |

Table 06: Moisture absorption

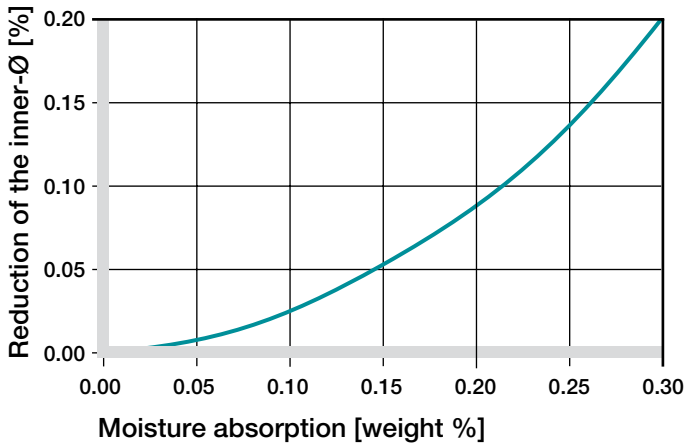


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

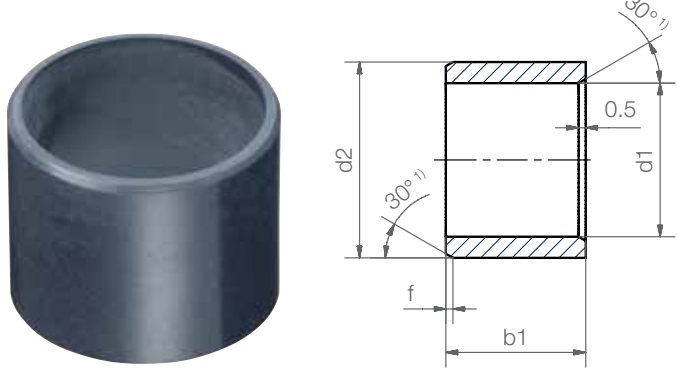
iglidur® H plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® H F10 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150       | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| HSM-0304-03 | 3.0  | +0.006 +0.046 | 4.5  | 3.0       |
| HSM-0405-04 | 4.0  | +0.010 +0.058 | 5.5  | 4.0       |
| HSM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 5.0       |
| HSM-0608-03 | 6.0  | +0.010 +0.058 | 8.0  | 3.0       |
| HSM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| HSM-0810-08 | 8.0  | +0.013 +0.071 | 10.0 | 8.0       |
| HSM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| HSM-1012-06 | 10.0 | +0.013 +0.071 | 12.0 | 6.0       |
| HSM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| HSM-1214-10 | 12.0 | +0.016 +0.086 | 14.0 | 10.0      |
| HSM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 12.0      |
| HSM-1214-15 | 12.0 | +0.016 +0.086 | 14.0 | 15.0      |
| HSM-1214-20 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      |
| HSM-1416-20 | 14.0 | +0.016 +0.086 | 16.0 | 20.0      |
| HSM-1517-15 | 15.0 | +0.016 +0.086 | 17.0 | 15.0      |
| HSM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| HSM-1618-20 | 16.0 | +0.016 +0.086 | 18.0 | 20.0      |
| HSM-1618-25 | 16.0 | +0.016 +0.086 | 18.0 | 25.0      |

\* after pressfit. Testing methods ► page 75



Order key

HSM-0304-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® H

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| HSM-1820-15 | 18.0 | +0.016 +0.086 | 20.0 | 15.0      |
| HSM-1820-25 | 18.0 | +0.016 +0.086 | 20.0 | 25.0      |
| HSM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |
| HSM-2225-20 | 22.0 | +0.020 +0.104 | 25.0 | 20.0      |
| HSM-2528-15 | 25.0 | +0.020 +0.104 | 28.0 | 15.0      |
| HSM-2528-20 | 25.0 | +0.020 +0.104 | 28.0 | 20.0      |
| HSM-3034-20 | 30.0 | +0.020 +0.104 | 34.0 | 20.0      |
| HSM-3034-30 | 30.0 | +0.020 +0.104 | 34.0 | 30.0      |
| HSM-3034-40 | 30.0 | +0.020 +0.104 | 34.0 | 40.0      |
| HSM-3236-30 | 32.0 | +0.025 +0.125 | 36.0 | 30.0      |
| HSM-3539-40 | 35.0 | +0.025 +0.125 | 39.0 | 40.0      |
| HSM-4044-20 | 40.0 | +0.025 +0.125 | 44.0 | 20.0      |
| HSM-4044-50 | 40.0 | +0.025 +0.125 | 44.0 | 50.0      |
| HSM-4550-30 | 45.0 | +0.025 +0.125 | 50.0 | 30.0      |
| HSM-5055-40 | 50.0 | +0.025 +0.125 | 55.0 | 40.0      |
| HSM-5560-26 | 55.0 | +0.030 +0.150 | 60.0 | 26.0      |
| HSM-6065-60 | 60.0 | +0.030 +0.150 | 65.0 | 60.0      |
| HSM-7075-50 | 70.0 | +0.030 +0.150 | 75.0 | 50.0      |

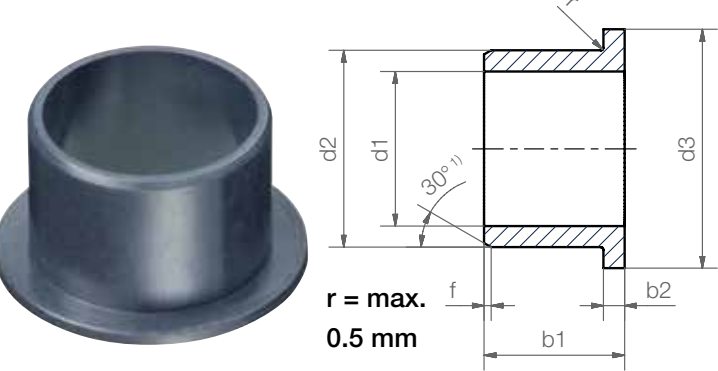


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Flange bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| HFM-0405-04 | 4.0  | +0.010 +0.058 | 5.5  | 9.5       | 4.0       | 0.75        |
| HFM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 11.0      | 5.0       | 1.0         |
| HFM-0507-08 | 5.0  | +0.010 +0.058 | 7.0  | 11.0      | 8.0       | 1.0         |
| HFM-0608-04 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 4.0       | 1.0         |
| HFM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| HFM-0608-10 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 10.0      | 1.0         |
| HFM-0810-07 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 7.0       | 1.0         |
| HFM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| HFM-0810-15 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 15.0      | 1.0         |
| HFM-1012-04 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 4.0       | 1.0         |
| HFM-1012-09 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 9.0       | 1.0         |
| HFM-1012-15 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 15.0      | 1.0         |
| HFM-1012-20 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 20.0      | 1.0         |
| HFM-1214-07 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 7.0       | 1.0         |
| HFM-1214-10 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 10.0      | 1.0         |
| HFM-1214-15 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 15.0      | 1.0         |
| HFM-1416-12 | 14.0 | +0.016 +0.086 | 16.0 | 22.0      | 12.0      | 1.0         |
| HFM-1517-17 | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 17.0      | 1.0         |
| HFM-1618-13 | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 13.0      | 1.0         |
| HFM-1618-17 | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| HFM-1820-17 | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 17.0      | 1.0         |

\* after pressfit. Testing methods ► page 75

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 Flange bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| HFM-2023-07 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 7.0       | 1.0         |
| HFM-2023-16 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 16.5      | 1.5         |
| HFM-2023-30 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 30.0      | 1.5         |
| HFM-2528-30 | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 30.0      | 1.5         |
| HFM-2730-20 | 27.0 | +0.020 +0.104 | 30.0 | 38.0      | 20.0      | 1.5         |
| HFM-3034-40 | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 40.0      | 2.0         |
| HFM-3438-13 | 34.0 | +0.025 +0.125 | 38.0 | 46.0      | 13.0      | 2.0         |
| HFM-3539-26 | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 26.0      | 2.0         |
| HFM-4044-40 | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 40.0      | 2.0         |
| HFM-4550-50 | 45.0 | +0.025 +0.125 | 50.0 | 58.0      | 50.0      | 2.0         |
| HFM-5055-50 | 50.0 | +0.025 +0.125 | 55.0 | 63.0      | 50.0      | 2.0         |
| HFM-6065-50 | 60.0 | +0.030 +0.150 | 65.0 | 73.0      | 50.0      | 2.0         |
| HFM-7075-50 | 70.0 | +0.030 +0.150 | 75.0 | 83.0      | 50.0      | 2.0         |

\* after pressfit. Testing methods ► page 75

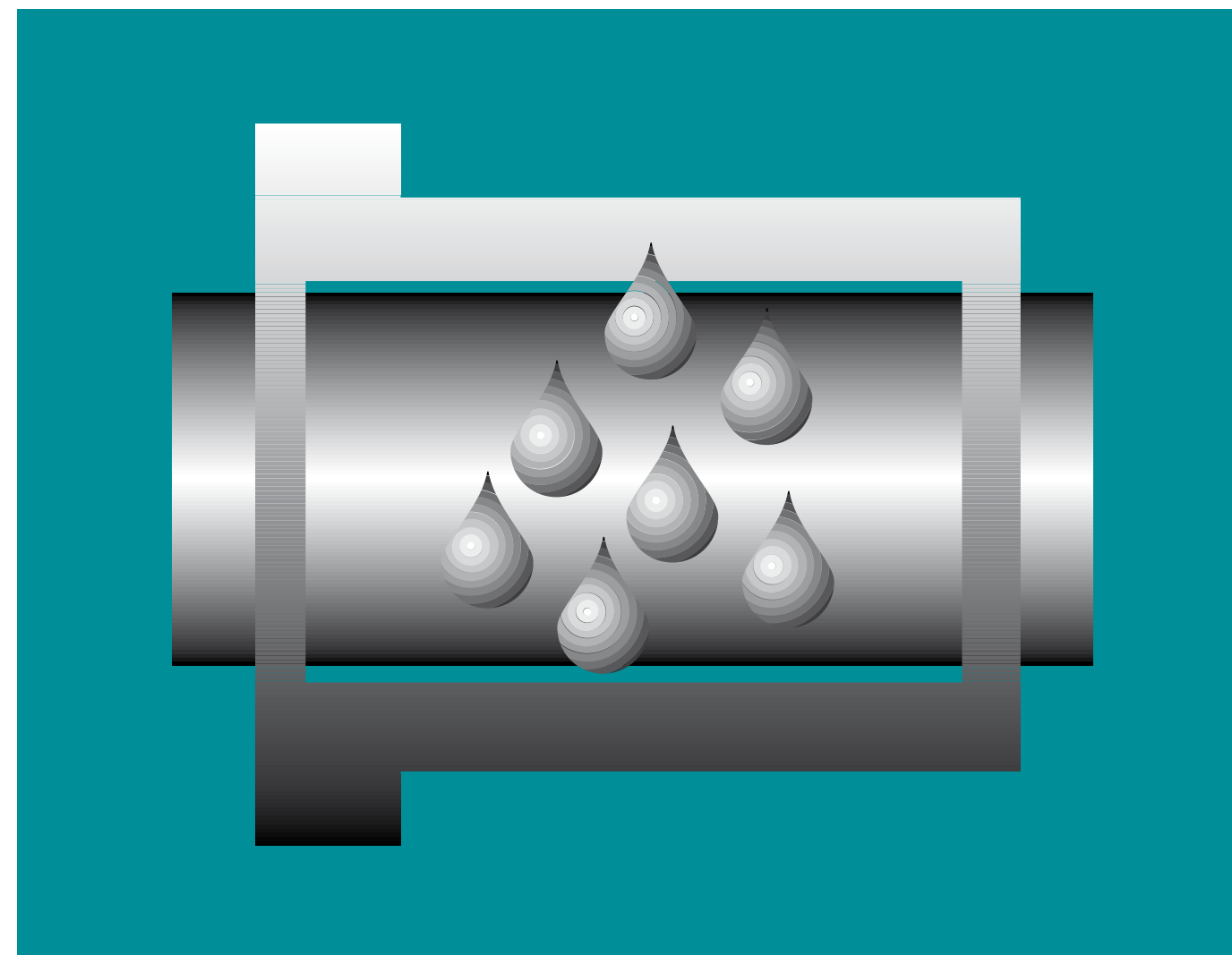
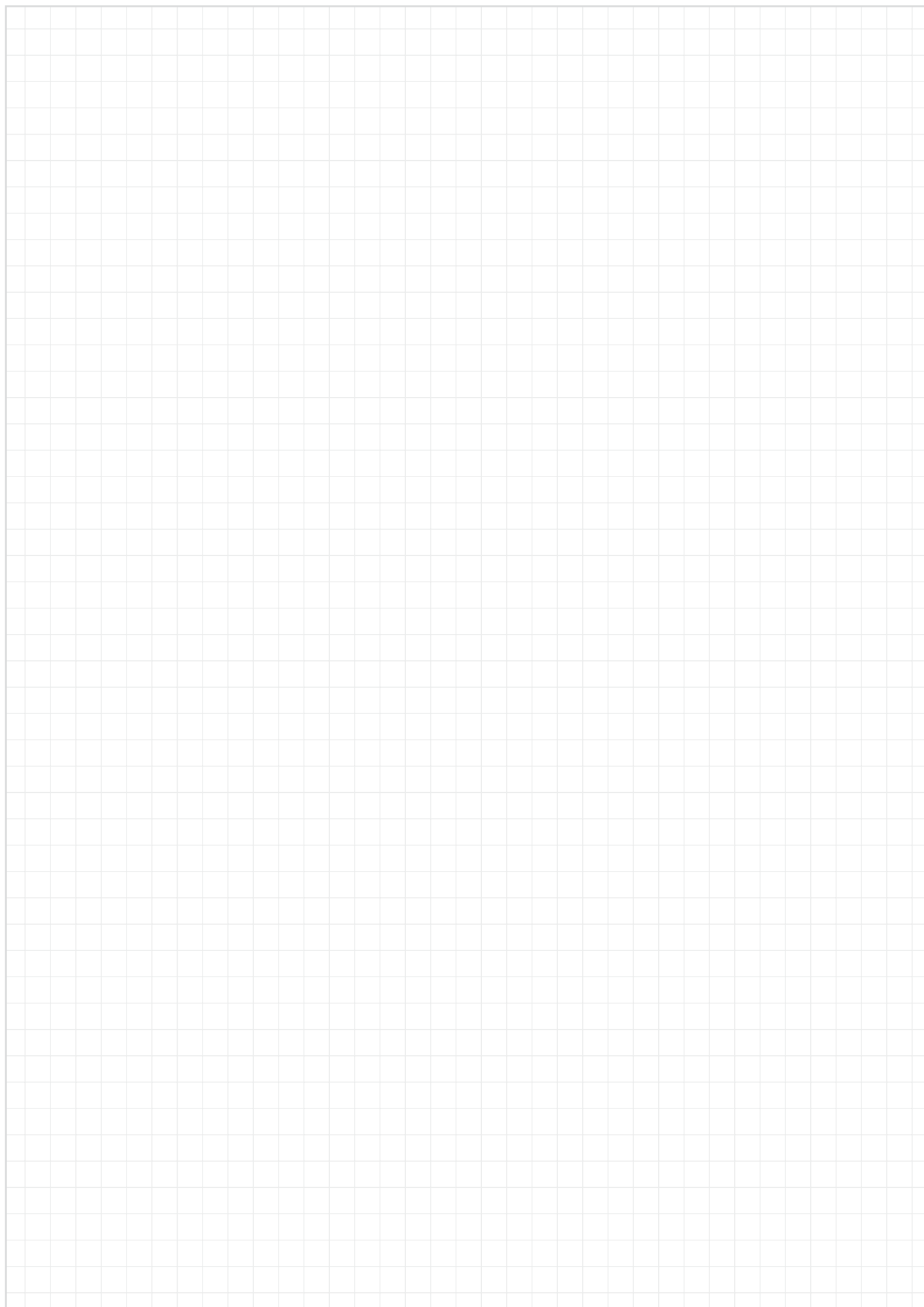
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## Long life operation – iglidur® H1



Standard range from stock

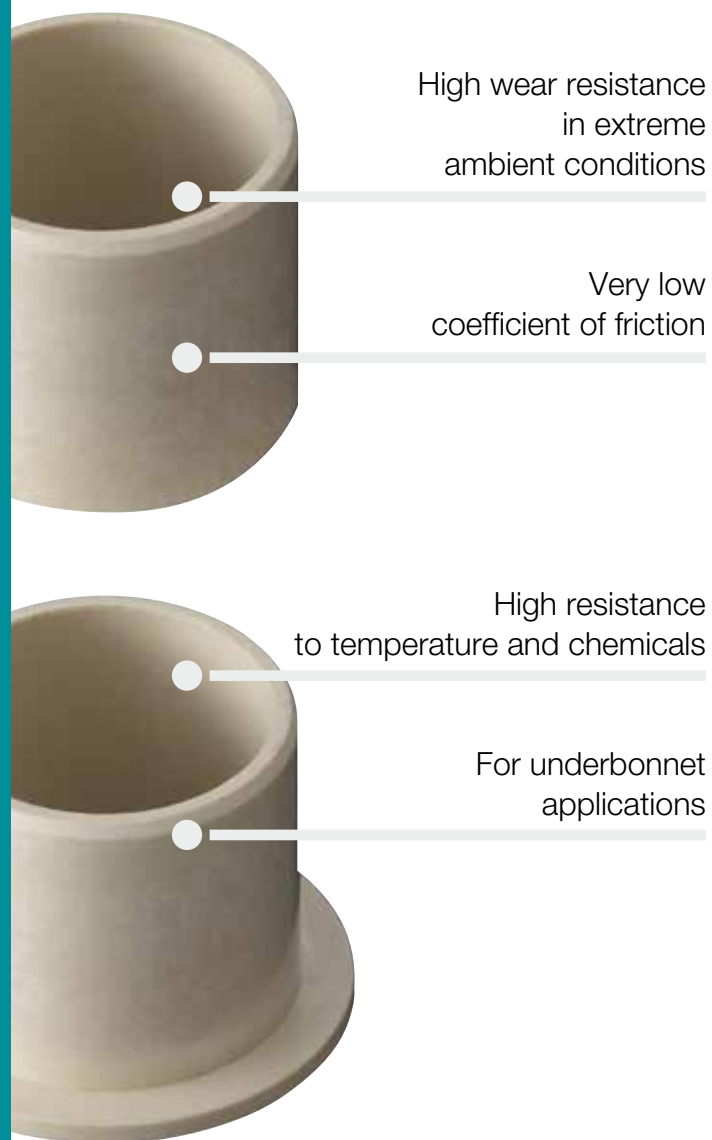
High wear resistance in extreme ambient conditions

Very low coefficient of friction

High resistance to temperature and chemicals

For underbonnet applications

**Long life operation.** iglidur® H1 is the first choice when high holding times are required in extreme environmental conditions. Extreme wear resistance is coupled with excellent resistance to temperature and chemicals – not only in the packaging and foodstuff industries or the automotive industry.



#### When to use it?

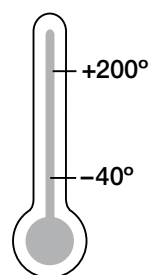
- When extreme service life is required under the influence of temperature and humidity
- When low coefficients of friction at high temperature are important
- When regular aggressive cleaning is required (splashes, steam blasting)
- When the bearings are used in the engine compartment



#### When not to use it?

- When high surface pressures occur  
► iglidur® Z, page 327
- When the best universal chemical resistance is required  
► iglidur® X, page 173
- When a cost-efficient high temperature bearing is sought, not the ideal wear resistance  
► iglidur® H2, page 399
- When an FDA-compliant plain bearing with high temperature resistance is required  
► iglidur® A500, page 457

#### Temperature



#### Product range

2 types  
Ø 3–40 mm  
more dimensions  
on request



#### Typical sectors of industry and application areas

- Beverage technology ● Automation
- Packaging ● Textile technology
- Optical industry etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

► [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



► [www.igus.co.uk/washing-chain](http://www.igus.co.uk/washing-chain)



► [www.igus.co.uk/form-fill-seal](http://www.igus.co.uk/form-fill-seal)

| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® H1        |
| Density                                                |  | g/cm³                              | 1.53               |
| Colour                                                 |  |                                    | cream              |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.1                |
| Max. water absorption                                  |  | % weight                           | 0.3                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.06–0.20          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.8                |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 2,800              |
| Tensile strength at +20 °C                             |  | MPa                                | 55                 |
| Compressive strength                                   |  | MPa                                | 78                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 80                 |
| Shore D hardness                                       |  |                                    | 77                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +200               |
| Max. short term application temperature                |  | °C                                 | +240               |
| Min. application temperature                           |  | °C                                 | –40                |
| Thermal conductivity                                   |  | W/m · K                            | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>–1</sup> · 10 <sup>–5</sup> | 6                  |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>12</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>11</sup> |

Table 01: Material properties table

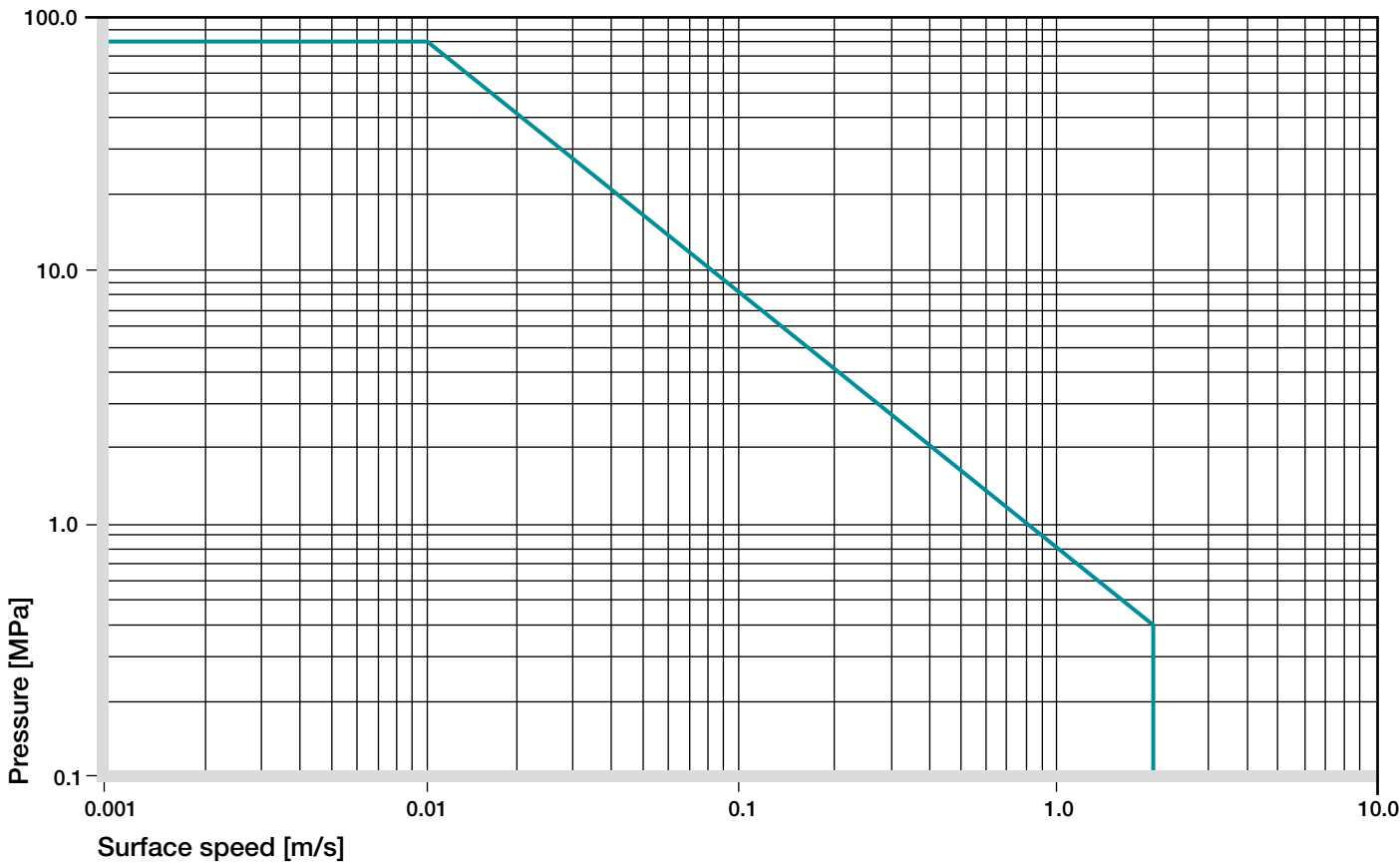


Diagram 01: Permissible pv values for iglidur® H1 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® H1 plain bearings have been specially developed for use under extreme environmental conditions. Their strengths are the extremely high wear resistance and the excellent coefficients of friction even in applications in which the bearing is exposed to extreme temperatures and/or aggressive chemicals. iglidur® H1 bearings can be used completely free of lubrication; in wet area applications, the surrounding medium acts as additional lubricant.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® H1 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

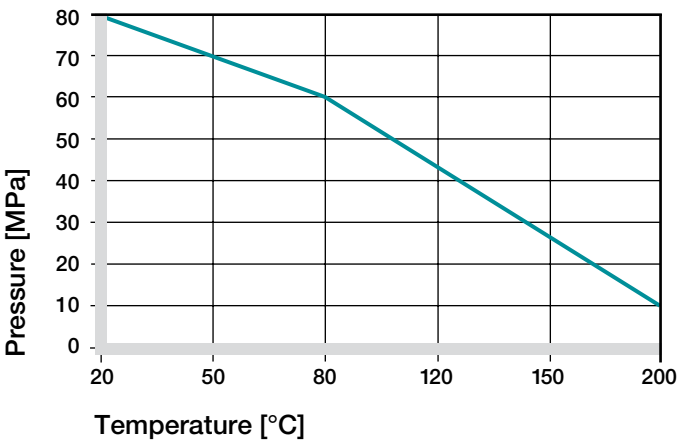


Diagram 02: Recommended maximum surface pressure as a function of temperature (80 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® H1 at radial loads. Among the iglidur® H materials, iglidur® H1 material has the greatest elasticity. This must be considered for applications with high pressure or strong edge pressure.

► Surface Pressure, page 63

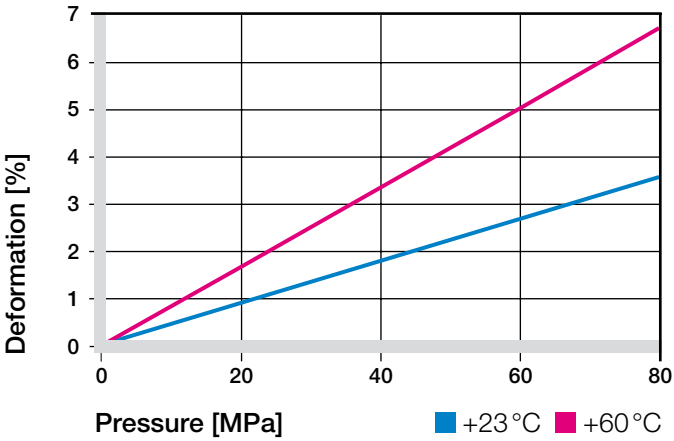


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Due to the excellent coefficients of friction, rotating surface speeds up to 2 m/s are possible with iglidur® H1 plain bearings in dry operation. Linear speeds up to 5 m/s are attained. The speeds stated in Table 02 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 2        | 1.0         | 5      |
| Short term | 2.5      | 1.5         | 7      |

Table 02: Maximum running speed

Temperatures

iglidur® H is an extremely temperature-resistant material. The short term maximum temperature is +240 °C. The pressure-resistance of iglidur® H1 decreases with rising temperature. Apart from the surrounding temperature, the friction heat resulting from the movement of the shaft in the bearing must be considered. The ambient temperatures that are prevalent in applications also have an effect on the bearing wear. The wear rate rises with higher temperatures, but with iglidur® H1, this increase is small. The temperature above which we recommend an additional axial securing is +80 °C for iglidur® H1, lower than for the other iglidur® H materials.

► Application Temperatures, page 66



| iglidur® H1                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +200 °C                 |
| Max. short term                | +240 °C                 |
| Add. securing is required from | + 80 °C                 |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction alters like the wear resistance with increasing load and speed. At constant load the coefficient of friction  $\mu$  increases with the speed. At constant speed the coefficient of friction lowers with increasing load, whereupon almost constant values result from 40 MPa. As the counter partner has a large influence on friction and wear, the choice of the appropriate shaft can be decisive. Smoother shafts than  $Ra = 0.1 \mu m$  raises the coefficient of friction. For applications with high loads, we recommend hardened and smoothed surfaces with an average surface finish of  $Ra = 0.3$  to  $0.4 \mu m$ .

- Coefficients of Friction and Surfaces, page 68
- Wear Resistance, page 69

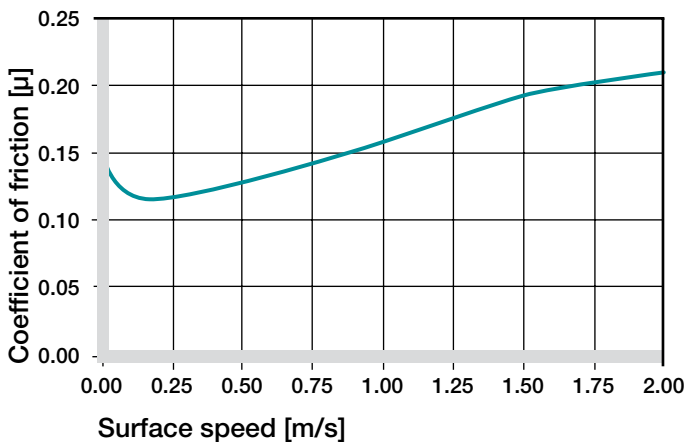


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

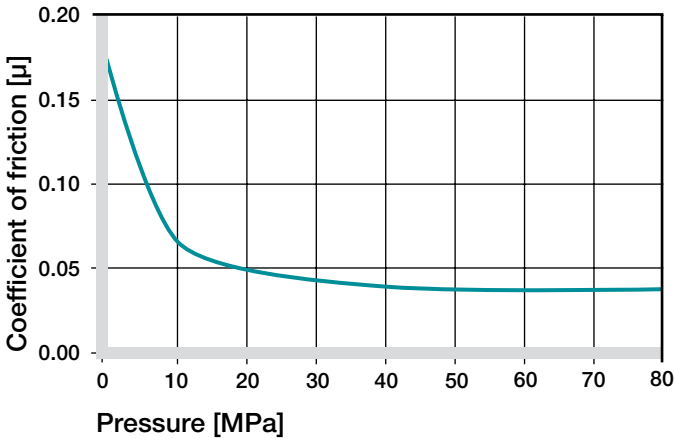


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

Diagrams 06 to 09 display a summary of the results of tests with different shaft materials conducted with iglidur® H1 plain bearings in the igus® laboratory. The iglidur® H1 plain bearings display excellent wear behavior in combination with a wide variety of shaft materials both in rotating and pivoting operations. On the V2A shafts in particular, iglidur® H1 attains very low wear rates both in rotating and pivoting operations. Even on hard-coated aluminum shafts, iglidur® H1 plain bearings attain high service life in rotating applications with low to medium loads.

- Shaft Materials, page 71

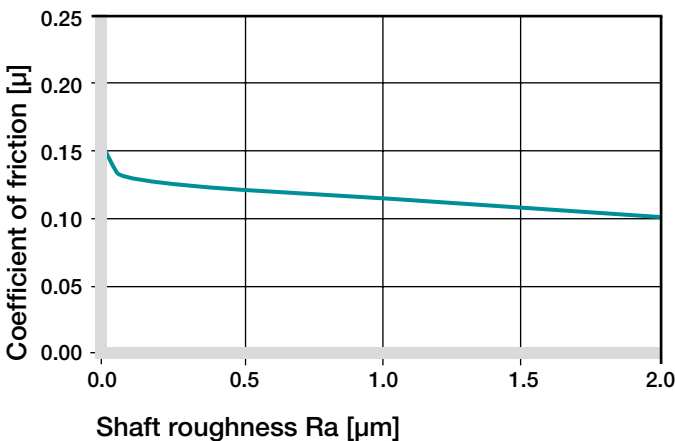


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

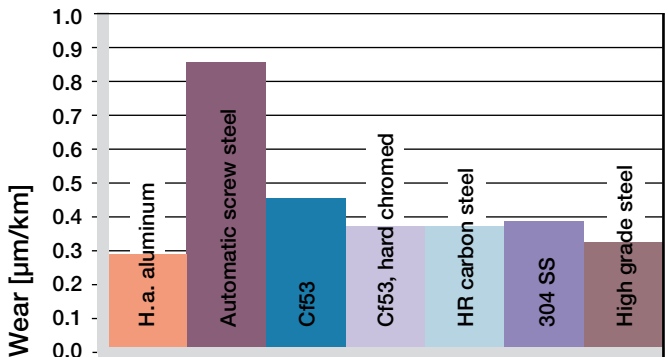


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

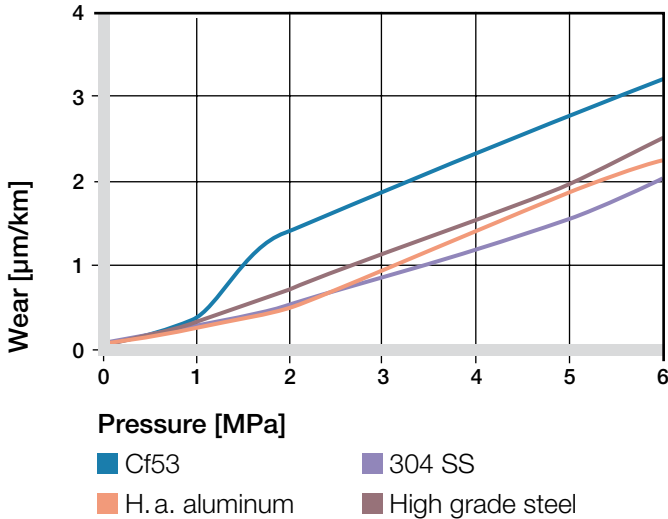


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

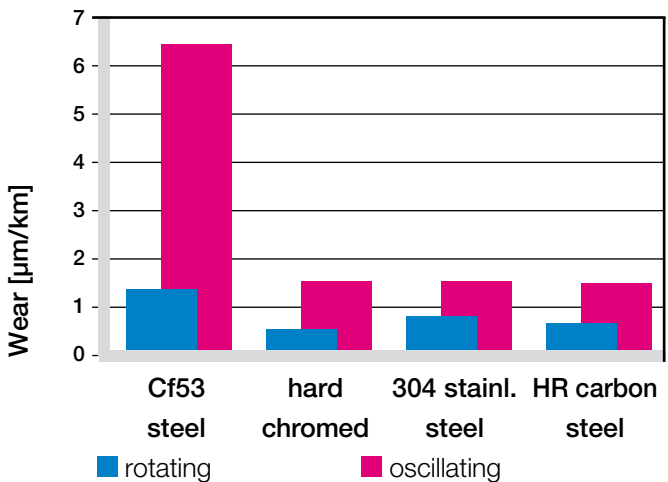


Diagram 09: Wear for rotating and oscillating applications with different shaft materials,  $p = 2 \text{ MPa}$

| iglidur® H1  | Dry       | Greases | Oil  | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. $\mu$ | 0.06–0.20 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $Ra = 1 \mu m$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H1 bearings have a good resistance against chemicals. Hence even chemicals can act as lubricants. The iglidur® H1 plain bearings are not resistant against hot, oxidizing acids and some other particularly aggressive chemicals.

- Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | + to 0     |
| Strong acids                    | + to –     |
| Diluted alkalines               | +          |
| Strong alkalines                | + to –     |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature  $[+20 \text{ °C}]$

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of  $2 \cdot 10^2 \text{ Gy}$ .

UV Resistance

iglidur® H1 bearings are only conditionally resistant to UV rays. The surface of iglidur® H1 becomes coarser under the influence of atmospheric conditions and the wear increases. Therefore the use of iglidur® H1 plain bearings in applications directly exposed to weathering should be tested in individual cases.

Vacuum

Water elements, even if only little, should be degassed for use in vacuum. The use in vacuum is generally possible.

Electrical Properties

iglidur® H1 plain bearings are electrically insulating.

|                    |                       |
|--------------------|-----------------------|
| Volume resistance  | $> 10^{12} \Omega cm$ |
| Surface resistance | $> 10^{11} \Omega$    |

Moisture Absorption

The moisture absorption of iglidur® H1 bearings is approximately 0.1 % in standard climatic conditions. The saturation limit in water is 0.3 %. Therefore iglidur® H1 is very well suited for use in wet environments.

| Maximal moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.1 % weight |
| Max. water absorption       | 0.3 % weight |

Table 06: Moisture absorption

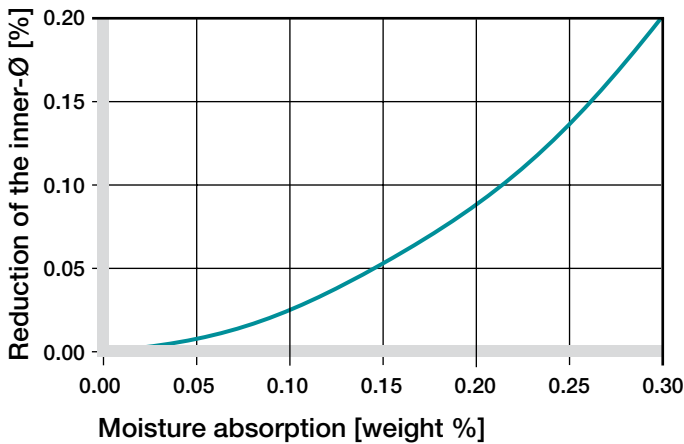


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

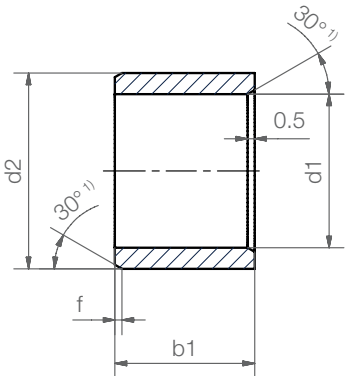
iglidur® H1 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® H1 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|----------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046        | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058        | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071        | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086        | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104        | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125        | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150        | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| H1SM-0304-05 | 3.0  | +0.006 +0.046 | 4.5  | 5.0       |
| H1SM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 5.0       |
| H1SM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| H1SM-0608-10 | 6.0  | +0.010 +0.058 | 8.0  | 10.0      |
| H1SM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| H1SM-0810-15 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      |
| H1SM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| H1SM-1012-15 | 10.0 | +0.013 +0.071 | 12.0 | 15.0      |
| H1SM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 12.0      |
| H1SM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| H1SM-2023-15 | 20.0 | +0.020 +0.104 | 23.0 | 15.0      |
| H1SM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |
| H1SM-2023-30 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      |
| H1SM-2528-30 | 25.0 | +0.020 +0.104 | 28.0 | 30.0      |
| H1SM-3034-30 | 30.0 | +0.020 +0.104 | 34.0 | 30.0      |
| H1SM-3539-30 | 35.0 | +0.025 +0.125 | 39.0 | 30.0      |
| H1SM-4044-40 | 40.0 | +0.025 +0.125 | 44.0 | 40.0      |

\* after pressfit. Testing methods ► page 75

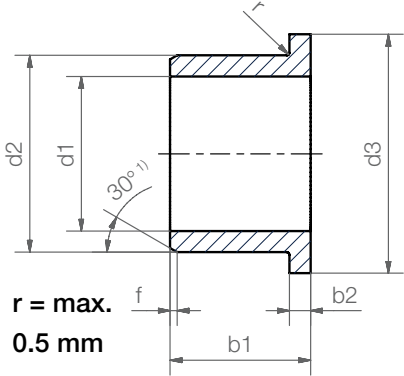


Order key

H1SM-0304-05

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® H1

Flange bearing



Order key

H1FM-0304-05



- Length b1
- Outer diameter d2
- Inner diameter
- Metric
- Type (Form F)
- Material iglidur® H1

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| H1FM-0304-05  | 3.0  | +0.006 +0.046 | 4.5  | 7.5       | 5.0       | 0.75        |
| H1FM-0507-05  | 5.0  | +0.010 +0.058 | 7.0  | 11.0      | 5.0       | 1.0         |
| H1FM-0608-06  | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| H1FM-0608-10  | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 10.0      | 1.0         |
| H1FM-0810-065 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 6.5       | 1.0         |
| H1FM-0810-10  | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| H1FM-1012-10  | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 10.0      | 1.0         |
| H1FM-1214-12  | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| H1FM-1214-20  | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 20.0      | 1.0         |
| H1FM-1618-17  | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| H1FM-1618-25  | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 25.0      | 1.0         |
| H1FM-1820-12  | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 12.0      | 1.0         |
| H1FM-2023-21  | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| H1FM-2023-30  | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 30.0      | 1.5         |
| H1FM-2528-21  | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 21.0      | 1.5         |
| H1FM-3034-26  | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 26.0      | 2.0         |
| H1FM-3539-26  | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 26.0      | 2.0         |
| H1FM-4044-40  | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 40.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

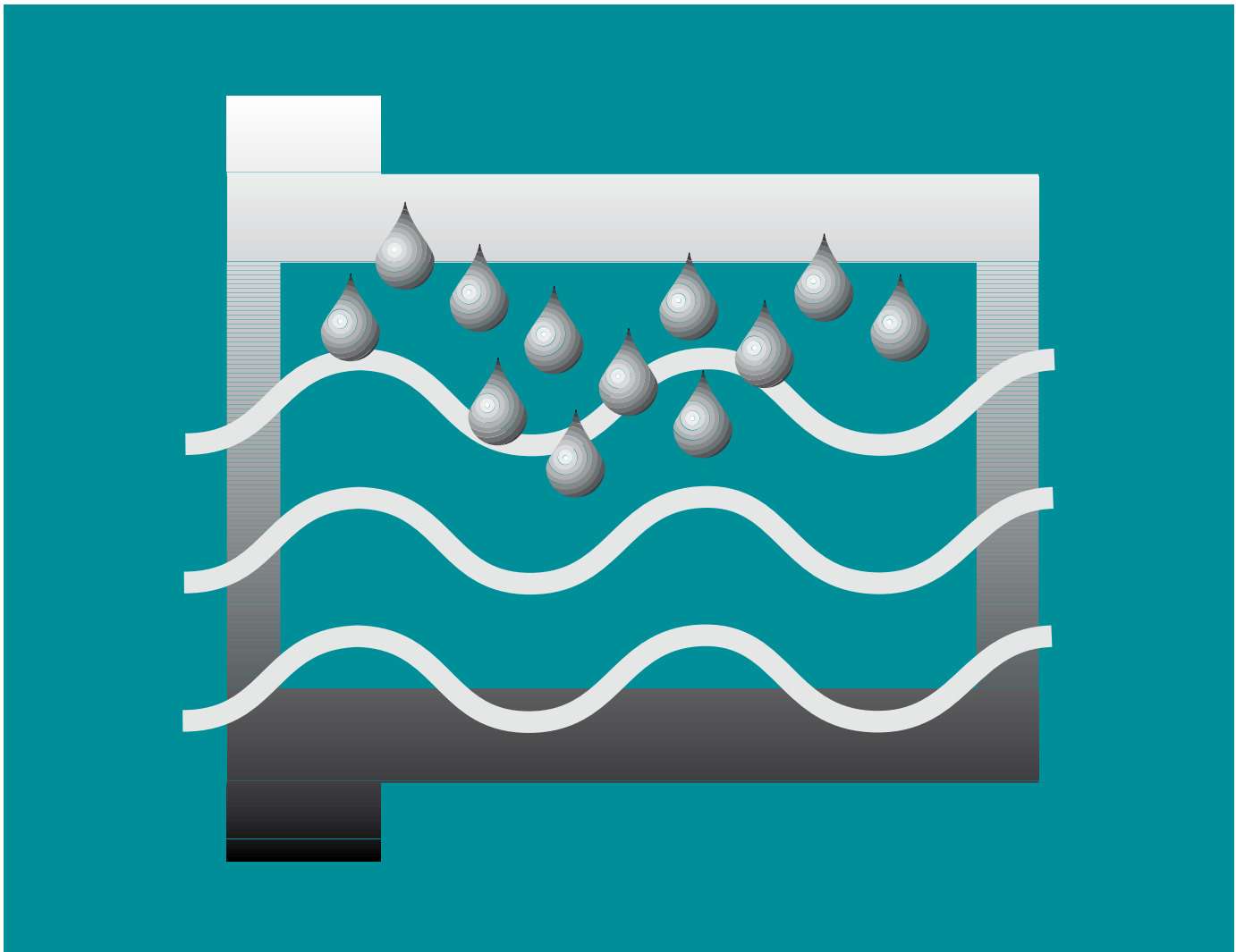
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/h1



## Under water – iglidur® H370



Standard range from stock

Wear-resistant – especially under water

High temperature resistance –40 °C to +200 °C

High resistance to chemicals



**Under water.** iglidur® H370 is the right solution for underwater applications. The bearings absorb extremely high loads, resist to chemicals and can be used at temperatures up to +200°C.

Wear-resistant –  
especially under water

High temperature  
resistance  
–40 °C to +200 °C

High resistance  
to chemicals



#### When to use it?

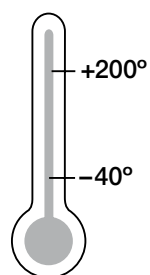
- For underwater use
- When it is dependent on high temperature resistance
- When high mechanical loading and wear resistance is required
- When good resistance to chemicals is required



#### When not to use it?

- When mechanical reaming of the wall surface is necessary  
► iglidur® M250, page 127
- When high wear resistance in temperatures is required  
► iglidur® H1, page 365
- For use in dirty surroundings  
► iglidur® Z, page 327
- When a cost-efficient, large-volume solution is required  
► iglidur® H2, page 399

#### Temperature



#### Product Range

2 types  
Ø 3–75 mm  
more dimensions  
on request

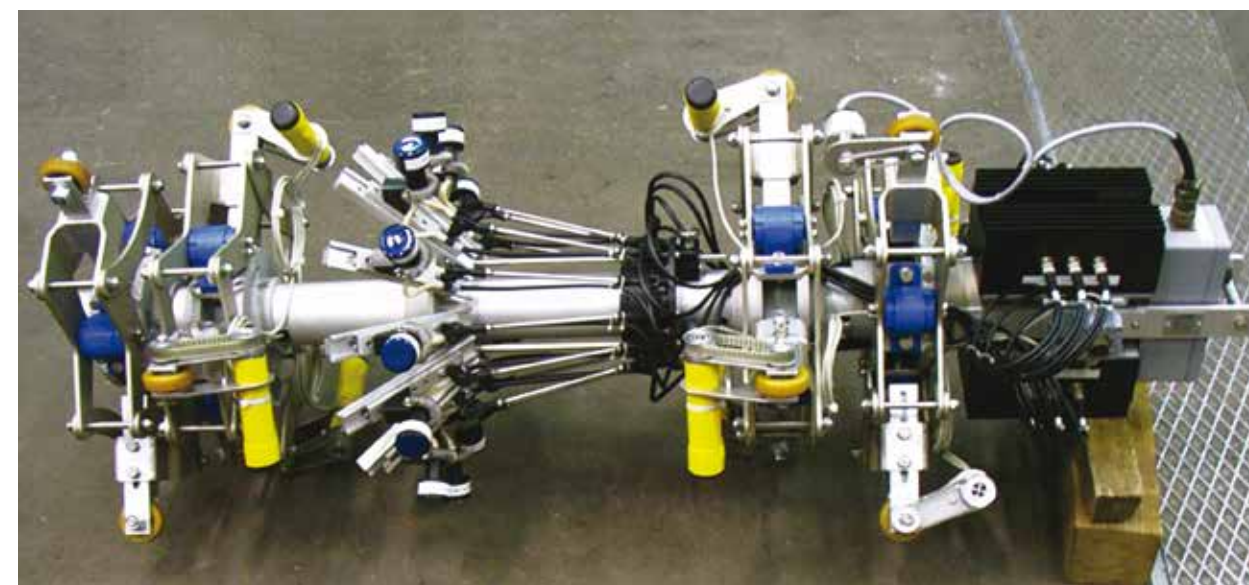


#### Typical sectors of industry and application areas

- Offshore ● Marine engineering
- Fluid technology ● Packaging
- Plant construction etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

► [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



► [www.igus.co.uk/oilplatform](http://www.igus.co.uk/oilplatform)



► [www.igus.co.uk/ultrasonic-tests](http://www.igus.co.uk/ultrasonic-tests)

| Material properties table                              |  |                                    |                                   |
|--------------------------------------------------------|--|------------------------------------|-----------------------------------|
| General properties                                     |  | Unit                               | iglidur® H370      Testing method |
| Density                                                |  | g/cm³                              | 1.66                              |
| Colour                                                 |  |                                    | grey                              |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.1      DIN 53495                |
| Max. water absorption                                  |  | % weight                           | 0.1                               |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.07–0.17                         |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.74                              |
| Mechanical properties                                  |  |                                    |                                   |
| Modulus of elasticity                                  |  | MPa                                | 11,100      DIN 53457             |
| Tensile strength at +20 °C                             |  | MPa                                | 135      DIN 53452                |
| Compressive strength                                   |  | MPa                                | 79                                |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 75                                |
| Shore D hardness                                       |  |                                    | 82      DIN 53505                 |
| Physical and thermal properties                        |  |                                    |                                   |
| Max. long term application temperature                 |  | °C                                 | +200                              |
| Max. short term application temperature                |  | °C                                 | +240                              |
| Min. application temperature                           |  | °C                                 | –40                               |
| Thermal conductivity                                   |  | W/m · K                            | 0.5      ASTM C 177               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>-1</sup> · 10 <sup>-5</sup> | 5      DIN 53752                  |
| Electrical properties <sup>1)</sup>                    |  |                                    |                                   |
| Specific volume resistance                             |  | Ωcm                                | < 10 <sup>5</sup> DIN IEC 93      |
| Surface resistance                                     |  | Ω                                  | < 10 <sup>5</sup> DIN 53482       |

<sup>1)</sup> The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact component.

Table 01: Material properties table

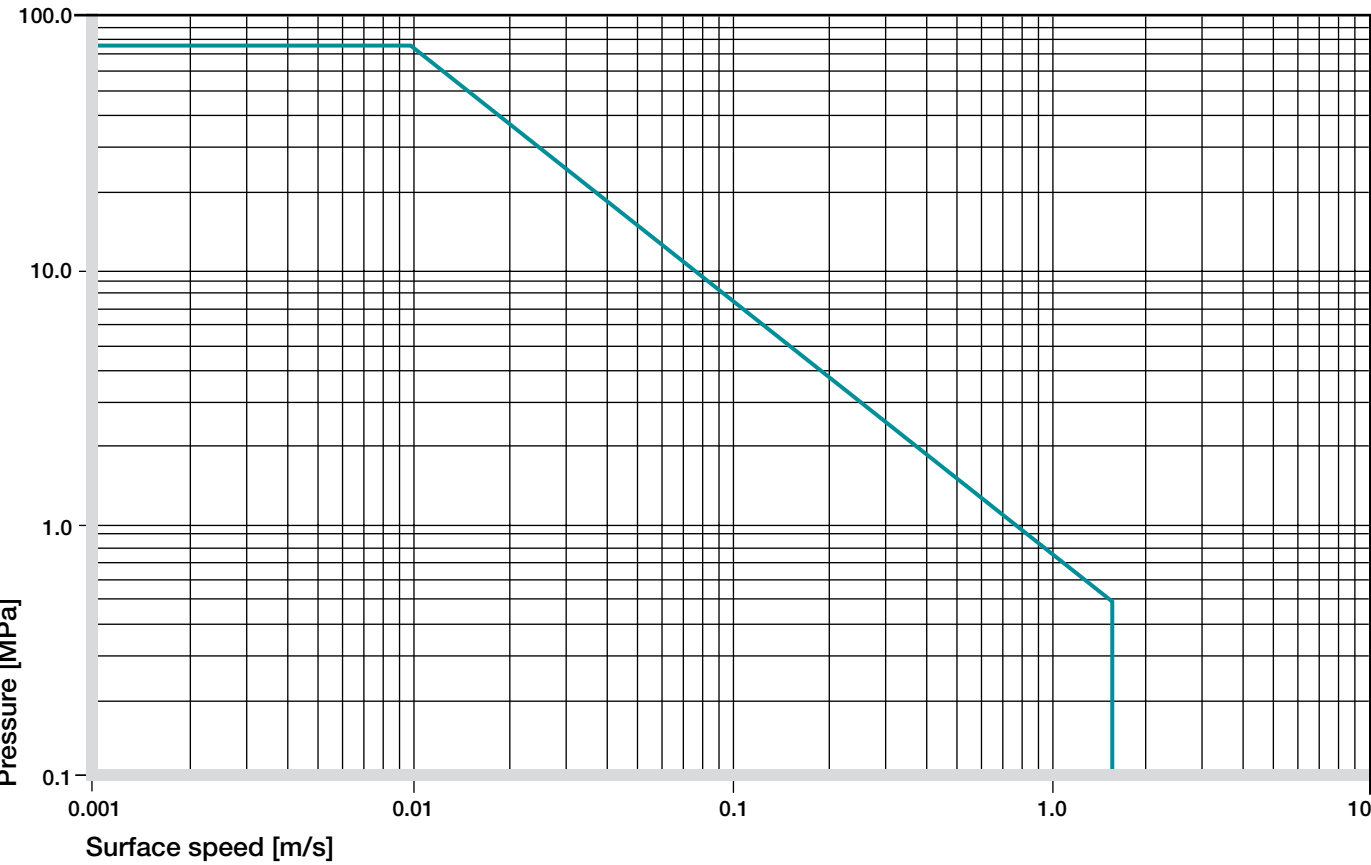


Diagram 01: Permissible pv values for iglidur® H370 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® H370 is an advanced development of the iglidur® H series. The material is characterized by particularly low water absorption and clearly enhanced wear resistance. With regard to the mechanical and thermal characteristic values, iglidur® H370 shows the same features as iglidur® H.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® H370 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is 9 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

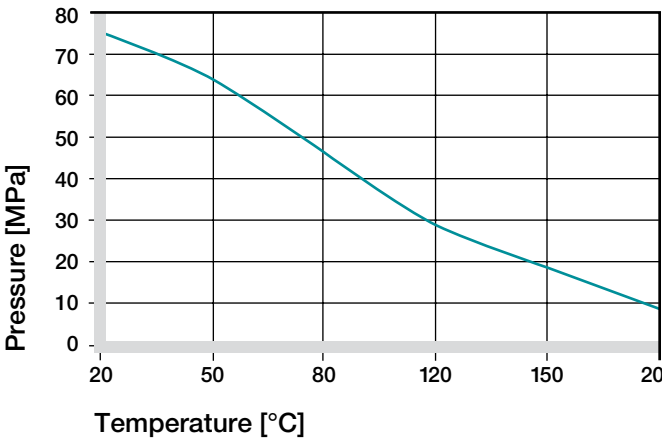


Diagram 02: Recommended maximum surface pressure as a function of temperature (75 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® H370 bearings as a function of radial pressure. At the maximum recommended surface pressure of 75 MPa, the deformation at room temperature is about 2.5 %.

Surface Pressure, page 63

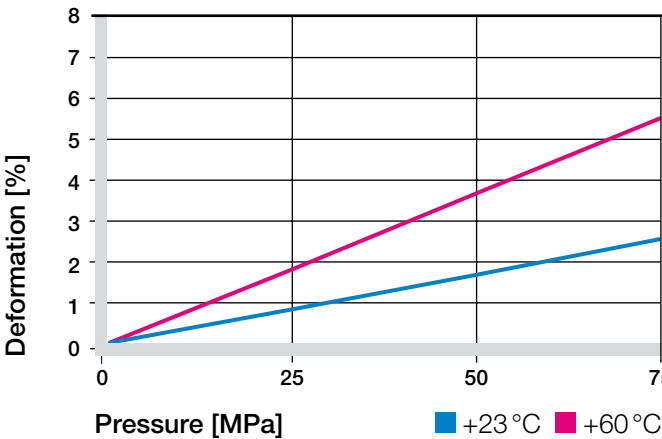


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speed is dependent on whether the temperature in the bearing location rises strongly or not. iglidur® H370 is suitable for surface speeds up to 1.2 m/s (rotating) and 4 m/s (linear) respectively. The maximum values stated in Table 02 are valid only with minimum pressure loads and are often not attained in practice.

Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1.2      | 0.8         | 4      |
| Short term | 1.5      | 1.1         | 5      |

Table 02: Maximum running speed

Temperatures

iglidur® H370 is an extremely temperature-resistant material. With a short-term permitted maximum temperature of +240 °C, the iglidur® H370 bearings can in otherwise unloaded condition be subjected for instance, to a paint drying process. With increasing temperatures, the compressive strength of iglidur® H370 bearings decreases. The ambient temperatures that are pre-valent in applications also have an effect on the bearing wear. The wear rises with increasing temperatures. iglidur® H370 loses about 75 % of its compressive strength with a rise in temperature range, from room temperature to +150 °C. In contrast the increase in wear is hardly noticeable in the same temperature range.

Application Temperatures, page 66

| iglidur® H370                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | +200 °C                 |
| Max. short term                | +240 °C                 |
| Add. securing is required from | +100 °C                 |

Table 03: Temperature limits



Friction and Wear

The coefficients of friction and wear in iglidur® H370 are more favorable than in iglidur® H. There is no better material than iglidur® H370 especially for underwater applications. The coefficient of friction alters only little, like the wear resistance with increasing load and surface speed. This connection illustrates the excellent suitability of iglidur® H370 bearings with high loads. Friction and wear also depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. The ideally suited is a smoothed surface with an average surface finish of Ra = 0.2 to 0.4 µm.

- Coefficients of Friction and Surfaces, page 68
- Wear Resistance, page 69

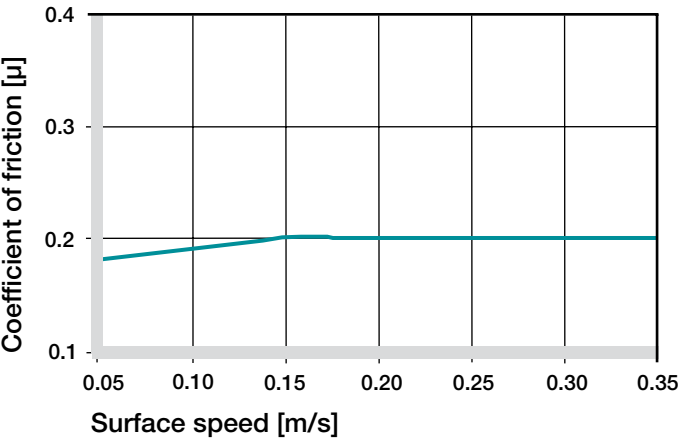


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

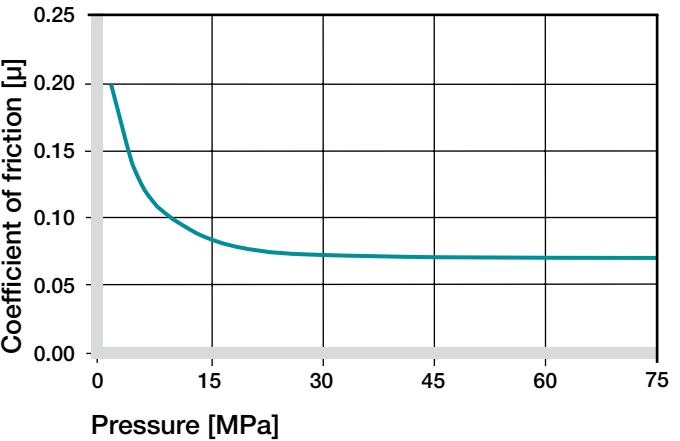


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagrams 06 to 09 show the test results of iglidur® H370 bearings running against various shaft materials. For loads up to 2 MPa, the hard-chromed shaft is the best material for the iglidur® H370 bearings in rotating applications. The high coefficients of wear with V2A shafts are striking, which due to their extremely smooth surfaces are prone to the stick-slip effect. The St37 shaft shows better values than Cf53, despite same values in the lowest range, from 2 MPa. On the other hand, the V2A shaft shows a clear advantage in pivoting movements. (Diagram 08).

- Shaft Materials, page 71

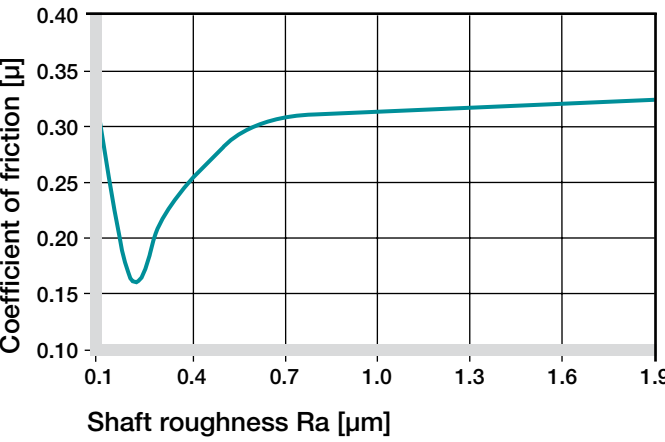


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

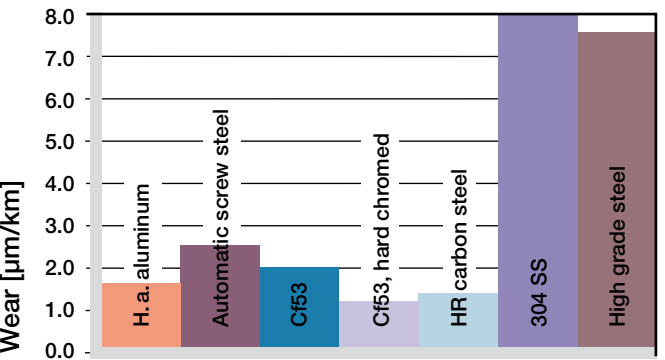


Diagram 07: Wear, rotating with different shaft materials, pressure, p = 1 MPa, v = 0.3 m/s

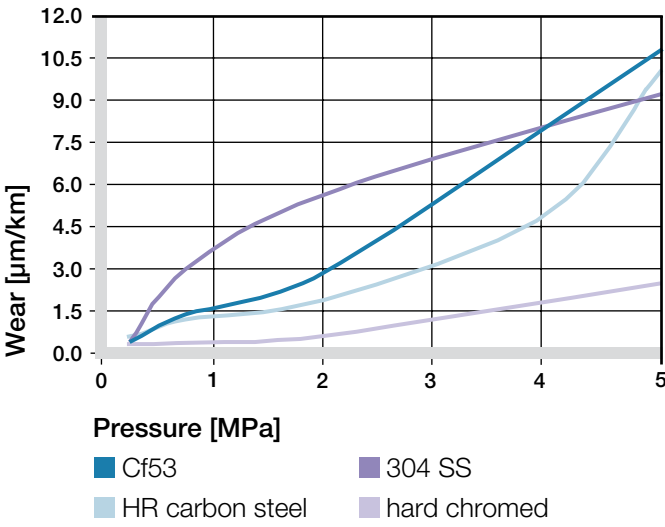


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

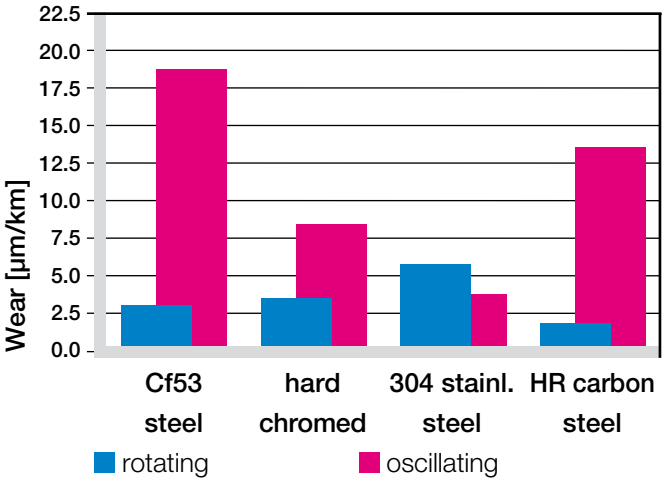


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® H370 | Dry       | Greases | Oil  | Water |
|---------------|-----------|---------|------|-------|
| C. o. f. µ    | 0.07–0.17 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H370 bearings have a good resistance against chemicals. They are resistant to most lubricants. The iglidur® is not affected by most weak organic and inorganic acids.

- Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | + to 0     |
| Strong acids                    | + to –     |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur® H370 withstands neutron and gamma particle radiation without detectable losses of its excellent mechanical properties. Plain bearings made from iglidur® H370 are resistant to radiation up to an intensity of 2 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® H370 plain bearings are permanently resistant against UV radiation.

Vacuum

In a vacuum environment, moisture is released as a vapour. Due to its low moisture absorption, use in a vacuum is possible.

Electrical Properties

|                                                           |                       |
|-----------------------------------------------------------|-----------------------|
| iglidur® H370 plain bearings are electrically conductive. |                       |
| Volume resistance                                         | < 10 <sup>5</sup> Ωcm |
| Surface resistance                                        | < 10 <sup>5</sup> Ω   |



Moisture Absorption

The moisture absorption of iglidur® H370 plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is also below 0.1 %.

For this reason, iglidur® H370 plain bearings are often used for underwater applications.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23°C/50 % r.h.    | 0.1 % weight |
| Max. water absorption | 0.1 % weight |

Table 06: Moisture absorption

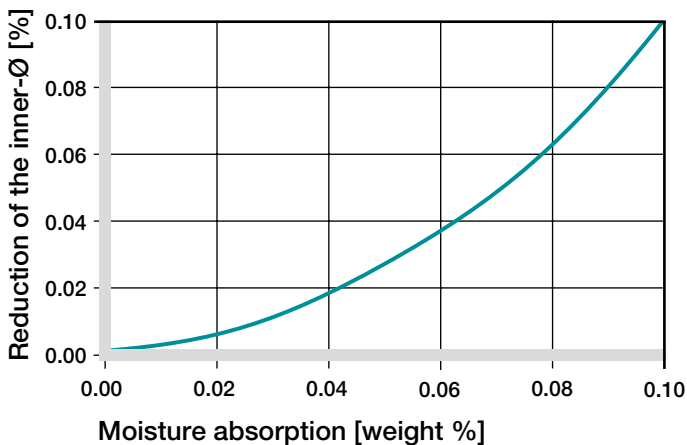


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

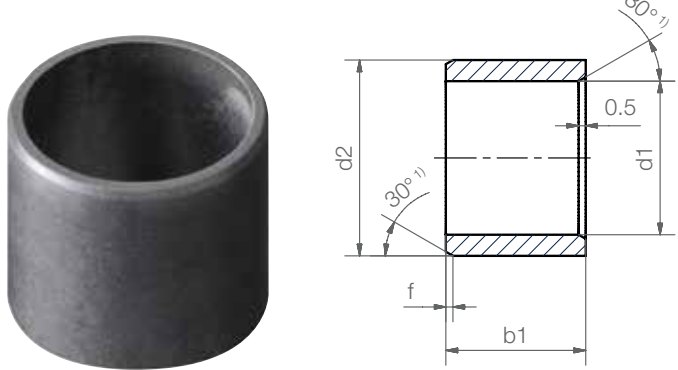
iglidur® H370 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® H370 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0-0.025       | +0.006 +0.046          | 0 +0.010        |
| > 3 to 6         | 0-0.030       | +0.010 +0.058          | 0 +0.012        |
| > 6 to 10        | 0-0.036       | +0.013 +0.071          | 0 +0.015        |
| > 10 to 18       | 0-0.043       | +0.016 +0.086          | 0 +0.018        |
| > 18 to 30       | 0-0.052       | +0.020 +0.104          | 0 +0.021        |
| > 30 to 50       | 0-0.062       | +0.025 +0.125          | 0 +0.025        |
| > 50 to 80       | 0-0.074       | +0.030 +0.150          | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Bestellnummer  | d1   | d1-Toleranz*  | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| H370SM-0304-03 | 3.0  | +0.006 +0.046 | 4.5  | 3.0       |
| H370SM-0405-04 | 4.0  | +0.010 +0.058 | 5.5  | 4.0       |
| H370SM-0405-12 | 4.0  | +0.010 +0.058 | 5.5  | 12.0      |
| H370SM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 5.0       |
| H370SM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| H370SM-0608-10 | 6.0  | +0.010 +0.058 | 8.0  | 10.0      |
| H370SM-0810-08 | 8.0  | +0.013 +0.071 | 10.0 | 8.0       |
| H370SM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| H370SM-0810-15 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      |
| H370SM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| H370SM-1012-12 | 10.0 | +0.013 +0.071 | 12.0 | 12.0      |
| H370SM-1012-15 | 10.0 | +0.013 +0.071 | 12.0 | 15.0      |
| H370SM-1214-10 | 12.0 | +0.016 +0.086 | 14.0 | 10.0      |
| H370SM-1214-15 | 12.0 | +0.016 +0.086 | 14.0 | 15.0      |
| H370SM-1517-15 | 15.0 | +0.016 +0.086 | 17.0 | 15.0      |

\* after pressfit. Testing methods ► page 75



Order key

H370SM-0304-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® H370

| Bestellnummer  | d1   | d1-Toleranz*  | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| H370SM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| H370SM-1618-20 | 16.0 | +0.016 +0.086 | 18.0 | 20.0      |
| H370SM-1820-15 | 18.0 | +0.016 +0.086 | 20.0 | 15.0      |
| H370SM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |
| H370SM-2225-20 | 22.0 | +0.020 +0.104 | 25.0 | 20.0      |
| H370SM-2528-20 | 25.0 | +0.020 +0.104 | 28.0 | 20.0      |
| H370SM-3034-30 | 30.0 | +0.020 +0.104 | 34.0 | 30.0      |
| H370SM-3539-40 | 35.0 | +0.025 +0.125 | 39.0 | 40.0      |
| H370SM-4044-30 | 40.0 | +0.025 +0.125 | 44.0 | 30.0      |
| H370SM-4044-50 | 40.0 | +0.025 +0.125 | 44.0 | 50.0      |
| H370SM-4550-50 | 45.0 | +0.025 +0.125 | 50.0 | 50.0      |
| H370SM-5055-40 | 50.0 | +0.000 +0.100 | 55.0 | 40.0      |
| H370SM-5560-26 | 55.0 | +0.030 +0.150 | 60.0 | 26.0      |
| H370SM-6065-60 | 60.0 | +0.030 +0.150 | 65.0 | 60.0      |
| H370SM-7580-60 | 75.0 | +0.030 +0.150 | 80.0 | 60.0      |

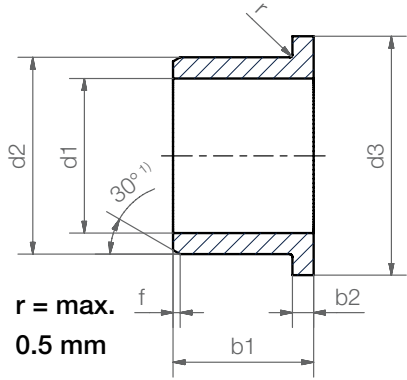


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Flange bearing



Order key

**H370FM-0405-04**



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form F)

Material iglidur® H370

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

d1 [mm]:    Ø 1-6    |    Ø 6-12    |    Ø 12-30    |    Ø > 30

f [mm]:        0.3    |        0.5    |        0.8    |        1.2

Dimensions [mm]

| Part number       | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------------|------|---------------|------|-----------|-----------|-------------|
| H370FM-0405-04    | 4.0  | +0.010 +0.058 | 5.5  | 9.5       | 4.0       | 0.75        |
| H370FM-0507-05    | 5.0  | +0.010 +0.058 | 7.0  | 11.0      | 5.0       | 1.0         |
| H370FM-0608-06    | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| H370FM-0810-06    | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 6.0       | 1.0         |
| H370FM-0810-10    | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| H370FM-0810-15    | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 15.0      | 1.0         |
| H370FM-1012-10    | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 10.0      | 1.0         |
| H370FM-1012-20    | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 20.0      | 1.0         |
| H370FM-1012-145   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 14.5      | 1.0         |
| H370FM-1214-07    | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 7.0       | 1.0         |
| H370FM-1214-12    | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| H370FM-1214-15    | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 15.0      | 1.0         |
| H370FM-1214-20    | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 20.0      | 1.0         |
| H370FM-1416-12    | 14.0 | +0.016 +0.086 | 16.0 | 22.0      | 12.0      | 1.0         |
| H370FM-1517-17    | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 17.0      | 1.0         |
| H370FM-161822-10  | 16.0 | +0.016 +0.086 | 18.0 | 22.0      | 10.0      | 1.0         |
| H370FM-1618-10    | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 10.0      | 1.0         |
| H370FM-1618-17    | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| H370FM-1618-25    | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 25.0      | 1.0         |
| H370FM-1820-12    | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 12.0      | 1.0         |
| H370FM-1820-17    | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 17.0      | 1.0         |
| H370FM-2023-16    | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 16.0      | 1.5         |
| H370FM-2023-21    | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| H370FM-2023-30    | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 30.0      | 1.5         |
| H370FM-222532-215 | 22.0 | +0.020 +0.104 | 25.0 | 32.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



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Flange bearing

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| H370FM-2528-30 | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 30.0      | 1.5         |
| H370FM-3034-40 | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 40.0      | 2.0         |
| H370FM-3539-26 | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 26.0      | 2.0         |
| H370FM-4044-40 | 40.0 | +0.025 +0.125 | 44.0 | 52.0      | 40.0      | 2.0         |
| H370FM-5055-50 | 50.0 | +0.025 +0.125 | 55.0 | 63.0      | 50.0      | 2.0         |
| H370FM-6065-50 | 60.0 | +0.030 +0.150 | 65.0 | 73.0      | 50.0      | 2.0         |
| H370FM-7075-50 | 70.0 | +0.030 +0.150 | 75.0 | 83.0      | 50.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



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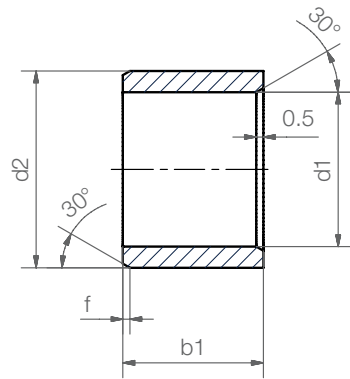


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Sleeve bearing



Order key

H370SI-0203-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® H370

Chamfer in relation to the d1

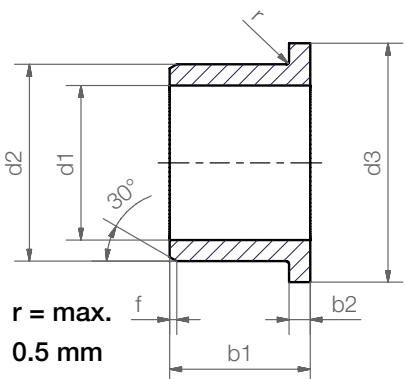
|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number    | d1    | d2      | b1<br>h13 | d1*    |        | Housing Bore |        | Shaft Size |        |
|----------------|-------|---------|-----------|--------|--------|--------------|--------|------------|--------|
|                |       |         |           | max.   | min.   | max.         | min.   | max.       | min.   |
| H370SI-0203-03 | 1/8   | 3/16    | 3/16      | .1269  | .1251  | .1878        | .1873  | .1243      | .1236  |
| H370SI-0304-04 | 3/16  | 1/4     | 1/4       | .1892  | .1873  | .2503        | .2497  | .1865      | .1858  |
| H370SI-0405-04 | 1/4   | 5/16    | 1/4       | .2521  | .2498  | .3128        | .3122  | .2490      | .2481  |
| H370SI-0506-06 | 5/16  | 3/8     | 3/8       | .3148  | .3125  | .3753        | .3747  | .3115      | .3106  |
| H370SI-0607-08 | 3/8   | 15/32   | 1/2       | .3773  | .3750  | .4691        | .4684  | .3740      | .3731  |
| H370SI-0809-08 | 1/2   | 19/32   | 1/2       | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| H370SI-1011-12 | 5/8   | 23/32   | 3/4       | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| H370SI-1214-12 | 3/4   | 7/8     | 3/4       | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| H370SI-1416-16 | 7/8   | 1       | 1         | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| H370SI-1618-16 | 1     | 1 1/8   | 1         | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| H370SI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4     | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

H370FI-0203-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® H370

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number    | d1    | d2      | b1<br>h13 | d3    | b2<br>-0.14 | d1*    |        | Housing Bore |        | Shaft Size |        |
|----------------|-------|---------|-----------|-------|-------------|--------|--------|--------------|--------|------------|--------|
|                |       |         |           |       |             | max.   | min.   | max.         | min.   | max.       | min.   |
| H370FI-0203-03 | 1/8   | 3/16    | 3/16      | .312  | .032        | .1269  | .1251  | .1878        | .1873  | .1243      | .1236  |
| H370FI-0304-04 | 3/16  | 1/4     | 1/4       | .375  | .032        | .1892  | .1873  | .2503        | .2497  | .1865      | .1858  |
| H370FI-0405-04 | 1/4   | 5/16    | 1/4       | .500  | .032        | .2521  | .2498  | .3128        | .3122  | .2490      | .2481  |
| H370FI-0506-06 | 5/16  | 3/8     | 3/8       | .562  | .032        | .3148  | .3125  | .3753        | .3747  | .3115      | .3106  |
| H370FI-0607-08 | 3/8   | 15/32   | 1/2       | .687  | .046        | .3773  | .3750  | .4691        | .4684  | .3740      | .3731  |
| H370FI-0809-08 | 1/2   | 19/32   | 1/2       | .875  | .046        | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| H370FI-1011-12 | 5/8   | 23/32   | 3/4       | 1.000 | .046        | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| H370FI-1214-12 | 3/4   | 7/8     | 3/4       | 1.125 | .062        | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| H370FI-1416-16 | 7/8   | 1       | 1         | 1.250 | .062        | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| H370FI-1618-16 | 1     | 1 1/8   | 1         | 1.375 | .062        | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| H370FI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4     | 1.687 | .078        | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |

\* after pressfit. Testing methods ► page 75



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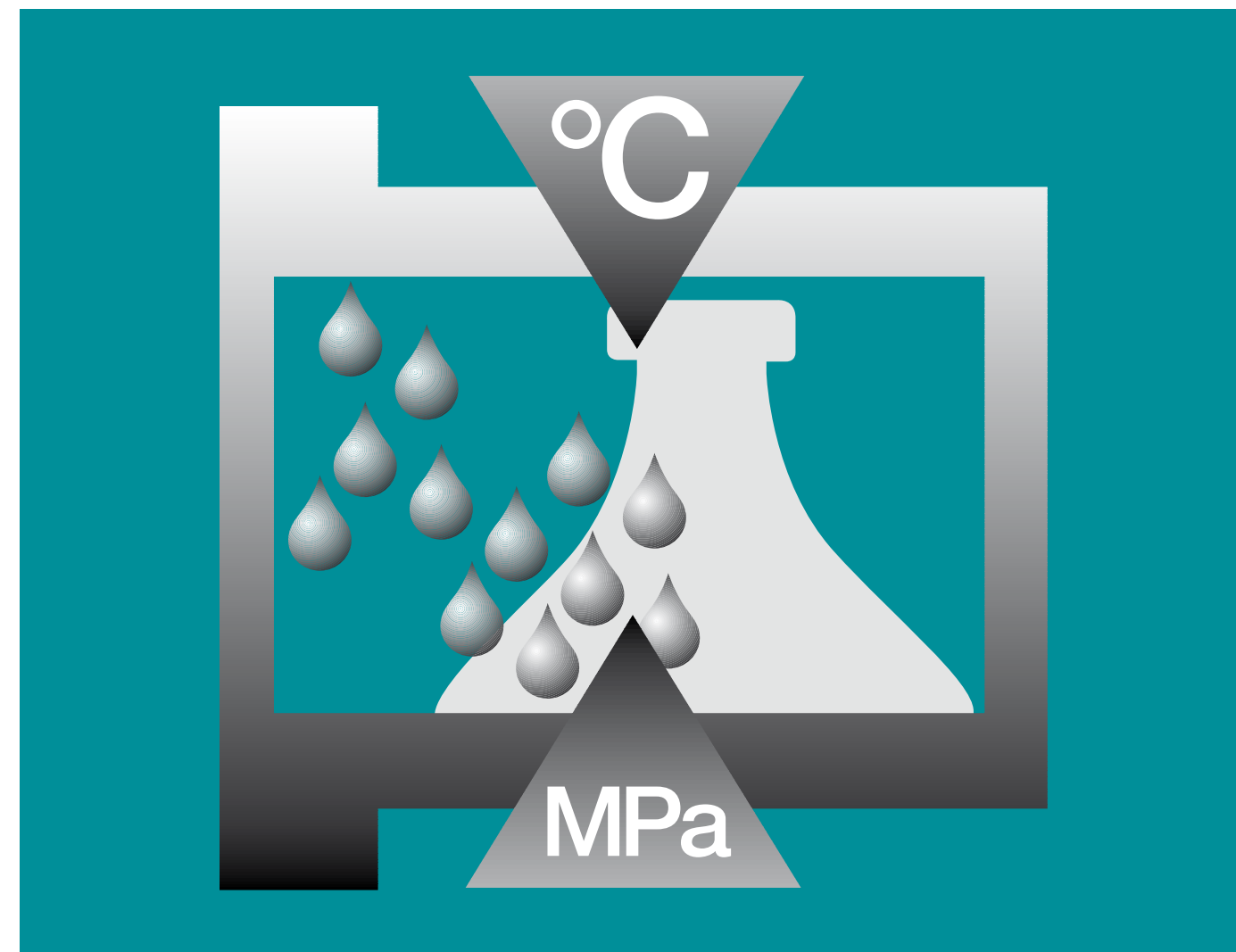


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**Up to 250 °C, wear resistant –  
iglidur® C500**



Standard range from stock

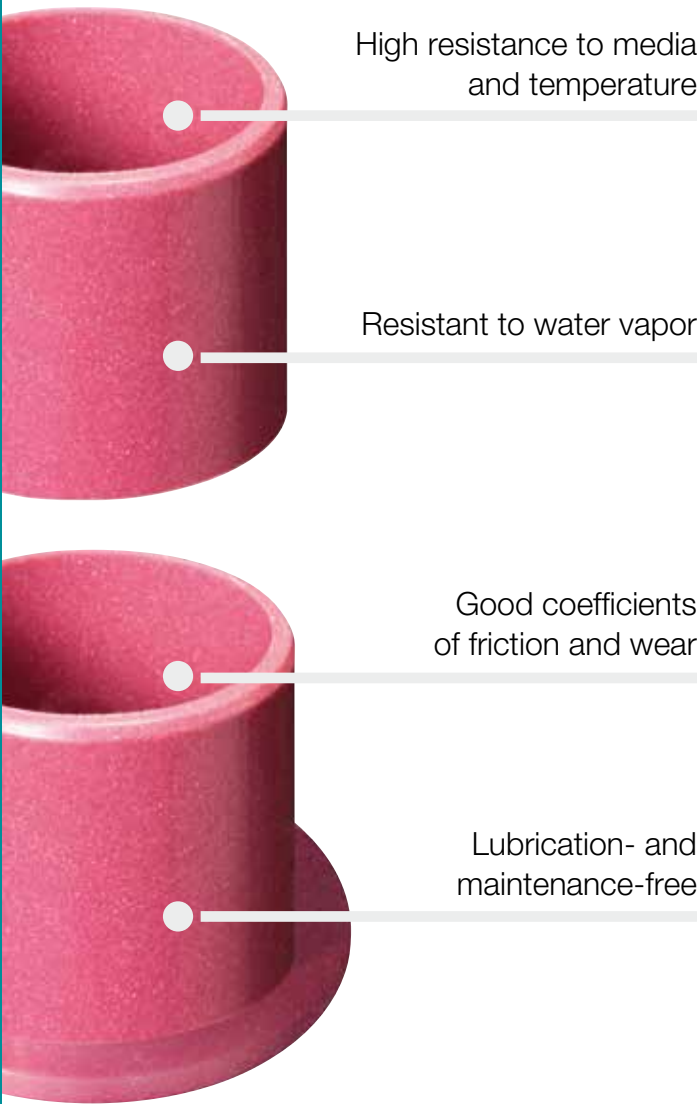
High resistance to media and temperature

Resistant to water vapor

Good coefficients of friction and wear

Lubrication- and maintenance-free

**Up to 250 °C, wear resistant.** iglidur® C500 can be used in up to 250 °C and is extremely resistant to media – even in cleaning processes using hydrogen peroxide – it is also wear resistant and has low coefficients of friction. Also suitable for various special designs. The color represents extreme environmental conditions.



**When to use it?**

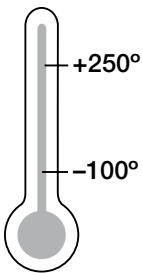
- When you need an extremely media-resistant bearing with high flexibility
- When you need a very wear-resistant and media resistant bearing



**When not to use it?**

- When you need an FDA compliant high temperature material  
▶ iglidur® A500, page 457
- When you need a media-resistant high-temperature bearing with the largest possible range of dimensions  
▶ iglidur® X, page 173

**Temperature**



**Product range**

2 types  
Ø 6–20 mm  
more dimensions  
on request

**Material properties table**

| General properties                                     | Unit                               | iglidur® C500      | Testing method |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| Density                                                | g/cm³                              | 1.37               |                |
| Colour                                                 |                                    | magenta            |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.5                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.07–0.19          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.7                |                |
| <b>Mechanical properties</b>                           |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 3,000              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 100                | DIN 53452      |
| Compressive strength                                   | MPa                                | 110                |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 110                |                |
| Shore D hardness                                       |                                    | 81                 | DIN 53505      |
| <b>Physical and thermal properties</b>                 |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +250               |                |
| Max. short term application temperature                | °C                                 | +300               |                |
| Min. application temperature                           | °C                                 | –100               |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 9                  | DIN 53752      |
| <b>Electrical properties<sup>1)</sup></b>              |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>14</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>13</sup> | DIN 53482      |

Table 01: Material properties table

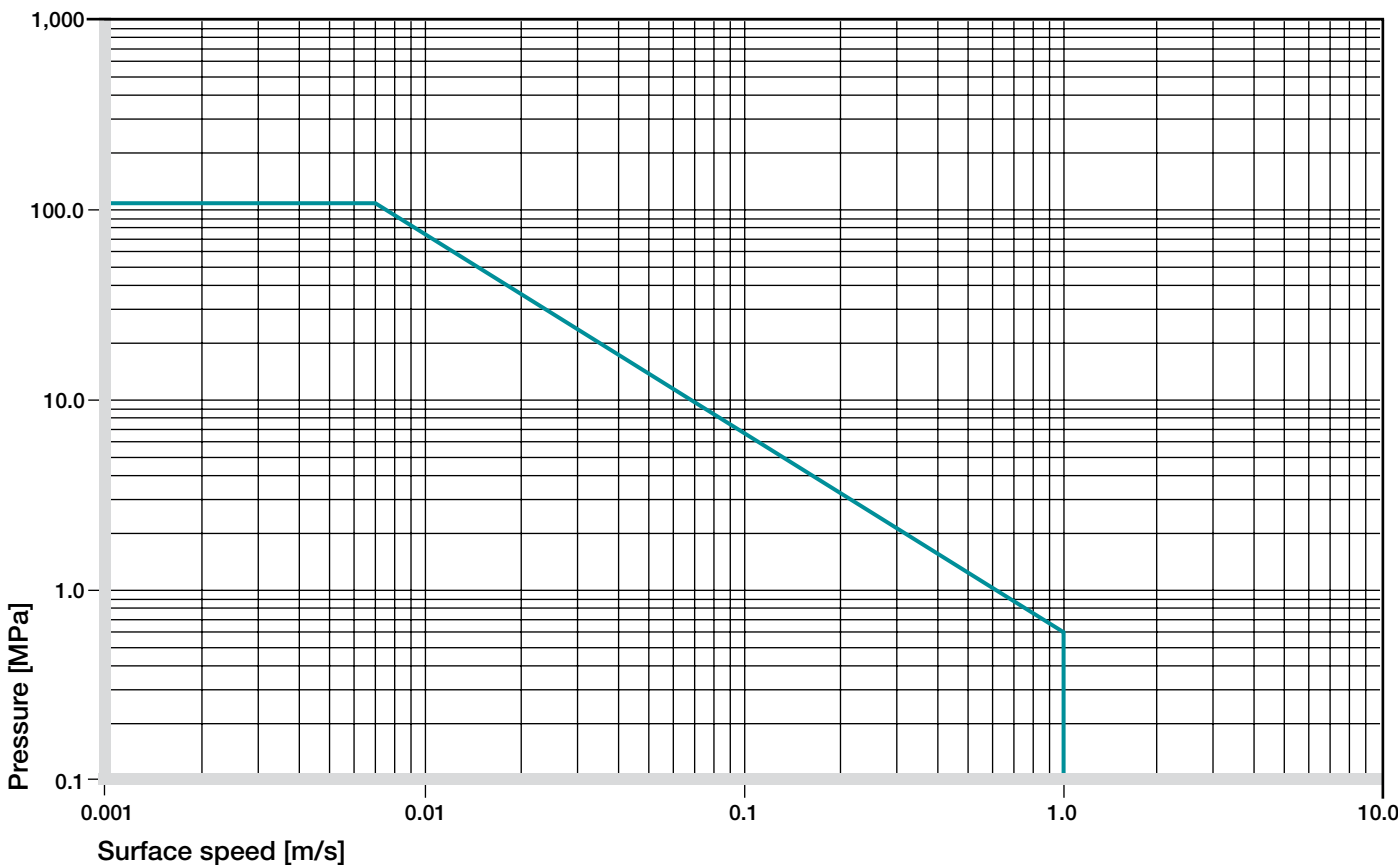


Diagram 01: Permissible pv values for iglidur® C500 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® C500 is a member of the family of extremely media and temperature-resistant iglidur® materials X, X6 and A500. This material is characterized by improved wear resistance and it's flexibility, allowing the use of this material as a piston ring, for example.

### Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® C500 plain bearings decreases. Diagram 02 shows this inverse relationship. However, at an operation temperature of +200 °C the permissible surface pressure is close to 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

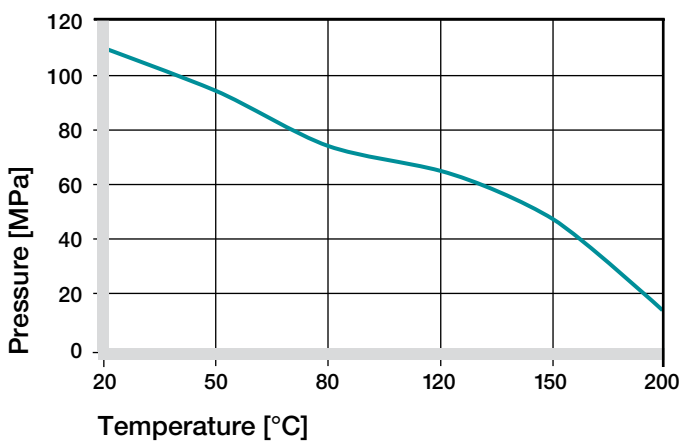


Diagram 02: Recommended maximum surface pressure as a function of temperature (110 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® C500 bearings as a function of radial pressure. At the maximum recommended surface pressure of 110 MPa, the deformation at room temperature is only 4.5 %.

### ► Surface Pressure, page 63

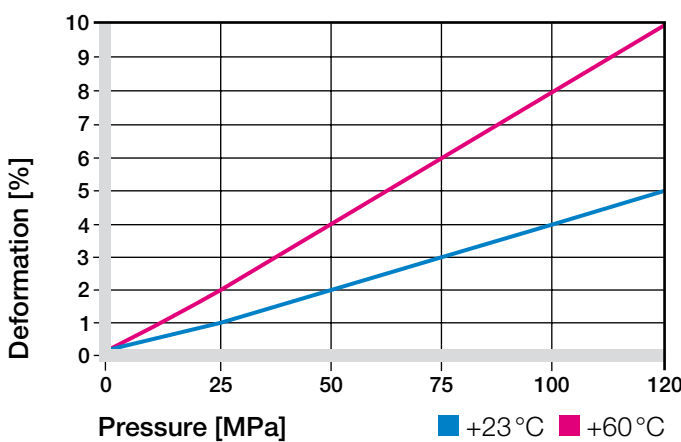


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

The maximum allowable gliding speed is based on the friction heat generated at the bearing surface. The temperature should only be permitted to increase to a value that will ensure a sustainable use of the bearing with respect to wear and dimensional integrity.

The maximum values stated in Table 02 are valid only with minimum pressure loads and are often not attained in practice.

### ► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.9      | 0.7         | 2.4    |
| Short term | 1.1      | 1           | 2.8    |

Table 02: Maximum running speed

### Temperatures

iglidur® C500 belongs to the most temperature resistant iglidur® materials. The longterm permitted temperature is +250 °C and on the short-term the temperature can even reach +300 °C. Similar to all thermoplastics, with increasing temperatures, the compressive strength of iglidur® C500 bearings decreases. The ambient temperatures that are prevalent in applications also have an effect on the bearing wear. The wear rises with increasing temperatures.

### ► Application Temperatures, page 66

| iglidur® C500                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -100 °C                 |
| Max. long term                 | +250 °C                 |
| Max. short term                | +300 °C                 |
| Add. securing is required from | +130 °C                 |

Table 03: Temperature limits

### Friction and Wear

The coefficients of friction and wear in iglidur® C500 are more favorable than in the other high temperature materials iglidur® X and A500. The friction value increases moderately as the gliding speed increases. The friction value initially drops rapidly to less than 0.1 under loads of up to approx. 20 MPa, and then only marginally increases as loads continue to increase.

Friction and wear also depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. The ideal shaft has an average surface finish of Ra = 0.6 to 0.8 µm.

### ► Coefficients of Friction and Surfaces, page 68

### ► Wear Resistance, page 69

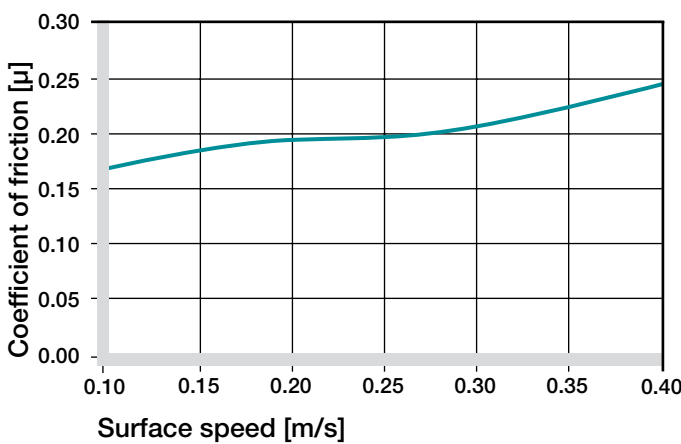


Diagram 04: Coefficient of friction as a function of the running speed, p = 1 MPa

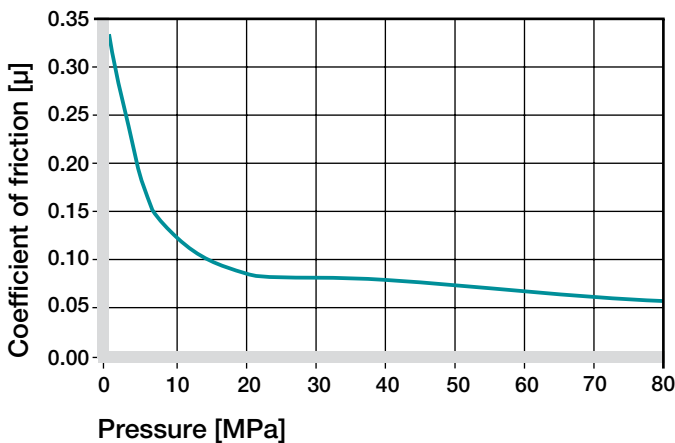


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### Shaft Materials

Diagrams 07 and 08 show the test results of iglidur® C500 bearings running against various shaft materials.

Using the example of a rotating motion at 1 MPa and a speed of 0.3 m/s, it becomes apparent that iglidur® C500 has very consistent wear characteristics across a variety of shaft types. This wear rate spikes upward in combination with free-machining steel, and, notably so, spikes downward in combination with HC Aluminum.

The wear under rotational loads is higher, specifically with increasing radial loads as compared to pivoting motions (Diagram 08).

### ► Shaft Materials, page 71

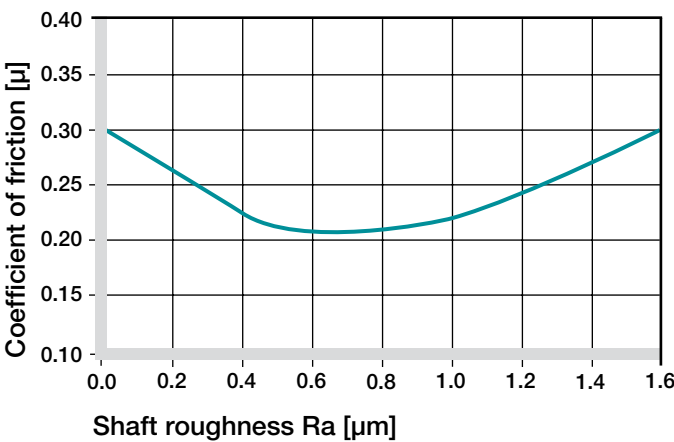


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

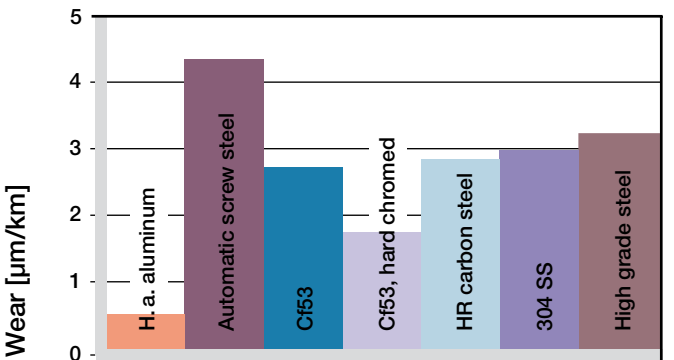


Diagram 07: Wear, rotating with different shaft materials, pressure, p = 1 MPa, v = 0.3 m/s



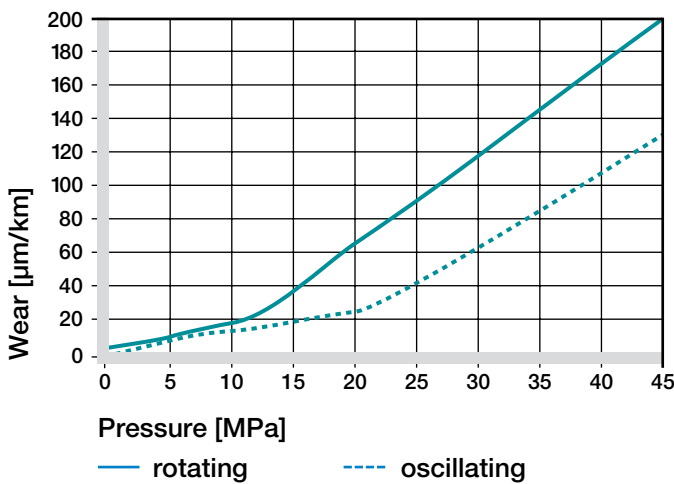


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® C500  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.07–0.19 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® C500 bearings have a very good resistance against chemicals. Most organic and inorganic acids, alkaline solutions or lubricants do not affect iglidur® C500.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur® C500 withstands neutron and gamma particle radiation without detectable losses of its excellent mechanical properties. Plain bearings made from iglidur® C500 are resistant to radiation up to an intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® C500 plain bearings are permanently resistant against UV radiation.

Vacuum

In a vacuum environment, moisture is released as a vapour. Due to its low moisture absorption, use in a vacuum is possible.

Electrical Properties

iglidur® C500 plain bearings are electrically isolating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{14} \Omega\text{cm}$ |
| Surface resistance | $> 10^{13} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® C500 plain bearings is below 0.3 % in standard atmosphere. The saturation limit in water is also below 0.5 %.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.3 % weight |
| Max. water absorption | 0.5 % weight |

Table 06: Moisture absorption

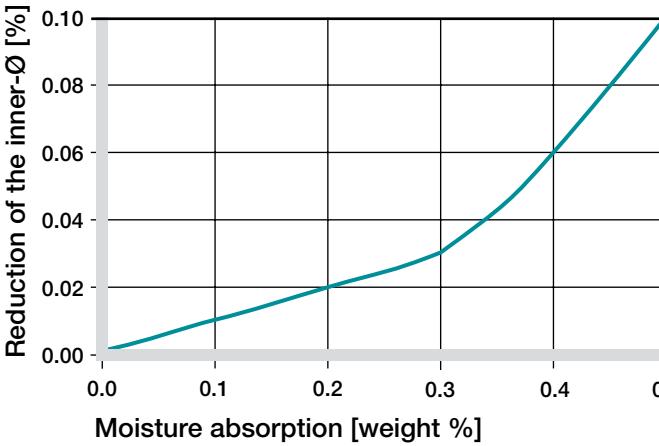


Diagram 09: Effect of moisture absorption on plain bearings

Installation Tolerances

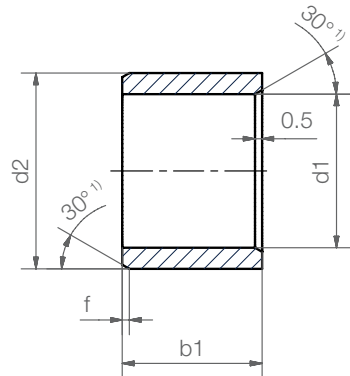
iglidur® C500 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances.

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® C500 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150          | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

C500SM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® C500

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

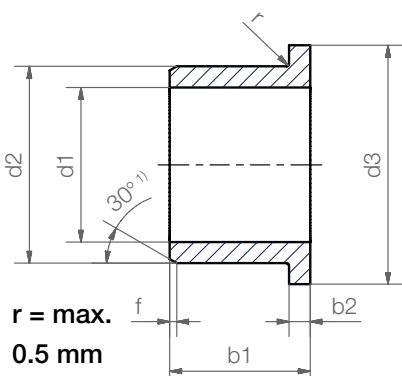
|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| C500SM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| C500SM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| C500SM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| C500SM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 12.0      |
| C500SM-1618-15 | 16.0 | +0.016 +0.086 | 18.0 | 15.0      |
| C500SM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

C500FM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® C500

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| C500FM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| C500FM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| C500FM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 10.0      | 1.0         |
| C500FM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| C500FM-1618-17 | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| C500FM-2023-21 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



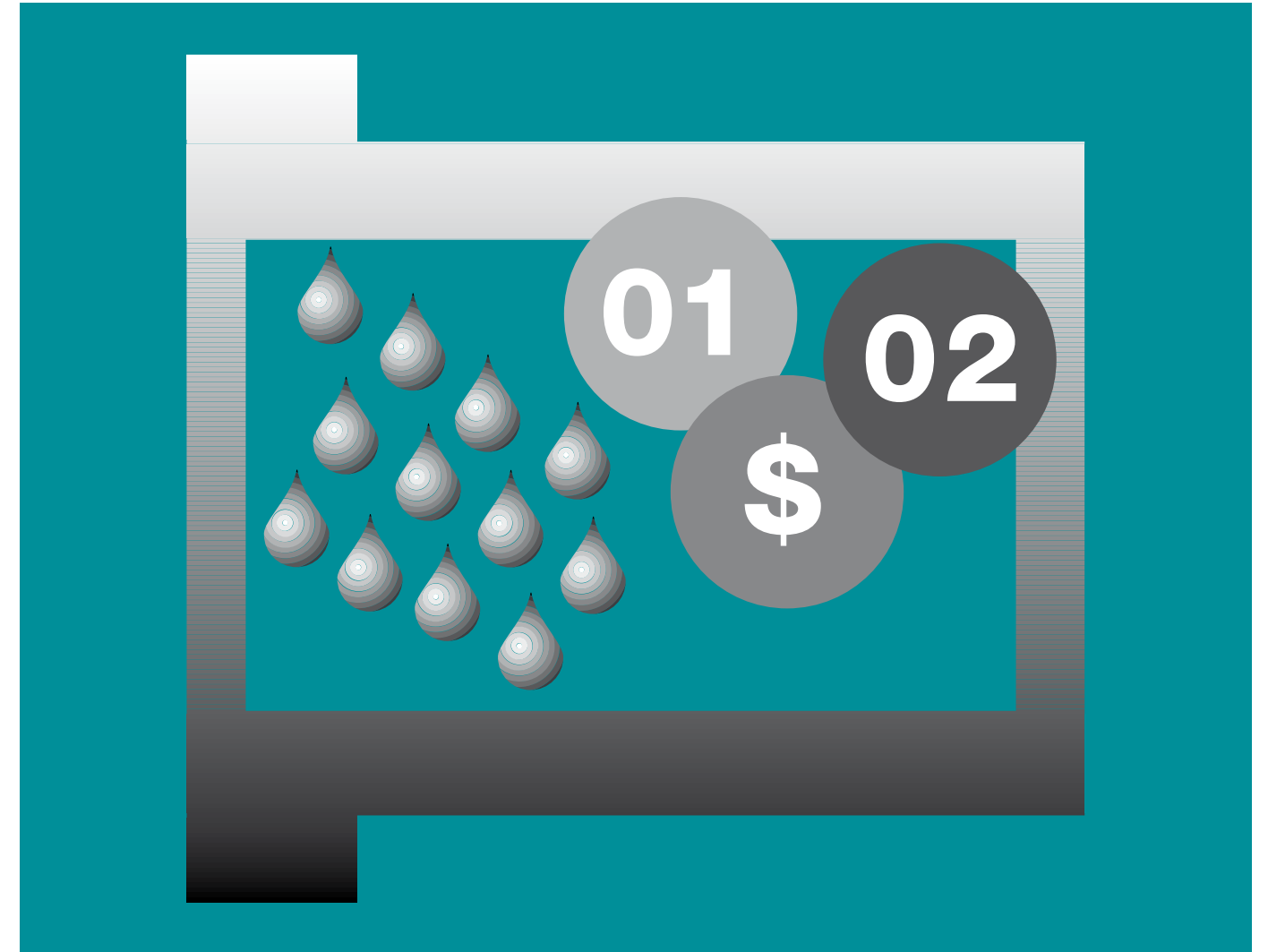
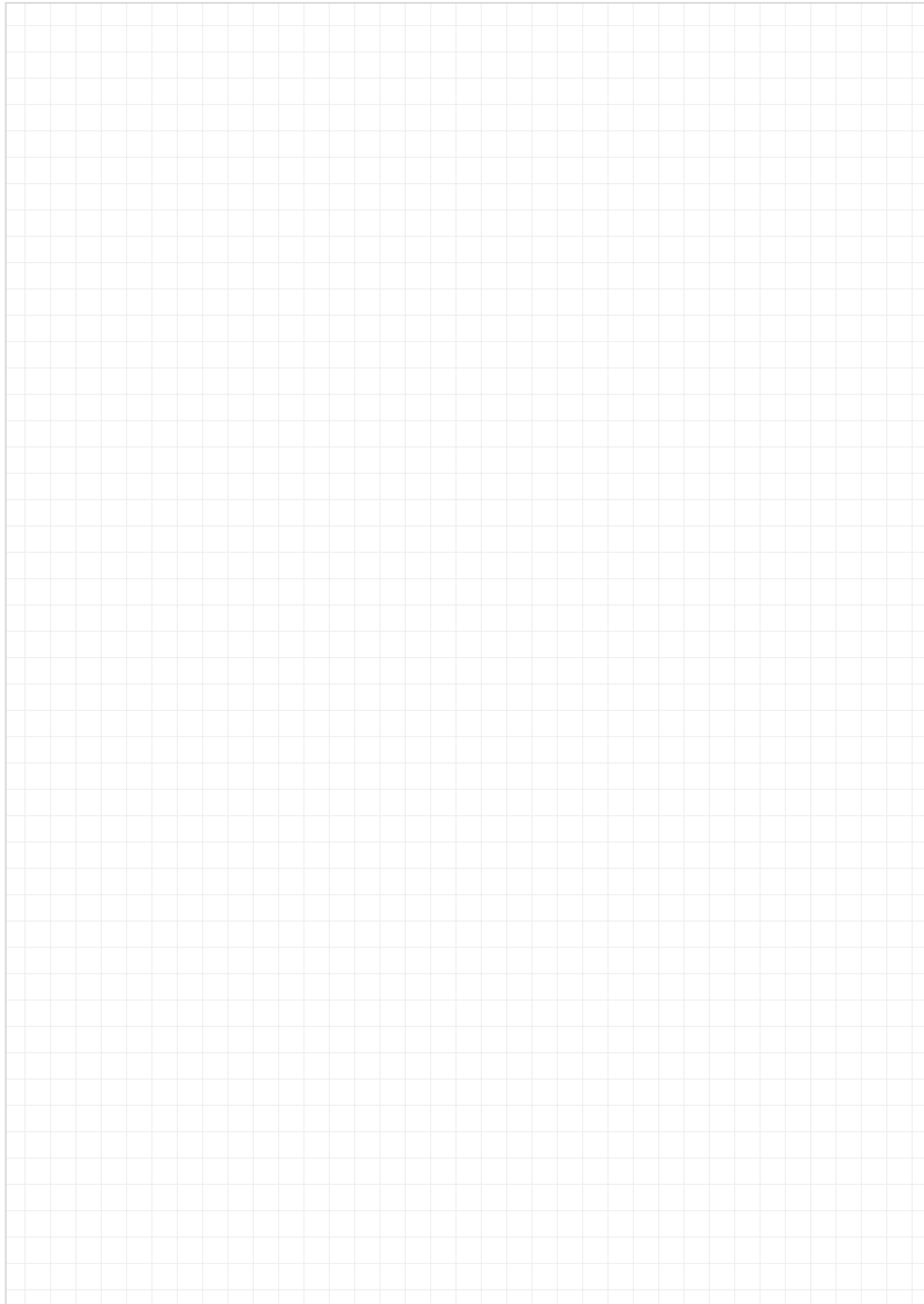
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## Low-cost – iglidur® H2



Can be used underwater

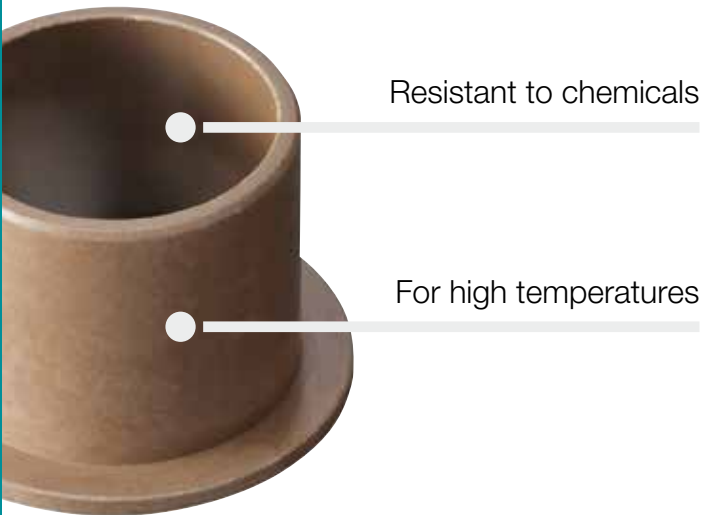
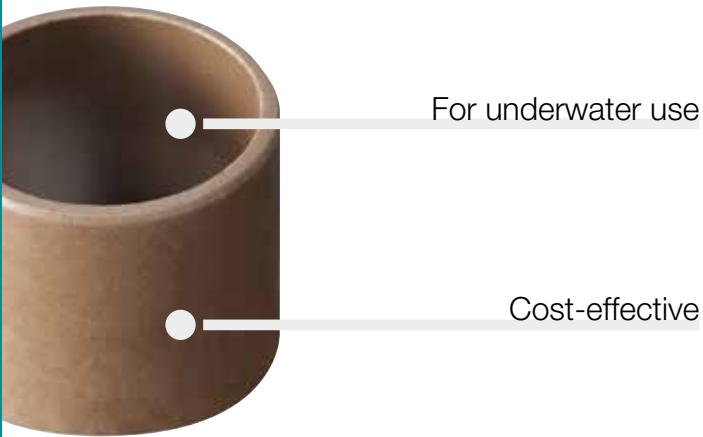
Cost-effective

Resistant to chemicals

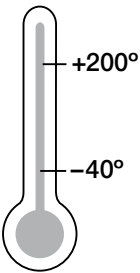
For high temperatures



**Low-cost.** For application with high temperature requirements. Can be conditionally used in dry operation; excellent properties with additional lubrication.



Temperature



**When to use it?**

- For underwater use
- When a cost-effective bearing for high temperatures is desired
- For applications with fuels, oils etc.
- Resistant to chemicals



**When not to use it?**

- When the highest wear resistance is required
  - ▶ iglidur® H1, page 365
  - ▶ iglidur® H4, page 531
  - ▶ iglidur® W300, page 151
- When vibration dampening is necessary
  - ▶ iglidur® B, page 605
  - ▶ iglidur® M250, page 127
- When neither increased temperatures nor media contact occur
  - ▶ iglidur® GLW, page 225

**Product range**

on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® H2        | Testing method |
| Density                                                | g/cm³                              | 1.72               |                |
| Colour                                                 |                                    | brown              |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.1                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.2                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.07–0.3           |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.58               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 10,300             | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 210                | DIN 53452      |
| Compressive strength                                   | MPa                                | 109                |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 110                |                |
| Shore D hardness                                       |                                    | 88                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +200               |                |
| Max. short term application temperature                | °C                                 | +240               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 4                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>15</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>14</sup> | DIN 53482      |

Table 01: Material properties table

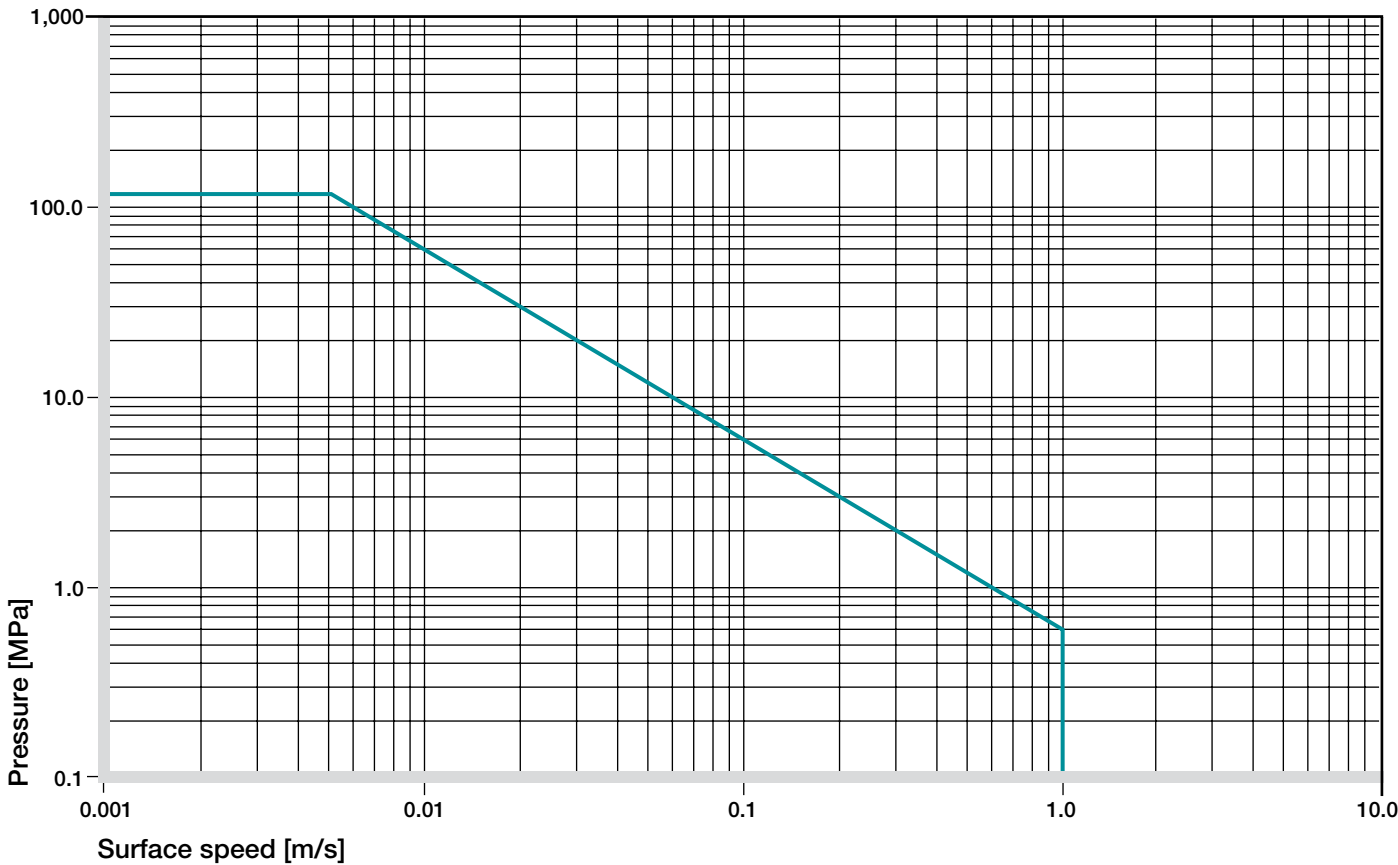


Diagram 01: Permissible pv values for iglidur® H2 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

In applications with the iglidur® H2 bearings, economical aspects are in focus. It is the first time that it is possible to offer such a high-performance bearing for large volume applications with these technical advantages at such a low price: Temperatures up to +200 °C, permitted surface pressure till 110 N/mm², and excellent chemical resistance. A mixture of solid lubricants lowers the coefficient of friction and supports the wear resistance. The iglidur® H2 bearings are self-lubricating and suitable for all motions.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® H2 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is 17 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

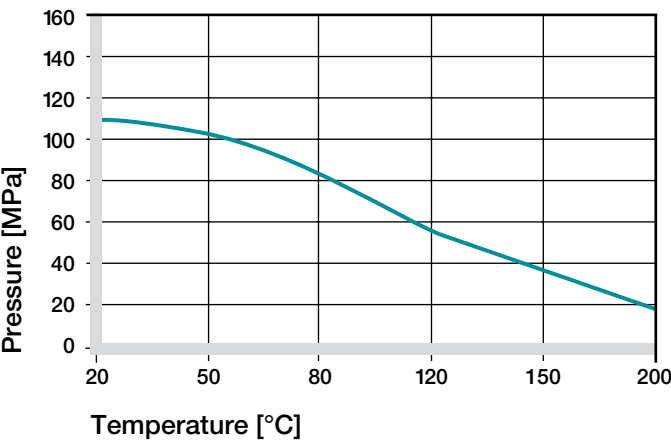


Diagram 02: Recommended maximum surface pressure as a function of temperature (110 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® H2 at radial loads. At the recommended maximum surface pressure of 110 MPa the deformation is less than 3% at room temperature. The values for tensile and compressive strength are higher than those of iglidur® H at room temperature.

► Surface Pressure, page 63

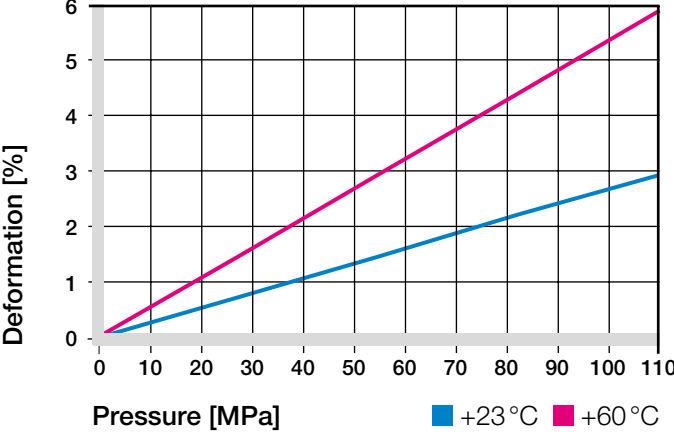


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

In the development of iglidur® H2, cost aspects and mechanical stability were in focus. The permitted surface speeds of this bearing are rather low, which primarily permits an application with slow movements or in intermittent service.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.9      | 0.6         | 2.5    |
| Short term | 1        | 0.7         | 3      |

Table 02: Maximum running speed

Temperatures

iglidur® H2 is an extremely temperature-resistant material. The short-term permitted maximum temperature is +240 °C and this enables the iglidur® H2 bearings to be subjected, for instance to a paint drying process without further load. With increasing temperatures, the compressive strength of iglidur® H2 bearings however decreases more strongly than in iglidur® H. The temperatures prevailing in the bearing system also have an influence on the bearing wear. The wear rises with increasing temperatures.

► Application Temperatures, page 66

| iglidur® H2                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +200 °C                 |
| Max. short term                | +240 °C                 |
| Add. securing is required from | +110 °C                 |

Table 03: Temperature limits

Friction and Wear

The coefficients of friction of iglidur® H2 plain bearings change with different surface speeds, loads and roughness, as indicated in the diagrams 04-06. Paired with hardened steel shafts, the friction of the iglidur® H2 bearing reduces sharply and in the high load range attains (> 30 MPa) values of 0.07.

The hardness and brittleness of the material are the reason for the sensitivity of the iglidur® H2 bearing with coarse shafts; smooth shafts (Ra = 0.1) in contrast do not increase the friction of the systems.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

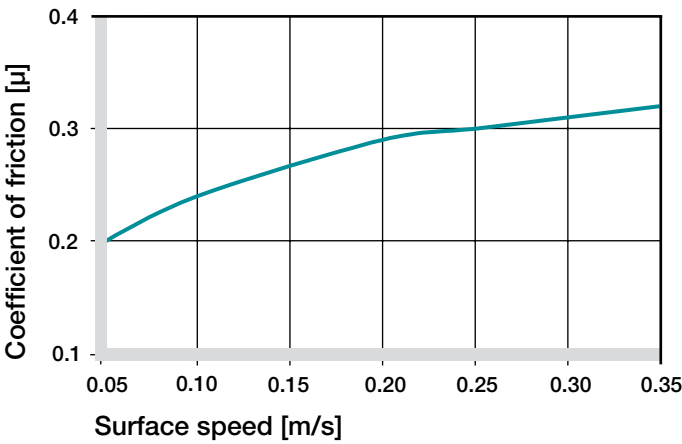


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

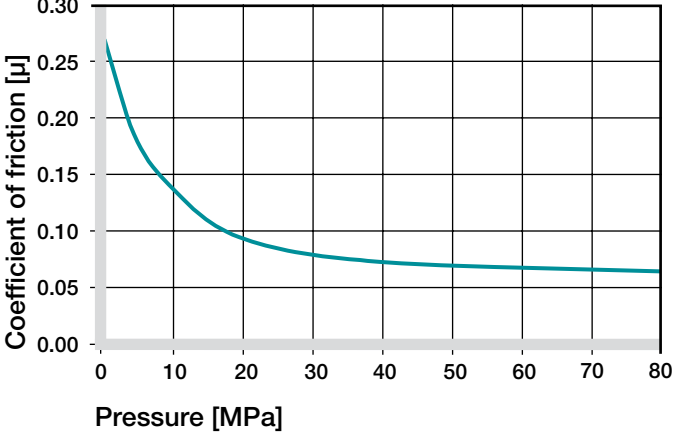


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Regarding the wear resistance of combinations with iglidur® H2, it must be indicated once again that this bearing was developed for statically high mechanical stability. The wear resistance however does not attain, with none of the bearing-shaft combinations, the values of iglidur® H370 with the corresponding shaft.

When the iglidur® H2 bearings are used, they should not be combined with hard-chromed shafts. Shafts made of automatic screw steel and V2A are essentially better, as is found in Diagrams 08 and 09.

► Shaft Materials, page 71

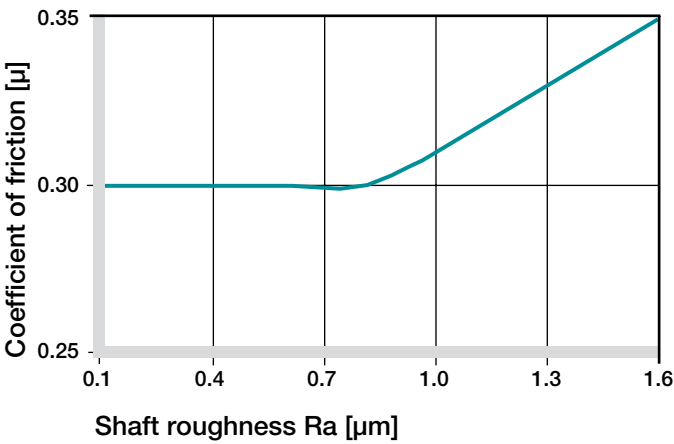


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

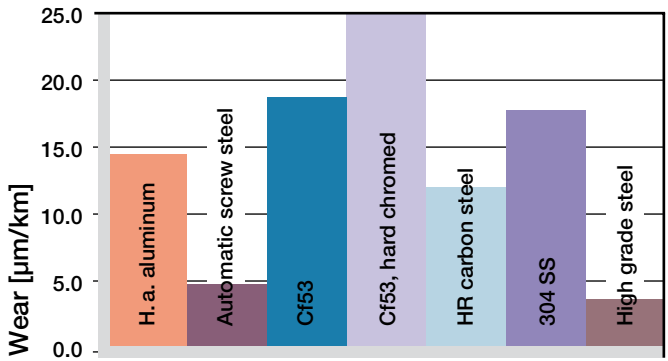


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

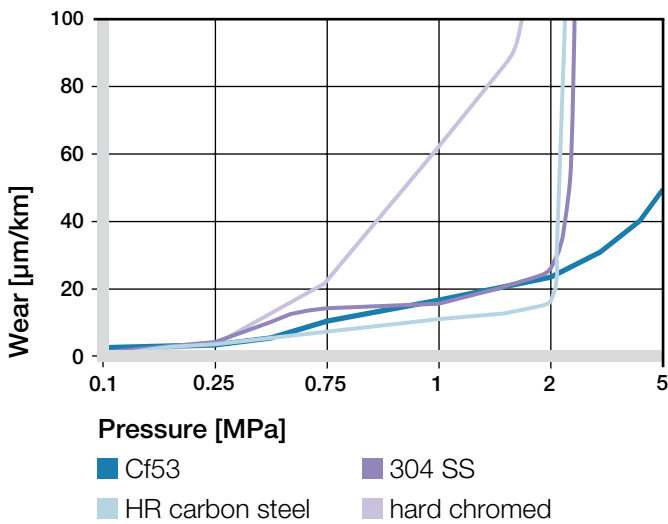


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

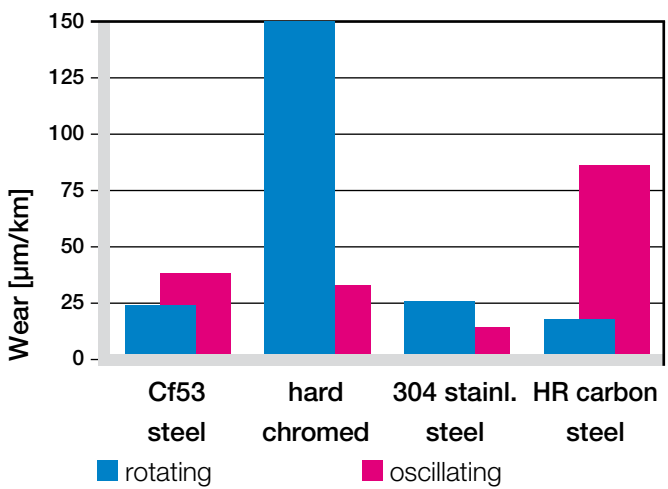


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® H2    | Greases   | Fett | Oil  | Water |
|----------------|-----------|------|------|-------|
| C. o. f. $\mu$ | 0.07–0.30 | 0.09 | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H2 bearings have a good resistance against chemicals. They are resistant to most lubricants. The iglidur® H2 is not affected by most weak organic and inorganic acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | + to 0     |
| Strong acids                    | + to –     |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur® H2 withstands neutron and gamma particle radiation without detectable losses of its excellent mechanical properties. Plain bearings made of iglidur® H2 are resistant to radiation up to an intensity of  $2 \cdot 10^2$  Gy.

UV Resistance

iglidur® H2 plain bearings change under the influence of UV radiation and other weathering effects. The surface becomes rougher and the compressive strength decreases. The use of iglidur® H2 in applications that are permanently exposed to weathering should be checked.

Vacuum

In a vacuum environment, small moisture components are released as vapour. It is possible to use iglidur® H2 in a vacuum.

Electrical Properties

iglidur® H2 plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{15} \Omega\text{cm}$ |
| Surface resistance | $> 10^{14} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® H2 bearings is approximately 0.1 % in standard climatic conditions. The saturation limit in water is 0.3 %. iglidur® H2 is an ideal material for wet environments.

Maximal Moisture Absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.1 % weight |
| Max. water absorption | 0.2 % weight |

Table 06: Moisture absorption

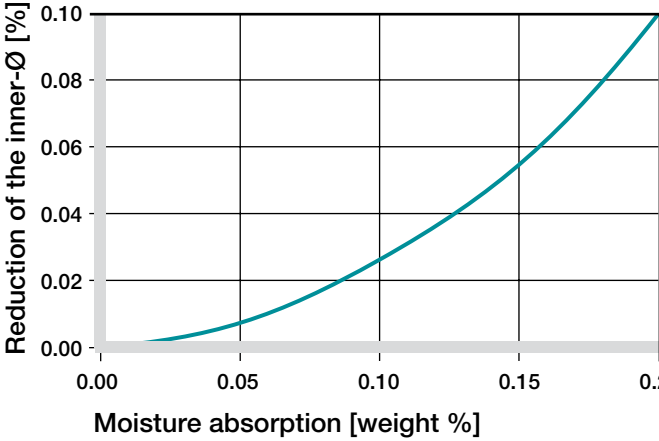


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H2 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® H2 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|----------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046        | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058        | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071        | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086        | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104        | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125        | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150        | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

Plain bearings made of iglidur® H2 are manufactured to special order. Please request iglidur® H2 bearings as an alternative to iglidur® H and iglidur® H2 bearings in high volume applications.



**iglidur<sup>®</sup> A180**

FDA-compliant general purpose material

Standard range from stock ► **from page 411**



**New! iglidur® A181**

The food grade material, compliant to FDA and per EC Directive 10/2011 EC

Standard range from stock ► **from page 421**

**iglidur® A200**

FDA-compliant

Standard range from stock ► **from page 431**

**iglidur® A350**

temperature and wear resistant,  
FDA-compliant

Standard range from stock ► **from page 447****iglidur<sup>®</sup> A500**

temperature and chemical resistance,  
FDA-compliant

Standard range from stock ► **from page 457**



**New! iglidur® A160**

## Chemicals & Food, compliant per EC Directive 10/2011 EC

Standard range from stock ► from page 429

**iglidur<sup>®</sup> A290**

robust

Standard range from stock ► **from page 477**

**New! iglidur® UW160**

KTW-compliant

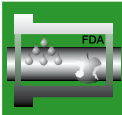
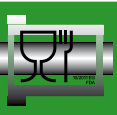
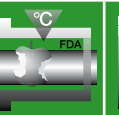
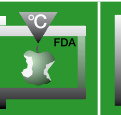
Standard range from stock ► **from page 487**

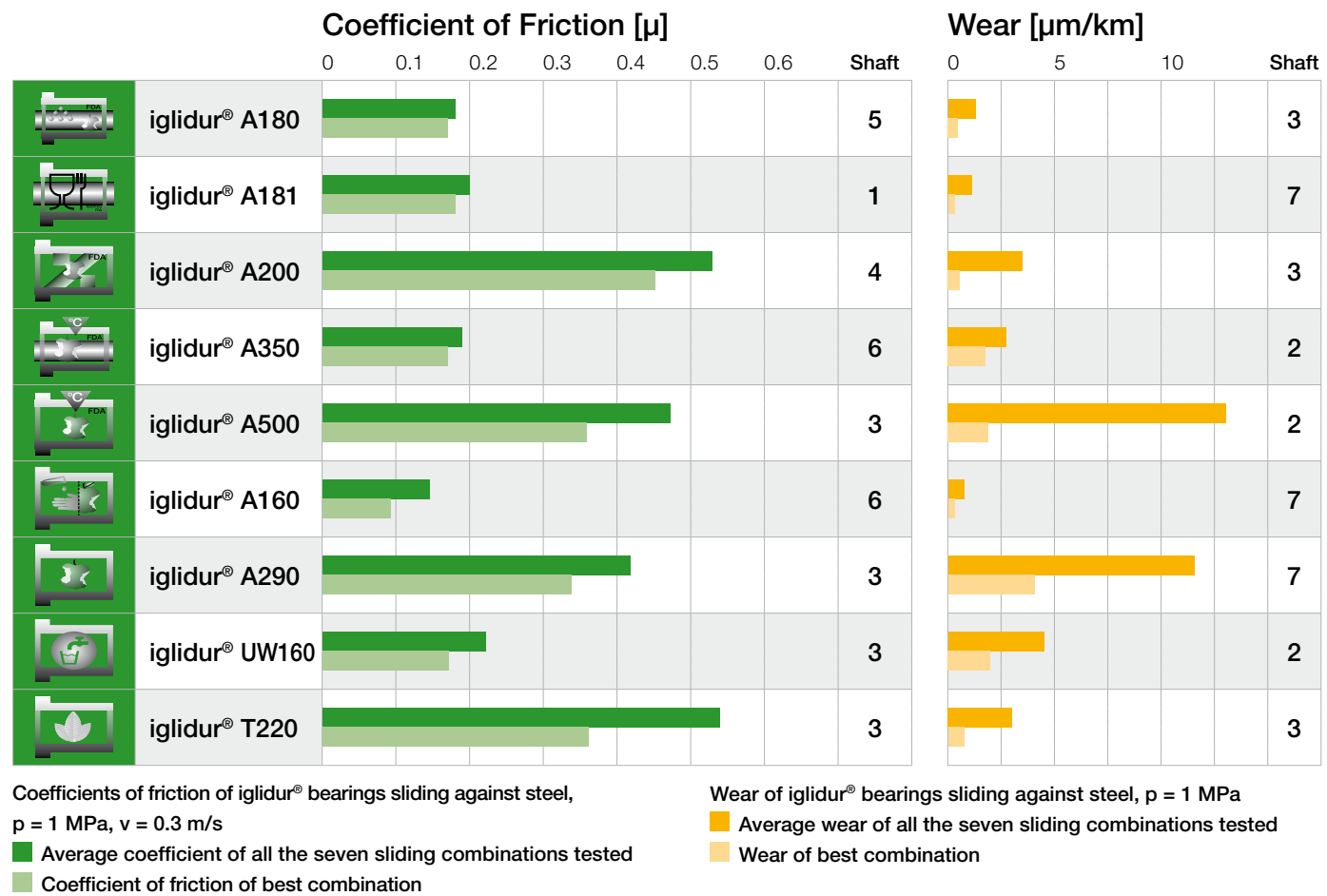
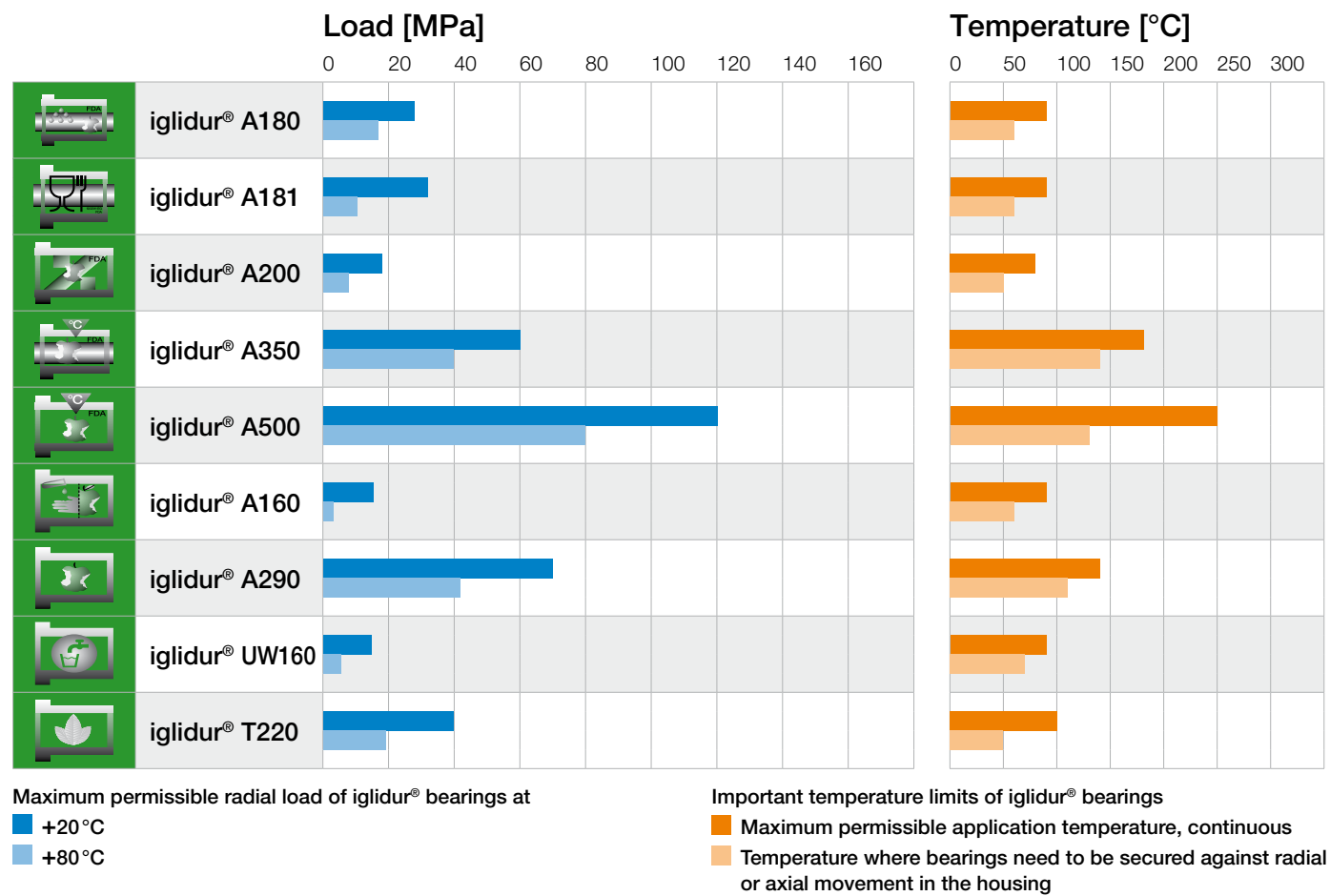
**iglidur® T220**

for the tobacco industry

On request ► from page 497

**iglidur<sup>®</sup> -  
Specialists –  
Contact with  
Food**

| iglidur®-<br>Specialists –<br>Contact with Food                                       |                         |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                       |                         | iglidur®<br>A180                                                                    | iglidur®<br>A181                                                                    | iglidur®<br>A200                                                                    | iglidur®<br>A350                                                                    | iglidur®<br>A500                                                                    | iglidur®<br>A160                                                                    | iglidur®<br>A290                                                                    | iglidur®<br>UW160                                                                   | iglidur®<br>T220                                                                    |
|    | Long life dry running   | ●                                                                                   | ●                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|    | For high loads          |                                                                                     |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |                                                                                     |
|    | For high temperatures   |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   | ●                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|    | Low friction/high speed | ●                                                                                   | ●                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|    | Dirt resistant          |                                                                                     |                                                                                     | ●                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|   | Chemicals resistant     |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |
|  | Low water absorption    | ●                                                                                   | ●                                                                                   |                                                                                     | ●                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |
|  | Food-suitable           | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     |                                                                                     |
|  | Vibration-dampening     |                                                                                     |                                                                                     | ●                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|  | Edge pressure           | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|  | For under water use     |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   | ●                                                                                   |                                                                                     |                                                                                     | ●                                                                                   |                                                                                     |
|  | Cost-effective          | ●                                                                                   | ●                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | ●                                                                                   |                                                                                     |
| from page                                                                             |                         | 411                                                                                 | 421                                                                                 | 431                                                                                 | 447                                                                                 | 457                                                                                 | 429                                                                                 | 477                                                                                 | 487                                                                                 | 497                                                                                 |



Shaft material:

2 = Cf53, hard chromed      4 = Automatic screw steel      6 = 304 SS

1 = Cf53      3 = Aluminium, hc      5 = HR carbon steel      7 = High grade steel

| Material properties table                              |                                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| General properties                                     | Unit                               | iglidur® A180      | iglidur® A181      | iglidur® A200      | iglidur® A350      | iglidur® A500      | iglidur® A160      | iglidur® A290      | iglidur® UW160     | iglidur® T220      |
| Density                                                | g/cm³                              | 1.46               | 1.38               | 1.14               | 1.42               | 1.28               | 1.00               | 1.41               | 1.04               | 1.28               |
| Colour                                                 |                                    | white              | blue               | white              | blue               | brown              | blue               | white              | grey               | white              |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2                | 0.2                | 1.5                | 0.6                | 0.3                | 0.1                | 1.7                | 0.1                | 0.3                |
| Max. water absorption                                  | % weight                           | 1.3                | 1.3                | 7.6                | 1.9                | 0.5                | 0.1                | 7.3                | 0.1                | 0.5                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.05–0.23          | 0.10–0.21          | 0.10–0.40          | 0.10–0.20          | 0.26–0.41          | 0.09–0.19          | 0.13–0.40          | 0.17–0.31          | 0.20–0.32          |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.31               | 0.31               | 0.09               | 0.40               | 0.28               | 0.25               | 0.23               | 0.22               | 0.28               |
| Mechanical properties                                  |                                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Modulus of elasticity                                  | MPa                                | 2,300              | 1,913              | 2,500              | 2,000              | 3,600              | 1,151              | 8,800              | 1,349              | 1,800              |
| Tensile strength at +20 °C                             | MPa                                | 88                 | 48                 | 116                | 110                | 140                | 19                 | 250                | 22                 | 65                 |
| Compressive strength                                   | MPa                                | 78                 | 60                 | 54                 | 78                 | 118                | 37                 | 91                 | 32                 | 55                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 28                 | 31                 | 18                 | 60                 | 120                | 15                 | 70                 | 15                 | 40                 |
| Shore D hardness                                       |                                    | 76                 | 76                 | 81                 | 76                 | 83                 | 60                 | 88                 | 60                 | 76                 |
| Physical and thermal properties                        |                                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Max. long term application temperature                 | °C                                 | +90                | +90                | +80                | +180               | +250               | +90                | +140               | +90                | +100               |
| Max. short term application temperature                | °C                                 | +110               | +110               | +170               | +210               | +300               | +100               | +180               | +100               | +160               |
| Min. application temperature                           | °C                                 | –50                | –50                | –40                | –100               | –100               | –50                | –40                | –50                | –40                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | 0.25               | 0.24               | 0.24               | 0.24               | 0.30               | 0.24               | 0.50               | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 11                 | 11                 | 10                 | 8                  | 9                  | 11                 | 7                  | 18                 | 11                 |
| Electrical properties                                  |                                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | > 10 <sup>12</sup> | > 10 <sup>13</sup> | > 10 <sup>11</sup> | > 10 <sup>14</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> | > 10 <sup>12</sup> | > 10 <sup>10</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | > 10 <sup>12</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> | > 10 <sup>13</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> | > 10 <sup>12</sup> | > 10 <sup>10</sup> |

| Material resistance (at +20 °C)                           |                     |                     |                     |                     |                     |                     |                     |                     |                     |  |
|-----------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--|
| Chemical resistance                                       | iglidur® A180       | iglidur® A181       | iglidur® A200       | iglidur® A350       | iglidur® A500       | iglidur® A160       | iglidur® A290       | iglidur® UW160      | iglidur® T220       |  |
| Alcohol                                                   | +                   | +                   | + to 0              | +                   | +                   | +                   | + to 0              | +                   | +                   |  |
| Hydrocarbons                                              | +                   | +                   | +                   | + to 0              | +                   | +                   | +                   | +                   | –                   |  |
| Greases, oils without additives                           | +                   | +                   | +                   | +                   | +                   | +                   | +                   | +                   | +                   |  |
| Fuels                                                     | +                   | +                   | +                   | +                   | +                   | + to 0              | +                   | + to 0              | +                   |  |
| Diluted acids                                             | 0 to –              | 0 to –              | 0 to –              | +                   | +                   | +                   | 0 to –              | +                   | 0                   |  |
| Strong acids                                              | –                   | –                   | –                   | +                   | +                   | +                   | –                   | +                   | –                   |  |
| Diluted alkalines                                         | +                   | +                   | +                   | +                   | +                   | +                   | +                   | +                   | –                   |  |
| Strong alkalines                                          | + to 0              | + to 0              | 0                   | +                   | +                   | +                   | + to 0              | +                   | –                   |  |
| Radiation resistance [Gy] to                              | 3 · 10 <sup>2</sup> | 2 · 10 <sup>2</sup> | 1 · 10 <sup>4</sup> | 2 · 10 <sup>2</sup> | 2 · 10 <sup>5</sup> | 1 · 10 <sup>5</sup> | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> |  |
| + resistant   0 conditionally resistant   – not resistant |                     |                     |                     |                     |                     |                     |                     |                     |                     |  |



## Typical sectors of industry and application areas

- Food industry
- Beverage technology
- Medical etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online

► [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



► [www.igus.co.uk/kitchen](http://www.igus.co.uk/kitchen)



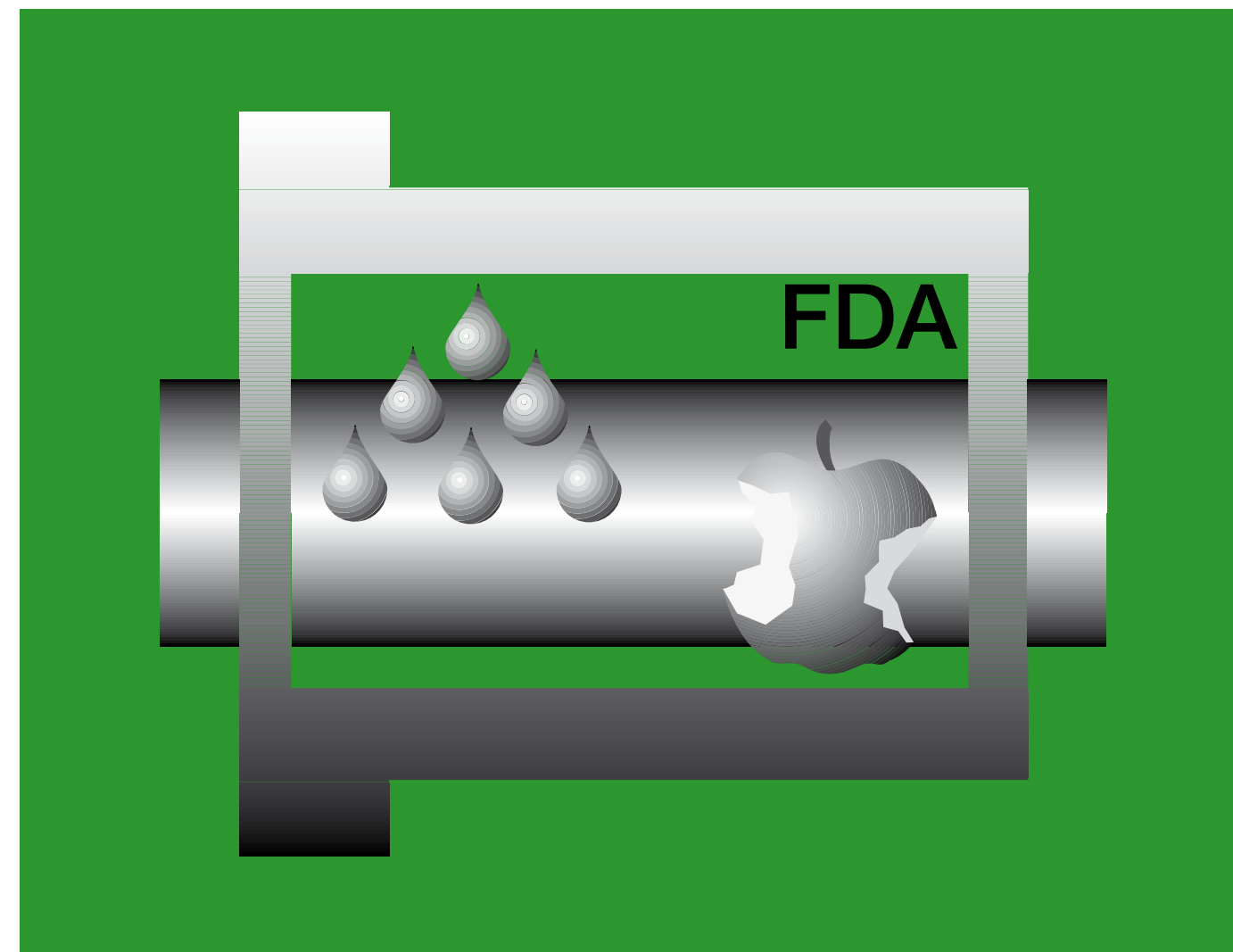
► [www.igus.co.uk/kitchen](http://www.igus.co.uk/kitchen)



► [www.igus.co.uk/milking-arm](http://www.igus.co.uk/milking-arm)



► [www.igus.co.uk/filtration-plant](http://www.igus.co.uk/filtration-plant)



## FDA-compliant general purpose material – iglidur® A180



Standard range from stock

The iglidur® A180 material complies with FOOD  
AND DRUG ADMINISTRATION (FDA) regulations

For direct contact with food or pharmaceuticals

For wet environments



**FDA-compliant general purpose material.** FDA compliant material for applications with low to medium loads in immediate environs of (or contact with) food or drugs, as well as humidity.



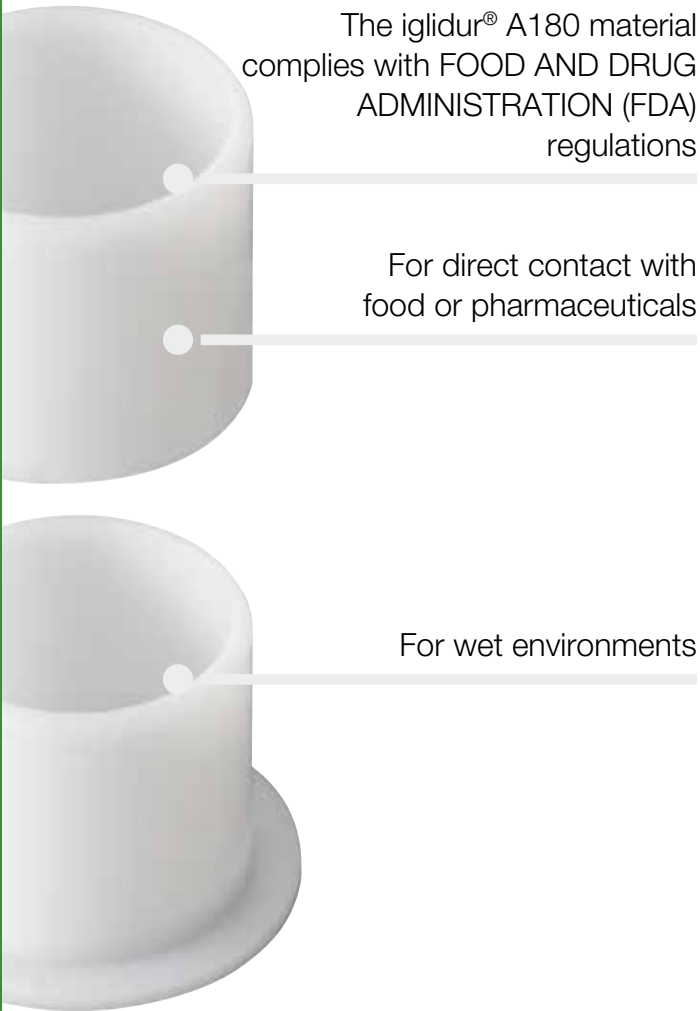
**When to use it?**

- If the bearings have direct contact with food
- If FDA-compliance is required
- If quiet operation is important
- If low water absorption is needed

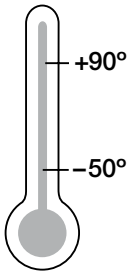


**When not to use?**

- When the maximum abrasion resistance is necessary
  - ▶ iglidur® J, page 109
- When temperatures are continuously higher than +80 °C
  - ▶ iglidur® A350, page 447
  - ▶ iglidur® A500, page 457
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81
  - ▶ iglidur® P, page 195



**Temperature**



**Product Range**

2 types  
Ø 6–30 mm  
more dimensions  
on request



products of iglidur® A180 comply with the requirements of the FDA for repeated contact with food

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® A180      | Testing Method |
| Density                                                | g/cm³                              | 1.46               |                |
| Colour                                                 |                                    | white              |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 1.3                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.05–0.23          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.31               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 2,300              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 88                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 78                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 28                 |                |
| Shore D hardness                                       |                                    | 76                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +90                |                |
| Max. short term application temperature                | °C                                 | +110               |                |
| Min. application temperature                           | °C                                 | –50                |                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 11                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

Table 01: Material properties table

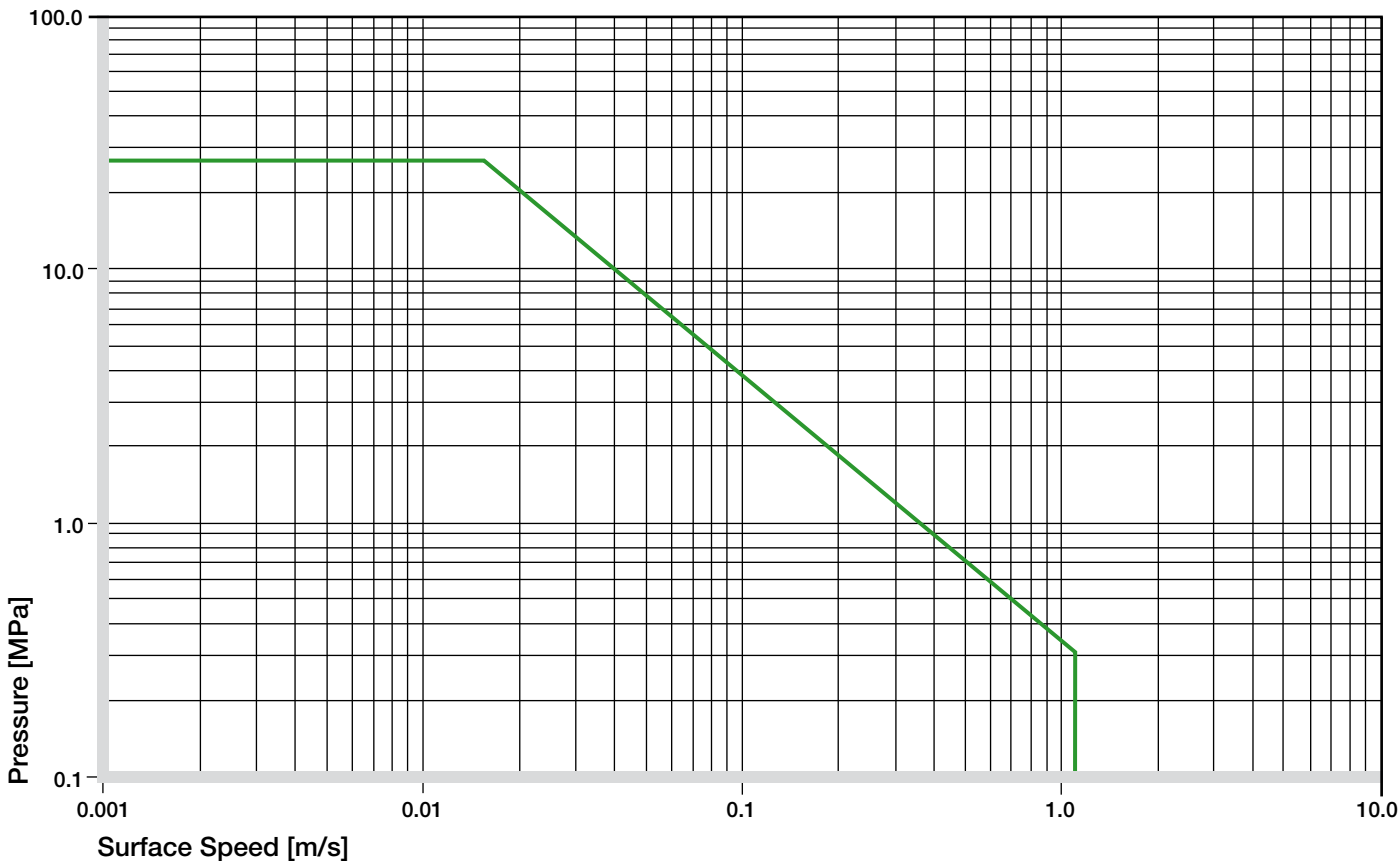


Diagram 01: Permissible pv values for iglidur® A180 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Bearings made of iglidur® A180 are suitable for application in direct contact with foodstuffs. Hence they are the ideal solution for bearing positions on machines for the food and packaging industries, the medical equipment manufacturing, for small equipment for households, etc. The iglidur® A180 distinguishes itself also in wet cleaning or where process-dependent contact with wet media is the business of the day by its extremely low humidity absorption.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® A180 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 15 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

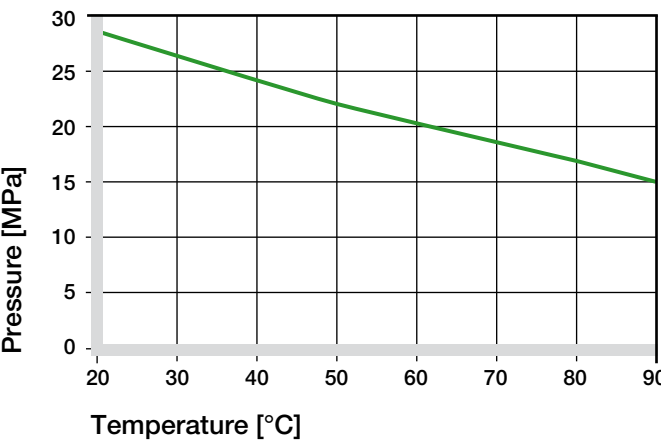


Diagram 02: Recommended maximum surface pressure as a function of temperature (28 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® A180 during radial loading. At the recommended maximum surface pressure of 20 MPa the deformation is less than 2.5 %. Plastic deformation is minimal up to this radial load. It is nonetheless depending on the duration of the applied force.

► Surface Pressure, page 63

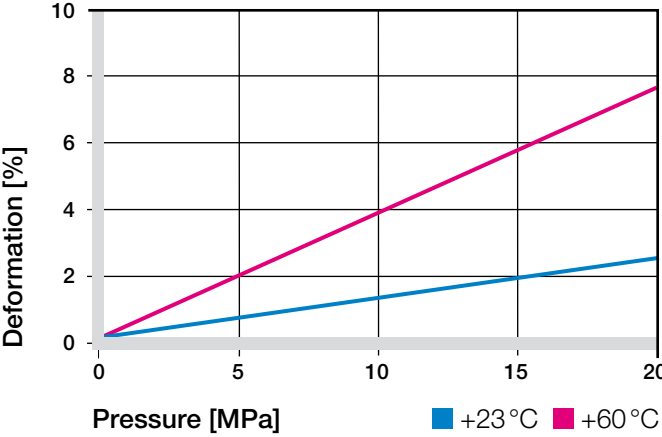


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A180 is developed for low surface speeds. Maximum speeds up to 0.8 m/s (rotating) and 3.5 m/s (linear) respectively are permitted for continuous application in dry operation.

These given values (table 02) indicate the limits at which an increase up to the continuous permissible temperature occurs. In practice these limit values are not always reached due to interactions.

- Surface Speed, page 65
- pv value and lubrication, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 3.5    |
| Short term | 1.2      | 1           | 5      |

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum temperature is +110 °C. With increasing temperatures, the compressive strength of iglidur® A180 bearings decreases. Diagram 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear.

► Application Temperatures, page 66

| iglidur® A180                  | Application Temperature |
|--------------------------------|-------------------------|
| Minimum                        | -50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +110 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

Coefficient of friction and wear resistance alter with the application parameters. For iglidur® A180 bearings, the alteration of the coefficient of friction  $\mu$  depends on surface speed and the shaft surface finish is only negligently pronounced. With increasing load, the coefficient of friction however sinks markedly. The coefficient of friction perceptibly reduces straightaway in the load range up to 5 MPa.

- Coefficients of Friction and Surfaces, page 68
- Wear Resistance, page 69

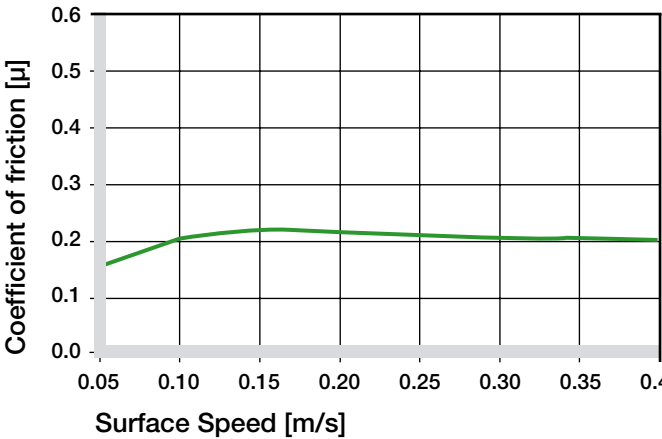


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

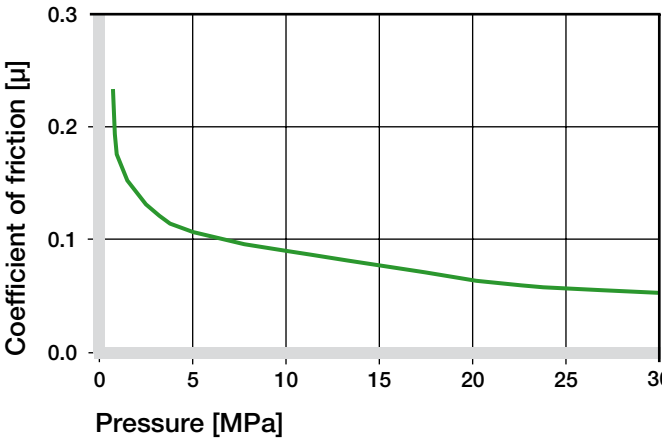


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagrams 06 to 09 show the test results of iglidur® A180 bearings running against various shaft materials. The combination “iglidur® A180/hard-anodized aluminum” clearly stands out. It attains good to excellent wear rates also with other shafts. With Cf53 shafts, the higher wear in pivoting applications is exemplary compared to rotating applications.

► Shaft Materials, page 71

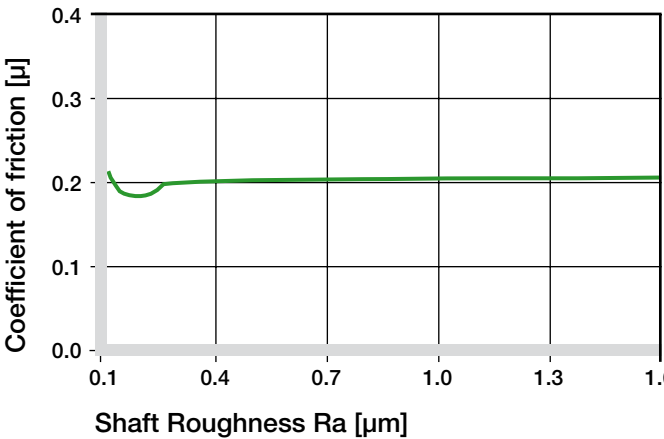


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

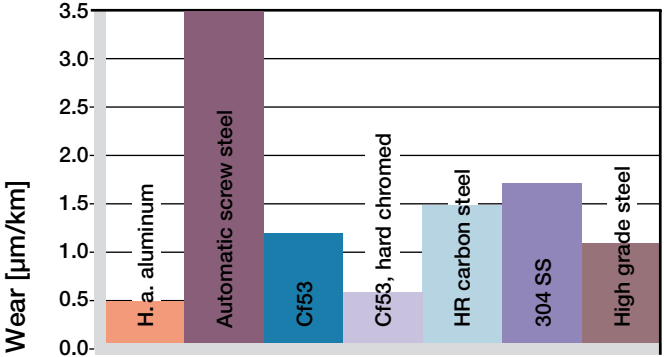


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

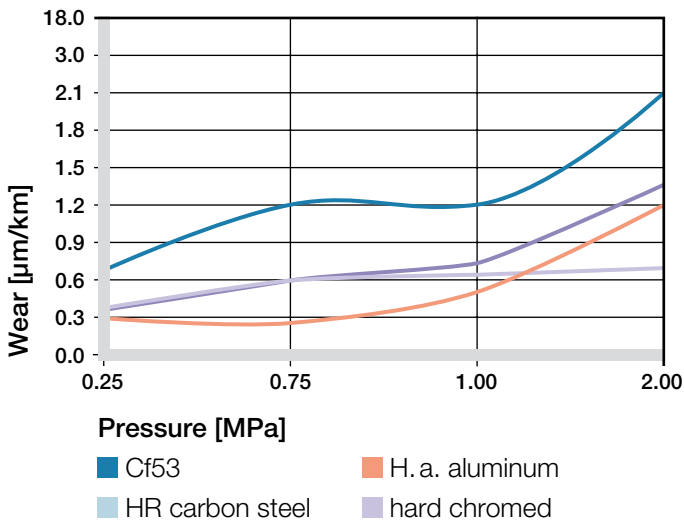


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

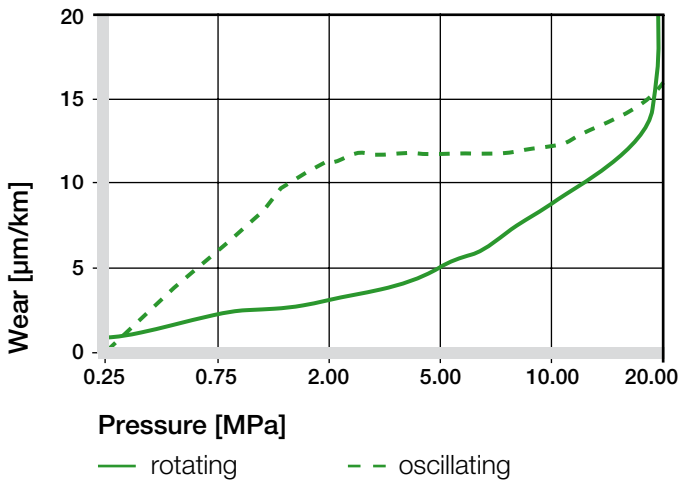


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® A180  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.05–0.23 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A180 bearings can be used under various environmental conditions and in contact with numerous chemicals. Table 05 gives an overview of the chemical resistance of iglidur® A180 bearings at room temperature.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A180 are resistant to radiation up to an intensity of  $3 \cdot 10^2$  Gy. Higher radiation levels attack the material and can cause the loss of essential mechanical properties.

UV Resistance

iglidur® A180 bearings are resistant to UV radiation, but the tribological properties deteriorate with continuous exposure.

Vacuum

When used in a vacuum environment, the iglidur® A180 plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® A180 plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{12} \Omega\text{cm}$ |
| Surface resistance | $> 10^{11} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® A180 plain bearings is approximately 0.2 % in standard atmosphere. The saturation limit submerged in water is 5 %. This must be taken into account for these types of applications.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.2 % weight |
| Max. water absorption | 1.3 % weight |

Table 06: Moisture absorption

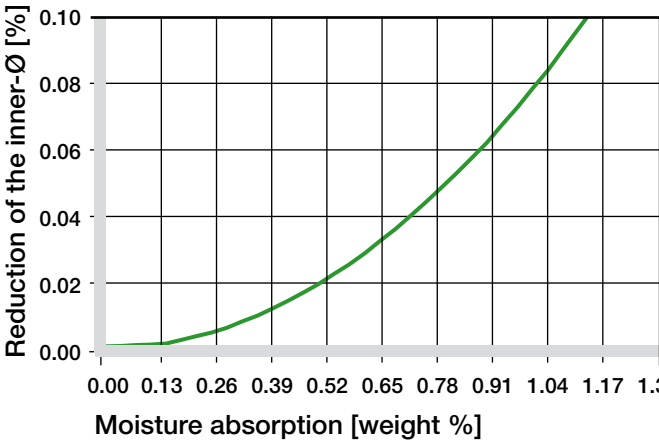


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® A180 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

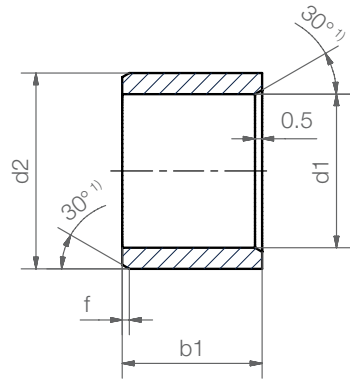
► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® A180 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| to 3             | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Sleeve bearing



Order key

A180SM-0608-10



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® A180

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| A180SM-0608-10 | 6.0  | +0.020 +0.068 | 8.0  | 10.0      |
| A180SM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| A180SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| A180SM-1214-15 | 12.0 | +0.032 +0.102 | 14.0 | 15.0      |
| A180SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| A180SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| A180SM-2528-30 | 25.0 | +0.040 +0.124 | 28.0 | 30.0      |
| A180SM-3034-20 | 30.0 | +0.040 +0.124 | 34.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

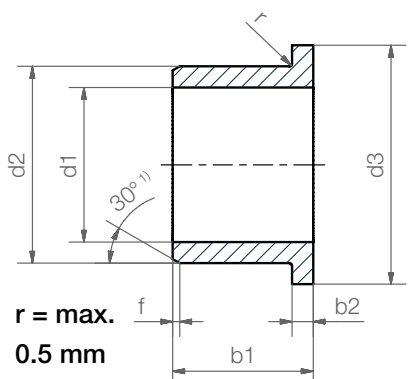


delivery from stock  
time



prices price list online  
www.igus.co.uk/en/a180

Flange bearing



Order key

A180FM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® A180

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| A180FM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| A180FM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| A180FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| A180FM-1214-15 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 15.0      | 1.0         |
| A180FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| A180FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |
| A180FM-2528-21 | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 21.5      | 1.5         |
| A180FM-3034-26 | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 26.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

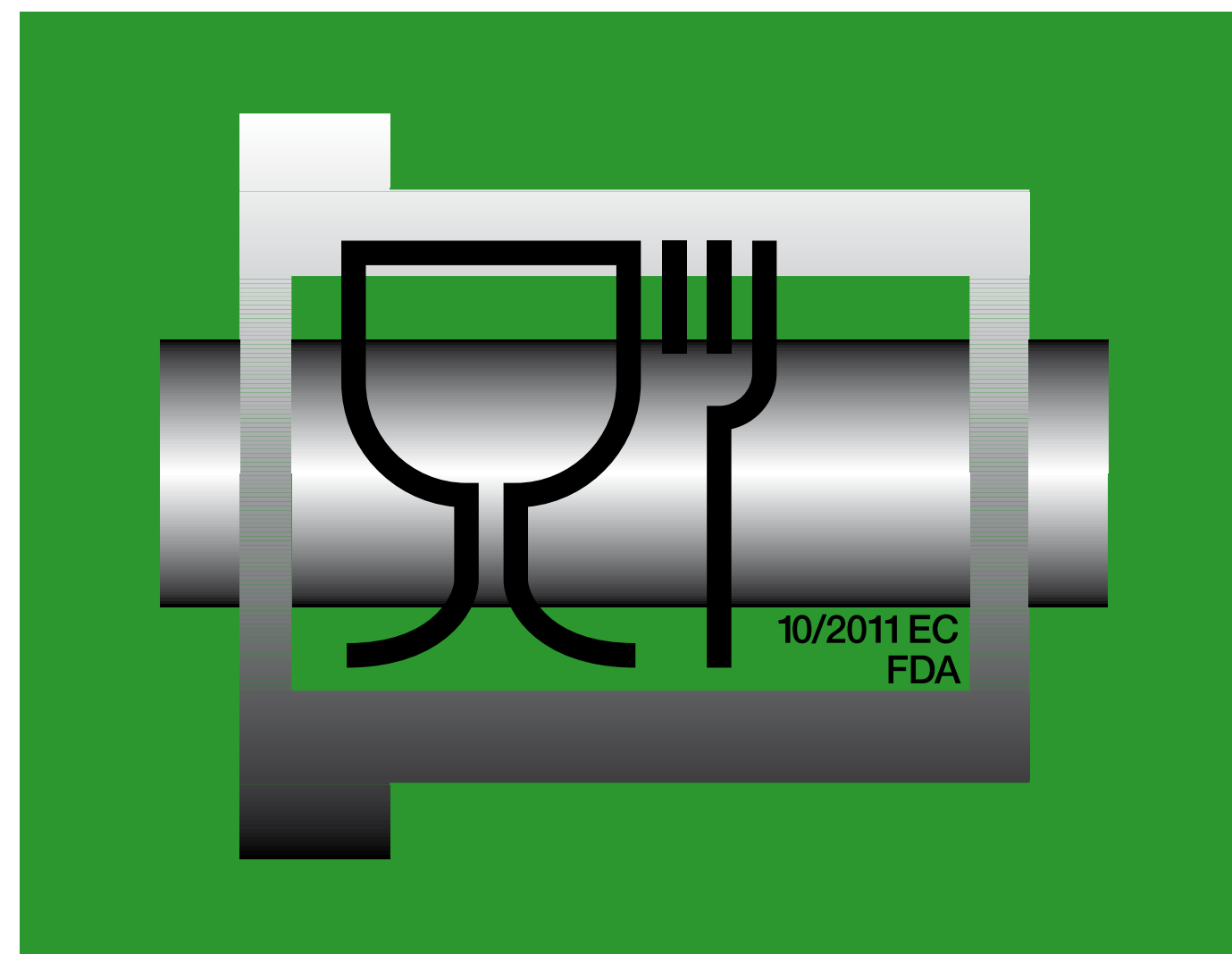
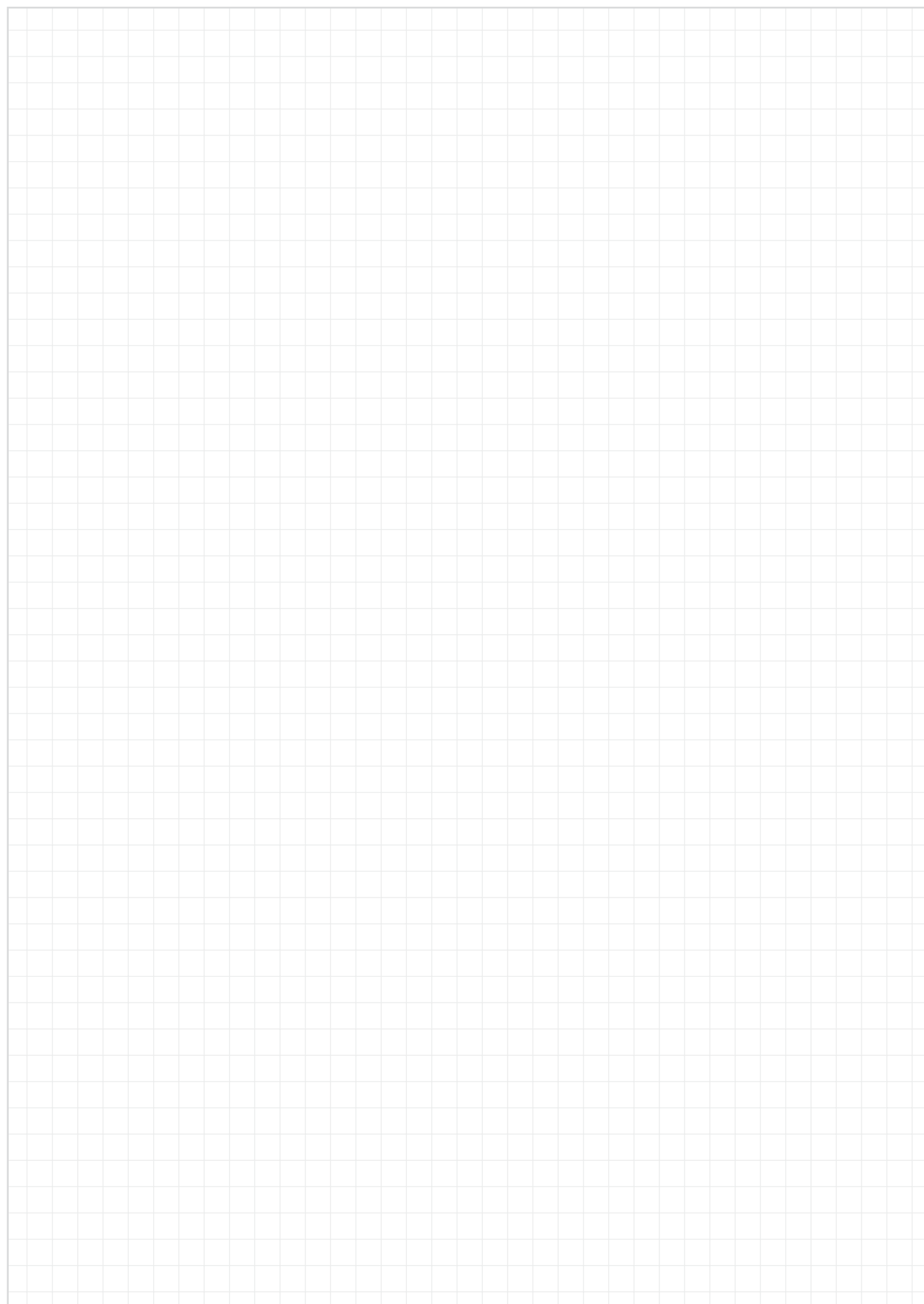
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



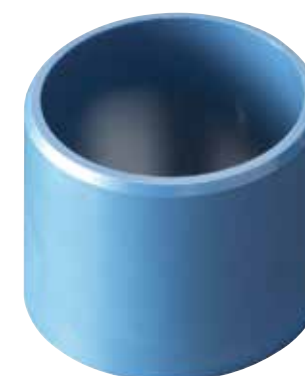
delivery from stock  
time



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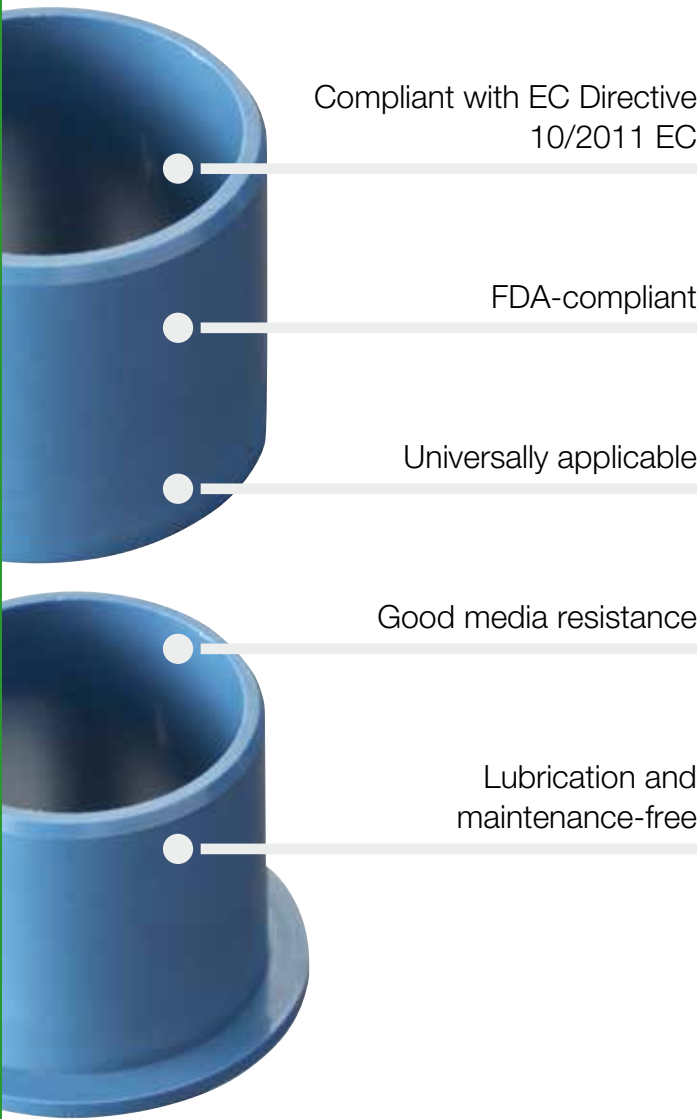


The food grade material, compliant to FDA and per EC Directive 10/2011 EC – iglidur® A181



- Standard range from stock
- Compliant with EC Directive 10/2011 EC
- FDA compliant
- Universally applicable
- Good media resistance
- Wear resistant
- Lubrication and maintenance-free

**The food grade material.** The iglidur® A181 material is food compliant with Directive 10/2011 EC and also to FDA specifications. The blue colour also facilitates the often desired “optical detectability” in the food industry.



**When to use it?**

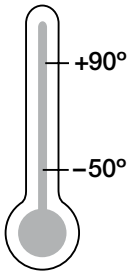
- When FDA compliance is required
- When a compliant with Directive 10/2011EG material is required
- When an universal material suitable for direct contact with food is required



**When not to use?**

- When FDA and 10/2011 EG Directive compliance are not required
  - ▶ iglidur® J, page 109
- When temperatures are continuously greater than +90 °C
  - ▶ iglidur® A350, page 447
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81
  - ▶ iglidur® P, page 195

**Temperature**



**Product Range**

2 types  
Ø 6–20 mm  
more dimensions  
on request



The products made of iglidur® A181 are food compliant with Directive 10/2011 EC and also to FDA specifications for repeated contact with food

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® A181      | Testing Method |
| Density                                                | g/cm³                              | 1.38               |                |
| Colour                                                 |                                    | blue               |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 1.3                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.10–0.21          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.31               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 1,913              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 48                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 60                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 31                 |                |
| Shore D hardness                                       |                                    | 76                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +90                |                |
| Max. short term application temperature                | °C                                 | +110               |                |
| Min. application temperature                           | °C                                 | –50                |                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 11                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | DIN 53482      |

Table 01: Material properties table

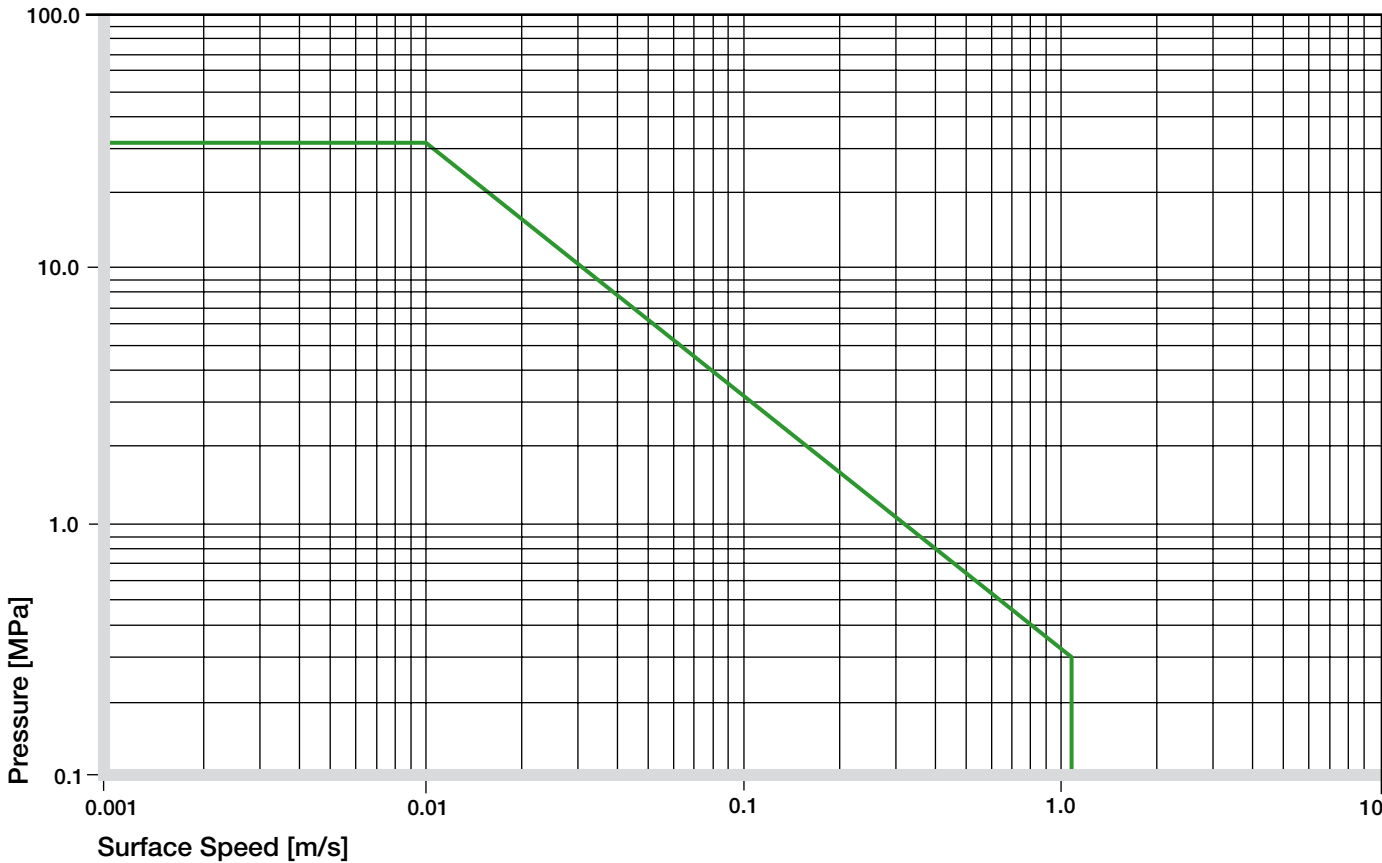


Diagram 01: Permissible pv values for iglidur® A181 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing



Due to their technical properties and their conformity with the relevant regulations, iglidur® A181 bearings are predestined for applications in food technology. Compared to iglidur® A180 with regard to the mechanical properties, temperature and media resistance, iglidur® A181 is more suitable with respect to the wear resistance in most cases.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® A181 plain bearings decreases. The Diagram 02 shows this inverse relationship. At a temperature of +70 °C, the permitted surface pressure is still almost half of the initial value at room temperature. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

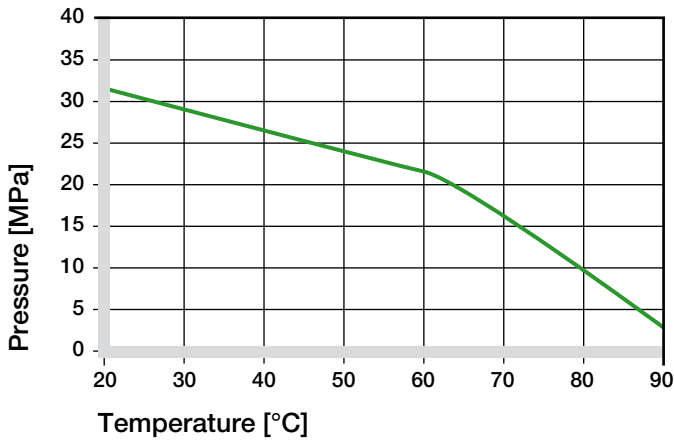


Diagram 02: Recommended maximum surface pressure as a function of temperature (31 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® A181 during radial loading. At the recommended maximum surface pressure of 31 MPa the deformation is less than 3 % in ambient conditions.

► Surface Pressure, page 63

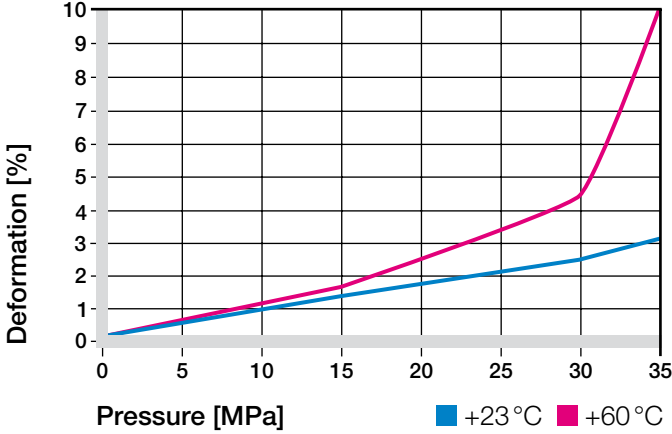


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A181 is developed for low surface speeds. Maximum speeds up to 0.8 m/s (rotating) and 3.5 m/s (linear) respectively are permitted for continuous use in dry operation. These given values (table 02) indicate the limits at which an increase up to the continuous permissible temperature occurs. In practice these limit values are not always reached.

► Surface Speed, page 65  
► pv value and lubrication, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 3.5    |
| Short term | 1.2      | 1.0         | 5.0    |

Table 02: Maximum running speed

Temperatures

The longterm upper temperature limit of +90 °C permits the broad use in applications with direct contact with food. As shown in diagram 02, with increasing temperatures, the compressive strength decreases. When considering temperatures, the additional frictional heat in the bearing system must be taken into account.

► Application Temperatures, page 66

| iglidur® A181                  | Application Temperature |
|--------------------------------|-------------------------|
| Minimum                        | -50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +110 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

Coefficient of friction and wear resistance alter with the application parameters. For iglidur® A181 bearings, the alteration of the coefficient of friction  $\mu$  depends on surface speed and the shaft surface finish. With increasing load, the coefficient of friction however sinks markedly. The coefficient of friction significantly reduces straightaway in the load range up to 5 MPa.

► Coefficients of Friction and Surfaces, page 68  
► Wear Resistance, page 69

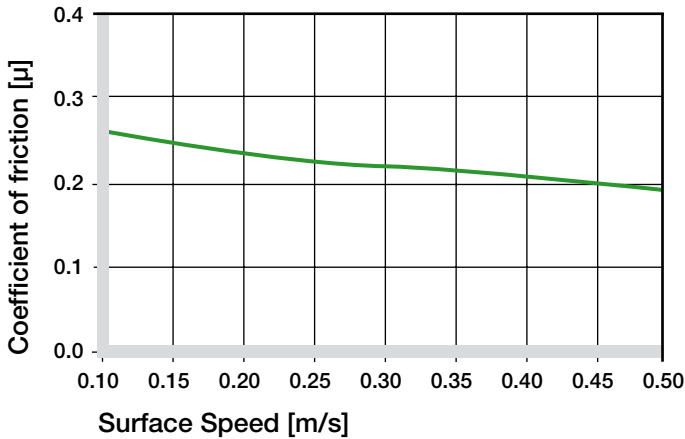


Diagram 04: Coefficient of friction as a function of the running speed, p = 1.0 MPa

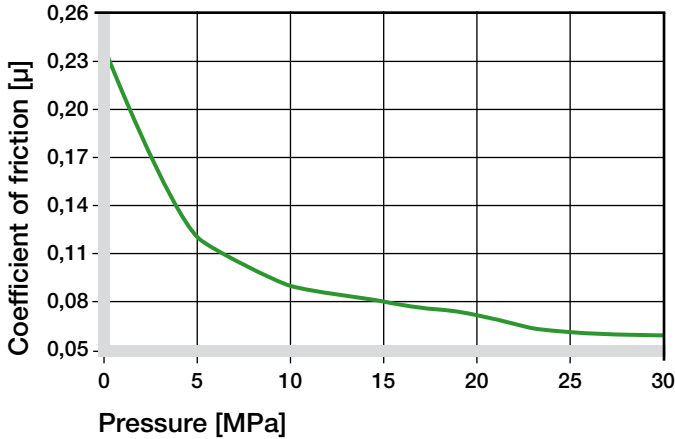


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagrams 06 to 09 show results of testing different shaft materials with plain bearings made of iglidur® A181. Particular attention is paid in the food industry to the corrosion-resistant shaft types. Diagram 08 shows that very low wear rates can be achieved in combination with these shafts. As with many of the iglidur materials, wear rate increases with otherwise identical parameters in rotation (Diagram 09).

► Shaft Materials, page 71

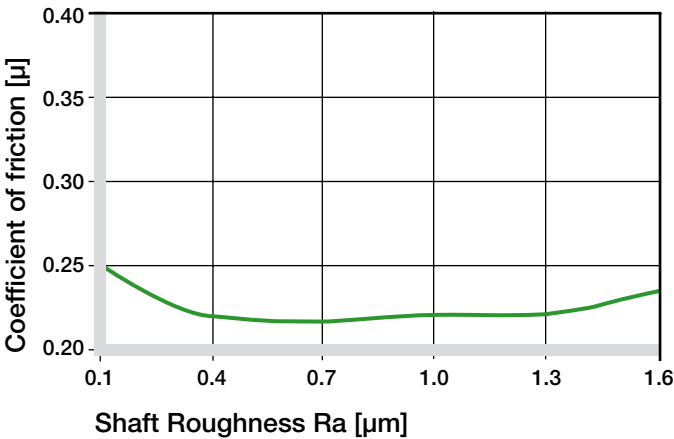


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

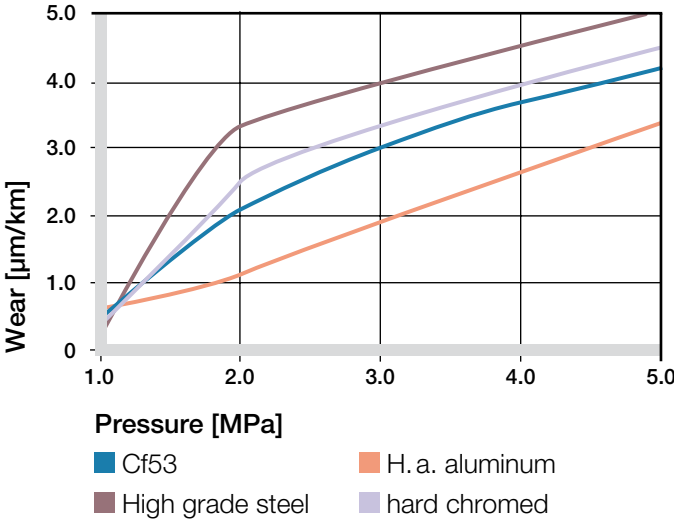


Diagram 07: Wear with different shaft materials in rotational operation, as a function of the pressure

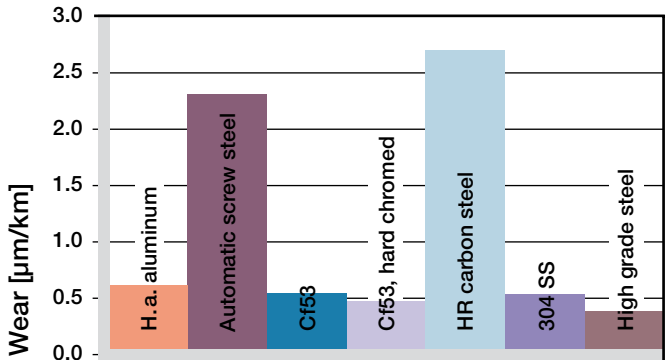


Diagram 08: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

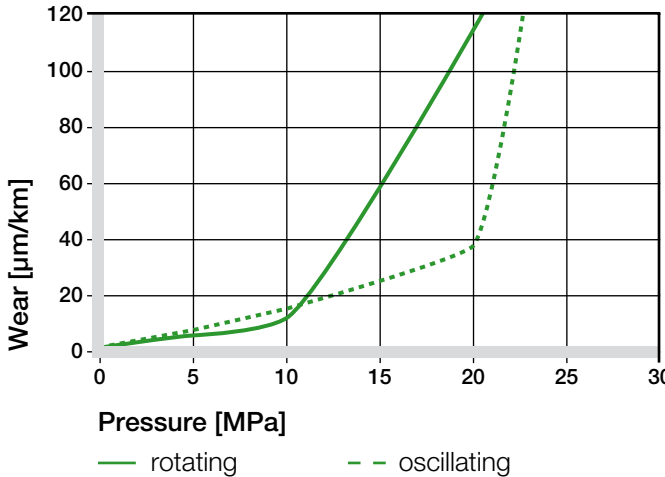


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® A181  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.10–0.21 | 0.08    | 0.03 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A181 bearings can be used under various environmental conditions and in contact with numerous chemicals. Table 05 gives an overview of the chemical resistance of iglidur® A181 bearings at room temperature.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]  
Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A181 are resistant to radiation up to an intensity of  $2 \cdot 10^2$  Gy.

UV Resistance

iglidur® A181 bearings are only conditionally resistant to UV radiation.

Vacuum

When used in a vacuum environment, the iglidur® A181 plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

|                                                           |                             |
|-----------------------------------------------------------|-----------------------------|
| iglidur® A181 plain bearings are electrically insulating. |                             |
| Volume resistance                                         | $> 10^{12} \Omega\text{cm}$ |
| Surface resistance                                        | $> 10^{12} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® A181 plain bearings is approximately 0.2 % in standard atmosphere. The saturation limit submerged in water is 1.3 %. This must be taken into account for these types of applications.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.2 % weight |
| Max. water absorption       | 1.3 % weight |

Table 06: Moisture absorption

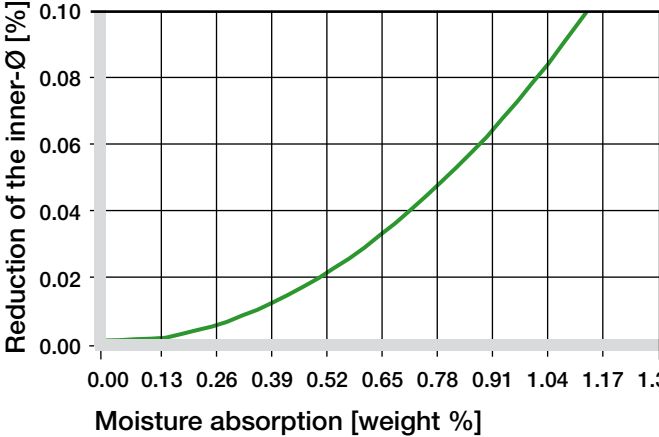


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

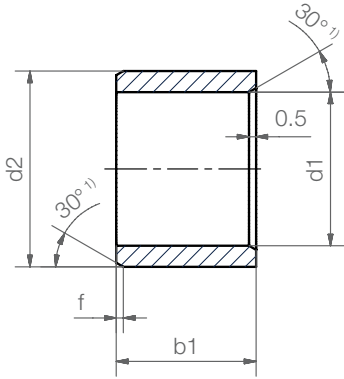
iglidur® A181 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances.

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® A181 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180          | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212          | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245          | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A181SM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® A181

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

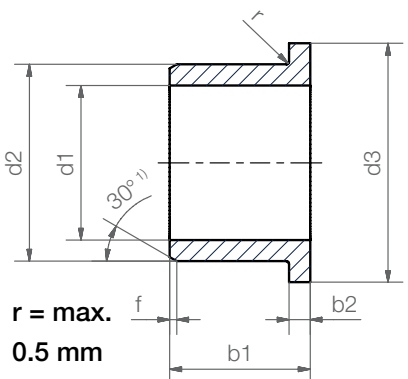
|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    |      | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|------|---------------|------|-----------|
| A181SM-0608-06 | New! | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| A181SM-0810-10 | New! | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| A181SM-1012-10 | New! | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| A181SM-1214-12 | New! | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| A181SM-1618-15 | New! | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| A181SM-2023-20 | New! | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

A181FM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® A181

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    |      | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|------|---------------|------|-----------|-----------|-------------|
| A181FM-0608-06 | New! | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| A181FM-0810-10 | New! | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| A181FM-1012-10 | New! | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| A181FM-1214-12 | New! | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| A181FM-1618-17 | New! | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| A181FM-2023-21 | New! | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/a181

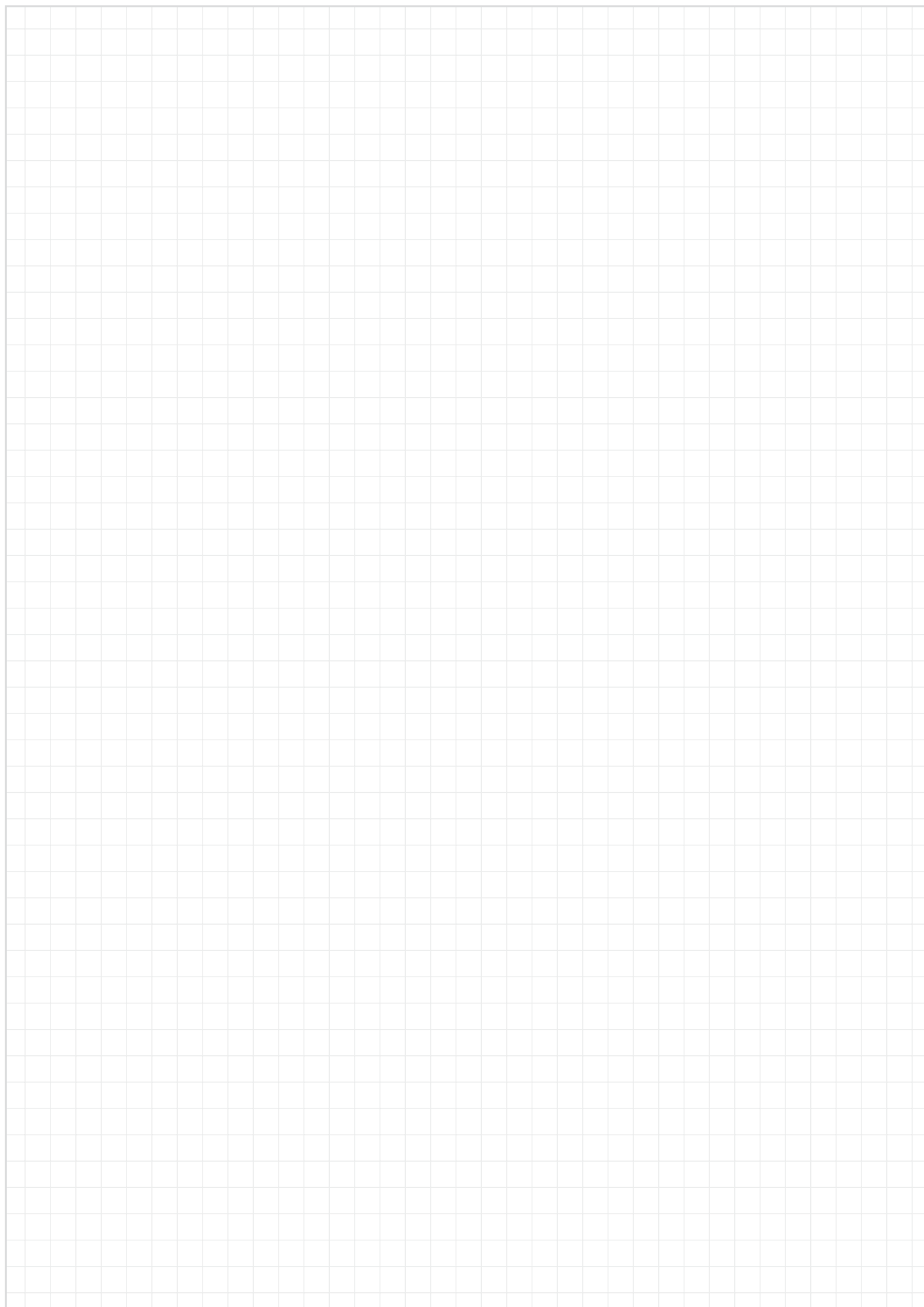


delivery from stock  
time



prices price list online  
www.igus.co.uk/en/a181





## FDA-compliant – iglidur® A200



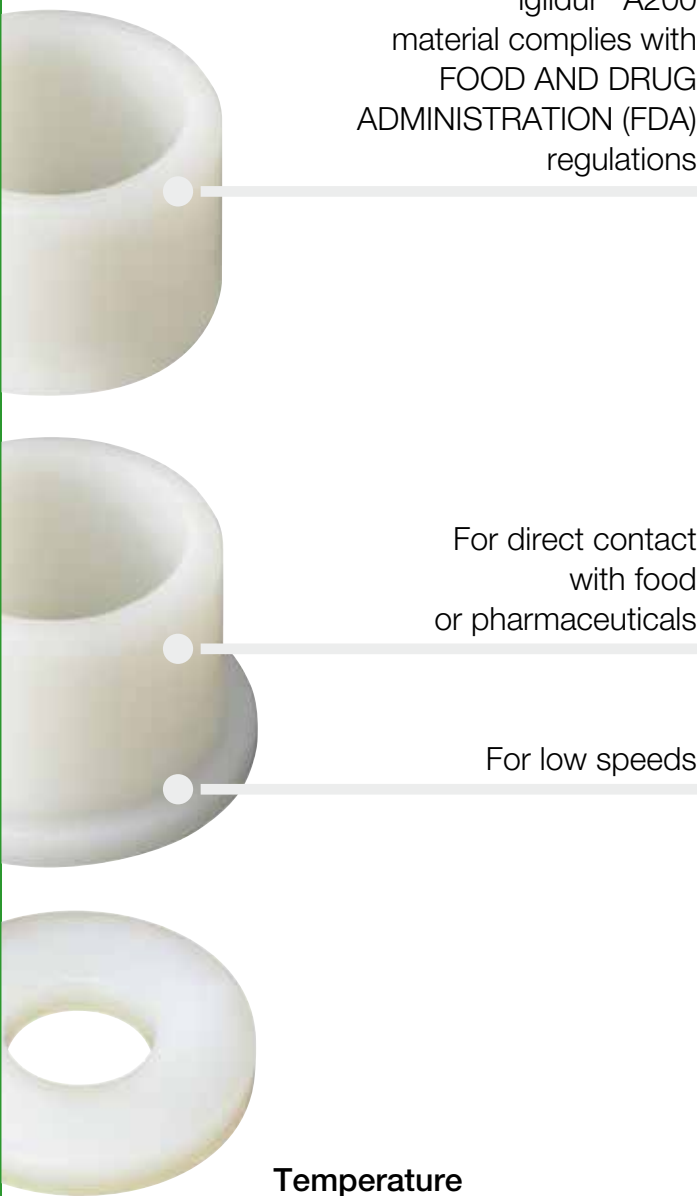
Standard range from stock

iglidur® A200 material complies with Food and Drug Administration (FDA) regulations

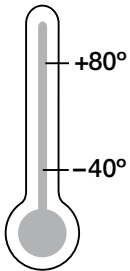
For direct contact with food or pharmaceuticals

For low speeds

**FDA-compliant.** FDA compliant material for applications with low to medium loads in immediate environs of (or contact) with food or drugs.



Temperature



**When to use it?**

- Suitable for direct contact with food
- When quiet operation is important
- When dirt needs to become embedded
- If FDA compliance is necessary



**When not to use it?**

- When the maximum abrasion resistance is necessary
  - ▶ iglidur® W300, page 151
- When temperatures are continuously higher than +80 °C
  - ▶ iglidur® A290, page 477
  - ▶ iglidur® A500, page 457
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81
- For operations in wet environments
  - ▶ iglidur® A180, page 411

**Product range**

3 types  
Ø 1–32 mm  
more dimensions  
on request



Products of iglidur® A200 comply with the requirements of the FDA for repeated contact with food

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® A200      | Testing method |
| Density                                                | g/cm³                              | 1.14               |                |
| Colour                                                 |                                    | white              |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.5                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 7.6                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.10–0.40          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.09               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 2,500              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 116                | DIN 53452      |
| Compressive strength                                   | MPa                                | 54                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 18                 |                |
| Shore D hardness                                       |                                    | 81                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +80                |                |
| Max. short term application temperature                | °C                                 | +170               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 10                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | DIN 53482      |

Table 01: Material properties table

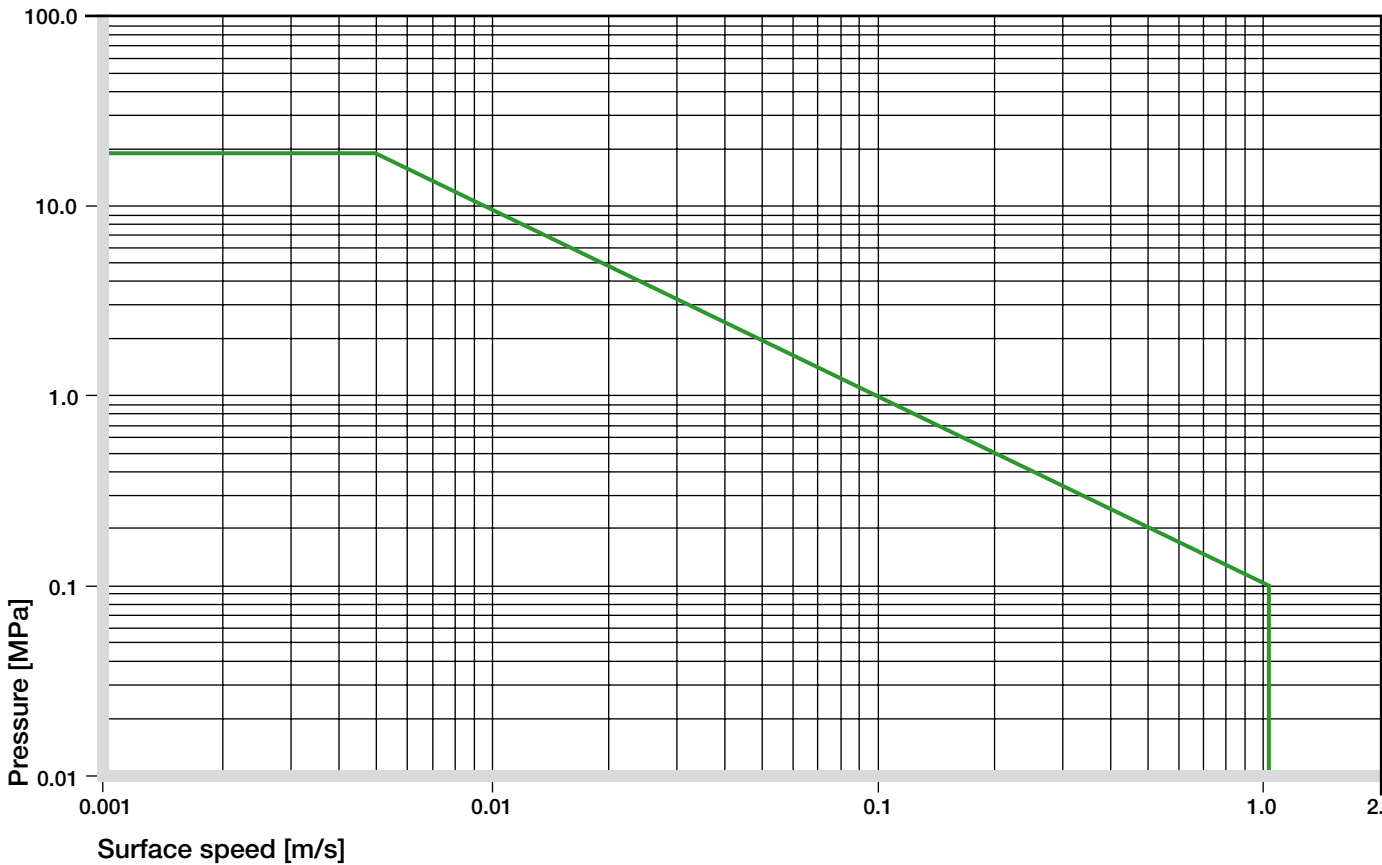


Diagram 01: Permissible pv values for iglidur® A200 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Bearings made of iglidur® A200 are suitable for application in direct contact with foodstuffs. Hence they are the ideal solution for bearing positions in machines for the food industry, medical equipment manufacturing, for small equipment for households, etc. As the admixture of lubricants should be foregone in favor of food compatibility, the thermoplastic composition of iglidur® A200 is particularly adjusted for abrasion resistance. In addition the iglidur® A200 is characterized by its capacity to embed dirt and by its quiet operating behavior.

The good wear properties, dirt resistance and the possibility for dry operation allow to replace elaborately sealed, lubricated bearings for little costs.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® A200 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +80 °C the permissible surface pressure is 8 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

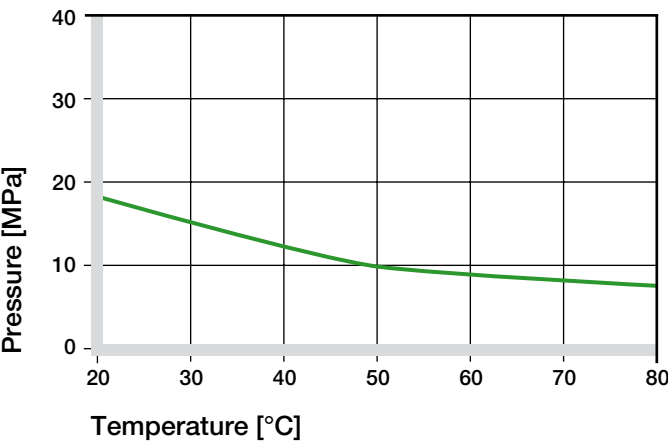


Diagram 02: Recommended maximum surface pressure as a function of temperature (18 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® A200 at radial loads. At the recommended maximum surface pressure of 18 MPa the deformation is less than 2 %. A plastic deformation can be ignored up to this value. It is nonetheless depending on the duration of the applied force.

► Surface Pressure, page 63

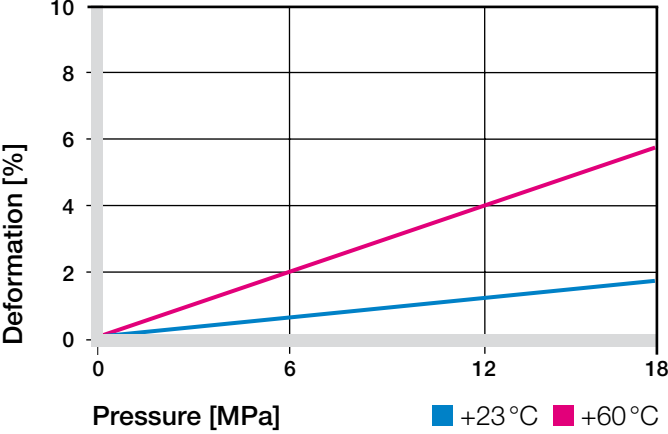


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A200 was developed for low surface speeds. With regard to running dry in continuous use, a maximum of 0.8 m/s (rotating) or 2 m/s (linear) is possible. These given values indicate the limits at which an increase up to the continuous permissible temperature occurs. This increase is a result of friction. In practice, these limit values are not often reached, due to varying application conditions.

► Surface Speed, page 65  
► pv value, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 2      |
| Short term | 1.5      | 1.1         | 3      |

Table 02: Maximum running speed

Temperatures

The maximum permissible short term temperature +170 °C. With increasing temperatures, the compressive strength of iglidur® A200 plain bearings decreases. Diagram 02 shows this relationship. The ambient temperatures prevalent in the bearing system also have an effect on the bearing wear.

► Application Temperatures, page 66

| iglidur® A200                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +80 °C                  |
| Max. short term                | +170 °C                 |
| Add. securing is required from | +50 °C                  |

Table 03: Temperature limits

Friction and Wear

Just as the wear resistance, the coefficient of friction also changes with the load. For iglidur® A200 plain bearings, the coefficient of friction  $\mu$  decreases slightly with increasing load. Friction and wear also depend to a high degree on the reverse partner. The shaft can be a decisive factor for an ideal pairing of the bearing system. Thus extremely smooth shafts enhance not only the coefficient of friction, but also the bearing wear. The most suited are smoothed surfaces with an average surface finish of  $R_a = 0.4$  to  $0.6 \mu\text{m}$ .

► Coefficients of Friction and Surfaces, page 68  
► Wear Resistance, page 69

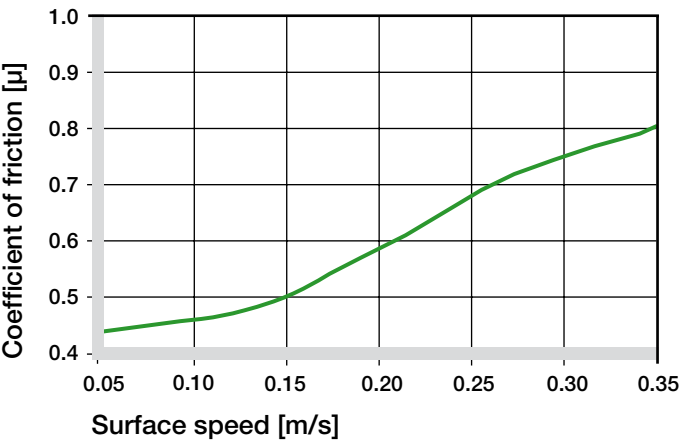


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

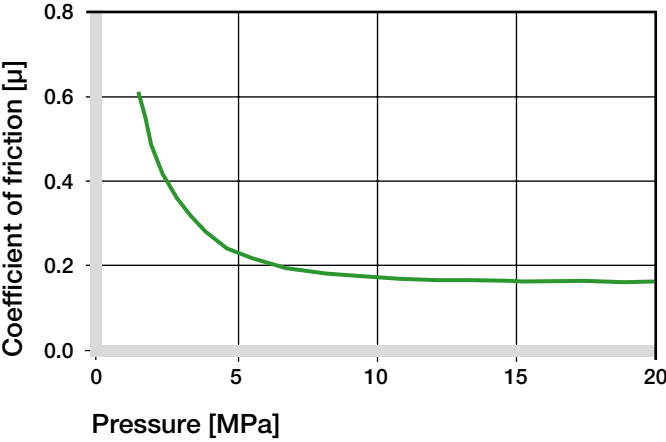


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

Diagrams 06 to 09 show the test results of iglidur® A200 bearings running against various shaft materials. In pivoting applications below a load  $p = 2 \text{ MPa}$ , the wear of iglidur® A200 bearings is higher than in rotating applications with equal load. Here the St37 shaft is a positive exception.

► Shaft Materials, page 71

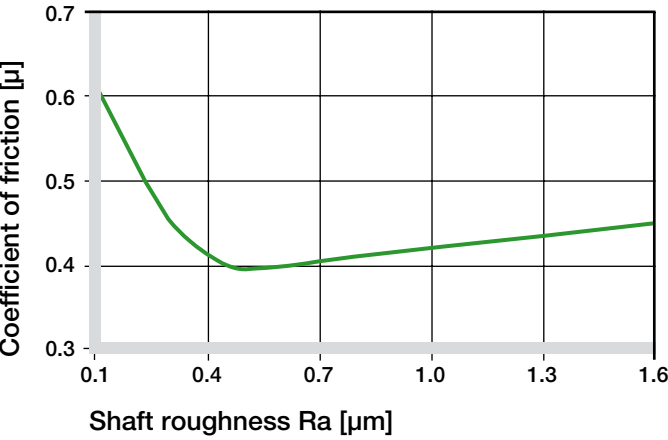


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

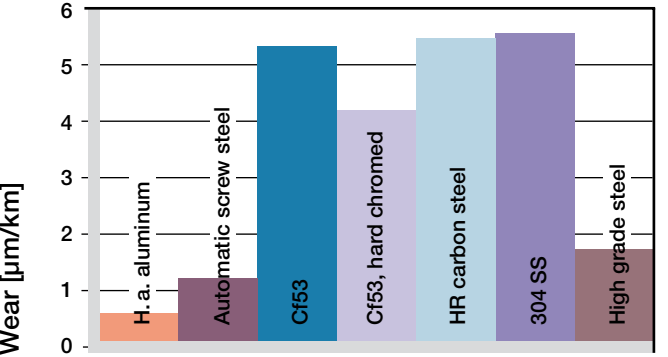


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

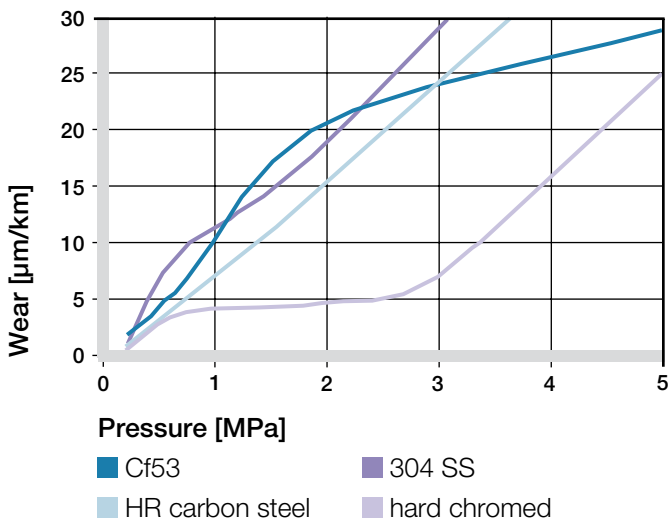


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

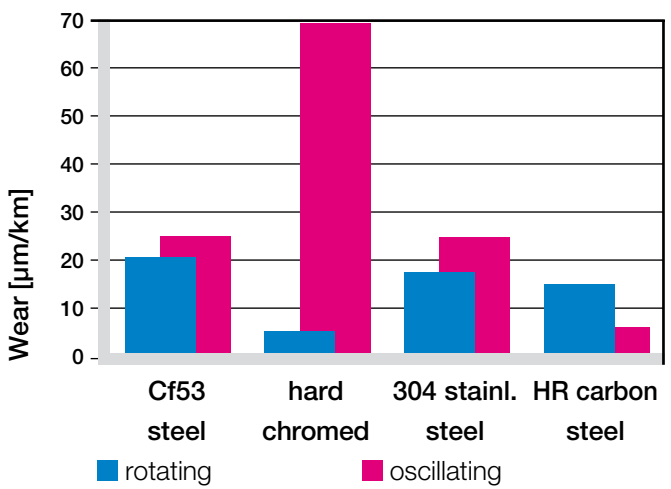


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® A200 | Dry     | Greases | Oil  | Water |
|---------------|---------|---------|------|-------|
| C. o. f. µ    | 0.1–0.4 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A200 plain bearings have strong resistance to chemicals. They are also resistant to most lubricants.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A200 are resistant to radiation up to an intensity of 1 · 10<sup>4</sup> Gy. Higher radiation levels attack the material and can cause the loss of essential mechanical properties.

UV Resistance

iglidur® A200 plain bearings are resistant to UV radiation.

Vacuum

In a vacuum environment, iglidur® A200 plain bearings have restricted use.

Electrical Properties

iglidur® A200 plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>13</sup> Ωcm |
| Surface resistance | > 10 <sup>12</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® A200 plain bearings is approximately 1.5 % in standard atmosphere. The saturation limit submerged in water is 7.6 %. This must be taken into account for these types of applications.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 1.5 % weight |
| Max. water absorption       | 7.6 % weight |

Table 06: Moisture absorption

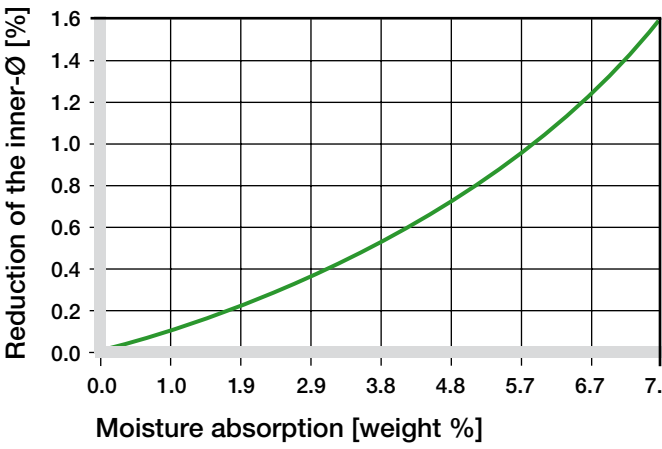


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® A200 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

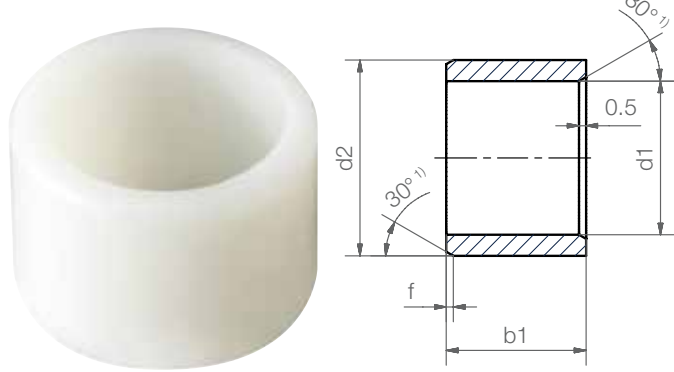
► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® A200 D11 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.020 +0.080          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.030 +0.105          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.040 +0.130          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.050 +0.160          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.065 +0.195          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.080 +0.240          | 0 +0.025        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Sleeve bearing



Dimensions according to DIN 1850 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

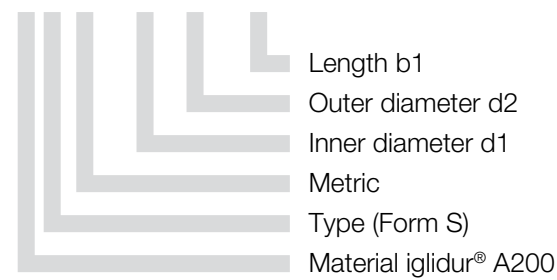
| Part number | d1  | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|-----|---------------|------|-----------|
| ASM-0103-02 | 1.0 | +0.020 +0.080 | 3.0  | 2.0       |
| ASM-0104-02 | 1.5 | +0.020 +0.080 | 4.0  | 2.0       |
| ASM-0205-02 | 2.0 | +0.020 +0.080 | 5.0  | 2.0       |
| ASM-0205-03 | 2.0 | +0.020 +0.080 | 5.0  | 3.0       |
| ASM-0206-03 | 2.5 | +0.020 +0.080 | 6.0  | 3.0       |
| ASM-0305-03 | 3.0 | +0.020 +0.080 | 5.0  | 3.0       |
| ASM-0305-04 | 3.0 | +0.020 +0.080 | 5.0  | 4.0       |
| ASM-0306-03 | 3.0 | +0.020 +0.080 | 6.0  | 3.0       |
| ASM-0306-04 | 3.0 | +0.020 +0.080 | 6.0  | 4.0       |
| ASM-0407-03 | 4.0 | +0.030 +0.105 | 7.0  | 3.0       |
| ASM-0407-04 | 4.0 | +0.030 +0.105 | 7.0  | 4.0       |
| ASM-0407-06 | 4.0 | +0.030 +0.105 | 7.0  | 6.0       |
| ASM-0408-06 | 4.0 | +0.030 +0.105 | 8.0  | 6.0       |
| ASM-0508-04 | 5.0 | +0.030 +0.105 | 8.0  | 4.0       |
| ASM-0508-05 | 5.0 | +0.030 +0.105 | 8.0  | 5.0       |
| ASM-0508-08 | 5.0 | +0.030 +0.105 | 8.0  | 8.0       |
| ASM-0509-05 | 5.0 | +0.030 +0.105 | 9.0  | 5.0       |
| ASM-0509-08 | 5.0 | +0.030 +0.105 | 9.0  | 8.0       |
| ASM-0608-10 | 6.0 | +0.030 +0.105 | 8.0  | 10.0      |
| ASM-0609-06 | 6.0 | +0.030 +0.105 | 9.0  | 6.0       |
| ASM-0610-04 | 6.0 | +0.030 +0.105 | 10.0 | 4.0       |
| ASM-0610-06 | 6.0 | +0.030 +0.105 | 10.0 | 6.0       |
| ASM-0610-10 | 6.0 | +0.030 +0.105 | 10.0 | 10.0      |
| ASM-0612-06 | 6.0 | +0.030 +0.105 | 12.0 | 6.0       |
| ASM-0612-10 | 6.0 | +0.030 +0.105 | 12.0 | 10.0      |

\* after pressfit. Testing methods ► page 75



Order key

ASM-0103-02



| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| ASM-0710-05 | 7.0  | +0.040 +0.130 | 10.0 | 5.0       |
| ASM-0710-08 | 7.0  | +0.040 +0.130 | 10.0 | 8.0       |
| ASM-0810-06 | 8.0  | +0.040 +0.130 | 10.0 | 6.0       |
| ASM-0810-08 | 8.0  | +0.040 +0.130 | 10.0 | 8.0       |
| ASM-0810-10 | 8.0  | +0.040 +0.130 | 10.0 | 10.0      |
| ASM-0811-08 | 8.0  | +0.040 +0.130 | 11.0 | 8.0       |
| ASM-0811-12 | 8.0  | +0.040 +0.130 | 11.0 | 12.0      |
| ASM-0812-06 | 8.0  | +0.040 +0.130 | 12.0 | 6.0       |
| ASM-0812-08 | 8.0  | +0.040 +0.130 | 12.0 | 8.0       |
| ASM-0812-10 | 8.0  | +0.040 +0.130 | 12.0 | 10.0      |
| ASM-0812-12 | 8.0  | +0.040 +0.130 | 12.0 | 12.0      |
| ASM-0814-06 | 8.0  | +0.040 +0.130 | 14.0 | 6.0       |
| ASM-0814-10 | 8.0  | +0.040 +0.130 | 14.0 | 10.0      |
| ASM-0912-14 | 9.0  | +0.040 +0.130 | 12.0 | 14.0      |
| ASM-1012-10 | 10.0 | +0.040 +0.130 | 12.0 | 10.0      |
| ASM-1014-06 | 10.0 | +0.040 +0.130 | 14.0 | 6.0       |
| ASM-1014-08 | 10.0 | +0.040 +0.130 | 14.0 | 8.0       |
| ASM-1014-10 | 10.0 | +0.040 +0.130 | 14.0 | 10.0      |
| ASM-1014-16 | 10.0 | +0.040 +0.130 | 14.0 | 16.0      |
| ASM-1016-06 | 10.0 | +0.040 +0.130 | 16.0 | 6.0       |
| ASM-1016-10 | 10.0 | +0.040 +0.130 | 16.0 | 10.0      |
| ASM-1016-16 | 10.0 | +0.040 +0.130 | 16.0 | 16.0      |
| ASM-1214-20 | 12.0 | +0.050 +0.160 | 14.0 | 20.0      |
| ASM-1216-15 | 12.0 | +0.050 +0.160 | 16.0 | 15.0      |
| ASM-1216-20 | 12.0 | +0.050 +0.160 | 16.0 | 20.0      |

 **delivery** from stock  
time

 **prices** price list online  
[www.igus.co.uk/en/a200](http://www.igus.co.uk/en/a200)



Sleeve bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| ASM-1218-08 | 12.0 | +0.050 +0.160 | 18.0 | 8.0       |
| ASM-1218-10 | 12.0 | +0.050 +0.160 | 18.0 | 10.0      |
| ASM-1218-15 | 12.0 | +0.050 +0.160 | 18.0 | 15.0      |
| ASM-1218-20 | 12.0 | +0.050 +0.160 | 18.0 | 20.0      |
| ASM-1416-10 | 14.0 | +0.050 +0.160 | 16.0 | 10.0      |
| ASM-1416-15 | 14.0 | +0.050 +0.160 | 16.0 | 15.0      |
| ASM-1416-20 | 14.0 | +0.050 +0.160 | 16.0 | 20.0      |
| ASM-1420-10 | 14.0 | +0.050 +0.160 | 20.0 | 10.0      |
| ASM-1420-15 | 14.0 | +0.050 +0.160 | 20.0 | 15.0      |
| ASM-1420-20 | 14.0 | +0.050 +0.160 | 20.0 | 20.0      |
| ASM-1517-10 | 15.0 | +0.050 +0.160 | 17.0 | 10.0      |
| ASM-1517-15 | 15.0 | +0.050 +0.160 | 17.0 | 15.0      |
| ASM-1521-10 | 15.0 | +0.050 +0.160 | 21.0 | 10.0      |
| ASM-1521-15 | 15.0 | +0.050 +0.160 | 21.0 | 15.0      |
| ASM-1521-20 | 15.0 | +0.050 +0.160 | 21.0 | 20.0      |
| ASM-1618-12 | 16.0 | +0.050 +0.160 | 18.0 | 12.0      |
| ASM-1618-20 | 16.0 | +0.050 +0.160 | 18.0 | 20.0      |
| ASM-1620-20 | 16.0 | +0.050 +0.160 | 20.0 | 20.0      |
| ASM-1620-25 | 16.0 | +0.050 +0.160 | 20.0 | 25.0      |
| ASM-1622-12 | 16.0 | +0.050 +0.160 | 22.0 | 12.0      |
| ASM-1622-15 | 16.0 | +0.050 +0.160 | 22.0 | 15.0      |
| ASM-1622-16 | 16.0 | +0.050 +0.160 | 22.0 | 16.0      |
| ASM-1622-20 | 16.0 | +0.050 +0.160 | 22.0 | 20.0      |
| ASM-1622-25 | 16.0 | +0.050 +0.160 | 22.0 | 25.0      |
| ASM-1824-12 | 18.0 | +0.050 +0.160 | 24.0 | 12.0      |
| ASM-1824-20 | 18.0 | +0.050 +0.160 | 24.0 | 20.0      |
| ASM-1824-30 | 18.0 | +0.050 +0.160 | 24.0 | 30.0      |
| ASM-2023-15 | 20.0 | +0.065 +0.195 | 23.0 | 15.0      |
| ASM-2023-20 | 20.0 | +0.065 +0.195 | 23.0 | 20.0      |
| ASM-2025-15 | 20.0 | +0.065 +0.195 | 25.0 | 15.0      |
| ASM-2025-20 | 20.0 | +0.065 +0.195 | 25.0 | 20.0      |
| ASM-2025-30 | 20.0 | +0.065 +0.195 | 25.0 | 30.0      |
| ASM-2026-15 | 20.0 | +0.065 +0.195 | 26.0 | 15.0      |

\* after pressfit. Testing methods ► page 75



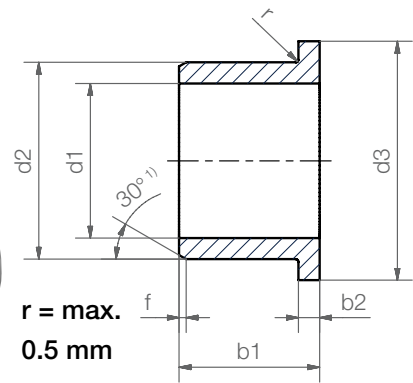
Don't find your size?

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 **delivery** from stock  
time

 **prices** price list online  
[www.igus.co.uk/en/a200](http://www.igus.co.uk/en/a200)

Flange bearing



Order key

**AFM-0103-02**



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® A200

Dimensions according to DIN 1850 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1  | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|-----|---------------|------|-----------|-----------|-------------|
| AFM-0103-02 | 1.0 | +0.020 +0.080 | 3.0  | 5.0       | 2.0       | 1.0         |
| AFM-0104-02 | 1.5 | +0.020 +0.080 | 4.0  | 6.0       | 2.0       | 1.0         |
| AFM-0205-03 | 2.0 | +0.020 +0.080 | 5.0  | 8.0       | 3.0       | 1.5         |
| AFM-0206-03 | 2.5 | +0.020 +0.080 | 6.0  | 9.0       | 3.0       | 1.5         |
| AFM-0306-04 | 3.0 | +0.020 +0.080 | 6.0  | 9.0       | 4.0       | 1.5         |
| AFM-0408-04 | 4.0 | +0.030 +0.105 | 8.0  | 12.0      | 4.0       | 2.0         |
| AFM-0408-06 | 4.0 | +0.030 +0.105 | 8.0  | 12.0      | 6.0       | 2.0         |
| AFM-0507-05 | 5.0 | +0.030 +0.105 | 7.0  | 11.0      | 5.0       | 1.0         |
| AFM-0509-05 | 5.0 | +0.030 +0.105 | 9.0  | 13.0      | 5.0       | 2.0         |
| AFM-0509-06 | 5.0 | +0.030 +0.105 | 9.0  | 13.0      | 6.0       | 2.0         |
| AFM-0509-08 | 5.0 | +0.030 +0.105 | 9.0  | 13.0      | 8.0       | 2.0         |
| AFM-0610-04 | 6.0 | +0.030 +0.105 | 10.0 | 14.0      | 4.0       | 2.0         |
| AFM-0610-06 | 6.0 | +0.030 +0.105 | 10.0 | 14.0      | 6.0       | 2.0         |
| AFM-0610-10 | 6.0 | +0.030 +0.105 | 10.0 | 14.0      | 10.0      | 2.0         |
| AFM-0612-06 | 6.0 | +0.030 +0.105 | 12.0 | 14.0      | 6.0       | 3.0         |
| AFM-0612-10 | 6.0 | +0.030 +0.105 | 12.0 | 14.0      | 10.0      | 3.0         |
| AFM-0711-08 | 7.0 | +0.040 +0.130 | 11.0 | 15.0      | 8.0       | 2.0         |
| AFM-0811-08 | 8.0 | +0.040 +0.130 | 11.0 | 13.0      | 8.0       | 2.0         |
| AFM-0812-06 | 8.0 | +0.040 +0.130 | 12.0 | 16.0      | 6.0       | 2.0         |
| AFM-0812-08 | 8.0 | +0.040 +0.130 | 12.0 | 16.0      | 8.0       | 2.0         |
| AFM-0812-12 | 8.0 | +0.040 +0.130 | 12.0 | 16.0      | 12.0      | 2.0         |
| AFM-0812-22 | 8.0 | +0.040 +0.130 | 12.0 | 16.0      | 22.0      | 2.0         |
| AFM-0814-06 | 8.0 | +0.040 +0.130 | 14.0 | 18.0      | 6.0       | 3.0         |
| AFM-0814-10 | 8.0 | +0.040 +0.130 | 14.0 | 18.0      | 10.0      | 3.0         |
| AFM-0914-06 | 9.0 | +0.040 +0.130 | 14.0 | 19.0      | 6.0       | 2.0         |

\* after pressfit. Testing methods ► page 75



delivery from stock  
time



prices price list online  
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Flange bearing

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| AFM-0914-10   | 9.0  | +0.040 +0.130 | 14.0 | 19.0      | 10.0      | 2.0         |
| AFM-0914-14   | 9.0  | +0.040 +0.130 | 14.0 | 19.0      | 14.0      | 2.0         |
| AFM-1016-06   | 10.0 | +0.040 +0.130 | 16.0 | 22.0      | 6.0       | 3.0         |
| AFM-1016-08   | 10.0 | +0.040 +0.130 | 16.0 | 22.0      | 8.0       | 3.0         |
| AFM-1016-10   | 10.0 | +0.040 +0.130 | 16.0 | 22.0      | 10.0      | 3.0         |
| AFM-1016-16   | 10.0 | +0.040 +0.130 | 16.0 | 22.0      | 16.0      | 3.0         |
| AFM-101620-10 | 10.0 | +0.040 +0.130 | 16.0 | 20.0      | 10.0      | 3.0         |
| AFM-1214-12   | 12.0 | +0.050 +0.160 | 14.0 | 20.0      | 12.0      | 1.0         |
| AFM-1218-08   | 12.0 | +0.050 +0.160 | 18.0 | 24.0      | 8.0       | 3.0         |
| AFM-1218-10   | 12.0 | +0.050 +0.160 | 18.0 | 22.0      | 10.0      | 3.0         |
| AFM-1218-12   | 12.0 | +0.050 +0.160 | 18.0 | 24.0      | 12.0      | 3.0         |
| AFM-1218-15   | 12.0 | +0.050 +0.160 | 18.0 | 22.0      | 15.0      | 3.0         |
| AFM-1218-20   | 12.0 | +0.050 +0.160 | 18.0 | 22.0      | 20.0      | 3.0         |
| AFM-1420-10   | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 10.0      | 3.0         |
| AFM-1420-15   | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 15.0      | 3.0         |
| AFM-1420-20   | 14.0 | +0.050 +0.160 | 20.0 | 25.0      | 20.0      | 3.0         |
| AFM-1521-10   | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 10.0      | 3.0         |
| AFM-1521-15   | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 15.0      | 3.0         |
| AFM-1521-20   | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 20.0      | 3.0         |
| AFM-1521-25   | 15.0 | +0.050 +0.160 | 21.0 | 27.0      | 25.0      | 3.0         |
| AFM-1622-12   | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 12.0      | 3.0         |
| AFM-1622-15   | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 15.0      | 3.0         |
| AFM-1622-20   | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 20.0      | 3.0         |
| AFM-1622-25   | 16.0 | +0.050 +0.160 | 22.0 | 28.0      | 25.0      | 3.0         |
| AFM-1824-12   | 18.0 | +0.050 +0.160 | 24.0 | 30.0      | 12.0      | 3.0         |
| AFM-1824-18   | 18.0 | +0.050 +0.160 | 24.0 | 30.0      | 18.0      | 3.0         |
| AFM-1824-20   | 18.0 | +0.050 +0.160 | 24.0 | 30.0      | 20.0      | 3.0         |
| AFM-1824-30   | 18.0 | +0.050 +0.160 | 24.0 | 30.0      | 30.0      | 3.0         |
| AFM-2026-15   | 20.0 | +0.065 +0.195 | 26.0 | 32.0      | 15.0      | 3.0         |
| AFM-2026-20   | 20.0 | +0.065 +0.195 | 26.0 | 32.0      | 20.0      | 3.0         |
| AFM-2026-30   | 20.0 | +0.065 +0.195 | 26.0 | 32.0      | 30.0      | 3.0         |
| AFM-2228-15   | 22.0 | +0.065 +0.195 | 28.0 | 34.0      | 15.0      | 3.0         |
| AFM-2228-20   | 22.0 | +0.065 +0.195 | 28.0 | 34.0      | 20.0      | 3.0         |
| AFM-2228-30   | 22.0 | +0.065 +0.195 | 28.0 | 34.0      | 30.0      | 3.0         |
| AFM-2430-15   | 24.0 | +0.065 +0.195 | 30.0 | 36.0      | 15.0      | 3.0         |
| AFM-2430-20   | 24.0 | +0.065 +0.195 | 30.0 | 36.0      | 20.0      | 3.0         |
| AFM-2430-30   | 24.0 | +0.065 +0.195 | 30.0 | 36.0      | 30.0      | 3.0         |
| AFM-2532-20   | 25.0 | +0.065 +0.195 | 32.0 | 38.0      | 20.0      | 4.0         |
| AFM-2532-30   | 25.0 | +0.065 +0.195 | 32.0 | 38.0      | 30.0      | 4.0         |
| AFM-2532-40   | 25.0 | +0.065 +0.195 | 32.0 | 38.0      | 40.0      | 4.0         |
| AFM-2734-20   | 27.0 | +0.065 +0.195 | 34.0 | 40.0      | 20.0      | 4.0         |
| AFM-2734-30   | 27.0 | +0.065 +0.195 | 34.0 | 40.0      | 30.0      | 4.0         |

\* after pressfit. Testing methods ► page 75



Flange bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| AFM-2734-40 | 27.0 | +0.065 +0.195 | 34.0 | 40.0      | 40.0      | 4.0         |
| AFM-2836-20 | 28.0 | +0.065 +0.195 | 36.0 | 42.0      | 20.0      | 4.0         |
| AFM-2836-30 | 28.0 | +0.065 +0.195 | 36.0 | 42.0      | 30.0      | 4.0         |
| AFM-2836-40 | 28.0 | +0.065 +0.195 | 36.0 | 42.0      | 40.0      | 4.0         |
| AFM-3038-20 | 30.0 | +0.065 +0.195 | 38.0 | 44.0      | 20.0      | 4.0         |
| AFM-3038-30 | 30.0 | +0.065 +0.195 | 38.0 | 44.0      | 30.0      | 4.0         |
| AFM-3038-40 | 30.0 | +0.065 +0.195 | 38.0 | 44.0      | 40.0      | 4.0         |
| AFM-3240-20 | 32.0 | +0.080 +0.240 | 40.0 | 46.0      | 20.0      | 4.0         |
| AFM-3240-30 | 32.0 | +0.080 +0.240 | 40.0 | 46.0      | 30.0      | 4.0         |
| AFM-3240-40 | 32.0 | +0.080 +0.240 | 40.0 | 46.0      | 40.0      | 4.0         |

\* after pressfit. Testing methods ► page 75



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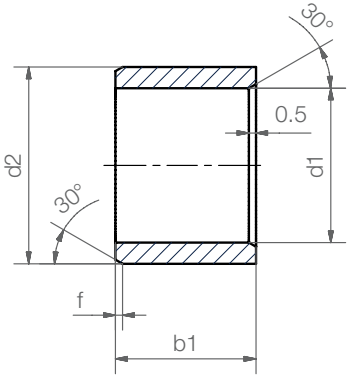


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Sleeve bearing



Order key



Length b1  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form S)  
Material iglidur® A200

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [mm]

| Part number | d1    | d2      | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       | max.   | min.   | max.         | min.   | max.       | min.   |
| ASI-0204-04 | 1/8   | 1/4     | 1/4   | .1280  | .1262  | .2515        | .2510  | .1250      | .1241  |
| ASI-0305-04 | 3/16  | 5/16    | 1/4   | .1905  | .1887  | .3140        | .3135  | .1875      | .1866  |
| ASI-0406-04 | 1/4   | 3/8     | 1/4   | .2539  | .2516  | .3765        | .3760  | .2500      | .2491  |
| ASI-0406-06 | 1/4   | 3/8     | 3/8   | .2539  | .2516  | .3765        | .3760  | .2500      | .2491  |
| ASI-0406-08 | 1/4   | 3/8     | 1/2   | .2539  | .2516  | .3765        | .3760  | .2500      | .2491  |
| ASI-0507-08 | 5/16  | 15/32   | 1/2   | .3164  | .3141  | .4390        | .4385  | .3125      | .3116  |
| ASI-0608-04 | 3/8   | 1/2     | 1/4   | .3789  | .3766  | .5015        | .5010  | .3750      | .3741  |
| ASI-0608-08 | 3/8   | 1/2     | 1/2   | .3789  | .3766  | .5015        | .5010  | .3750      | .3741  |
| ASI-0810-08 | 1/2   | 5/8     | 1/2   | .5047  | .5020  | .6260        | .6250  | .5000      | .4990  |
| ASI-0810-12 | 1/2   | 5/8     | 3/4   | .5047  | .5020  | .6260        | .6250  | .5000      | .4990  |
| ASI-1013-05 | 5/8   | 13/16   | 5/16  | .6297  | .6270  | .8135        | .8125  | .6250      | .6240  |
| ASI-1013-12 | 5/8   | 13/16   | 3/4   | .6297  | .6270  | .8135        | .8125  | .6250      | .6240  |
| ASI-1216-12 | 3/4   | 1       | 3/4   | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| ASI-1216-16 | 3/4   | 1       | 1     | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| ASI-1418-16 | 7/8   | 1 1/8   | 1     | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| ASI-1620-12 | 1     | 1 9/32  | 3/4   | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| ASI-1620-16 | 1     | 1 9/32  | 1     | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| ASI-2024-16 | 1 1/4 | 1 17/32 | 1     | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| ASI-2428-24 | 1 1/2 | 1 3/4   | 1 1/2 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |

\* after pressfit. Testing methods ► page 75

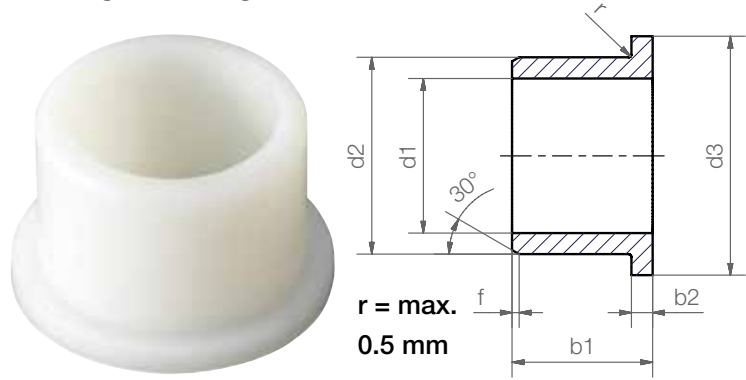


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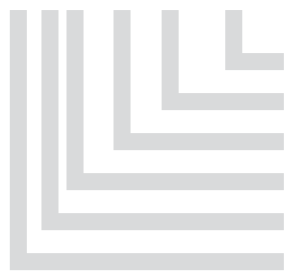
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[www.igus.co.uk/en/a200](http://www.igus.co.uk/en/a200)

Flange bearing



Order key

AFI-0204-04



Length b1  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form F)  
Material iglidur® A200

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d3    | b2   | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| AFI-0204-04 | 1/8   | 1/4     | 1/4   | .360  | .047 | .1280  | .1262  | .2515        | .2510  | .1250      | .1241  |
| AFI-0305-04 | 3/16  | 5/16    | 1/4   | .370  | .047 | .1905  | .1887  | .3140        | .3135  | .1875      | .1866  |
| AFI-0406-04 | 1/4   | 3/8     | 1/4   | .560  | .047 | .2539  | .2516  | .3765        | .3760  | .2500      | .2491  |
| AFI-0406-06 | 1/4   | 3/8     | 3/8   | .560  | .047 | .2539  | .2516  | .3765        | .3760  | .2500      | .2491  |
| AFI-0507-08 | 5/16  | 15/32   | 1/2   | .560  | .062 | .3164  | .3141  | .4390        | .4385  | .3125      | .3116  |
| AFI-0608-04 | 3/8   | 1/2     | 1/4   | .625  | .062 | .3164  | .3141  | .4390        | .4385  | .3125      | .3116  |
| AFI-0608-08 | 3/8   | 1/2     | 1/2   | .625  | .062 | .3789  | .3766  | .5015        | .5010  | .3750      | .3741  |
| AFI-0810-08 | 1/2   | 5/8     | 1/2   | .875  | .062 | .5047  | .5020  | .6257        | .6250  | .5000      | .4983  |
| AFI-0810-12 | 1/2   | 5/8     | 3/4   | .875  | .062 | .5047  | .5020  | .6257        | .6250  | .5000      | .4983  |
| AFI-1013-16 | 5/8   | 13/16   | 1     | 1.063 | .156 | .6297  | .6270  | .8135        | .8125  | .6250      | .6240  |
| AFI-1216-12 | 3/4   | 1       | 3/4   | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| AFI-1216-16 | 3/4   | 1       | 1     | 1.250 | .156 | .7559  | .7525  | 1.0010       | 1.0000 | .7500      | .7490  |
| AFI-1418-24 | 7/8   | 1 1/8   | 1 1/2 | 1.375 | .156 | .8809  | .8775  | 1.1260       | 1.1250 | .8750      | .8740  |
| AFI-1620-16 | 1     | 1 9/32  | 1     | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| AFI-1620-24 | 1     | 1 9/32  | 1 1/2 | 1.500 | .188 | 1.0059 | 1.0025 | 1.2510       | 1.2500 | 1.0000     | .9990  |
| AFI-2024-16 | 1 1/4 | 1 17/32 | 1     | 1.750 | .200 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| AFI-2024-24 | 1 1/4 | 1 17/32 | 1 1/2 | 1.750 | .200 | 1.2600 | 1.2531 | 1.5005       | 1.4995 | 1.2500     | 1.2490 |
| AFI-2428-16 | 1 1/2 | 1 3/4   | 1     | 2.000 | .125 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| AFI-2428-24 | 1 1/2 | 1 3/4   | 1 1/2 | 2.000 | .125 | 1.5100 | 1.5032 | 1.7505       | 1.7495 | 1.5000     | 1.4990 |
| AFI-2832-16 | 1 3/4 | 2       | 1     | 2.250 | .125 | 1.7560 | 1.7532 | 2.0005       | 1.9995 | 1.7500     | 1.7490 |

\* after pressfit. Testing methods ► page 75

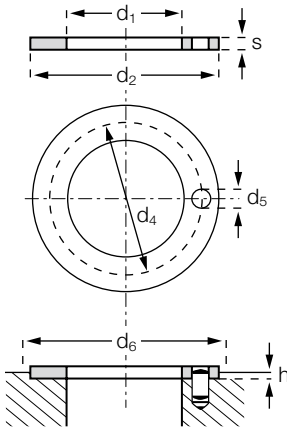


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Thrust washer



Order key

ATI-04



Thickness s  
Inch  
Type (Form T)  
Material iglidur® A200

Dimensions [Inch]

| Part number | d1 (nominal) | d1*    |        | d2     |        | s     |
|-------------|--------------|--------|--------|--------|--------|-------|
|             |              | max.   | min.   | max.   | min.   |       |
| ATI-04      | 1/4          | .2610  | .2551  | .6201  | .6094  | .0902 |
| ATI-06      | 3/8          | .3943  | .3813  | .7500  | .7370  | .0902 |
| ATI-08      | 1/2          | .5102  | .5031  | .8201  | .8071  | .0902 |
| ATI-12      | 3/4          | .7673  | .7598  | 1.0654 | 1.0500 | .0941 |
| ATI-16      | 1            | 1.0268 | 1.0197 | 1.5000 | 1.4843 | .1252 |

\* after pressfit. Testing methods ► page 75

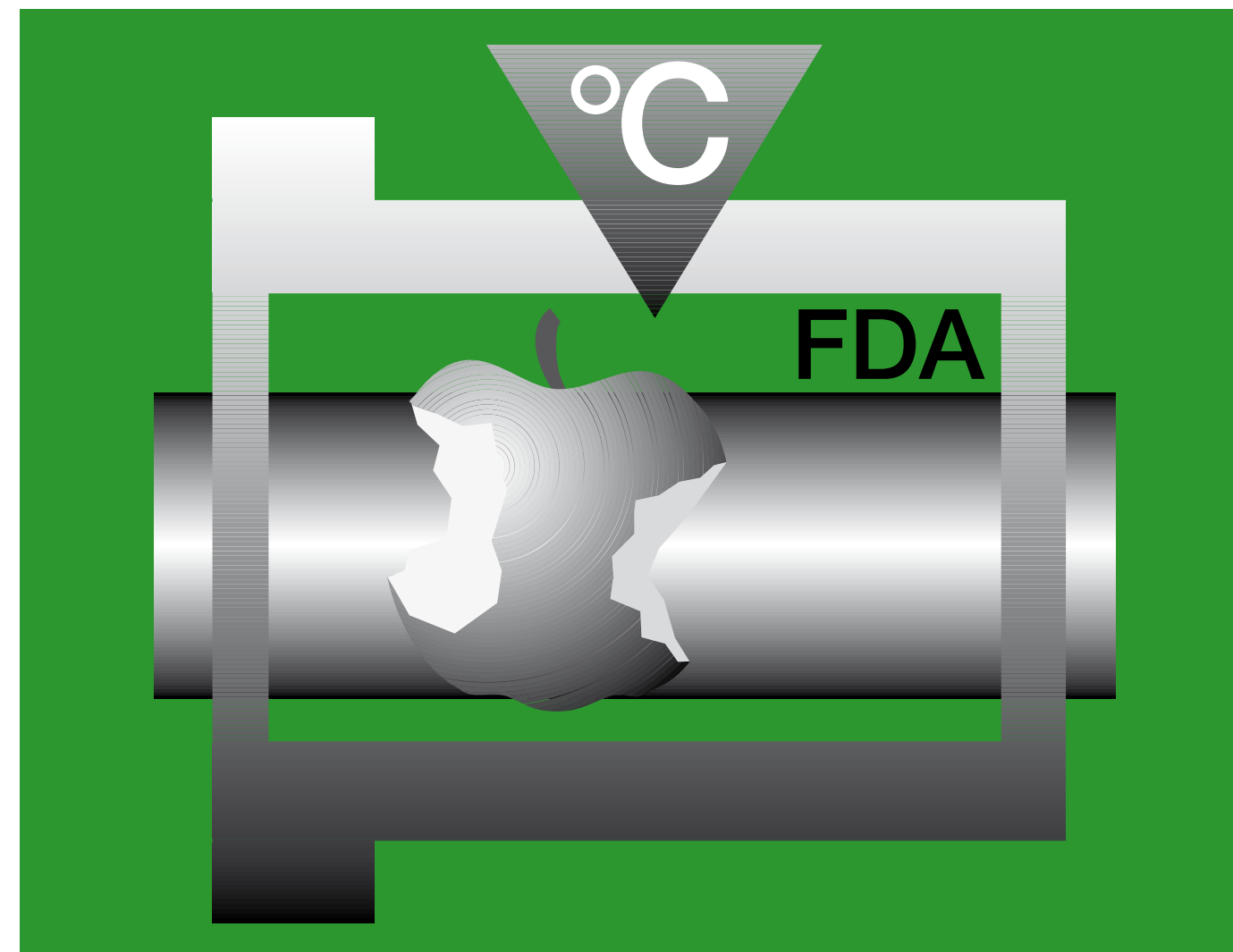
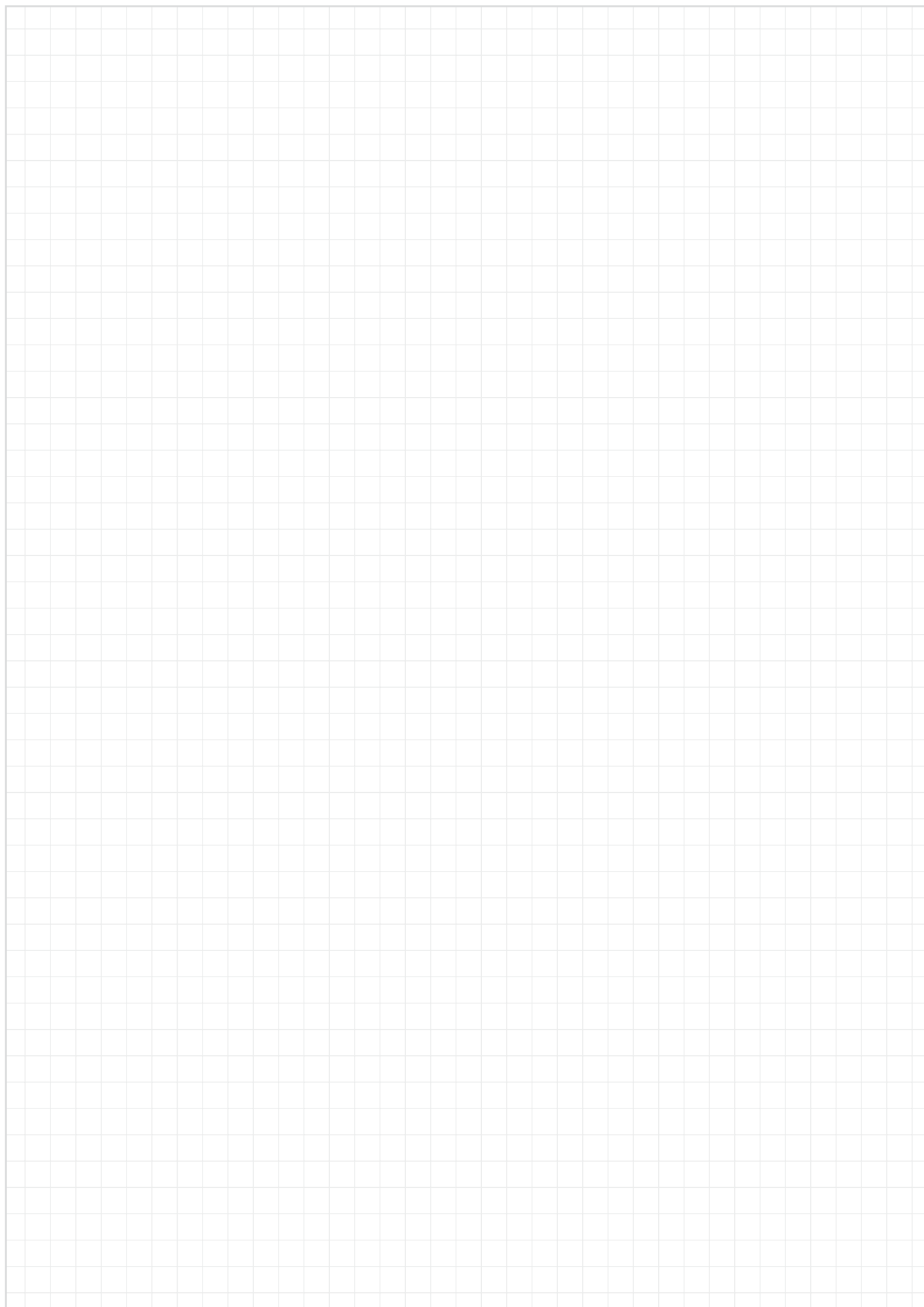


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## Temperature and wear resistant, FDA-compliant – iglidur® A350



Standard range from stock

The iglidur® A350 material complies with FOOD  
AND DRUG ADMINISTRATION (FDA) regulations

For use with temperatures up to +180 °C

For medium and high loads

Equally good for both oscillating and rotating  
applications

**Temperature and wear resistant, FDA-compliant.** A very universal bearing for use in the area of food and pharmaceutical industries. Composition of FDA-conform materials allows the use in areas where due to the contact with food other bearings cannot be used. With good tribological and mechanical properties, iglidur® A350 bearings are suitable for general purpose use in food machinery. The blue colour helps to visually identify the bearing, an important factor when designing food processing equipment.

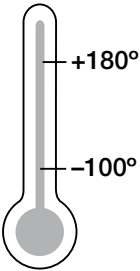
Complies with FOOD  
AND DRUG ADMINISTRATION  
(FDA) regulations

For use with  
temperatures up to +180 °C

For medium  
and high loads

Equally good  
for both oscillating  
and rotating applications

Temperature



**When to use it?**

- If FDA-compliance is required
- If wear-resistance and FDA-conformance is necessary at high loads
- If the bearing is use in acid environment
- If a blue bearing is required



**When not to use?**

- When temperatures are continuously greater than +180 °C
  - ▶ iglidur® A500, page 457
- When the maximum abrasion resistance is necessary
  - ▶ iglidur® J, page 109
- When a low-priced FDA bearing is required
  - ▶ iglidur® A200, page 431
  - ▶ iglidur® A180, page 411
- For high speeds
  - ▶ iglidur® J, page 109

**Product range**

2 types  
Ø 6–50 mm  
more dimensions  
on request



iglidur® A350 products comply with the requirements of the FDA for repeated contact with food

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General poperties                                      | Unit                               | iglidur® A350      | Testing method |
| Density                                                | g/cm³                              | 1.42               |                |
| Colour                                                 |                                    | blue               |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.6                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 1.9                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.1–0.2            |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.4                |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 2,000              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 110                | DIN 53452      |
| Compressive strength                                   | MPa                                | 78                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 60                 |                |
| Shore D hardness                                       |                                    | 76                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +180               |                |
| Max. short term application temperature                | °C                                 | +210               |                |
| Min. application temperature                           | °C                                 | –100               |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> | 8                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>11</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

Table 01: Material properties table

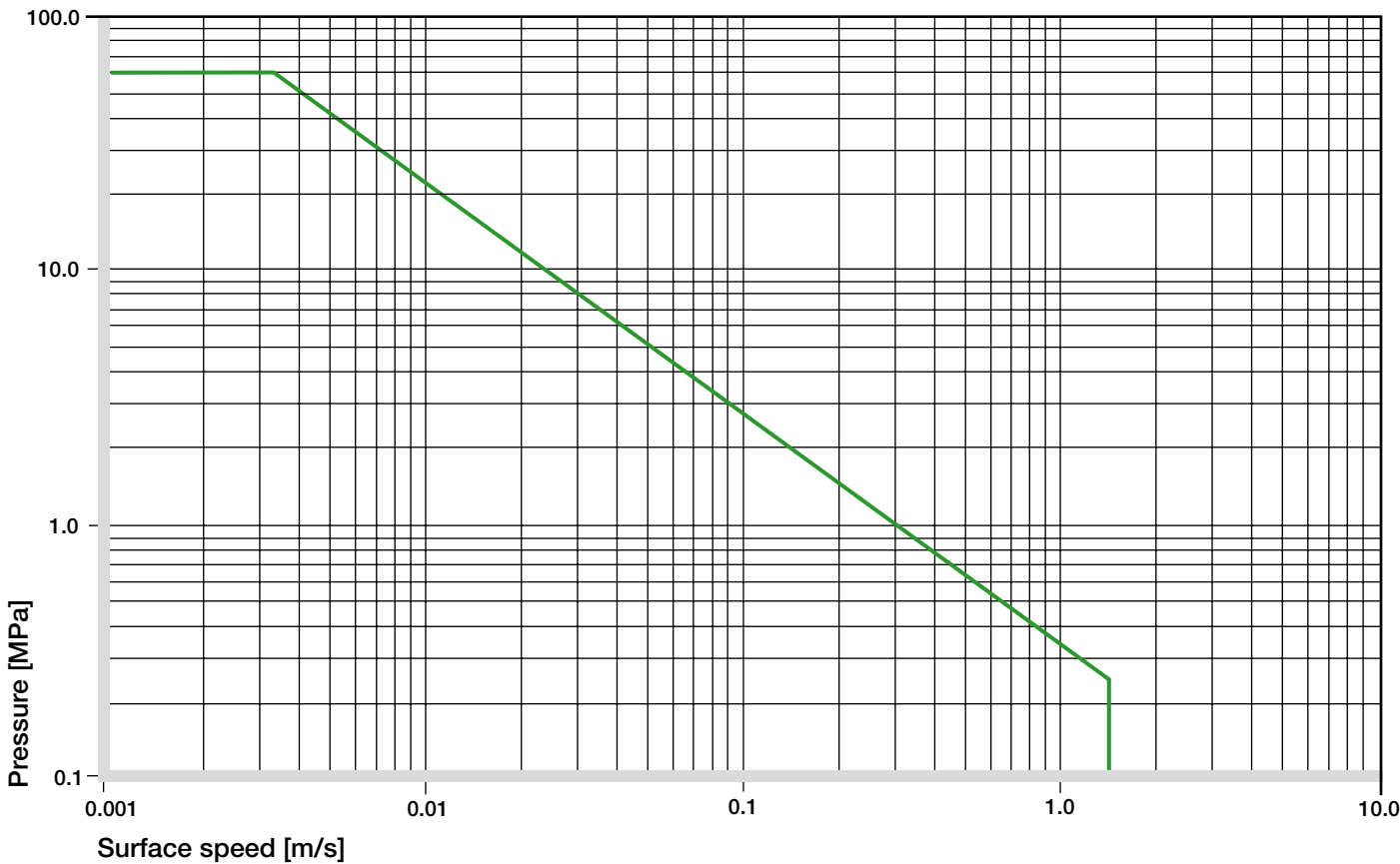


Diagram 01: Permissible pv values for iglidur® A350 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® A350 bearings are made for practically all loads in food and packaging machinery. Even high loads, often seen in lifting equipment, are taken easily and the bearings work flawlessly without any external lubrication.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® A350 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +180 °C the permissible surface pressure is 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

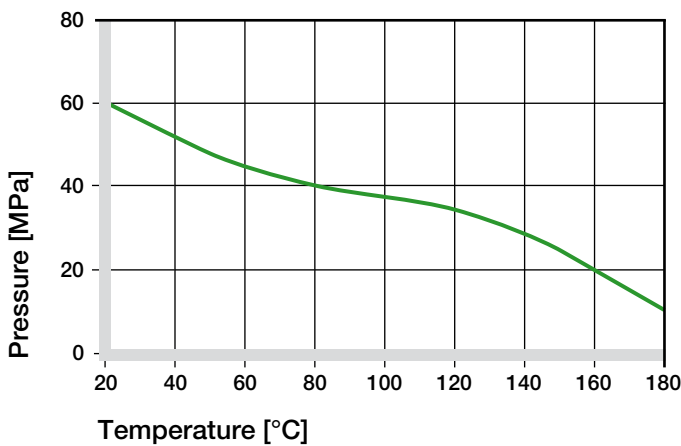


Diagram 02: Recommended maximum surface pressure as a function of temperature (60 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® A350 at radial loads. At the recommended maximum surface pressure of 60 MPa the deformation is less than 5 %.

► Surface Pressure, page 63

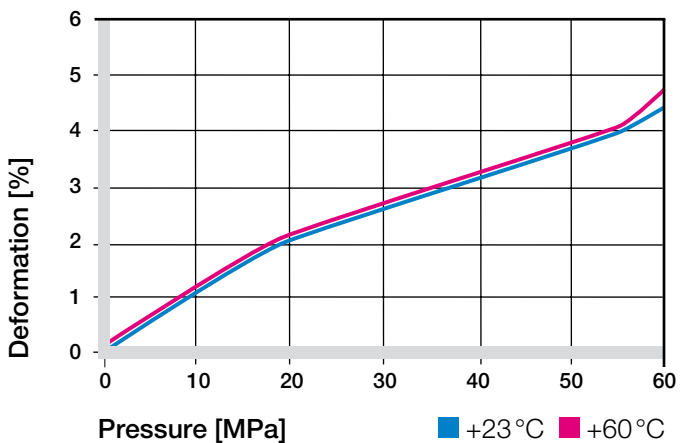


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A350 bearings are suitable for low to medium speeds in both rotating and oscillating applications. Even linear movements can often be realised with iglidur® A350. With high sliding speeds, iglidur® J or iglidur® L250 can be interesting alternatives because the wear rate of these materials is better.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.8         | 2.5    |
| Short term | 1.2      | 0.9         | 3      |

Table 02: Maximum running speed

Temperatures

Its temperature resistance makes iglidur® A350 an ideal material for bearing in the area of foodstuffs. Typically, temperatures range up to +130 °C, which corresponds perfectly with the applicable temperature range for iglidur® A350. Short-term temperatures up to +210 °C are possible. Please note that at temperatures over +140 °C, the pressfit forces of the bearings may decrease and an additional axial security device is recommended.

The wear-rate of iglidur® A350 bearings rises only little with higher temperatures. Tests have shown good wear results at +100 °C on all tested shaft materials.

► Application Temperatures, page 66

| iglidur® A350                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | – 100 °C                |
| Max. long term                 | + 180 °C                |
| Max. short term                | + 210 °C                |
| Add. securing is required from | + 140 °C                |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction of iglidur® A350 on a steel shaft are in the mid range. They decrease at higher temperatures, which in dry operation is somewhat unusual. Diagram 04 shows this phenomenon graphically.

All wear results of iglidur® A350 bearings show good results on a low level. Of all iglidur® materials for food contact, they are often the best choice.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

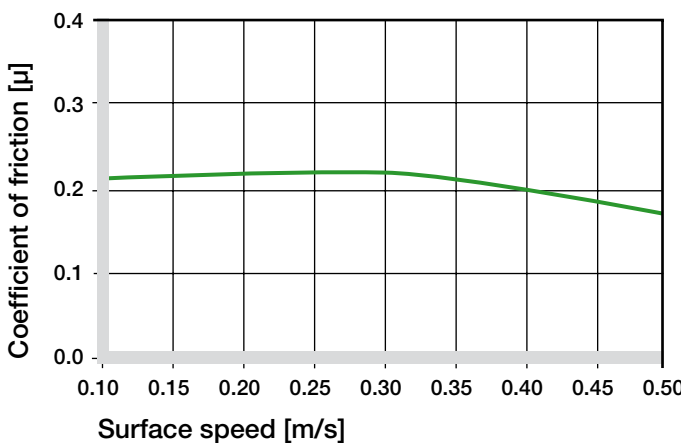


Diagram 04: Coefficient of friction as a function of the running speed, p = 1 MPa

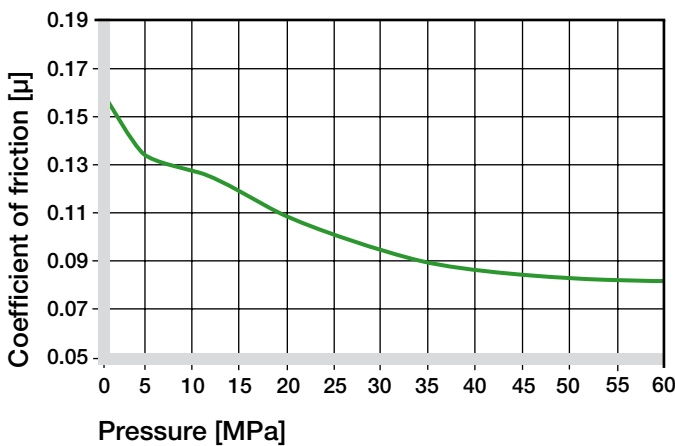


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

The corrosion-resistant steels are rather considered a natural choice for use in the food industry.

The trials were therefore carried out especially on such materials. It has been shown that there is no clear favorite and V2A, X90 and hard chrome plated steel are all suitable. Hard-anodized aluminum is also well suited for both linear and rotating movements.

► Shaft Materials, page 71

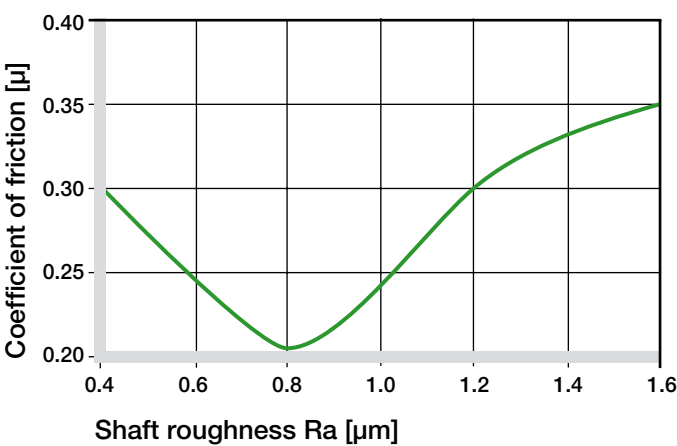


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

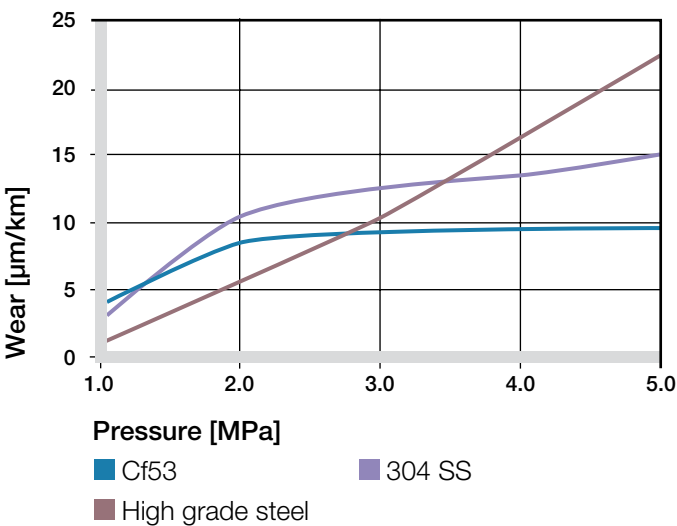


Diagram 07: Wear with different shaft materials in rotational operation, as a function of the pressure

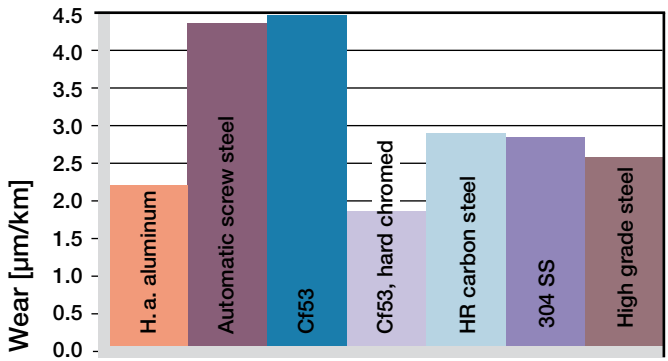


Diagram 08: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

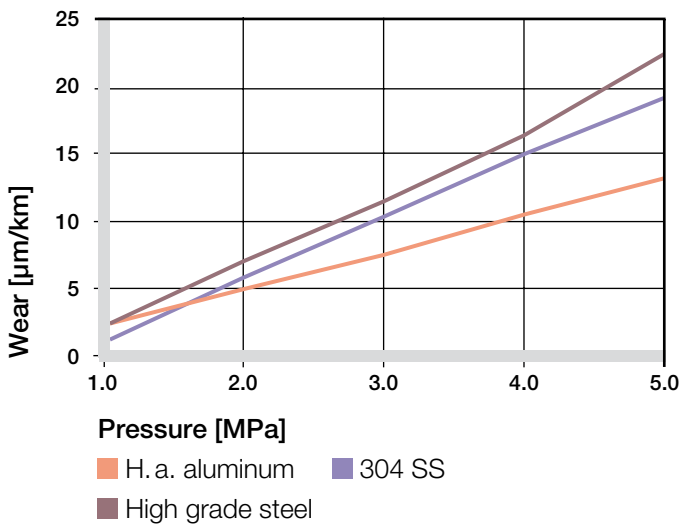


Diagram 09: Wear with different shaft materials in oscillating operation, as a function of the pressure

| iglidur® A350 | Dry     | Greases | Oil  | Water |
|---------------|---------|---------|------|-------|
| C. o. f. µ    | 0.1–0.2 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A350 plain bearings are resistant to diluted acids and alkalis, alcohols and detergents. They are also resistant to most lubricants. The iglidur® A350 plain bearings are resistant to common cleaning agents in the food industry. iglidur® A350 is affected by esters, ketones, chlorinated hydrocarbons, aromatics and highly polar solvents.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | + to 0     |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| starke Basen                    | +          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A350 are resistant to radiation up to an intensity of 2 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® A350 bearings are resistant to UV radiation.

Vacuum

When used in a vacuum environment, the iglidur® A350 plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® A350 plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>11</sup> Ωcm |
| Surface resistance | > 10 <sup>11</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® A350 is low and can be disregarded when using standard bearings.

Even at full saturation the iglidur® A350 does not absorb more than 1.9 % of water.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.6 % weight |
| Max. water absorption       | 1.9 % weight |

Table 06: Moisture absorption

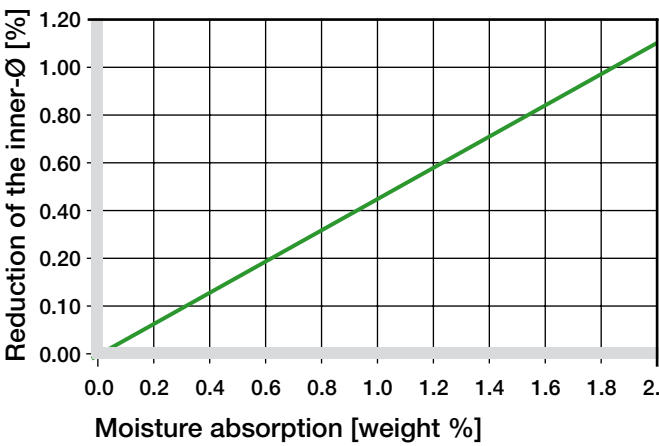


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® A350 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

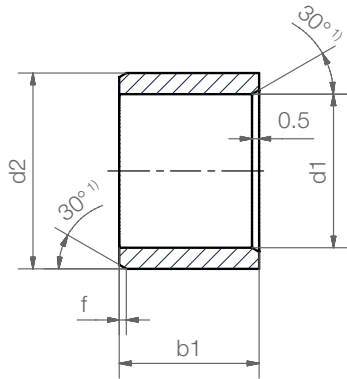
► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® A350 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150          | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Sleeve bearing



Order key

A350SM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® A350

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| A350SM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 6.0       |
| A350SM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| A350SM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 10.0      |
| A350SM-1214-12 | 12.0 | +0.016 +0.068 | 14.0 | 12.0      |
| A350SM-1618-15 | 16.0 | +0.016 +0.068 | 18.0 | 15.0      |
| A350SM-1618-25 | 16.0 | +0.016 +0.068 | 18.0 | 25.0      |
| A350SM-2023-20 | 20.0 | +0.020 +0.104 | 23.0 | 20.0      |
| A350SM-2023-30 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      |
| A350SM-2832-30 | 28.0 | +0.020 +0.104 | 32.0 | 30.0      |
| A350SM-3236-40 | 32.0 | +0.025 +0.125 | 36.0 | 40.0      |
| A350SM-4044-50 | 40.0 | +0.025 +0.125 | 44.0 | 50.0      |
| A350SM-5055-50 | 50.0 | +0.025 +0.125 | 55.0 | 50.0      |

\* after pressfit. Testing methods ► page 75

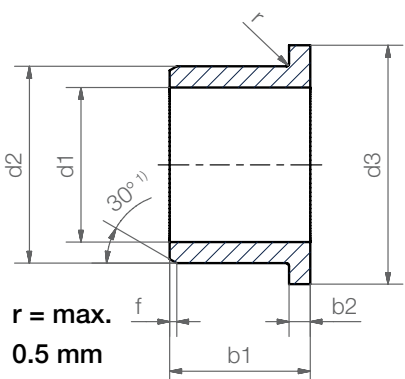


delivery from stock  
time



prices price list online  
www.igus.co.uk/en/a350

Flange bearing



Order key

A350FM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® A350

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| A350FM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| A350FM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| A350FM-1012-10 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 10.0      | 1.0         |
| A350FM-1214-12 | 12.0 | +0.016 +0.068 | 14.0 | 20.0      | 12.0      | 1.0         |
| A350FM-1618-17 | 16.0 | +0.016 +0.068 | 18.0 | 24.0      | 17.0      | 1.0         |
| A350FM-2023-21 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| A350FM-3539-26 | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 26.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

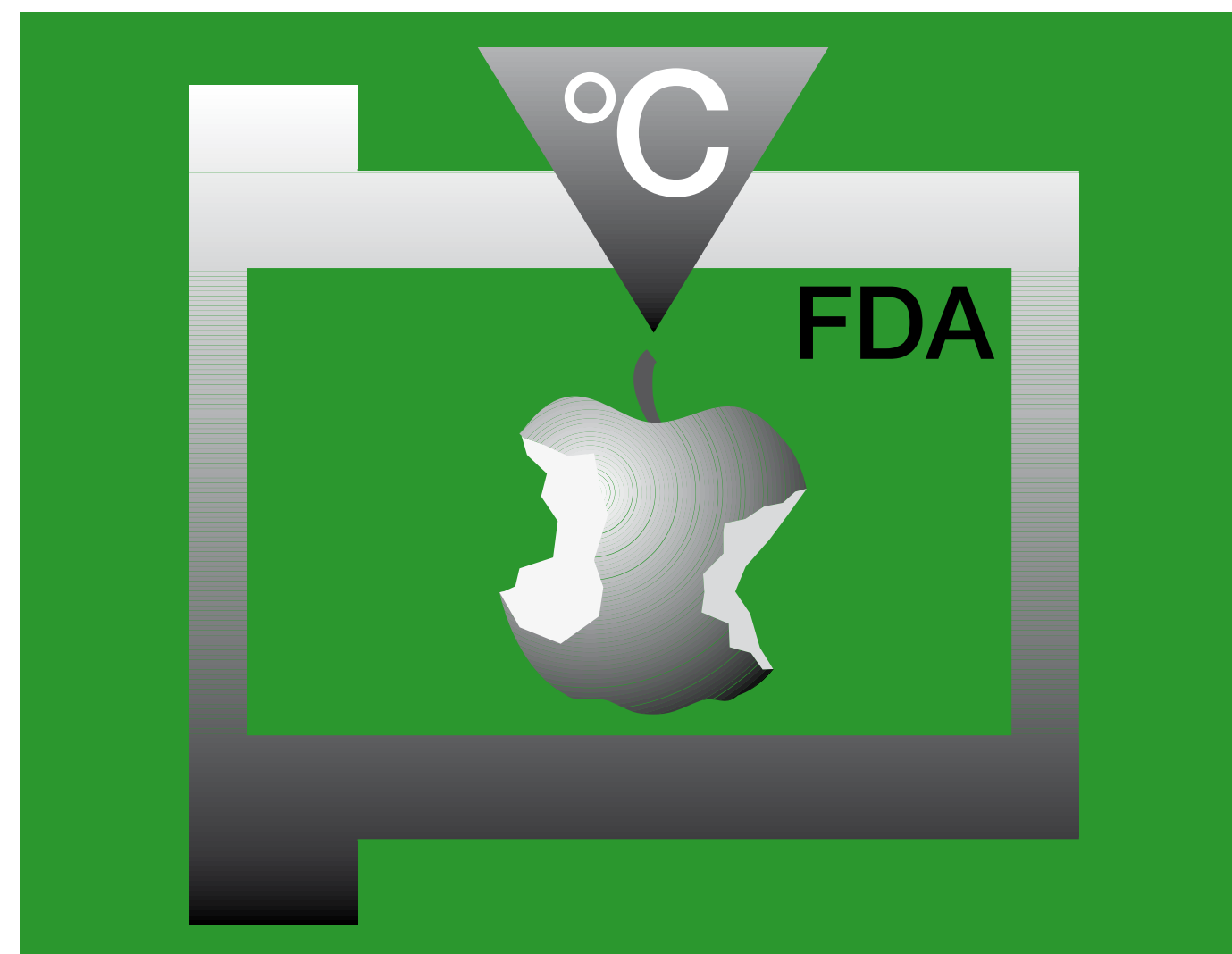
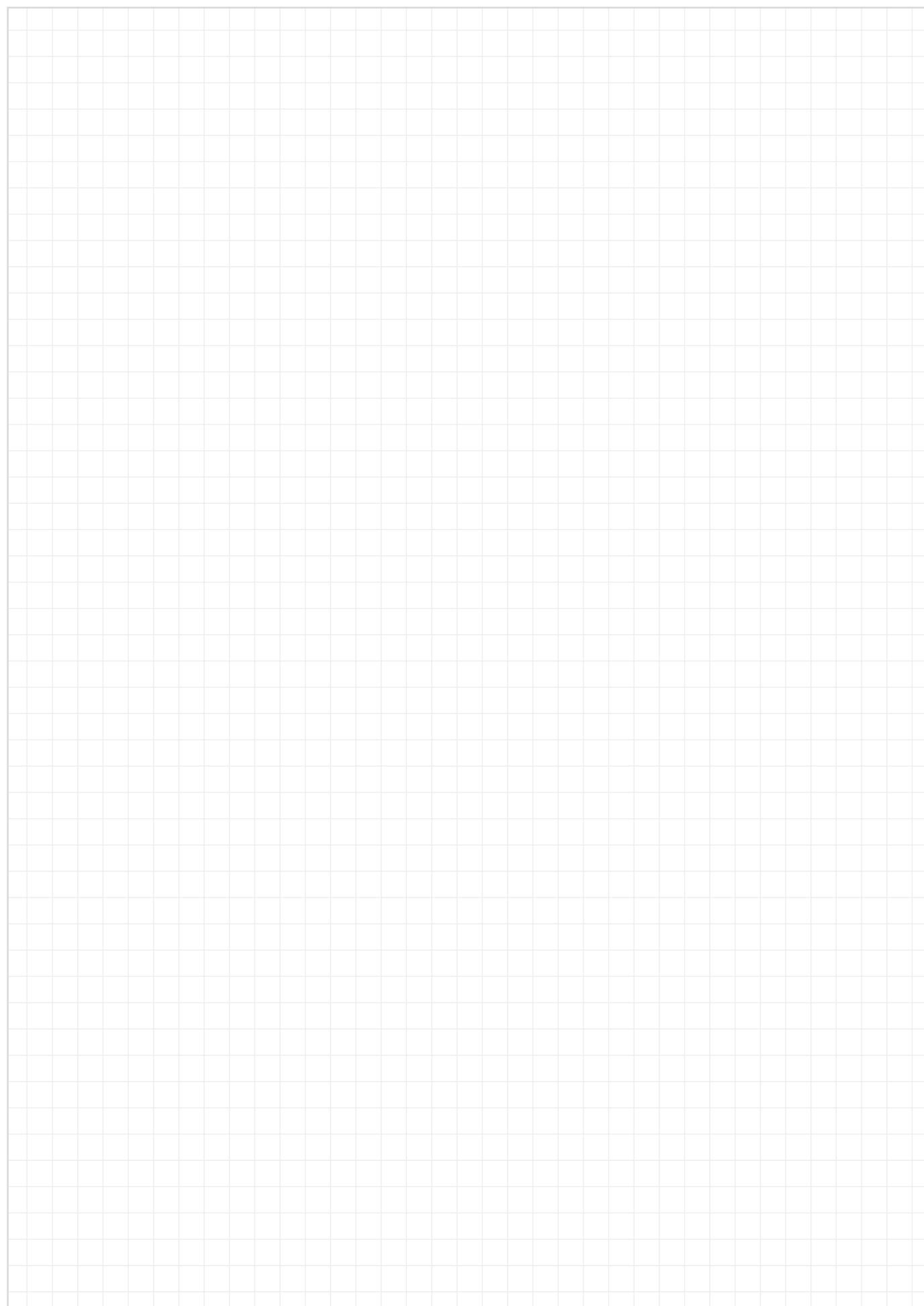
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/a350



## Temperature and chemical resistance, FDA-compliant – iglidur® A500



Standard range from stock

Lubrication- and maintenance-free

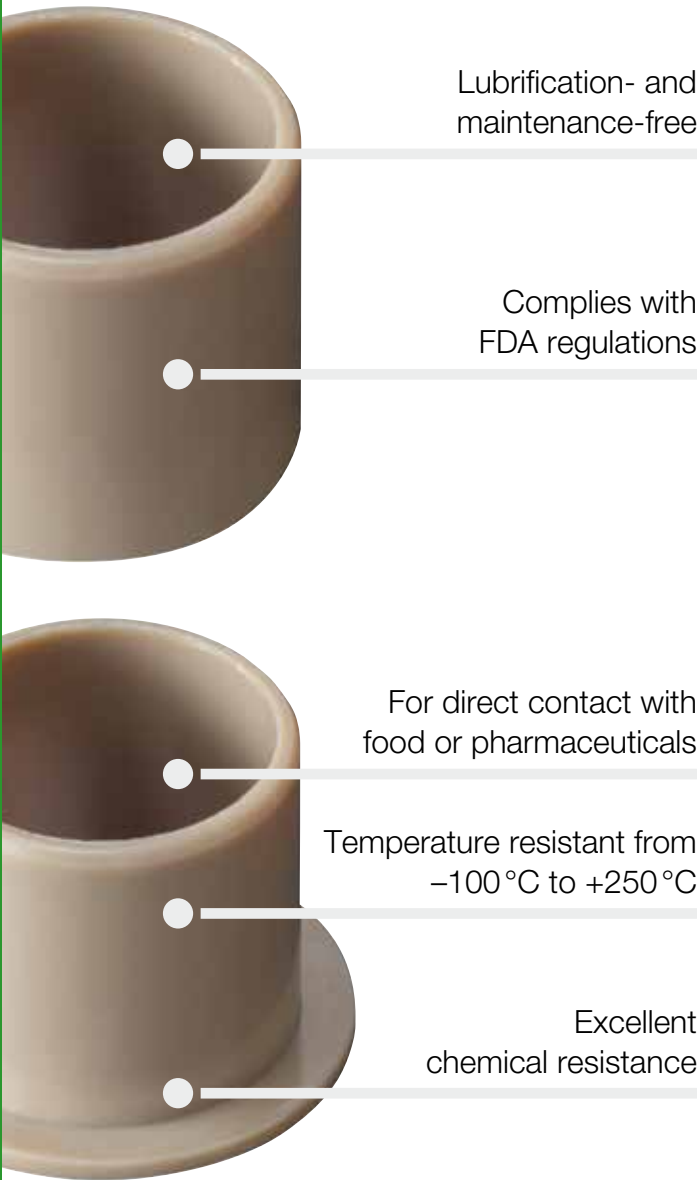
Complies with FDA regulations

For direct contact with food or pharmaceuticals

Temperature resistant from  $-100^{\circ}\text{C}$  to  $+250^{\circ}\text{C}$

High chemical-resistance

**Temperature and chemical resistance, FDA-compliant.** Polymer bearings made of iglidur® A500 can be exposed to extremely high temperatures and consist of materials suitable for direct contact with food (FDA-conformity).



**When to use it?**

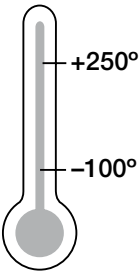
- When FDA compliance is required
- When a high chemical resistance is required
- Good abrasion resistance
- Temperature resistant from -100°C to +250°C



**When not to use it?**

- When the highest wear resistance is required
  - ▶ iglidur® X, page 173
  - ▶ iglidur® Z, page 327
- If no resistance to temperature or chemicals is required
  - ▶ iglidur® A180, page 411
  - ▶ iglidur® A200, page 431
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81
  - ▶ iglidur® P, page 195

**Temperature**



**Product range**

2 types  
Ø 4–50 mm  
more dimensions  
on request



The material iglidur® A500 complies with the requirements of the FDA for repeated contact with food.

| Material properties table                              |            |               |                |
|--------------------------------------------------------|------------|---------------|----------------|
| General properties                                     | Unit       | iglidur® A500 | Testing method |
| Density                                                | g/cm³      | 1.28          |                |
| Colour                                                 |            | brown         |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight   | 0.3           | DIN 53495      |
| Max. water absorption                                  | % weight   | 0.5           |                |
| Coefficient of sliding friction, dynamic against steel | μ          | 0.26–0.41     |                |
| pv value, max. (dry)                                   | MPa · m/s  | 0.28          |                |
| Mechanical properties                                  |            |               |                |
| Modulus of elasticity                                  | MPa        | 3,600         | DIN 53457      |
| Tensile strength at +20 °C                             | MPa        | 140           | DIN 53452      |
| Compressive strength                                   | MPa        | 118           |                |
| Max. recommended surface pressure (+20 °C)             | MPa        | 120           |                |
| Shore D hardness                                       |            | 83            | DIN 53505      |
| Physical and thermal properties                        |            |               |                |
| Max. long term application temperature                 | °C         | +250          |                |
| Max. short term application temperature                | °C         | +300          |                |
| Min. application temperature                           | °C         | -100          |                |
| Thermal conductivity                                   | W/m · K    | 0.24          | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K⁻¹ · 10⁻⁵ | 9             | DIN 53752      |
| Electrical properties                                  |            |               |                |
| Specific volume resistance                             | Ωcm        | > 10¹⁴        | DIN IEC 93     |
| Surface resistance                                     | Ω          | > 10¹³        | DIN 53482      |

Table 01: Material properties table

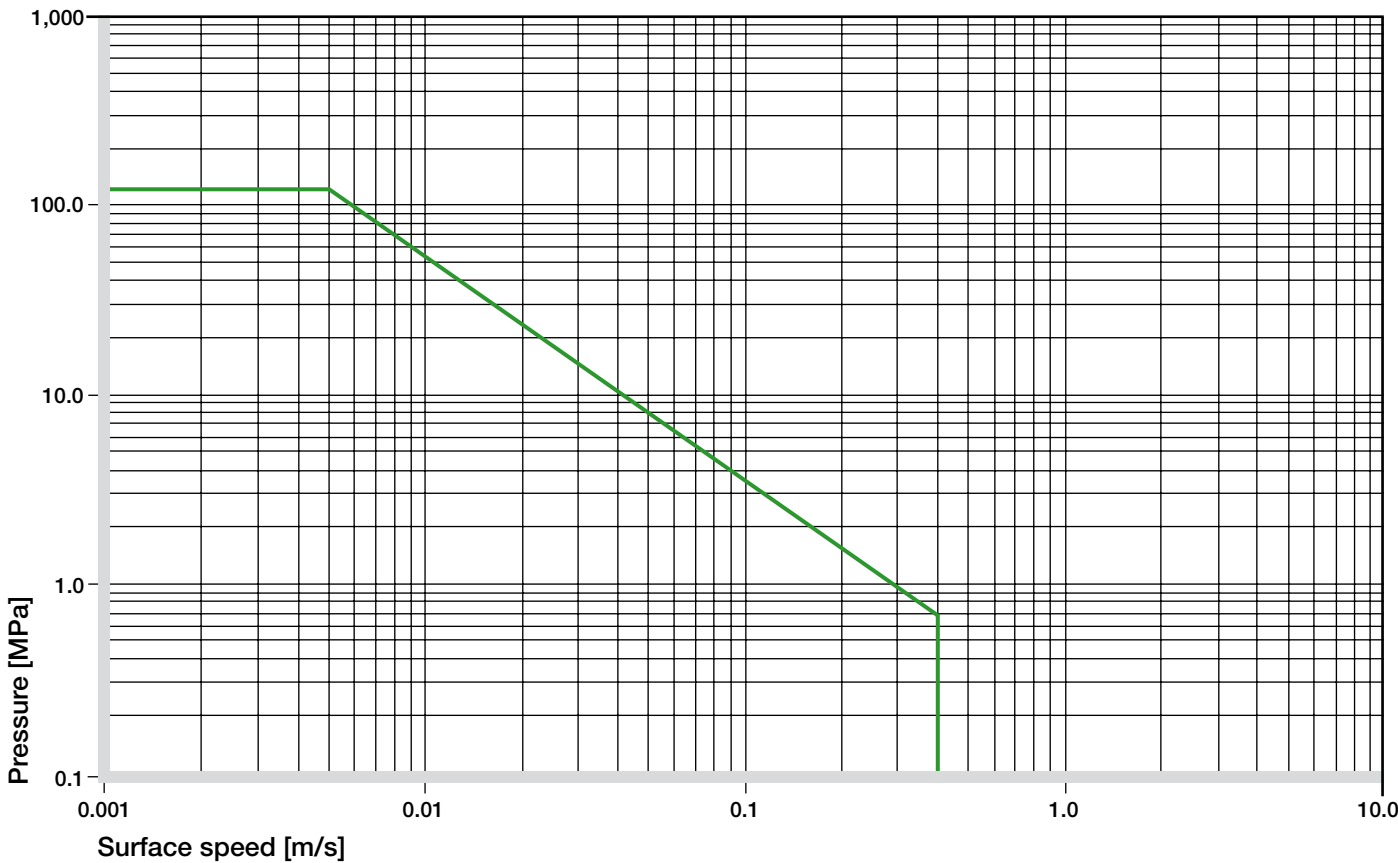


Diagram 01: Permissible pv values for iglidur® A500 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Bearings made of iglidur® A500 can be used at high temperatures and are permitted for use in direct contact with foodstuffs (FDA compatible). They exhibit an exceptionally good chemical resistance and are suitable for heavy-duty use in machinery for the food industry. Though iglidur® A500 is an extremely soft material, it simultaneously possesses an excellent compressive strength even at high temperatures.

### Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® A500 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +250 °C the permissible surface pressure is almost 11 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

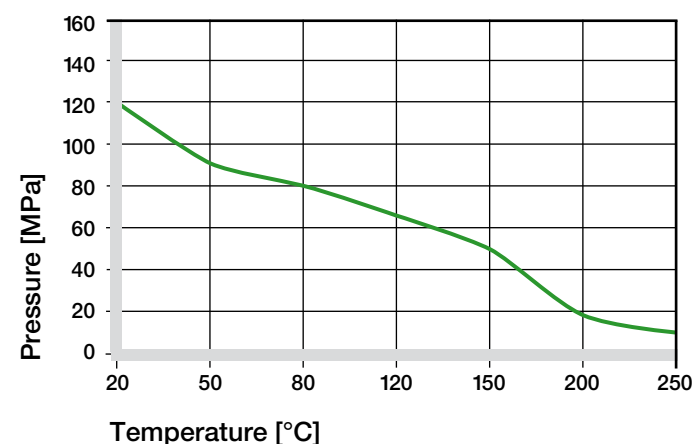


Diagram 02: Recommended maximum surface pressure as a function of temperature (120 MPa at +20 °C)

Diagram 02 shows the maximum recommended surface pressure of the bearing dependent on the temperature. This combination of high stability and high flexibility acts very positively with vibrations and edge loads. As the wear of the bearing rapidly escalates from pressures of 10 to 20 MPa, we recommend a particularly accurate testing of the application above these limits.

► Surface Pressure, [page 63](#)

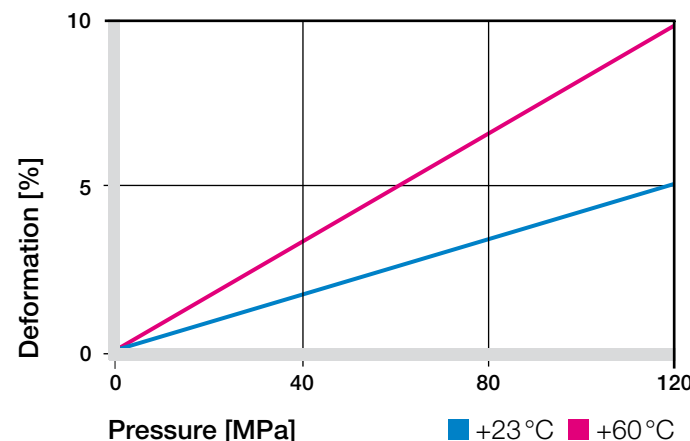


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

iglidur® A500 also permits high surface speeds due to the high temperature resistance. The coefficient of friction rises however by these high rotatory speeds leading to a higher heating up of the bearing. Tests show that bearings made of iglidur® A500 have a better wear resistance and higher permitted pv values in pivoting applications.

► Surface Speed, [page 65](#)

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.6      | 0.4         | 1      |
| Short term | 1        | 0.7         | 2      |

Table 02: Maximum running speed

### Temperatures

The short-term permitted maximum application temperature is +300 °C. With increasing temperatures, the compressive strength of iglidur® A500 bearings decreases. Diagram 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear.

► Application Temperatures, [page 66](#)

| iglidur® A500                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -100 °C                 |
| Max. long term                 | +250 °C                 |
| Max. short term                | +300 °C                 |
| Add. securing is required from | +130 °C                 |

Table 03: Temperature limits

### Friction and Wear

The coefficient of friction is dependent on the load that acts on the bearing. In iglidur® A500 bearings, the friction coefficient  $\mu$  initially declines with increasing load. The most favorable coefficient of friction is attained from about 10 MPa. Friction and wear also depend to a high degree on the reverse partner. Thus extremely smooth shafts enhance not only the coefficient of friction, but also the bearing wear. The most suited are smoothed surfaces with an average surface finish of  $R_a = 0.4$  to  $0.6 \mu\text{m}$ .

► Coefficients of Friction and Surfaces, [page 68](#)

► Wear Resistance, [page 69](#)

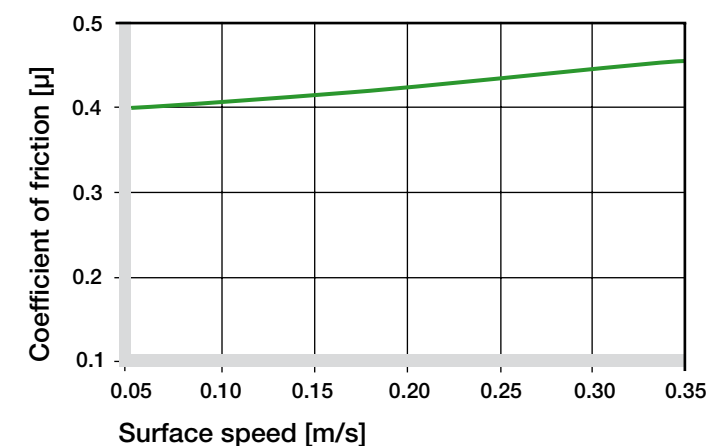


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

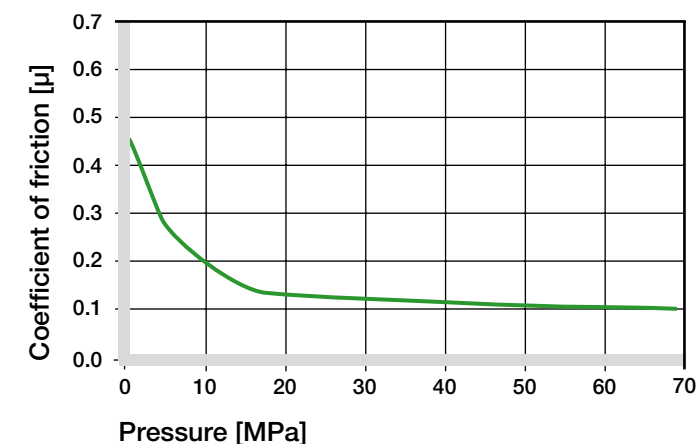


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

### Shaft Materials

The diagrams 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® A500. The combination "iglidur® A500/hard-chromed shaft" clearly stands out in rotating application. Up to about 2.0 MPa, the wear of this combination remains largely independent of load. In pivoting applications with Cf53 shafts, the wear resistance is better than in rotations under equal load.

Please contact us in case the shaft material scheduled by you is not included in these figures.

► Shaft Materials, [page 71](#)

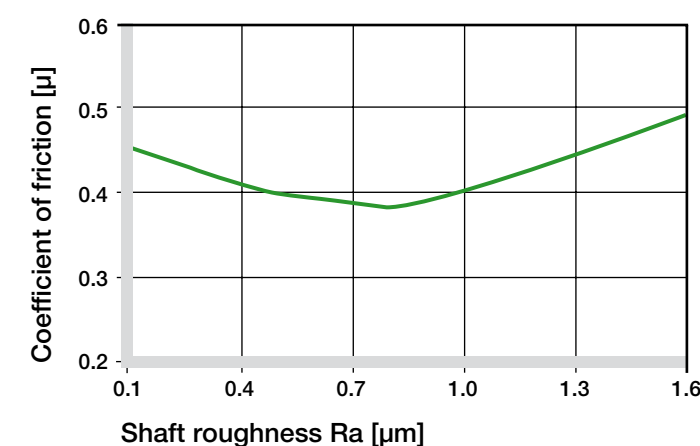


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

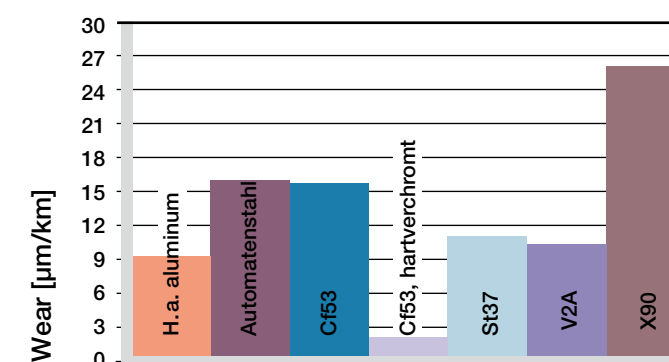


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$



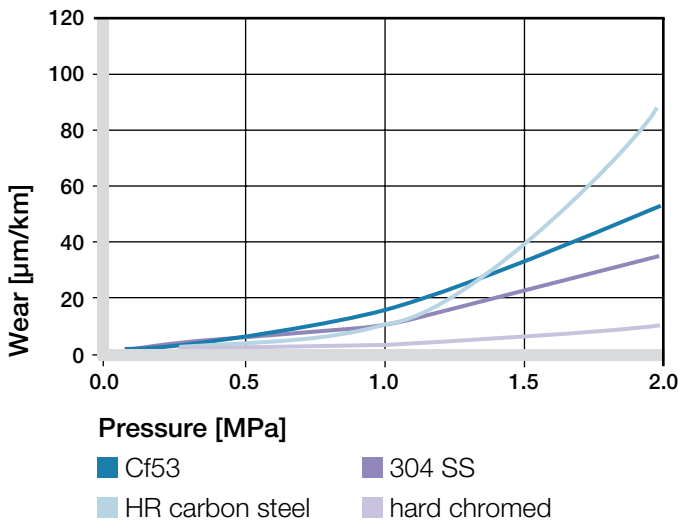


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

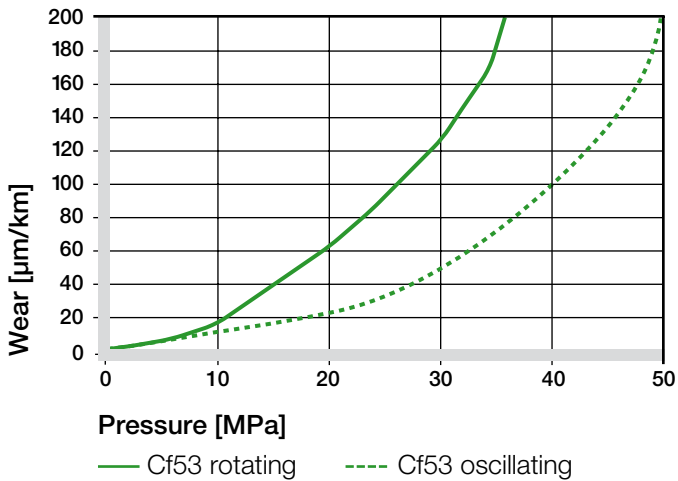


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® A500 | Dry       | Greases | Oil  | Water |
|---------------|-----------|---------|------|-------|
| C. o. f. µ    | 0.26–0.41 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A500 plain bearings feature an excellent resistance with regard to detergents, greases, oils, bases and acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® A500 rank among the most radiation resistant products in the iglidur® range. The bearings are resistant up to a radiation intensity of 2 · 10<sup>5</sup> Gy. Higher radiation affects the material and can result in the loss of basic mechanical characteristics.

UV Resistance

To a large extent, iglidur® A500 plain bearings are resistant to UV radiation.

Vacuum

In a vacuum, iglidur® A500 plain bearings can only be used to a limited degree.

Electrical Properties

iglidur® A500 plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>14</sup> Ωcm |
| Surface resistance | > 10 <sup>13</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® A500 plain bearings is only 0.5 % when saturated.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.3 % weight |
| Max. water absorption | 0.5 % weight |

Table 06: Moisture absorption

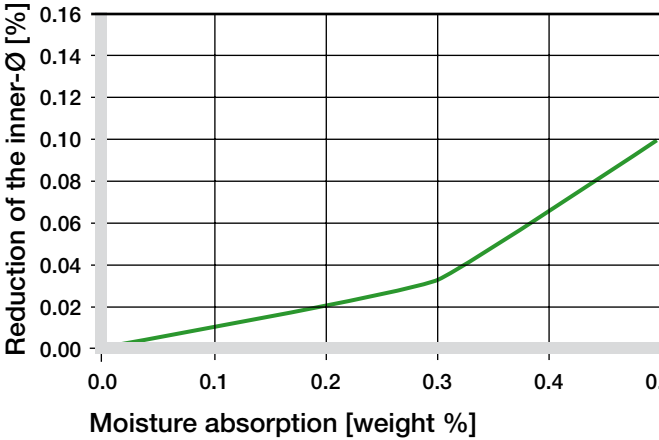


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

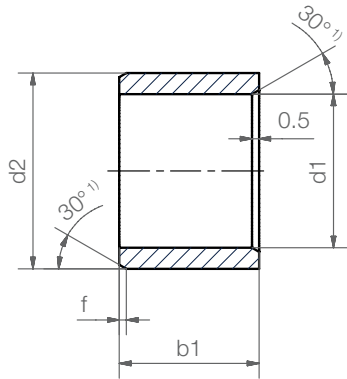
iglidur® A500 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® A500 F10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.006 +0.046          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.010 +0.058          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.013 +0.071          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.016 +0.086          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.020 +0.104          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.025 +0.125          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.030 +0.150          | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A500SM-0507-05



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® A500

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| A500SM-0507-05 | 5.0  | +0.010 +0.058 | 7.0  | 5.0       |
| A500SM-0810-06 | 8.0  | +0.013 +0.071 | 10.0 | 6.0       |
| A500SM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 10.0      |
| A500SM-0810-12 | 8.0  | +0.013 +0.071 | 10.0 | 12.0      |
| A500SM-1012-12 | 10.0 | +0.013 +0.071 | 12.0 | 12.0      |
| A500SM-1214-15 | 12.0 | +0.016 +0.086 | 14.0 | 15.0      |
| A500SM-1215-15 | 12.0 | +0.016 +0.086 | 15.0 | 15.0      |
| A500SM-1416-16 | 14.0 | +0.016 +0.086 | 16.0 | 16.0      |
| A500SM-2023-30 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      |
| A500SM-2225-30 | 22.0 | +0.020 +0.104 | 25.0 | 30.0      |
| A500SM-3236-30 | 32.0 | +0.025 +0.125 | 36.0 | 30.0      |
| A500SM-3539-50 | 35.0 | +0.025 +0.125 | 39.0 | 50.0      |
| A500SM-5055-30 | 50.0 | +0.025 +0.125 | 55.0 | 30.0      |

\* after pressfit. Testing methods ► page 75



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

► [www.igus.co.uk/iglidur-specialbearings](http://www.igus.co.uk/iglidur-specialbearings)

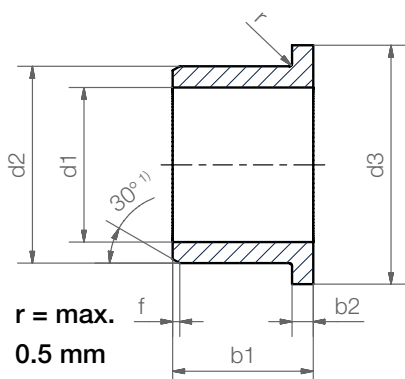


delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/a500](http://www.igus.co.uk/en/a500)

Flange bearing



Order key

A500FM-0405-04



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® A500

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| A500FM-0405-04 | 4.0  | +0.010 +0.058 | 5.5  | 9.5       | 4.0       | 2.0         |
| A500FM-0408-06 | 4.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 0.75        |
| A500FM-0608-06 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 6.0       | 1.0         |
| A500FM-0608-08 | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 8.0       | 1.0         |
| A500FM-0810-10 | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| A500FM-1012-09 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 9.0       | 1.0         |
| A500FM-1012-15 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 15.0      | 1.0         |
| A500FM-1214-13 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 13.0      | 1.0         |
| A500FM-1214-15 | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 15.0      | 1.0         |
| A500FM-1517-17 | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 17.0      | 1.0         |
| A500FM-1618-17 | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| A500FM-2023-21 | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| A500FM-3034-40 | 30.0 | +0.020 +0.104 | 34.0 | 42.0      | 40.0      | 2.0         |
| A500FM-3539-40 | 35.0 | +0.025 +0.125 | 39.0 | 47.0      | 40.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

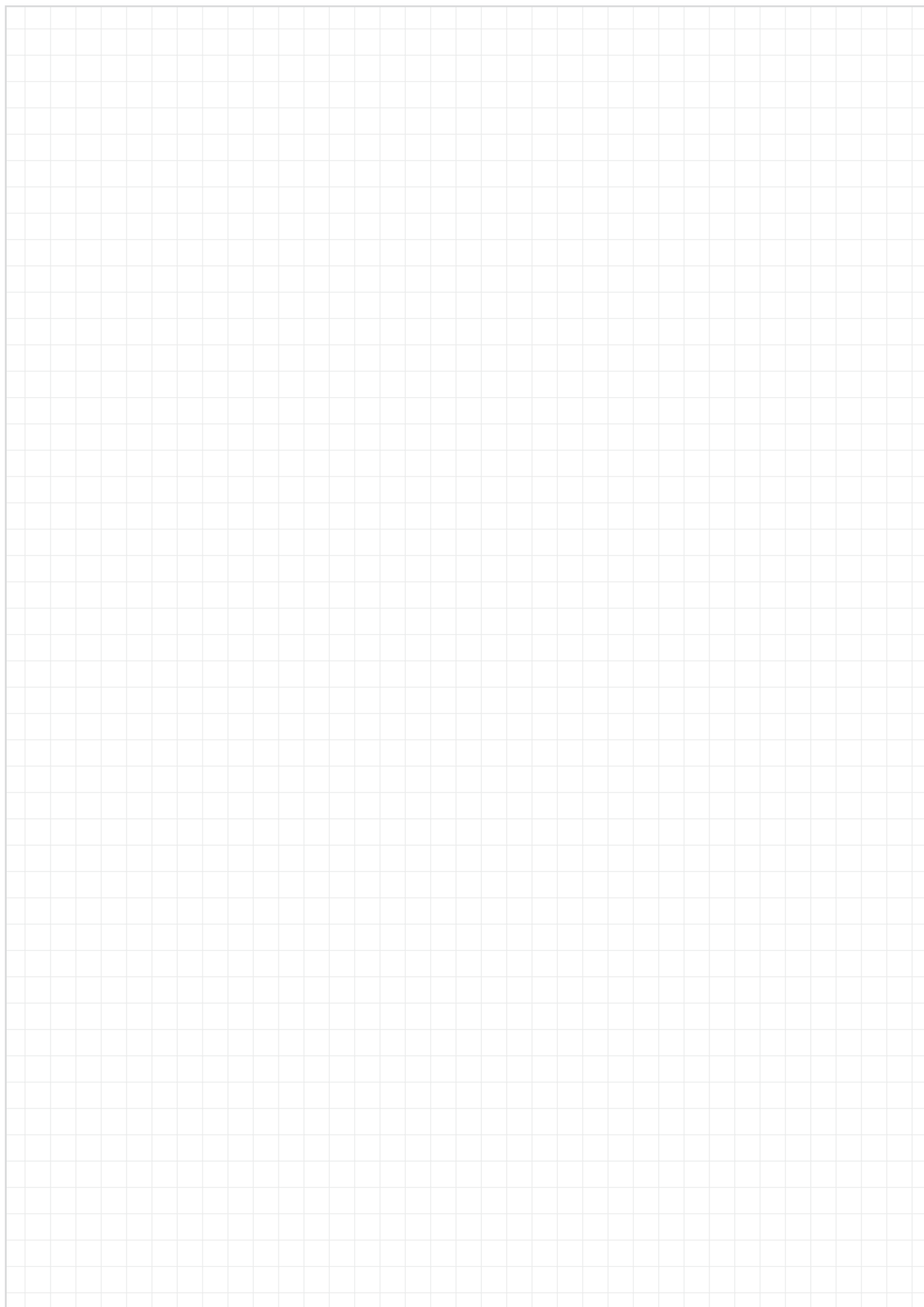
► [www.igus.co.uk/iglidur-specialbearings](http://www.igus.co.uk/iglidur-specialbearings)



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## Chemicals & Food, compliant per EC Directive 10/2011 EC – iglidur® A160



Standard range from stock

Compliant with EC Directive 10/2011 EC

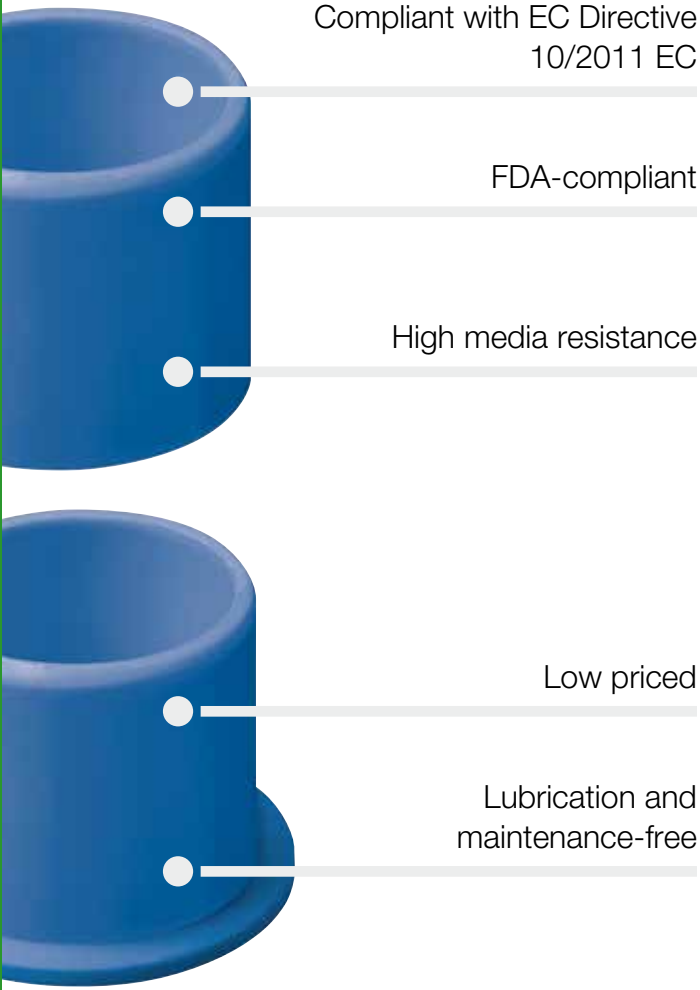
FDA-compliant

High media resistance

Low priced

Lubrication and maintenance-free

**Chemicals & Food.** iglidur® A160 offers maximum media resistance in the medium temperature range and is therefore a true low-cost iglidur®. The profile of properties is completed by the suitability for applications in the food industry.



**When to use it?**

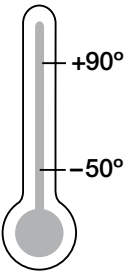
- When a bearing with maximum media resistance is required at medium temperatures
- When a very cost effective bearing with high media resistance is required
- When a material compliant with the 10/2011 EC is required



**When not to use?**

- When a universal material for the food industry is required
  - ▶ iglidur® A180, page 411
  - ▶ iglidur® A181, page 421
- When a very media-resistant bearing is required for applications at more than +90 °C
  - ▶ iglidur® A500, page 457
  - ▶ iglidur® X, page 173
- When a low-cost material with high wear resistance is required for dry running
  - ▶ iglidur® R, page 277

**Temperature**



**Product Range**

2 types  
Ø 6–20 mm  
more dimensions  
on request



The products made of iglidur® A160 are food compliant with Directive 10/2011 EC and also to FDA specifications for repeated contact with food

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® A160      | Testing Method |
| Density                                                | g/cm³                              | 1.00               |                |
| Colour                                                 |                                    | blue               |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.1                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.1                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.09–0.19          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.25               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 1,151              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 19                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 37                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 15                 |                |
| Shore D hardness                                       |                                    | 60                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +90                |                |
| Max. short term application temperature                | °C                                 | +100               |                |
| Min. application temperature                           | °C                                 | –50                |                |
| Thermal conductivity                                   | W/m · K                            | 0.30               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> | 11                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | DIN 53482      |

Table 01: Material properties table

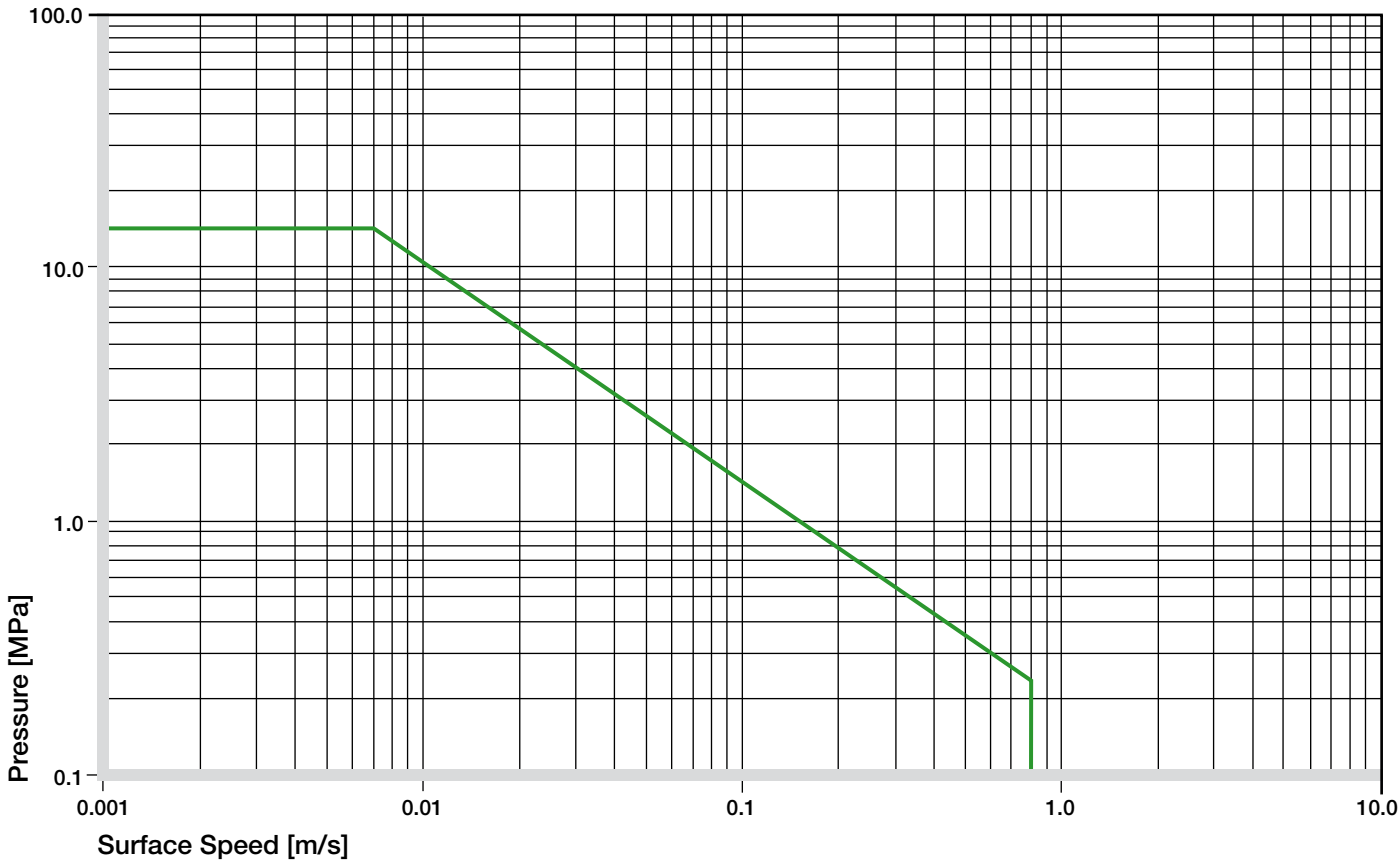


Diagram 01: Permissible pv values for iglidur® A160 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing



iglidur® A160 plain bearings are characterised by extreme media resistance at a low cost. Tribologically optimised, the material can be used in up to +90°C and also possesses conformities demanded in the food processing sector. The profile of properties is completed by the “optical detectability”, i.e. the blue colour, often required in the industry.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® A160 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is a little bit higher than 3 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

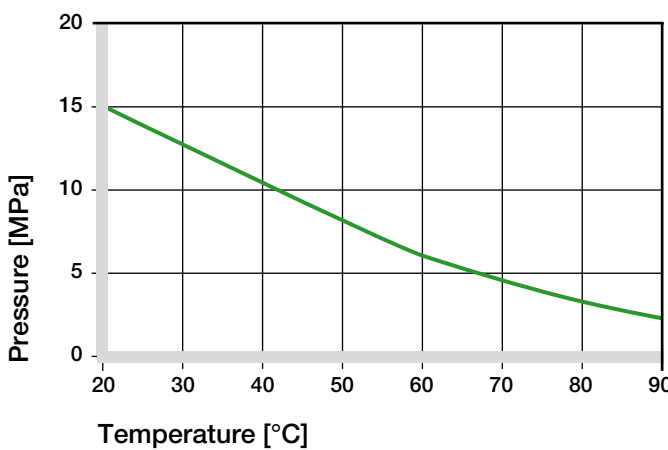


Diagram 02: Recommended maximum surface pressure as a function of temperature (15 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® A160 during radial loading. At the recommended maximum surface pressure of 15 MPa the deformation is less than 3.0 %. Plastic deformation is minimal up to this radial load. It is nonetheless depending on the duration of the applied force.

► Surface Pressure, page 63

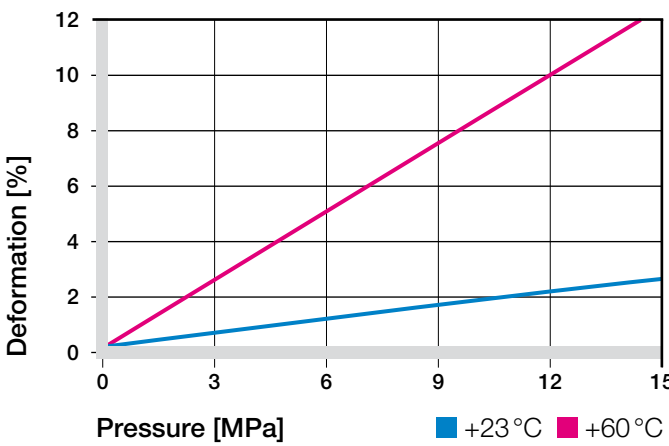


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A160 is developed for low surface speeds. Maximum speeds up to 0.5 m/s (rotating) and 2.0 m/s (linear) respectively are permitted for continuous application in dry operation. These given values (table 02) indicate the limits at which an increase up to the continuous permissible temperature occurs. In practice these limit values are not always reached.

- Surface Speed, page 65
- pv value and lubrication, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.5      | 0.4         | 2      |
| Short term | 0.7      | 0.6         | 3      |

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum temperature is +100 °C. With increasing temperatures, the compressive strength of iglidur® A160 bearings decreases. Diagram 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear.

► Application Temperatures, page 66

| iglidur® A160                  | Application Temperature |
|--------------------------------|-------------------------|
| Minimum                        | -50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +100 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

Coefficient of friction and wear resistance alter with the application parameters. For iglidur® A160 bearings, the alteration of the coefficient of friction  $\mu$  depends on surface speed and the shaft surface finish is only negligently pronounced. With increasing load, the coefficient of friction however sinks markedly. In the Ra range between 0.6 and 0.7  $\mu\text{m}$ , the coefficient of friction attains the optimum value.

- Coefficients of Friction and Surfaces, page 68
- Wear Resistance, page 69

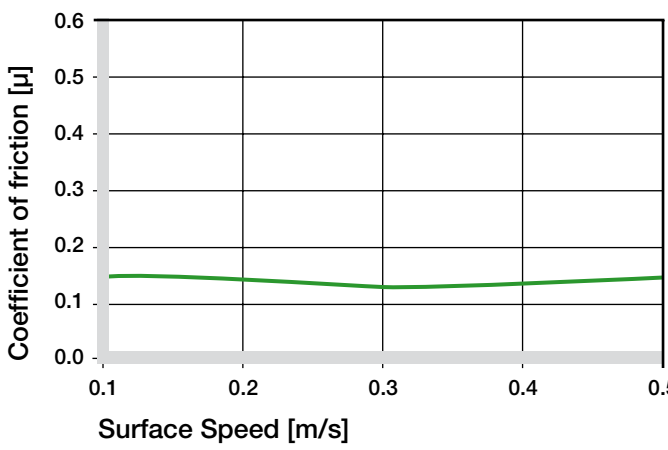


Diagram 04: Coefficient of friction as a function of the running speed, p = 1 MPa

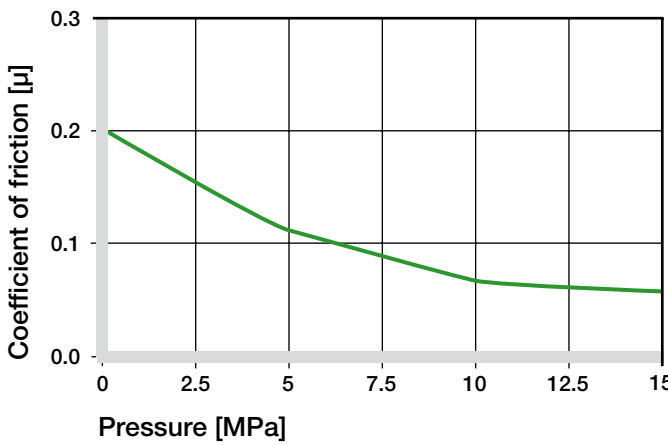


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagrams 06 to 09 show results of testing different shaft materials with plain bearings made of iglidur® A160 running dry. For rotational applications with low loads, the most interesting, media- and corrosion-resistant shaft materials V2A, X90 and hard chrome-plated steel reveal themselves as particularly good counter partners. On X90 shafts, however, the wear increases the fastest with the load (Diagramm 08). With Cf53 shafts, the wear in pivoting applications is exemplary compared to rotating applications. In rotation the wear, as with many other iglidur® materials, is higher than when pivoting.

► Shaft Materials, page 71

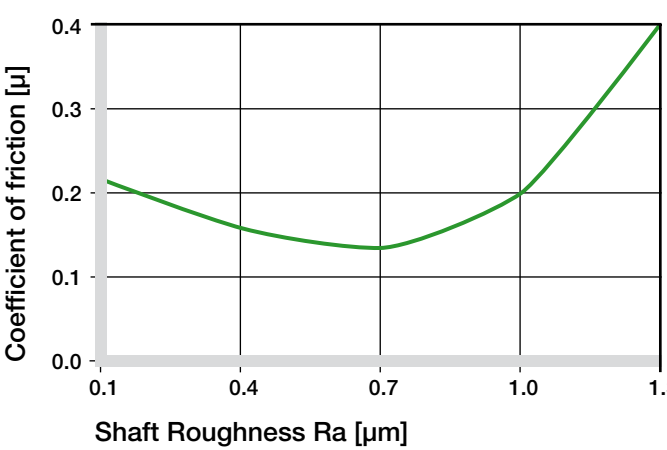


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

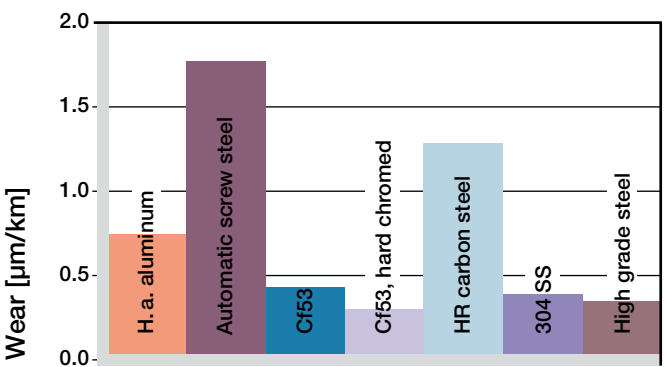


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

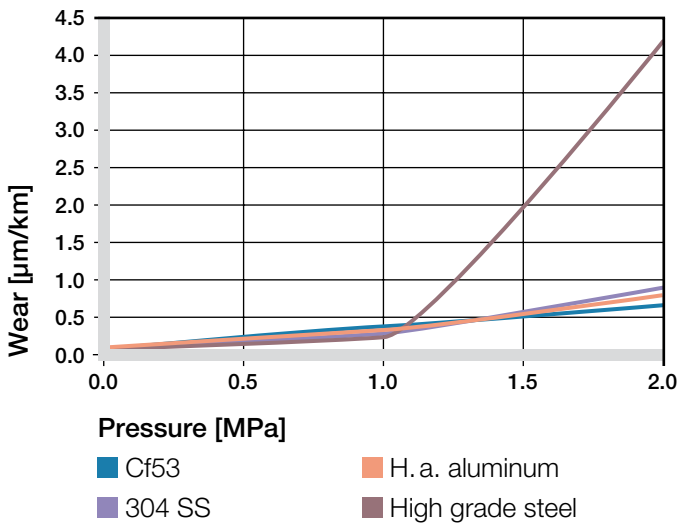


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

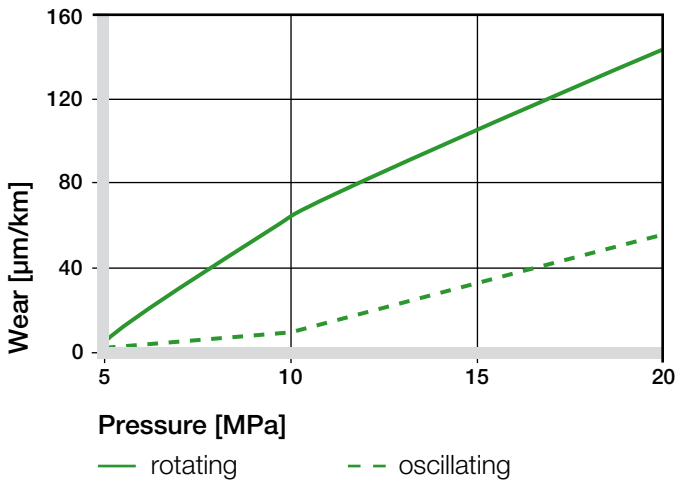


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® A160  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.09–0.19 | 0.08    | 0.03 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A160 bearings can be used under various environmental conditions and in contact with numerous chemicals. Table 05 gives an overview of the chemical resistance of iglidur® A160 bearings at room temperature.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | + to 0     |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A160 are resistant to radiation up to an intensity of  $1 \cdot 10^5$  Gy. Higher radiation levels attack the material and can cause the loss of essential mechanical properties.

UV Resistance

iglidur® A160 plain bearings are partially resistant to the impact of UV radiation.

Vacuum

When used in a vacuum environment, the iglidur® A160 plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® A160 plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{12} \Omega\text{cm}$ |
| Surface resistance | $> 10^{12} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® A160 plain bearings is approximately 0.1 % in standard atmosphere. The saturation limit submerged in water is also approximately 0.1 %.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.1 % weight |
| Max. water absorption | 0.1 % weight |

Table 06: Moisture absorption

Installation Tolerances

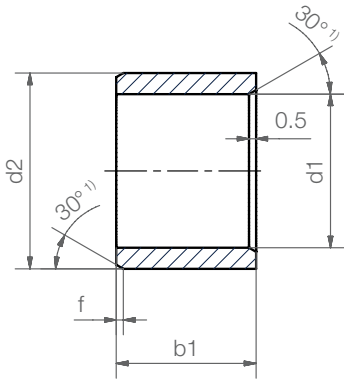
iglidur® A160 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances.

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® A160<br>E10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|---------------------------|--------------------|
| to 3                | 0–0.025          | +0.014 +0.054             | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.020 +0.068             | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.025 +0.083             | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.032 +0.102             | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.040 +0.124             | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.050 +0.150             | 0 +0.025           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A160SM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® A160

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

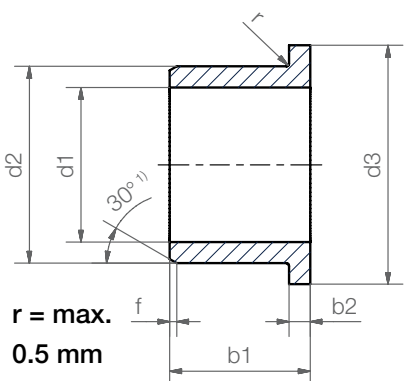
|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number                | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------------------|------|---------------|------|-----------|
| A160SM-0608-06 <b>New!</b> | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| A160SM-0810-10 <b>New!</b> | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| A160SM-1012-10 <b>New!</b> | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| A160SM-1214-12 <b>New!</b> | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| A160SM-1618-15 <b>New!</b> | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| A160SM-2023-20 <b>New!</b> | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

A160FM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® A160

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number                | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------------------|------|---------------|------|-----------|-----------|-------------|
| A160FM-0608-06 <b>New!</b> | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| A160FM-0810-10 <b>New!</b> | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| A160FM-1012-10 <b>New!</b> | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| A160FM-1214-12 <b>New!</b> | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| A160FM-1618-17 <b>New!</b> | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| A160FM-2023-21 <b>New!</b> | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



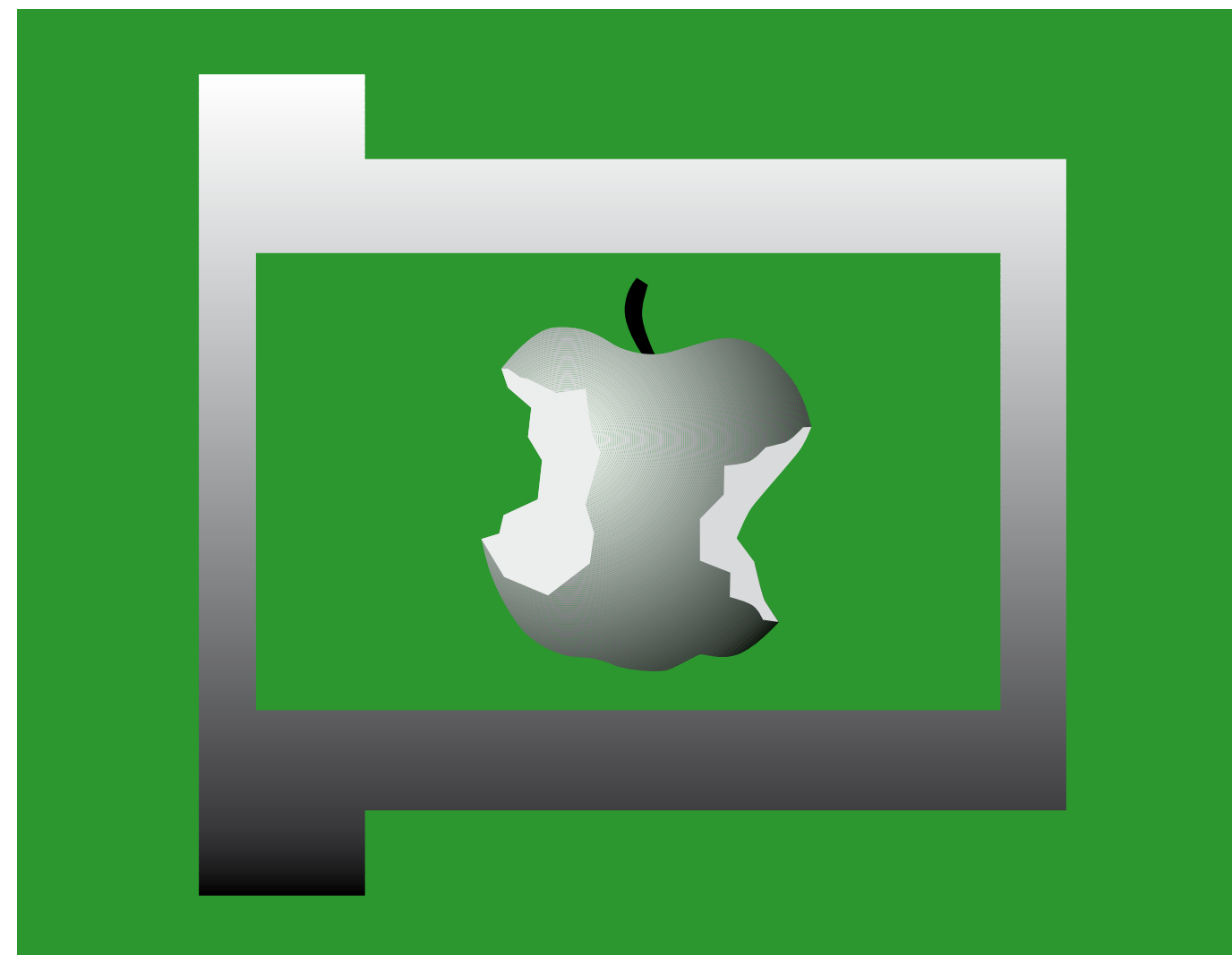
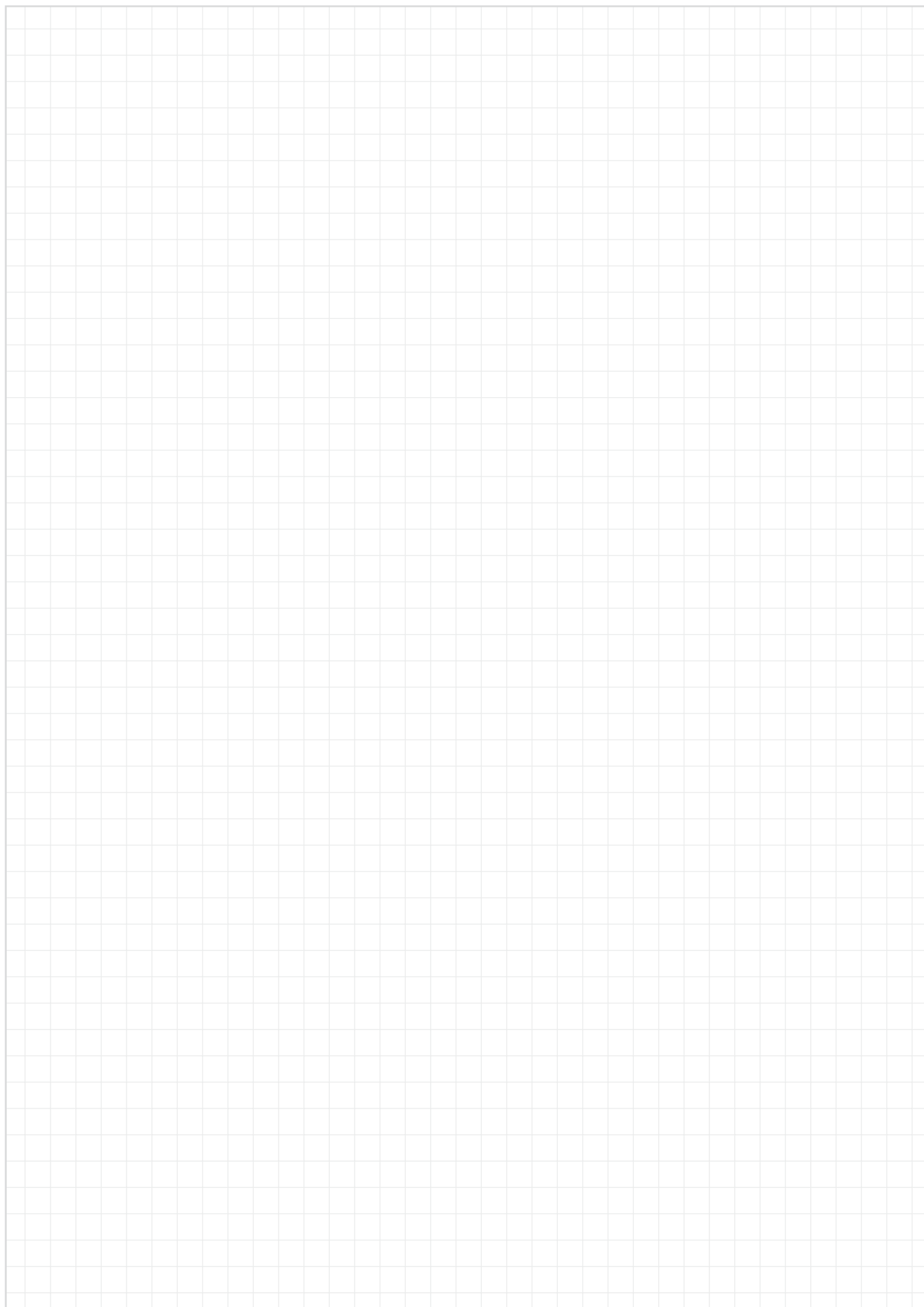
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## Robust – iglidur® A290



Standard range from stock

Complies with the requirements of the BfR

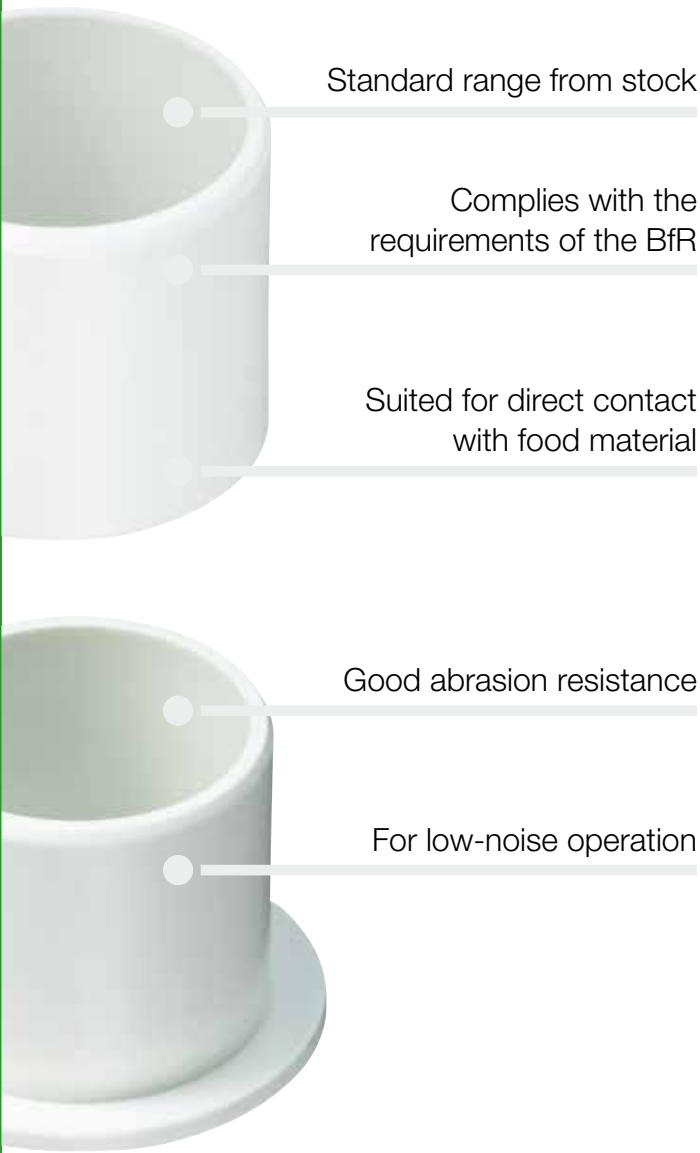
Suited for direct contact with food materials

Good abrasion resistance

For low-noise operation



**Robust.** The bearings complies with the requirements of the BfR for contact with food. For medium and high loads.



**When to use it?**

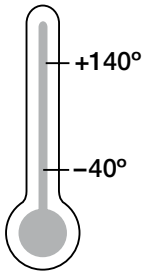
- Suitable for contact with food
- For low speeds
- For low-noise operation
- Physiologically safe
- Very good mechanical properties



**When not to use it?**

- When the material's FDA compliance is necessary
  - ▶ iglidur® A180, page 411
  - ▶ iglidur® A200, page 431
  - ▶ iglidur® A500, page 457
- When the highest wear resistance is required
  - ▶ iglidur® W300, page 151
- When temperatures are continuously greater than +140 °C
  - ▶ iglidur® A500, page 457
  - ▶ iglidur® H, page 353
  - ▶ iglidur® X, page 173
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81

**Temperature**



**Product range**

2 types  
Ø 3–50 mm  
more dimensions  
on request



The material iglidur® A290 complies with the requirements of the BfR (German institute for food safety) for contact with food.

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® A290      | Testing method |
| Density                                                | g/cm³                              | 1.41               |                |
| Colour                                                 |                                    | white              |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.7                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 7.3                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.13–0.40          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.23               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 8,800              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 250                | DIN 53452      |
| Compressive strength                                   | MPa                                | 91                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 70                 |                |
| Shore D hardness                                       |                                    | 88                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +140               |                |
| Max. short term application temperature                | °C                                 | +180               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 7                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>11</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

Table 01: Material properties table

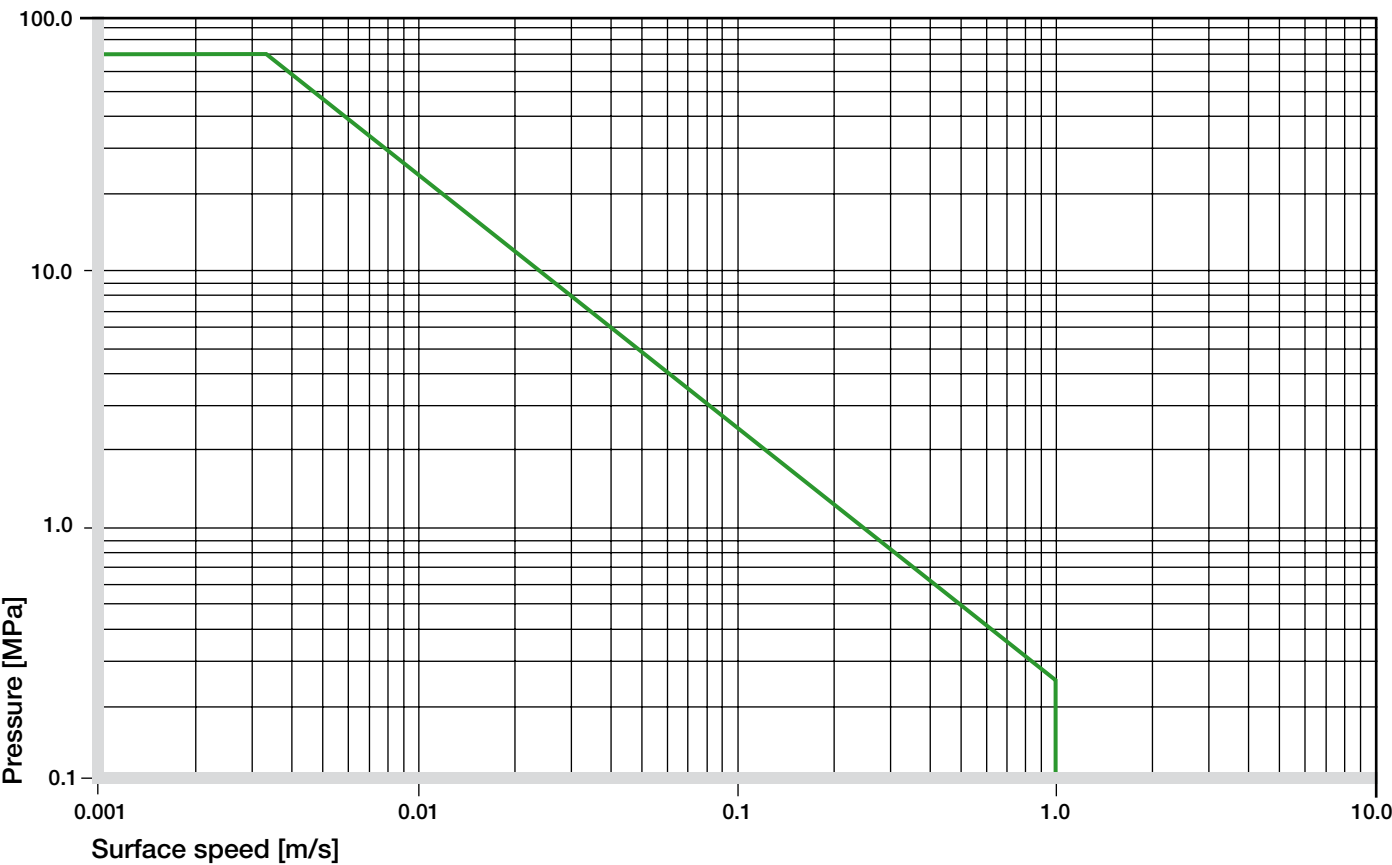


Diagram 01: Permissible pv values for iglidur® A290 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing



iglidur® A290 bearings are an advanced development for the use in food industry. Compared to the bearings made of iglidur® A200, the tribological properties could be significantly improved.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® A290 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +140 °C the permissible surface pressure is almost 35 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

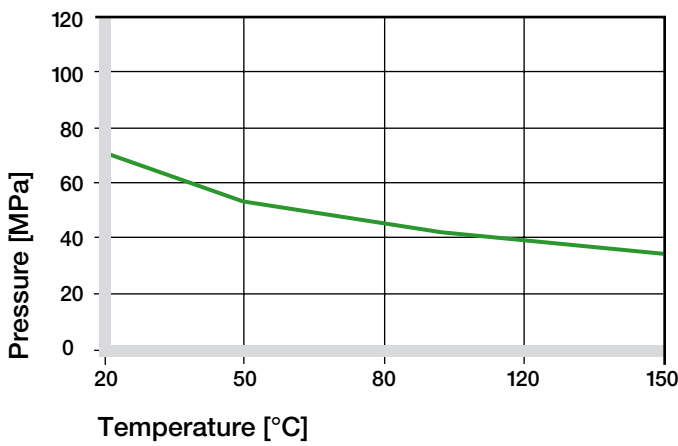


Diagram 02: Recommended maximum surface pressure as a function of temperature (70 MPa at +20 °C)

At this load, the deformation is only about 2.5 % at room temperature. A plastic deformation can be negligible up to this load. It is however also dependent on the duration of the applied pressure.

► Surface Pressure, page 63

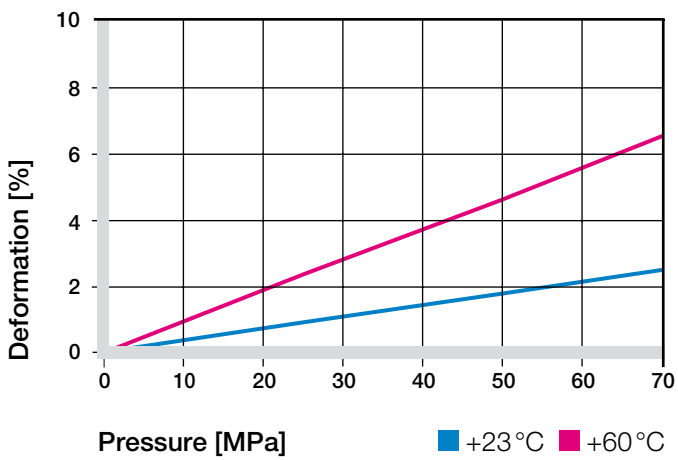


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A290 is suitable for low surface speeds. Due to the relatively high friction particularly in the low load range, the bearings made of iglidur® A290 heat more strongly than other bearings. With higher speeds, the friction also increases.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 3      |
| Short term | 2        | 1.4         | 4      |

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum temperature is +180 °C. With increasing temperatures, the compressive strength of iglidur® A290 bearings decreases. The diagram 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear. The wear increases with rising temperatures, and the influence is especially marked from +120 °C temperature onwards.

► Application Temperatures, page 66

| iglidur® A290                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +140 °C                 |
| Max. short term                | +180 °C                 |
| Add. securing is required from | +110 °C                 |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction alters like the wear resistance with increasing load and surface speed. With increasing speed and constant load, the coefficient of friction steadily rises. In contrast a reverse behavior is noticed at increasing load and constant speed (see diagrams 04 and 05). Friction and wear depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. iglidur® A290 proves to be relatively insensitive to shaft surfaces and retains a 0.4 friction coefficient  $\mu$  with average surface finishes of  $R_a = 0.4$  to  $1.6 \mu m$ .

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

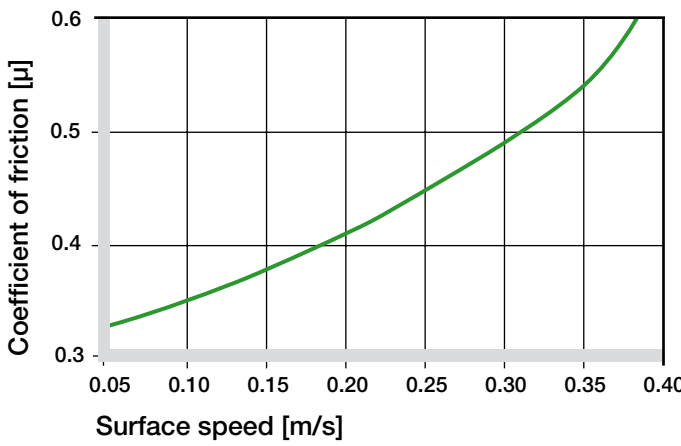


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 1.0 \text{ MPa}$

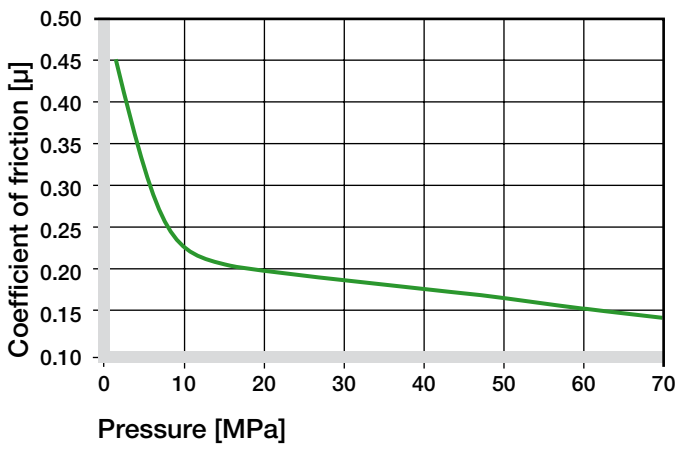


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

Shaft Materials

Diagrams 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® A290. Compared to iglidur® A200, the improved tribological properties of iglidur® A290 are also reflected in the wear. At low loads, the differences in the wear resistance of the combinations of iglidur® A290 with different shaft materials are very distinct.

► Shaft Materials, page 71

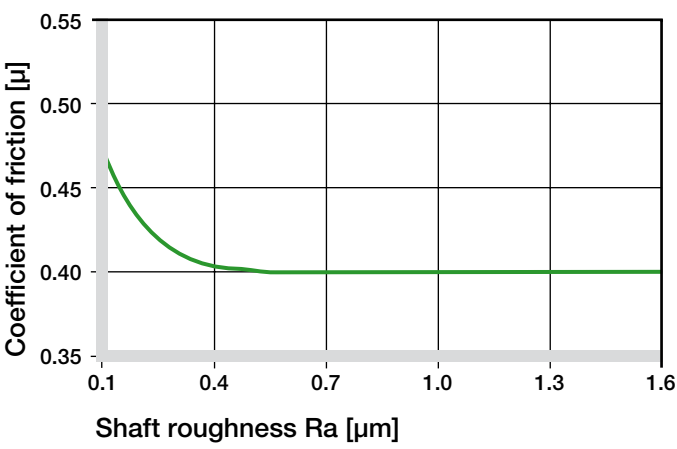


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

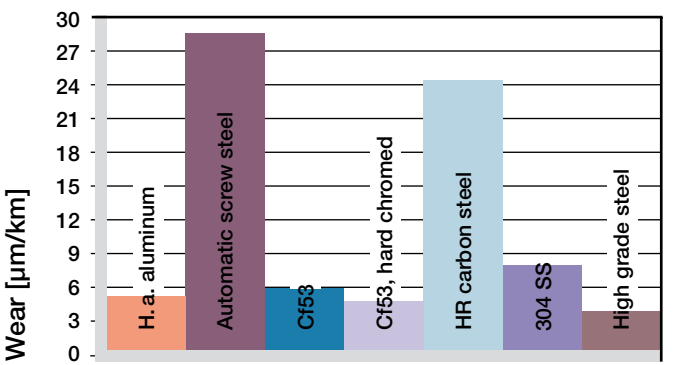


Diagram 06: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

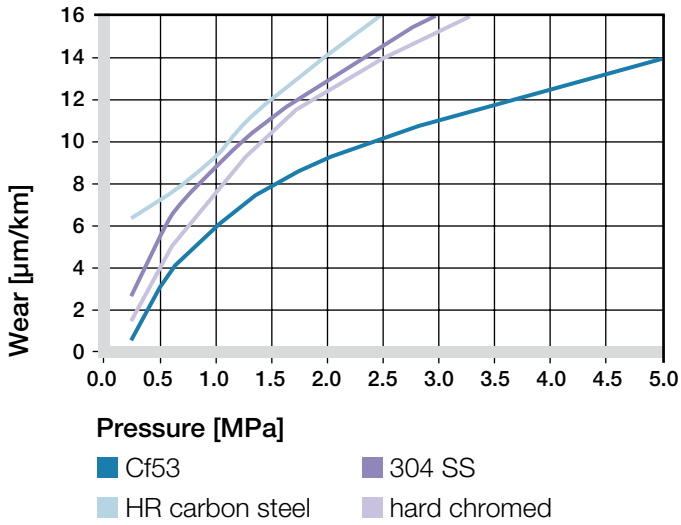


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

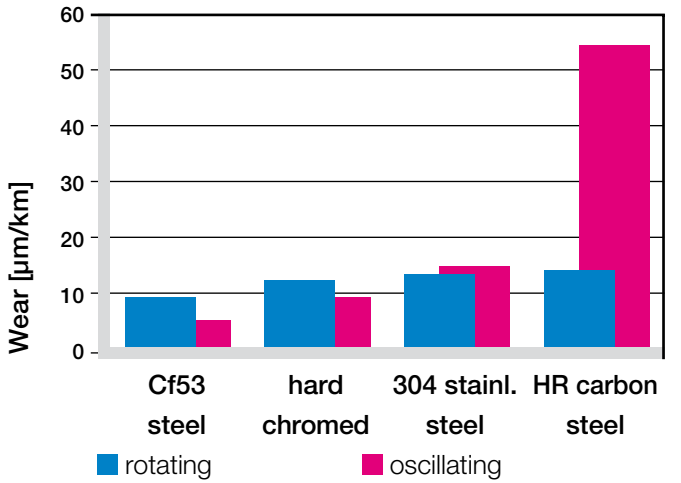


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® A290 | Dry       | Greases | Oil  | Water |
|---------------|-----------|---------|------|-------|
| C. o. f. µ    | 0.13–0.40 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A290 bearings have a good resistance against chemicals. They are resistant to most lubricants. The iglidur® A290 is not affected by most weak organic and inorganic acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® A290 are resistant to radiation up to an intensity of 3 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® A290 is resistant to UV radiation, but its tribological properties can be affected.

Vacuum

In a vacuum environment iglidur® A290 plain bearings have limited use due to the high moisture absorption.

Electrical Properties

iglidur® A290 plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>11</sup> Ωcm |
| Surface resistance | > 10 <sup>11</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® A290 bearings is approximately 1.7 % in standard atmosphere. The saturation limit in water is 7.3 %, a disadvantage which must be accounted for by all means in applications in humid and wet areas.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r. h.  | 1.7 % weight |
| Max. water absorption | 7.3 % weight |

Table 06: Moisture absorption

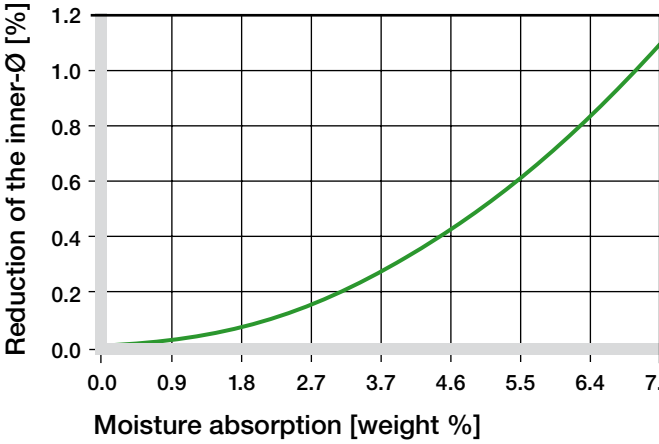


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

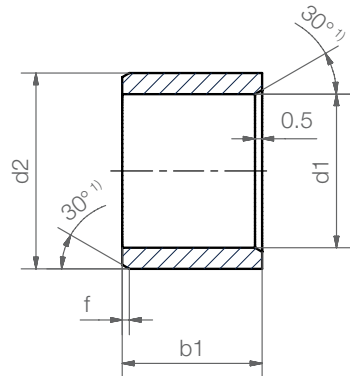
iglidur® A290 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® A290 D11 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.020 +0.080          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.030 +0.105          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.040 +0.130          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.050 +0.160          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.065 +0.195          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.080 +0.240          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.100 +0.290          | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A290SM-0304-03



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® A290

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|----------------|------|---------------|------|-----------|
| A290SM-0304-03 | 3.0  | +0.020 +0.080 | 4.5  | 3.0       |
| A290SM-0405-04 | 4.0  | +0.030 +0.105 | 5.5  | 4.0       |
| A290SM-0507-05 | 5.0  | +0.030 +0.105 | 7.0  | 5.0       |
| A290SM-0608-06 | 6.0  | +0.030 +0.105 | 8.0  | 6.0       |
| A290SM-0810-08 | 8.0  | +0.040 +0.130 | 10.0 | 8.0       |
| A290SM-1012-10 | 10.0 | +0.040 +0.130 | 12.0 | 10.0      |
| A290SM-1214-15 | 12.0 | +0.050 +0.160 | 14.0 | 15.0      |
| A290SM-1517-15 | 15.0 | +0.050 +0.160 | 17.0 | 15.0      |
| A290SM-1618-15 | 16.0 | +0.050 +0.160 | 18.0 | 15.0      |
| A290SM-1820-15 | 18.0 | +0.050 +0.160 | 20.0 | 15.0      |
| A290SM-2023-20 | 20.0 | +0.065 +0.195 | 23.0 | 20.0      |
| A290SM-2528-20 | 25.0 | +0.065 +0.195 | 28.0 | 20.0      |
| A290SM-3034-30 | 30.0 | +0.065 +0.195 | 34.0 | 30.0      |
| A290SM-3539-40 | 35.0 | +0.080 +0.240 | 39.0 | 40.0      |
| A290SM-4044-50 | 40.0 | +0.080 +0.240 | 44.0 | 50.0      |
| A290SM-5055-40 | 50.0 | +0.080 +0.240 | 55.0 | 40.0      |

\* after pressfit. Testing methods ► page 75

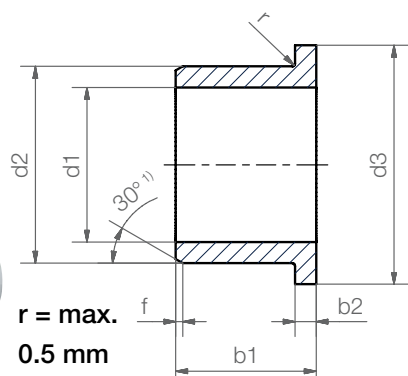


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Flange bearing



Order key

A290FM-0405-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® A290

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| A290FM-0405-06 | 4.0  | +0.030 +0.105 | 5.5  | 9.5       | 6         | 0.75        |
| A290FM-0507-05 | 5.0  | +0.030 +0.105 | 7.0  | 11.0      | 5         | 1.0         |
| A290FM-0608-08 | 6.0  | +0.030 +0.105 | 8.0  | 12.0      | 8         | 1.0         |
| A290FM-0810-09 | 8.0  | +0.040 +0.130 | 10.0 | 15.0      | 9         | 1.0         |
| A290FM-1012-09 | 10.0 | +0.040 +0.130 | 12.0 | 18.0      | 9         | 1.0         |
| A290FM-1214-12 | 12.0 | +0.050 +0.160 | 14.0 | 20.0      | 12        | 1.0         |
| A290FM-1517-17 | 15.0 | +0.050 +0.160 | 17.0 | 23.0      | 17        | 1.0         |
| A290FM-1618-17 | 16.0 | +0.050 +0.160 | 18.0 | 24.0      | 17        | 1.0         |
| A290FM-2023-21 | 20.0 | +0.065 +0.195 | 23.0 | 30.0      | 21        | 1.5         |
| A290FM-2528-21 | 25.0 | +0.065 +0.195 | 28.0 | 35.0      | 21        | 1.5         |
| A290FM-3034-26 | 30.0 | +0.065 +0.195 | 34.0 | 42.0      | 26        | 2.0         |
| A290FM-3539-26 | 35.0 | +0.080 +0.240 | 39.0 | 47.0      | 26        | 2.0         |
| A290FM-4044-40 | 40.0 | +0.080 +0.240 | 44.0 | 52.0      | 40        | 2.0         |
| A290FM-5055-40 | 50.0 | +0.080 +0.240 | 55.0 | 63.0      | 40        | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

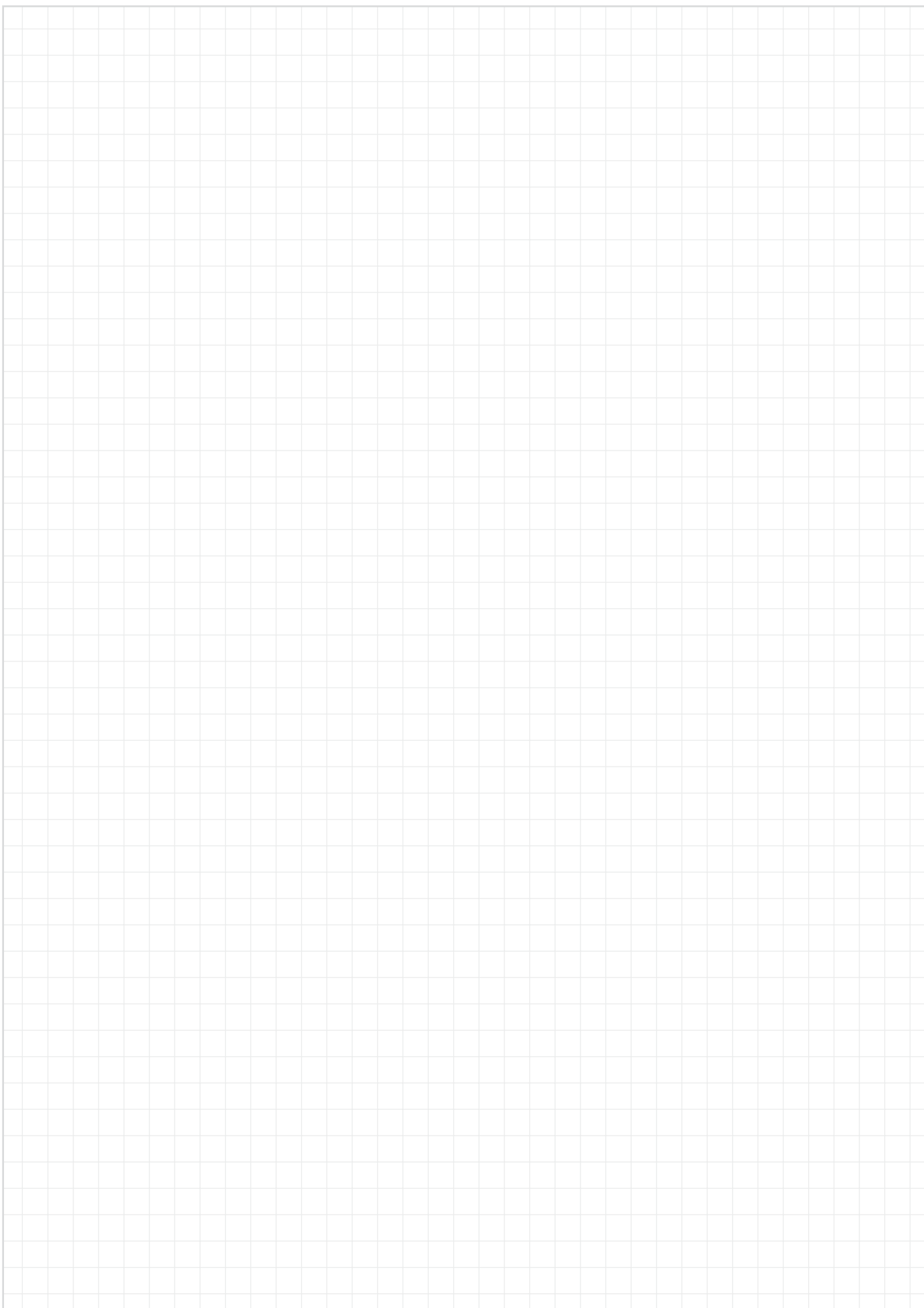


delivery from stock  
time



prices price list online  
www.igus.co.uk/en/a290





## KTW-compliant – iglidur® UW160



Standard range from stock

Extremely wear-resistant in liquid at longterm operation

Suitable for contact with drinking water (KTW-compliant)

Good media resistance

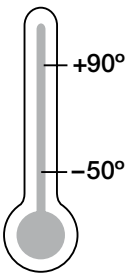
Lubrication and maintenance-free

**KTW-compliant.** iglidur® UW160 is tribologically optimised for continuous use in liquid media. A very good media resistance permits applications not only in drinking water.



Lubrication and maintenance-free

Temperature



When to use it?

- When a KTW compliant material is required
- When a wear-resistant material is required for continuous use in liquid media



When not to use it?

- When a media-resistant plain bearing for recurring media contact and in the meantime for dry operation is required  
▶ iglidur® A160, page 429
- When a media- and temperature-resistant universal bearing is required  
▶ iglidur® X, page 173
- When a standard bearing is required for use in a wet environment  
▶ iglidur® P, page 195

Product range

2 types  
Ø 3–10 mm  
more dimensions  
on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® UW160     | Testing method |
| Density                                                | g/cm³                              | 1.04               |                |
| Colour                                                 |                                    | grey               |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.1                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.1                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.17–0.31          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.22               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 1,349              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 22                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 32                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 15                 |                |
| Shore D hardness                                       |                                    | 60                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +90                |                |
| Max. short term application temperature                | °C                                 | +100               |                |
| Min. application temperature                           | °C                                 | –50                |                |
| Thermal conductivity                                   | W/m · K                            | 0.50               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 18                 | DIN 53752      |
| Electrical properties <sup>1)</sup>                    |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | DIN 53482      |

Table 01: Material properties table

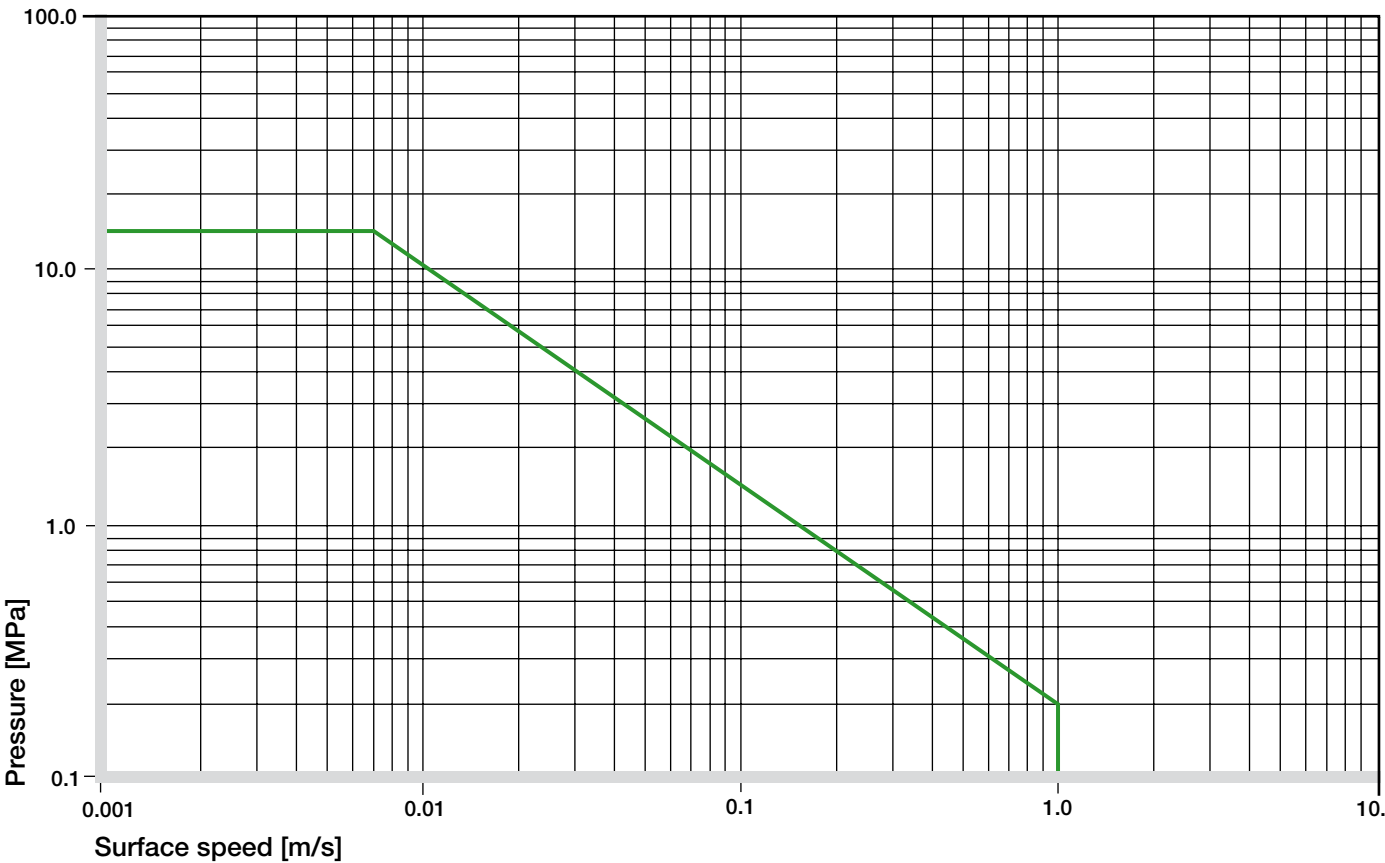


Diagram 01: Permissible pv values for iglidur® UW160 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® UW160 was developed quite specifically with regard to maximum wear resistance in media-based continuous operation. In such applications, low radial loads and moderate temperatures usually occur. The suitability for contact with drinking water and very good durability complete the profile of properties.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® UW160 plain bearings decreases. Diagram 02 shows this inverse relationship. At the max. long-term application temperature of +90 °C, the permitted surface pressure is still almost a third of the initial value at room temperature. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

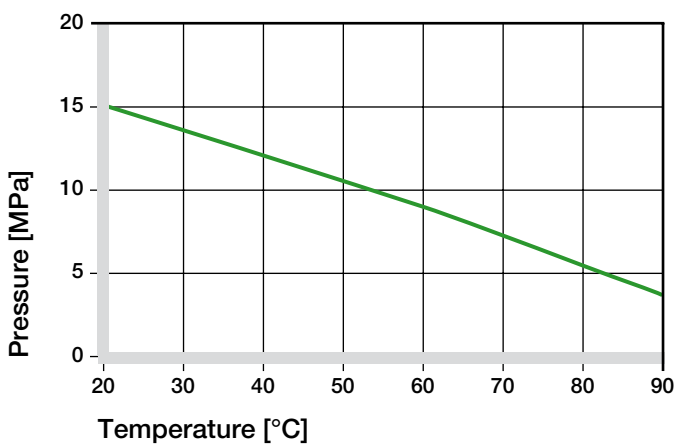


Diagram 02: Recommended maximum surface pressure as a function of temperature (15 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® UW160 during radial loading. At the recommended maximum surface pressure of 15 MPa the deformation is in standard atmosphere a little bit higher than 2 %.

► Surface Pressure, page 63

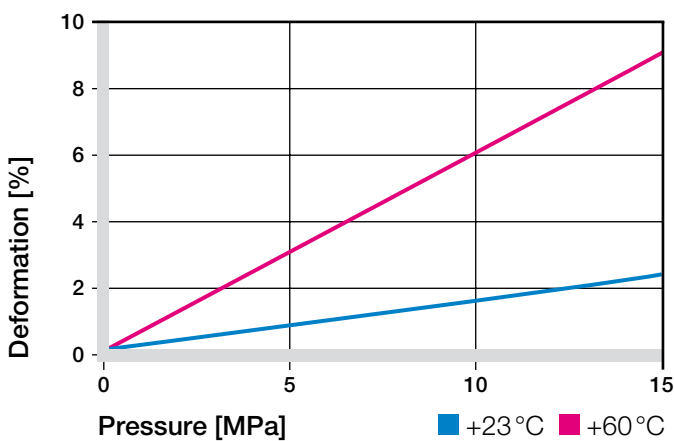


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permissible surface speed is determined by the resulting frictional heat at the bearing point. The temperature should rise only up to a value that still ensures a reasonable bearing insert with regard to wear and dimensional accuracy.

The maximum values specified in Table 02 are for the dry operation. In media-based application, sometimes significantly higher speeds are achieved due to reduced heat generation depending on the installation.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.3      | 0.3         | 1      |
| Short term | 0.5      | 0.4         | 2.5    |

Table 02: Maximum running speed

Temperatures

iglidur® UW160 was developed for use in liquid media in normal and medium temperature range. The longterm upper application temperature is +90 °C.

As with all thermoplastics, the compression resistance of iglidur® UW160 decreases with increasing temperature. The occurring temperatures in the bearing system also have an effect on the bearing wear. The wear rate rises with increasing temperatures.

► Application Temperatures, page 66

| iglidur® UW160                 | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +100 °C                 |
| Add. securing is required from | +70 °C                  |

Table 03: Temperature limits

Friction and Wear

Coefficient of friction and wear alter with the application parameters. The influence of surface speed and surface finish of the shaft on the friction coefficient is low, but with increasing radial load the coefficient of friction decreases significantly, mainly in the range of up to 7.5 MPa.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

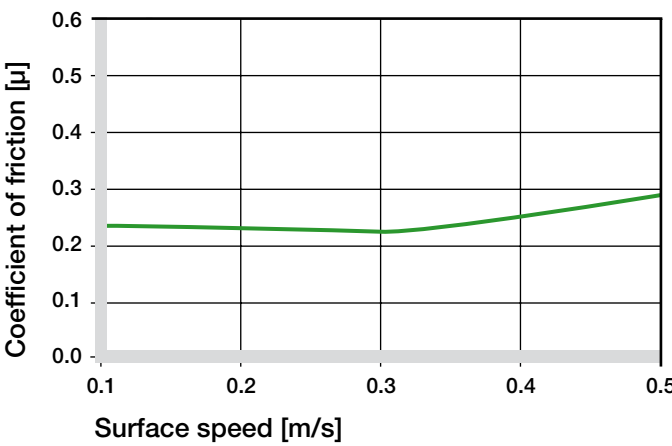


Diagram 04: Coefficient of friction as a function of the running speed, p = 1.0 MPa

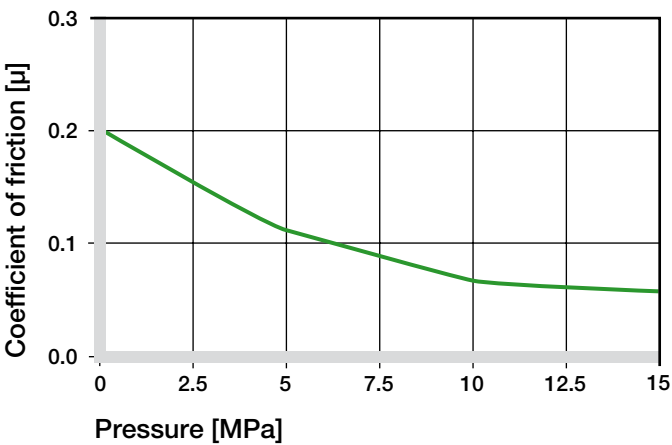


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagrams 07 and 08 show results of testing different shaft materials with plain bearings made of iglidur® UW160 running dry.

In the example of a rotational movement with radial loads of 1 MPa and a speed of 0.3 m/s, it becomes clear that iglidur® UW160 achieves good wear values with the most varied shafts up to the pairing with V2A shafts. It is also clear that there are better iglidur® materials for dry running. As with many other iglidur® materials in dry running, Diagram 08 shows the significantly higher wear in rotation than in pivoting with otherwise identical parameters.

► Shaft Materials, page 71

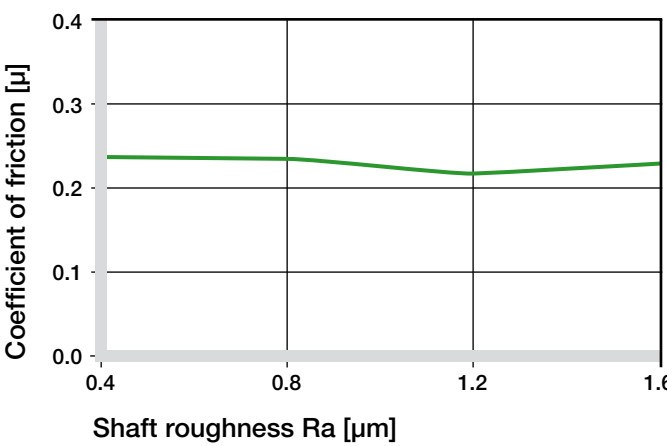


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

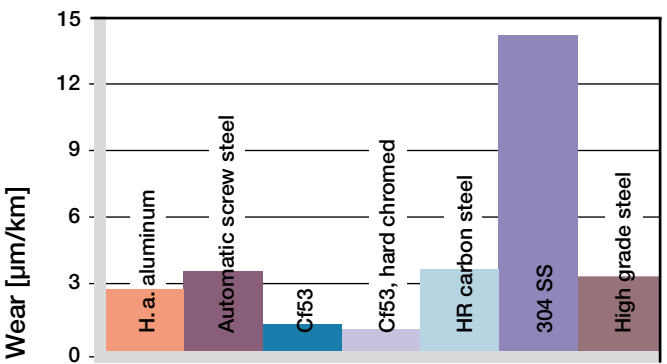


Diagram 07: Wear, rotating with different shaft materials, pressure, p = 1 MPa, v = 0.3 m/s

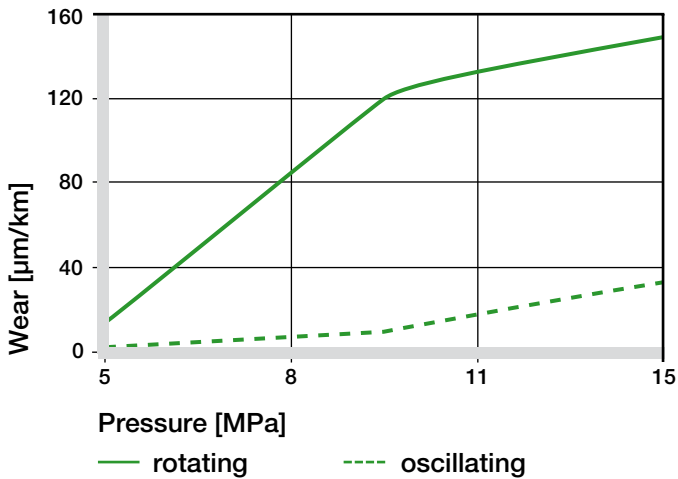


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® UW160 | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.17–0.31 | 0.08    | 0.03 | 0.03  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® UW160 bearings have a very good resistance against chemicals. Most organic and inorganic acids, alkaline solutions or lubricants do not affect iglidur® UW160.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | + to 0     |
| Diluted acids                   | +          |
| Strong acids                    | +          |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® UW160 are resistant to radiation up to an intensity of 3 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® UW160 bearings are only conditionally resistant to UV radiation.

Vacuum

When used in a vacuum environment, the iglidur® UW160 plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® UW160 plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>12</sup> Ωcm |
| Surface resistance | > 10 <sup>12</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® UW160 plain bearings is approximately 0.1 % in standard atmosphere. The saturation limit submerged in water is 0.1 %.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 0.1 % weight |
| Max. water absorption | 0.1 % weight |

Table 06: Moisture absorption

Installation Tolerances

iglidur® UW160 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances

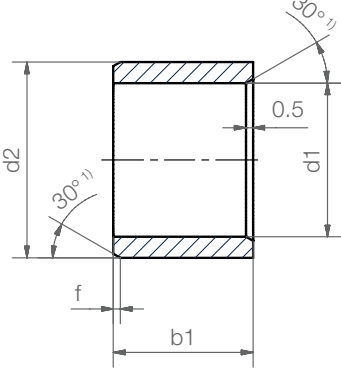
► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® UW160 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|-------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054           | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068           | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083           | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102           | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124           | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150           | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180           | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212           | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245           | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Sleeve bearing



 Order key

UW160SM-0304-03



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form S)

Material iglidur® UW160

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

d1 [mm]:

Ø 1-6

Ø 6-12

Ø 12-30

Ø > 30

f [mm]:

0.3

0.5

0.8

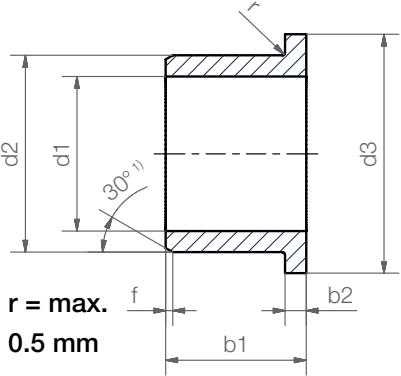
1.2

Dimensions [mm]

| Part number                 | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-----------------------------|------|---------------|------|-----------|
| UW160SM-0304-03 <b>New!</b> | 3.0  | +0.014 +0.054 | 4.0  | 3.0       |
| UW160SM-0405-04 <b>New!</b> | 4.0  | +0.014 +0.054 | 5.0  | 4.0       |
| UW160SM-0507-05 <b>New!</b> | 5.0  | +0.020 +0.068 | 7.0  | 5.0       |
| UW160SM-0608-06 <b>New!</b> | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| UW160SM-0810-10 <b>New!</b> | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| UW160SM-1012-10 <b>New!</b> | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |

\* after pressfit. Testing methods ► page 75

Flange bearing



 Order key

UW160FM-0304-05



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form F)

Material iglidur® UW160

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

d1 [mm]:

Ø 1-6

Ø 6-12

Ø 12-30

Ø > 30

f [mm]:

0.3

0.5

0.8

1.2

Dimensions [mm]

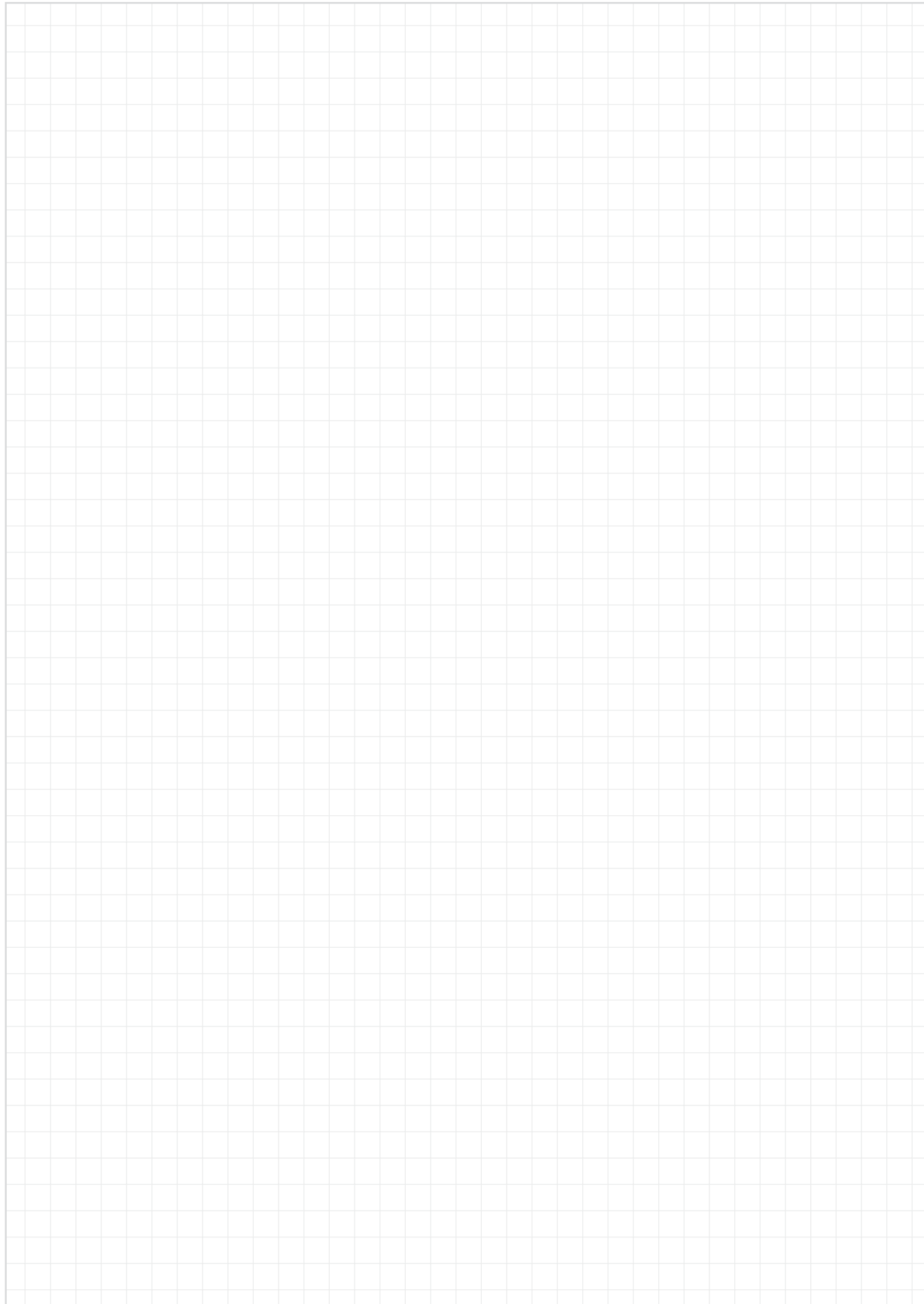
| Part number                 | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-----------------------------|------|---------------|------|-----------|-----------|-------------|
| UW160FM-0304-05 <b>New!</b> | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 5.0       | 0.75        |
| UW160FM-0405-06 <b>New!</b> | 4.0  | +0.014 +0.054 | 5.5  | 9.5       | 6.0       | 0.75        |
| UW160FM-0507-07 <b>New!</b> | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 7.0       | 1.0         |
| UW160FM-0608-06 <b>New!</b> | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| UW160FM-0810-10 <b>New!</b> | 8.0  | +0.025 +0.083 | 10.0 | 14.0      | 10.0      | 1.0         |
| UW160FM-1012-10 <b>New!</b> | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. iglus® listens to your needs and provides you a solution in a very short time.



**For the tobacco industry –  
iglidur® T220**



Free of unwanted components as requested by  
main manufacturers of tobacco products

**For the tobacco industry.** Bearings that constitute only materials “recommended” for the tobacco industry. They are free from carcinogenic additives like, for instance, PTFE.

Free of unwanted components as requested by main manufacturers of tobacco products



**When to use it?**

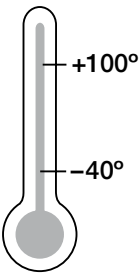
- When my bearings need to be free of substances that are not permitted for applications in the tobacco industry



**When not to use it?**

- When high compression strength occurs
  - ▶ iglidur® Z, page 327
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 81
  - ▶ iglidur® M250, page 127
- If highest wear resistance and low pressure load is necessary
  - ▶ iglidur® J, page 109
- If the bearing should be free merely from PTFE and silicon
  - ▶ iglidur® C, page 613
  - ▶ iglidur® R, page 277

**Temperature**



**Product range**

on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® T220      | Testing method |
| Density                                                | g/cm³                              | 1.28               |                |
| Colour                                                 |                                    | white              |                |
| Max. moisture absorption at +23 °C/50 % r. h.          | % weight                           | 0.3                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.5                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.20–0.32          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.28               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 1,800              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 65                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 55                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 40                 |                |
| Shore D hardness                                       |                                    | 76                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +100               |                |
| Max. short term application temperature                | °C                                 | +160               |                |
| Max. ambient temperature, short term <sup>1)</sup>     | °C                                 | +170               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> | 11                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>10</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>10</sup> | DIN 53482      |

Table 01: Material properties table

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible

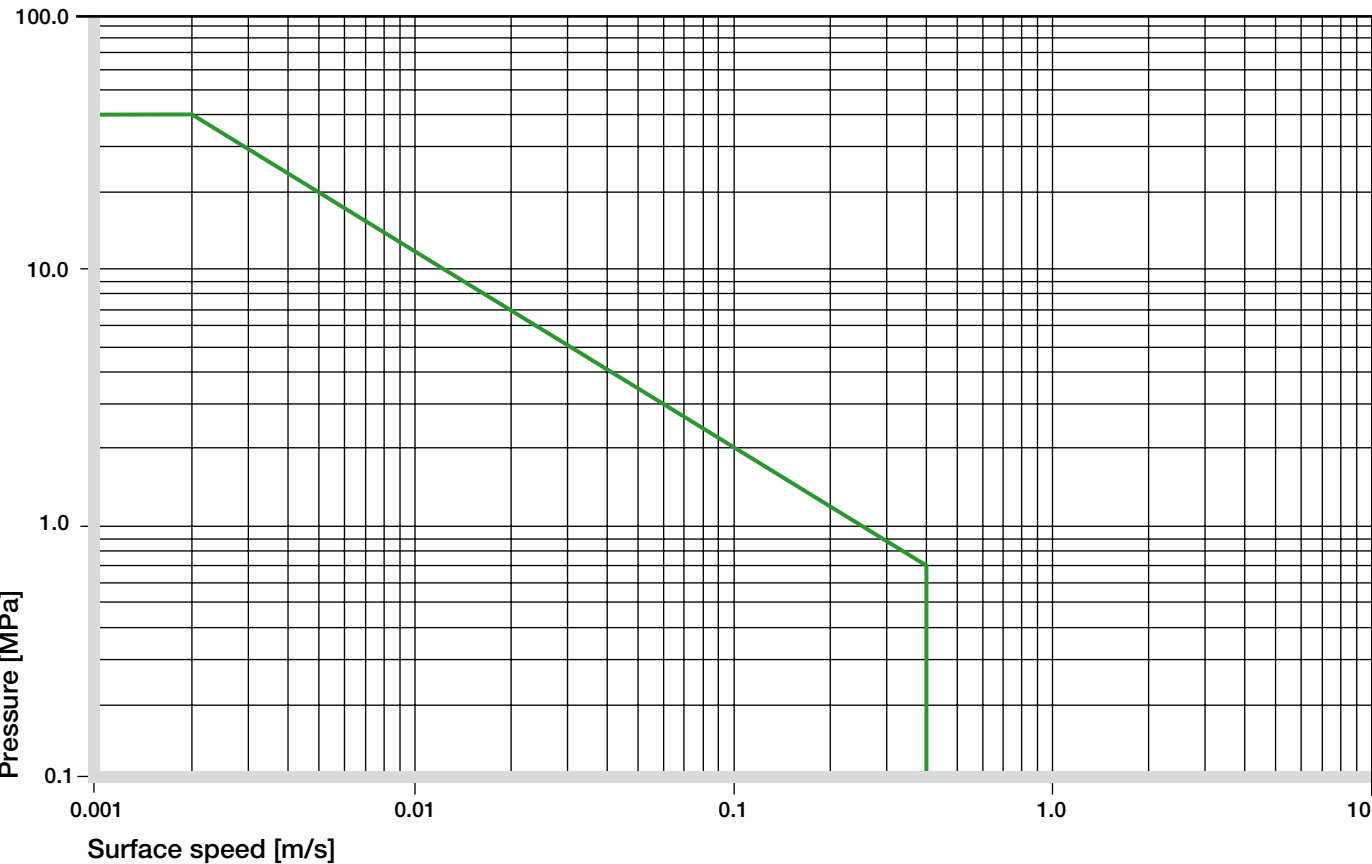


Diagram 01: Permissible pv values for iglidur® T220 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® T220 is a special material for applications in the tobacco processing industry. It fulfills the demands of the tobacco industry (engineering database). The material is free of undesirable or banned ingredients, as requested by reputed manufacturers from 2004 onward.

### Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® T220 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +100 °C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

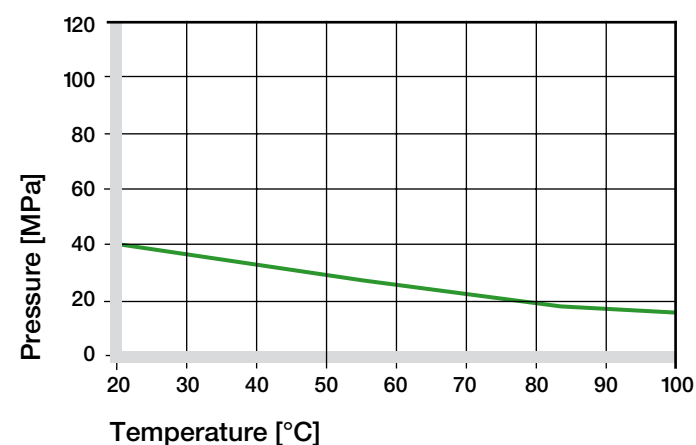


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

iglidur® T220 bearings can be stressed up to the permitted limit of 45 MPa, the elastic deformation is less than 2 % at room temperature. The permitted load is limited by higher temperatures (Diagram 02).

► Surface Pressure, [page 63](#)

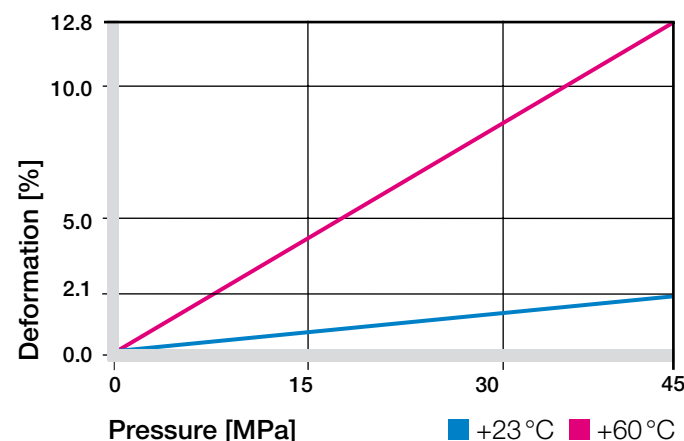


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

The maximum speeds of iglidur® T220 bearings amount to 0.4 m/s with continuous rotation. The friction and the entailing heating limit the permitted speeds. From this it follows that in intermittent service or in linear movements, higher speeds can be attained.

► Surface Speed, [page 65](#)

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.4      | 0.3         | 1      |
| Short term | 1        | 0.7         | 2      |

Table 02: Maximum running speed

### Temperatures

The plain bearings of iglidur® T220 can be continuously used up to +100 °C. Temporarily, temperatures up to +160 °C are permissible.

The elasticity of the bearings depends on the temperature. A clear increase in elasticity occurs already at +60 °C. Usually iglidur® T220 bearings will need to be mechanically secured in the housing when being used at temperatures over +50 °C.

► Application Temperatures, [page 66](#)

| iglidur® T220                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | +100 °C                 |
| Max. short term                | +160 °C                 |
| Add. securing is required from | +50 °C                  |

Table 03: Temperature limits

### Friction and Wear

By the observance of the tobacco processing industry specifications, the coefficient of friction and the wear of iglidur® T220 remain behind those of the best iglidur® bearings. The coefficient of friction decreases with the load and increases only slightly with higher speeds.

► Coefficients of Friction and Surfaces, [page 68](#)

► Wear Resistance, [page 69](#)

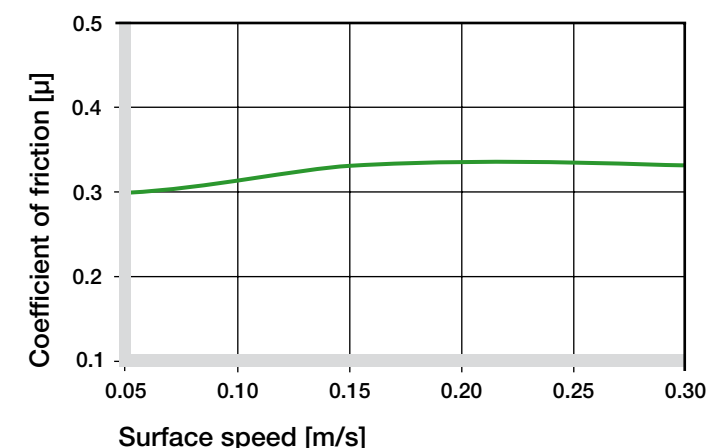


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

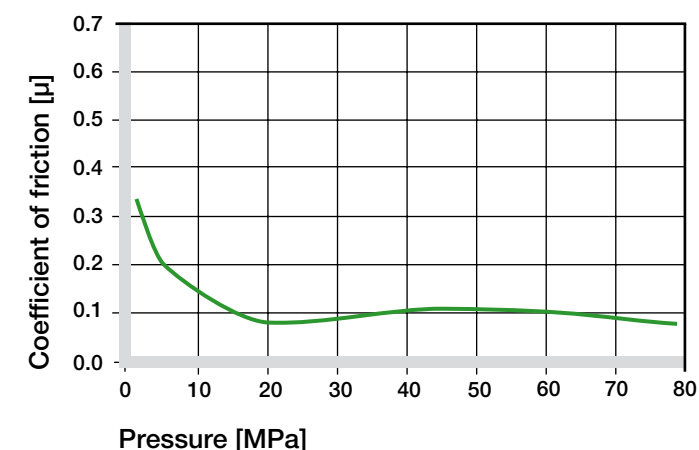


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### Shaft Materials

Diagrams 06 to 09 show the test results of iglidur® T220 bearings running against various shaft materials.

Diagram 09 shows that the bearings react with a heavy increase in wear when the load is increased. Therefore it should be observed that the load should be kept below 5 MPa by the correct dimensioning of the bearings.

► Shaft Materials, [page 71](#)

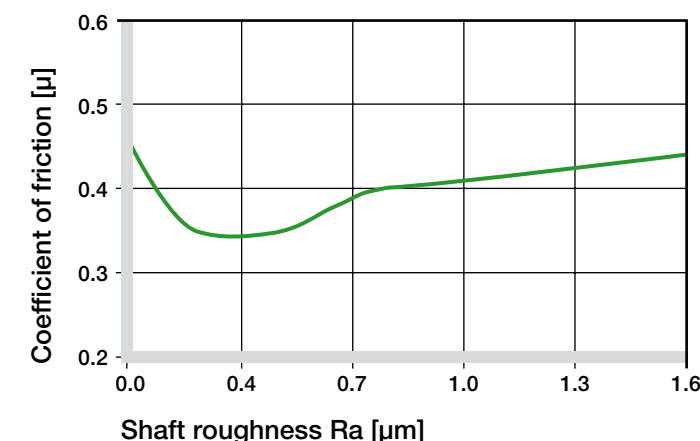


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

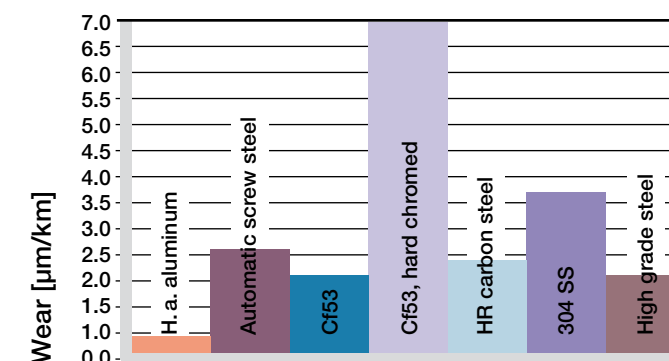


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s



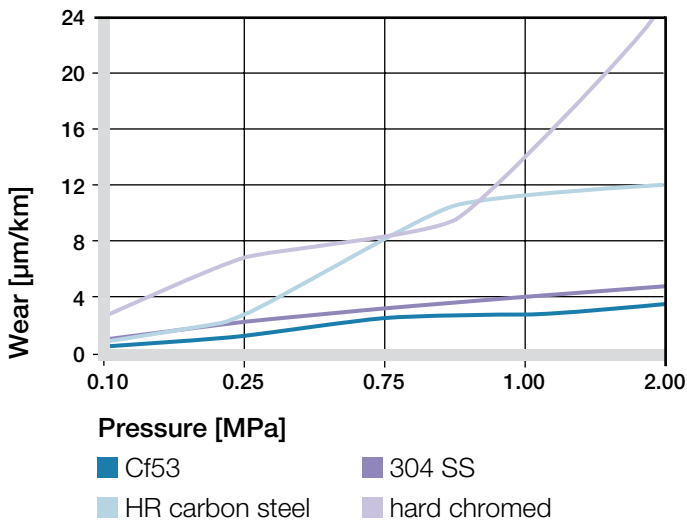


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

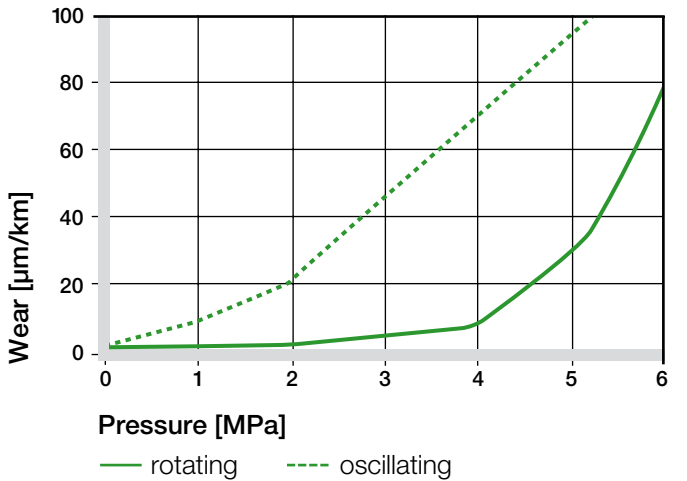


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® T220  | Dry      | Greases | Oil  | Water |
|----------------|----------|---------|------|-------|
| C. o. f. $\mu$ | 0.2–0.32 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® T220 plain bearings are resistant to strongly diluted alkalines and very weak acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | –          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0          |
| Strong acids                    | –          |
| Diluted alkalines               | –          |
| Strong alkalines                | –          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® T220 are radiation resistant up to a radiation intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® T220 plain bearings are not resistant to the impact of UV radiation.

Vacuum

Applications in a vacuum are only possible to a limited extent. Only dehumidified bearings of iglidur® T220 should be tested in a vacuum.

Electrical Properties

iglidur® T220 plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{10} \Omega\text{cm}$ |
| Surface resistance | $> 10^{10} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® T220 plain bearings is approximately 0.3 % in standard atmosphere. The saturation limit in water is 0.5 %. These values are so low that consideration of expansion by moisture absorption is only required under extreme circumstances.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r. h.  | 0.3 % weight |
| Max. water absorption | 0.5 % weight |

Table 06: Moisture absorption

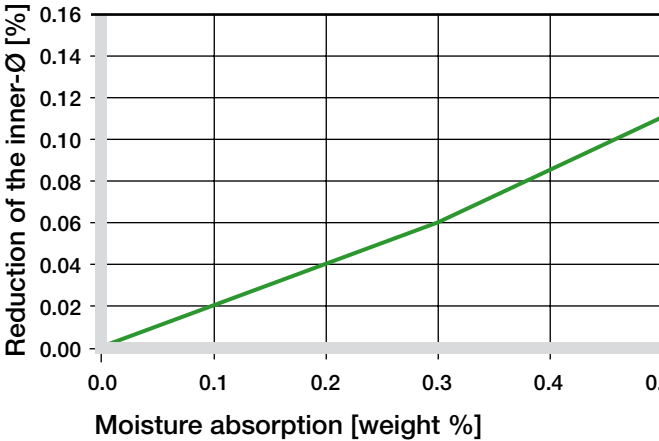


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® T220 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® T220 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180          | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212          | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245          | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® T220 plain bearings are manufactured to special order.



## iglidur® F electrically conductive

Standard range from stock ► from page 509



## New! iglidur® F2 ESD-compatible

Standard range from stock ► from page 521



## iglidur® H4 the automotive standard

Standard range from stock ► from page 531



## iglidur® Q for high loads

Standard range from stock ► from page 541



## iglidur® Q2 for extreme loads

Standard range from stock ► from page 555



## iglidur® UW for fast rotation under water

Standard range from stock ► from page 565



## iglidur® N54 the biopolymer

Standard range from stock ► from page 575



## iglidur® G V0 V0 rating according to UL94, universal

Standard range from stock ► from page 585



## New! iglidur® J2 PFOA-free

Standard range from stock ► from page 595



## iglidur® B high elasticity

On request ► from page 605

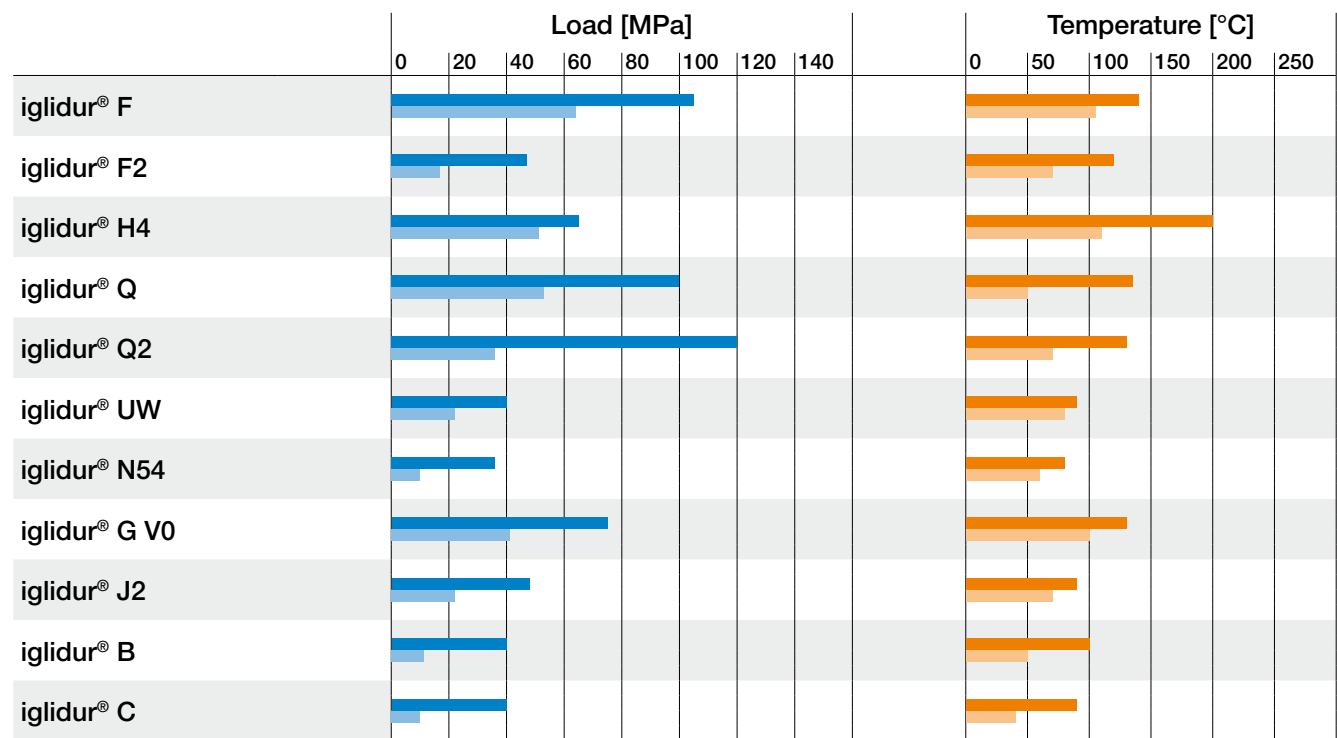


## iglidur® C free of PTFE and silicone

On request ► from page 613

### iglidur®- Specialists – Special Applications

|                         | F   | F2  | H4  | Q   | Q2  | UW  | N54 | G V0 | J2  | B   | C   |   |  |  |
|-------------------------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|---|--|--|
| Long life dry running   |     | ●   | ●   | ●   | ●   |     |     | ●    |     |     |     |   |  |  |
| For high loads          | ●   |     |     | ●   |     |     |     |      |     |     |     |   |  |  |
| For high temperatures   |     |     | ●   |     |     |     |     |      |     |     |     |   |  |  |
| Low friction/high speed |     |     | ●   | ●   |     |     |     |      |     |     |     |   |  |  |
| Dirt resistant          |     | ●   |     |     | ●   |     |     | ●    |     |     |     |   |  |  |
| Chemicals resistant     |     |     | ●   |     |     |     |     |      |     |     |     |   |  |  |
| Low water absorption    |     | ●   | ●   | ●   |     | ●   |     |      | ●   |     |     |   |  |  |
| Food-suitable           |     |     |     |     |     |     |     |      |     |     |     |   |  |  |
| Vibration-dampening     |     |     |     |     | ●   |     |     |      |     | ●   |     |   |  |  |
| Edge pressure           |     | ●   | ●   |     | ●   |     |     |      | ●   | ●   |     | ● |  |  |
| For under water use     |     |     | ●   |     |     | ●   |     |      |     |     |     |   |  |  |
| Cost-effective          |     |     | ●   |     | ●   | ●   | ●   | ●    | ●   |     |     |   |  |  |
| from page               | 509 | 521 | 531 | 541 | 555 | 565 | 575 | 585  | 595 | 605 | 613 |   |  |  |

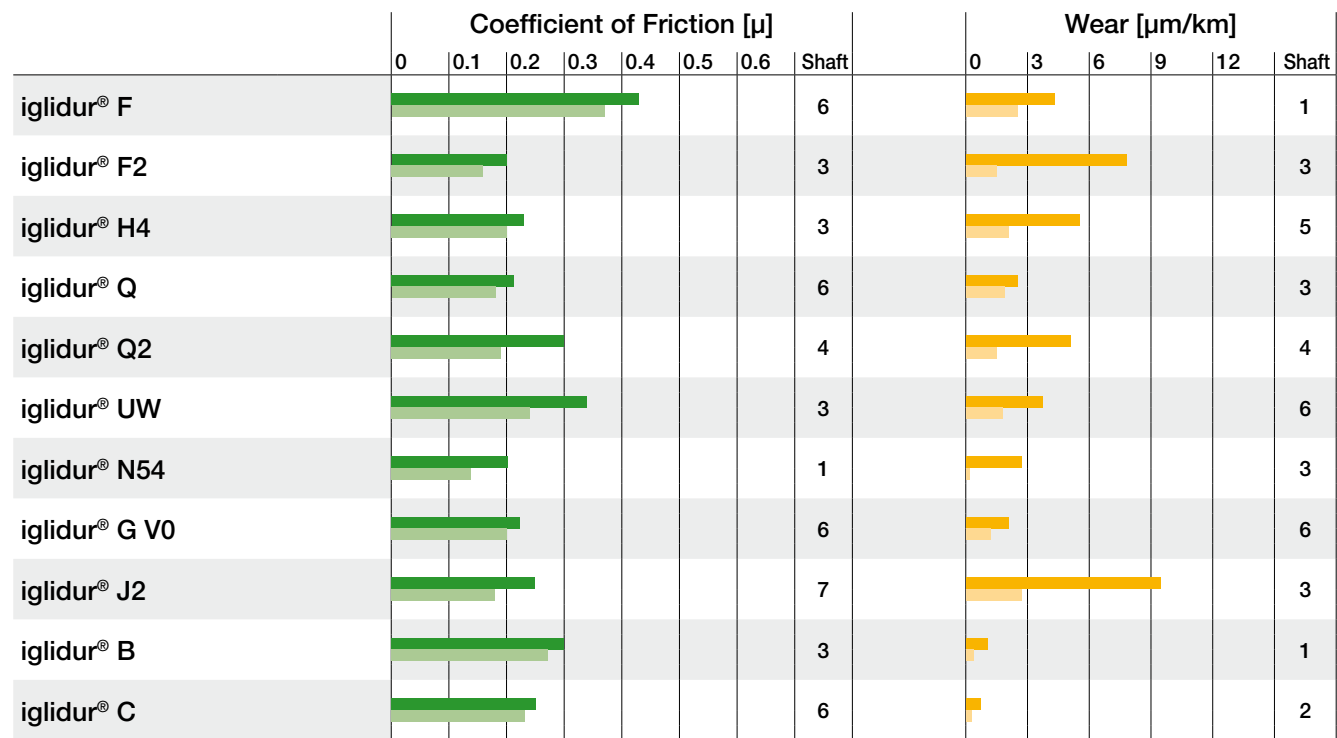


Maximum permissible radial load of iglidur® bearings at

■ +20 °C  
■ +80 °C

Important temperature limits of iglidur® bearings

■ Maximum permissible application temperature, continuous  
■ Temperature where bearings need to be secured against radial or axial movement in the housing



Coefficients of friction of iglidur® bearings sliding against steel, p = 1 MPa, v = 0.3 m/s

■ Average coefficient of all the seven sliding combinations tested  
■ Coefficient of friction of best combination

Wear of iglidur® bearings sliding against steel, p = 1 MPa

■ Average wear of all the seven sliding combinations tested  
■ Wear of best combination

Shaft material: 2 = Cf53, hard chromed 4 = Automatic screw steel 6 = 304 SS  
1 = Cf53 3 = Aluminium, hc 5 = HR carbon steel 7 = High grade steel

| Material properties table                              |                                    |                   |                   |                    |                    |                    |
|--------------------------------------------------------|------------------------------------|-------------------|-------------------|--------------------|--------------------|--------------------|
| General properties                                     | Unit                               | iglidur® F        | iglidur® F2       | iglidur® H4        | iglidur® Q         | iglidur® Q2        |
| Density                                                | g/cm³                              | 1.25              | 1.52              | 1.79               | 1.40               | 1.46               |
| Colour                                                 |                                    | black             | black             | brown              | black              | beige-brown        |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.8               | 0.2               | 0.1                | 0.9                | 1.1                |
| Max. water absorption                                  | % weight                           | 8.4               | 0.4               | 0.2                | 4.9                | 4.6                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.10–0.39         | 0.16–0.22         | 0.08–0.25          | 0.05–0.15          | 0.22–0.42          |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.34              | 0.31              | 0.7                | 0.55               | 0.7                |
| Mechanical properties                                  |                                    |                   |                   |                    |                    |                    |
| Modulus of elasticity                                  | MPa                                | 11,600            | 7,418             | 7,500              | 4,500              | 8,370              |
| Tensile strength at +20 °C                             | MPa                                | 260               | 93                | 120                | 120                | 240                |
| Compressive strength                                   | MPa                                | 98                | 61                | 50                 | 89                 | 130                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 105               | 47                | 65                 | 100                | 120                |
| Shore D hardness                                       |                                    | 84                | 72                | 80                 | 83                 | 80                 |
| Physical and thermal properties                        |                                    |                   |                   |                    |                    |                    |
| Max. long term application temperature                 | °C                                 | +140              | +120              | +200               | +135               | +130               |
| Max. short term application temperature                | °C                                 | +180              | +165              | +240               | +155               | +200               |
| Min. application temperature                           | °C                                 | –40               | –40               | –40                | –40                | –40                |
| Thermal conductivity                                   | W/m · K                            | 0.65              | 0.61              | 0.24               | 0.23               | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 12                | 5                 | 5                  | 5                  | 8                  |
| Electrical properties                                  |                                    |                   |                   |                    |                    |                    |
| Specific volume resistance                             | Ωcm                                | < 10 <sup>3</sup> | < 10 <sup>9</sup> | > 10 <sup>13</sup> | > 10 <sup>15</sup> | > 10 <sup>13</sup> |
| Surface resistance                                     | Ω                                  | < 10 <sup>2</sup> | < 10 <sup>9</sup> | > 10 <sup>12</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> |

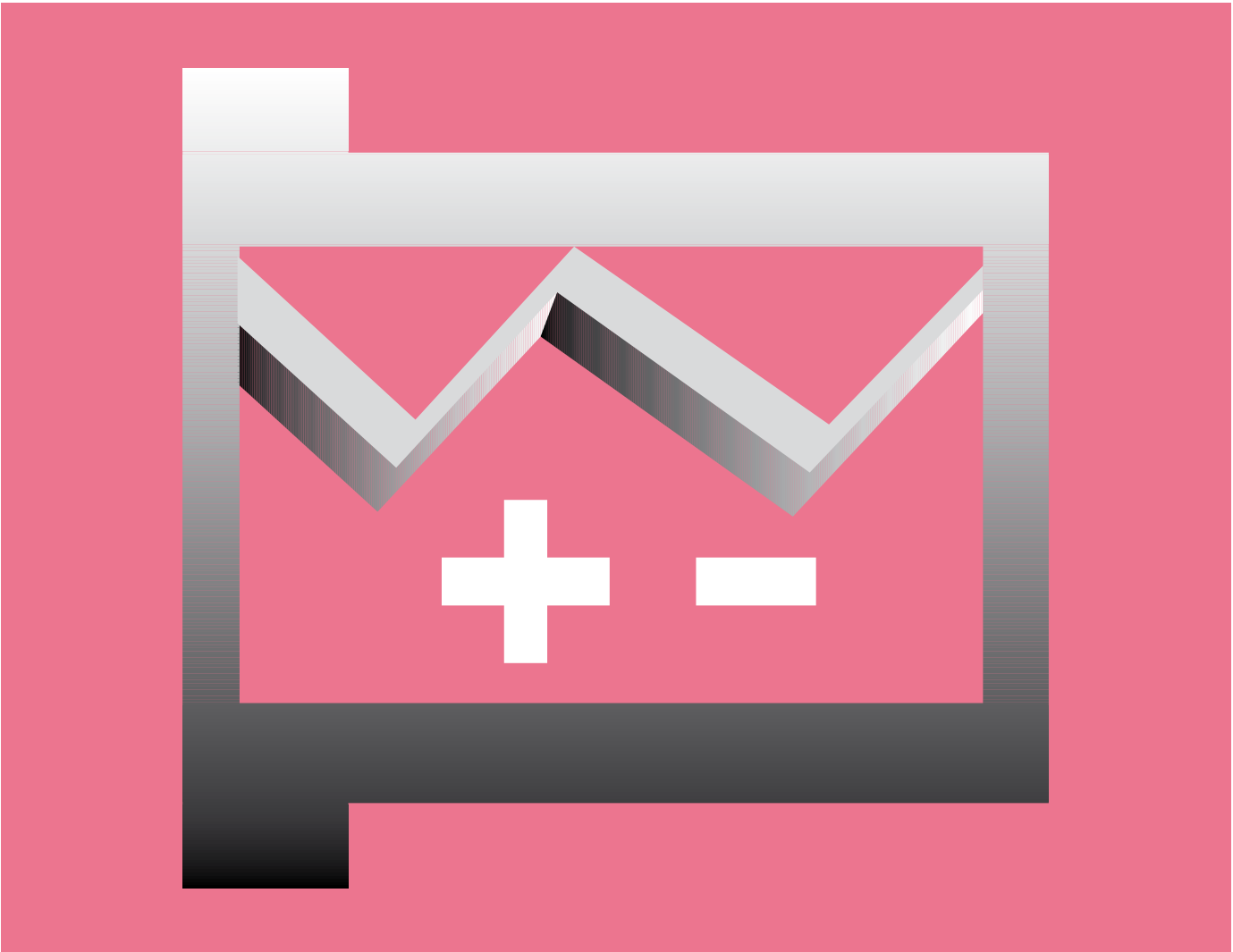
| Material resistance (at +20 °C) |                     |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Chemical resistance             | iglidur® F          | iglidur® F2         | iglidur® H4         | iglidur® Q          | iglidur® Q2         |
| Alcohol                         | + to 0              | +                   | +                   | + to 0              | +                   |
| Hydrocarbons                    | +                   | –                   | +                   | +                   | +                   |
| Greases, oils without additives | +                   | +                   | +                   | +                   | +                   |
| Fuels                           | +                   | +                   | +                   | +                   | +                   |
| Diluted acids                   | 0 to –              | 0                   | + to 0              | 0 to –              | 0 to –              |
| Strong acids                    | –                   | –                   | + to –              | –                   | –                   |
| Diluted alkalines               | +                   | –                   | +                   | +                   | +                   |
| Strong alkalines                | + to 0              | –                   | +                   | 0                   | 0                   |
| Radiation resistance [Gy] to    | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 2 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> |

+ resistant 0 conditionally resistant – not resistant

| Material properties table                              |                                    |                   |                    |                    |                    |                    |                    |
|--------------------------------------------------------|------------------------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| General properties                                     | Unit                               | iglidur®<br>UW    | iglidur®<br>N54    | iglidur®<br>G V0   | iglidur®<br>J2     | iglidur®<br>B      | iglidur®<br>C      |
| Density                                                | g/cm³                              | 1.52              | 1.13               | 1.53               | 1.44               | 1.15               | 1.1                |
| Colour                                                 |                                    | black             | green              | black              | light yellow       | grey               | white              |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2               | 1.6                | 0.7                | 0.2                | 1.0                | 1.0                |
| Max. water absorption                                  | % weight                           | 0.8               | 3.6                | 4.0                | 1.3                | 6.3                | 6.9                |
| Coefficient of sliding friction. dynamic against steel | μ                                  | 0.15–             | 0.15–              | 0.07–              | 0.11–              | 0.18–              | 0.17–              |
|                                                        |                                    | 0.35              | 0.23               | 0.20               | 0.27               | 0.28               | 0.25               |
| pv value. max. (dry)                                   | MPa · m/s                          | 0.11              | 0.5                | 0.5                | 0.23               | 0.15               | 0.10               |
| Mechanical properties                                  |                                    |                   |                    |                    |                    |                    |                    |
| Modulus of elasticity                                  | MPa                                | 9,600             | 1,800              | 7,900              | 3,605              | 1,800              | 1,900              |
| Tensile strength at +20 °C                             | MPa                                | 90                | 70                 | 140                | 101                | 55                 | 60                 |
| Compressive strength                                   | MPa                                | 70                | 30                 | 100                | 77                 | 20                 | 30                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 40                | 36                 | 75                 | 46                 | 40                 | 40                 |
| Shore D hardness                                       |                                    | 78                | 74                 | 80                 | n.b.               | 69                 | 72                 |
| Physical and thermal properties                        |                                    |                   |                    |                    |                    |                    |                    |
| Max. long term application temperature                 | °C                                 | +90               | +80                | +130               | +90                | +100               | +90                |
| Max. short term application temperature                | °C                                 | +110              | +120               | +210               | +110               | +130               | +130               |
| Min. application temperature                           | °C                                 | –50               | –40                | –40                | –50                | –40                | –40                |
| Thermal conductivity                                   | W/m · K                            | 0.60              | 0.24               | 0.25               | 0.25               | 0.24               | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> | 6                 | 9                  | 9                  | 7                  | 12                 | 15                 |
| Electrical properties                                  |                                    |                   |                    |                    |                    |                    |                    |
| Specific volume resistance                             | Ωcm                                | < 10 <sup>5</sup> | > 10 <sup>13</sup> | > 10 <sup>12</sup> | > 10 <sup>13</sup> | > 10 <sup>10</sup> | > 10 <sup>10</sup> |
| Surface resistance                                     | Ω                                  | < 10 <sup>5</sup> | > 10 <sup>11</sup> | > 10 <sup>11</sup> | > 10 <sup>12</sup> | > 10 <sup>9</sup>  | > 10 <sup>9</sup>  |

| Material resistance (at +20 °C) |                     |                     |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Chemical resistance             | iglidur®<br>UW      | iglidur®<br>N54     | iglidur®<br>G V0    | iglidur®<br>J2      | iglidur®<br>B       | iglidur®<br>C       |
| Alcohol                         | +                   | + to 0              | + to 0              | +                   | + to 0              | + to 0              |
| Hydrocarbons                    | +                   | +                   | +                   | +                   | –                   | +                   |
| Greases, oils without additives | +                   | +                   | +                   | +                   | –                   | +                   |
| Fuels                           | +                   | +                   | +                   | +                   | –                   | +                   |
| Diluted acids                   | 0 to –              | 0 to +              | 0 to –              | 0 to –              | 0 to –              | 0 to –              |
| Strong acids                    | –                   | –                   | –                   | –                   | –                   | –                   |
| Diluted alkalines               | +                   | +                   | +                   | +                   | –                   | +                   |
| Strong alkalines                | + to 0              | 0                   | 0                   | + to 0              | –                   | 0                   |
| Radiation resistance [Gy] to    | 3 · 10 <sup>2</sup> | 1 · 10 <sup>4</sup> | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 3 · 10 <sup>2</sup> | 2 · 10 <sup>4</sup> |

+ resistant   0 conditionally resistant   – not resistant



## Electrically conductive – iglidur® F



Standard range from stock

Electrically conductive

High compressive strength

Good temperature resistance

High pv value

Good resistance to chemicals



**Electrically conductive.** An extremely stiff and hard material, as well as being electrically conductive, iglidur® F bearings can be used in some dry running operations. Uniquely for an iglidur® material, the full mechanical benefits are only achieved when running in a lubricant.

Electrically conductive

High compressive strength

High temperature resistance

High pv value

Good resistance to chemicals



#### When to use it?

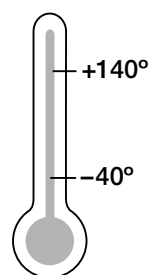
- When the bearing should be electrically conductive
- For high static loads



#### When not to use it?

- When mechanical reaming of the wall surface is necessary  
▶ iglidur® M250, page 127
- When the highest wear resistance is needed  
▶ iglidur® W300, page 151
- When very low coefficients of friction in the dry run are needed  
▶ iglidur® J, page 109
- For underwater applications  
▶ iglidur® H370, page 375
- When you need an universal bearing  
▶ iglidur® G, page 81

#### Temperature



#### Product range

2 types  
Ø 2–70 mm  
more dimensions  
on request

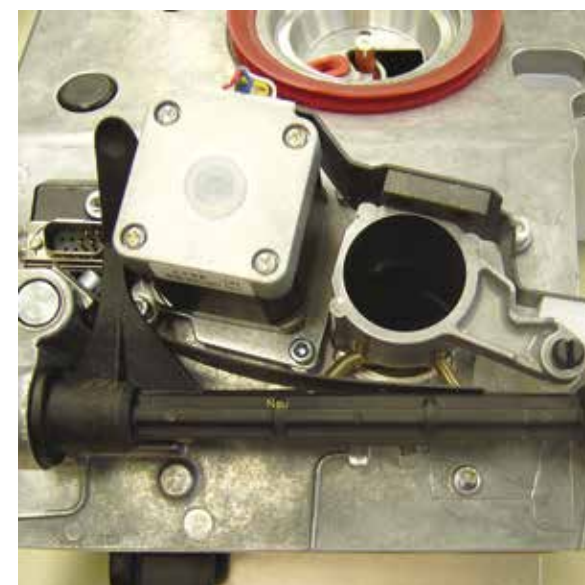


#### Typical sectors of industry and application areas

- Textile technology
- Automotive etc.

Improve technology and reduce costs –  
310 exciting examples for iglidur® plain bearings online

▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/spinningbox](http://www.igus.co.uk/spinningbox)



▶ [www.igus.co.uk/textile-machine](http://www.igus.co.uk/textile-machine)

| Material properties table                              |                                    |                   |            |
|--------------------------------------------------------|------------------------------------|-------------------|------------|
| General properties                                     |                                    | Unit              | iglidur® F |
| Density                                                |                                    | g/cm³             | 1.25       |
| Colour                                                 |                                    |                   | black      |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           |                   | 1.8        |
| Max. water absorption                                  | % weight                           |                   | 8.4        |
| Coefficient of sliding friction, dynamic against steel | μ                                  |                   | 0.1–0.39   |
| pv value, max. (dry)                                   | MPa · m/s                          |                   | 0.34       |
| Mechanical properties                                  |                                    |                   |            |
| Modulus of elasticity                                  | MPa                                | 11,600            | DIN 53457  |
| Tensile strength at +20 °C                             | MPa                                | 260               | DIN 53452  |
| Compressive strength                                   | MPa                                | 98                |            |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 105               |            |
| Shore D hardness                                       |                                    | 84                | DIN 53505  |
| Physical and thermal properties                        |                                    |                   |            |
| Max. long term application temperature                 | °C                                 | +140              |            |
| Max. short term application temperature                | °C                                 | +180              |            |
| Min. application temperature                           | °C                                 | –40               |            |
| Thermal conductivity                                   | W/m · K                            | 0.65              | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 12                | DIN 53752  |
| Electrical properties <sup>1)</sup>                    |                                    |                   |            |
| Specific volume resistance                             | Ωcm                                | < 10 <sup>3</sup> | DIN IEC 93 |
| Surface resistance                                     | Ω                                  | < 10 <sup>2</sup> | DIN 53482  |

Table 01: Material properties table

<sup>1)</sup> The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact components.

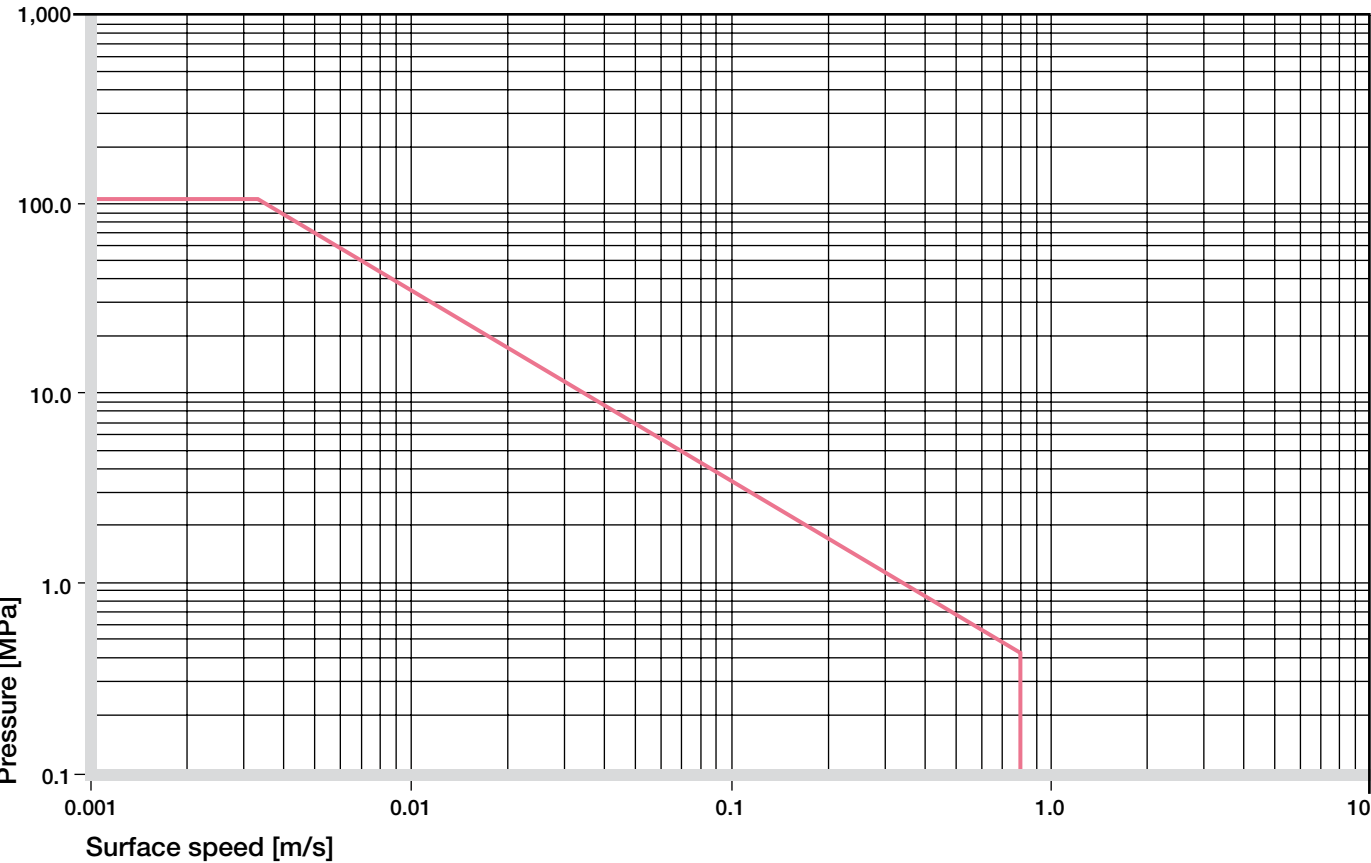


Diagram 01: Permissible pv values for iglidur® F with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

When bearings need to be electrically conductive, especially in applications that should keep out static, the iglidur® F is the right choice. Moreover, the iglidur® F bearings are extremely pressure resistant. At room temperature, they could be statically loaded up to 105 MPa.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® F plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +140°C the permissible surface pressure is almost 50 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

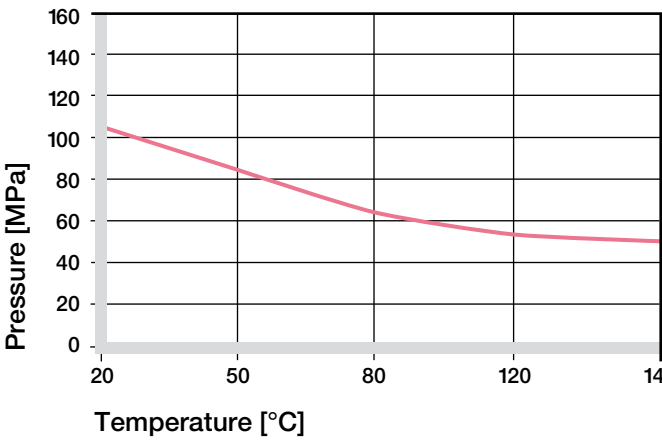


Diagram 02: Recommended maximum surface pressure as a function of temperature (105 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® F at radial loads. At the maximum recommended surface pressure of 105 MPa, the deformation is less than 3.5 % at room temperature. A plastic deformation can be negligible up to this pressure load. It is however also dependent on the duration of the applied force.

► Surface Pressure, [page 63](#)

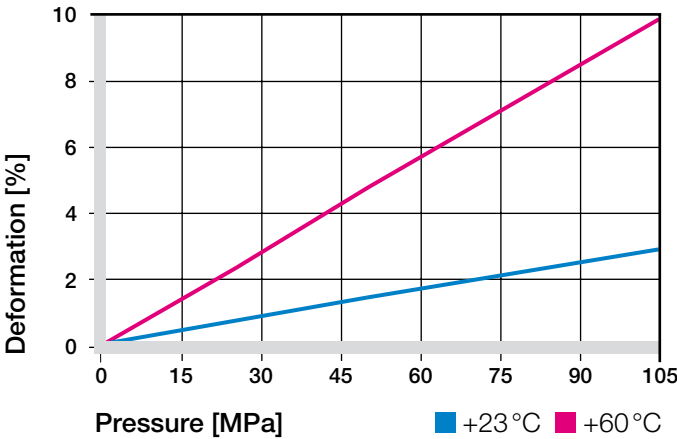


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speeds are based on the operation period and the type of motion. A bearing is the most stressed in longterm rotating motions. Here the maximum speed for the iglidur® F bearing is 0.8 m/s. The maximum values specified in Table 02 are attained only at minimum pressure loads. In practice these limit values are not often attained due to interactions.

► Surface Speed, [page 65](#)

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 3      |
| Short term | 1.5      | 1.1         | 6      |

Table 02: Maximum running speed

Temperatures

The ambient temperatures strongly influence the features of bearings. The short-term permitted maximum temperature is +180 °C. Longterm operating temperatures should not exceed +140 °C. With increasing temperatures, the compressive strength of iglidur® F bearings decreases. Diagram 02 clarifies this connection. The wear too rises.

► Application Temperatures, [page 66](#)

| iglidur® F                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +140 °C                 |
| Max. short term                | +180 °C                 |
| Add. securing is required from | +105 °C                 |

Table 03: Temperature limits

Friction and Wear

In dry operation, the coefficients of friction of iglidur® F bearings are not as favorable as those of many other iglidur® materials. However iglidur® bearings can be lubricated without any problems, and iglidur® F bearings attain excellent results among the lubricated iglidur® bearings.

- Coefficients of Friction and Surfaces, page 68
- Wear Resistance, page 69

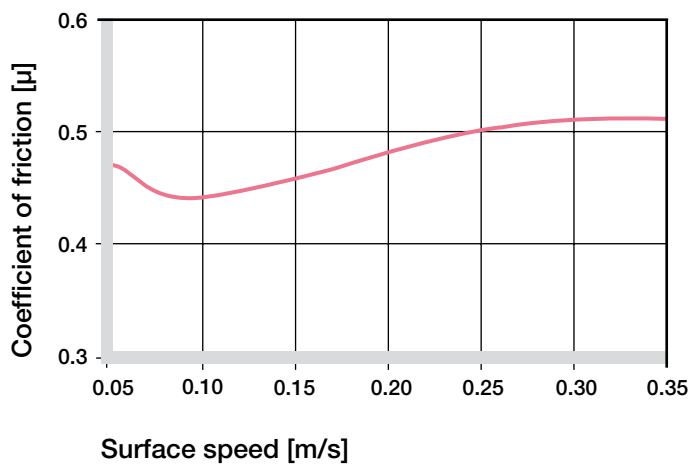


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

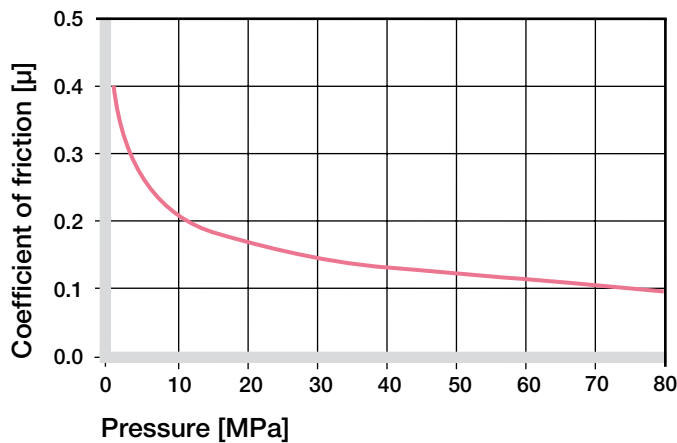


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Diagrams 07–09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® F. In the lowest load range, the hard-chromed shafts prove to be the most suitable in rotating applications with iglidur® F bearings. It behaves otherwise in pivoting applications (see Diagram 09) At 2 MPa loads, the V2A shaft and the hard-chromed shaft are more favorable than the Cf53 shaft, having all in all a much higher wear than in rotations.

Please contact us in case the shaft material scheduled by you is not included in these diagrams.

- Shaft Materials, page 71

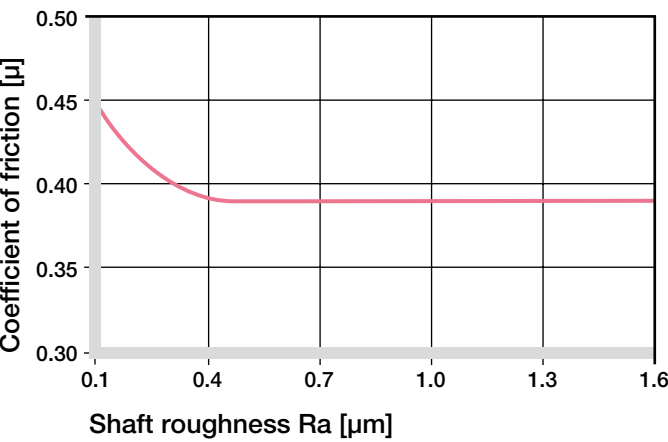


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

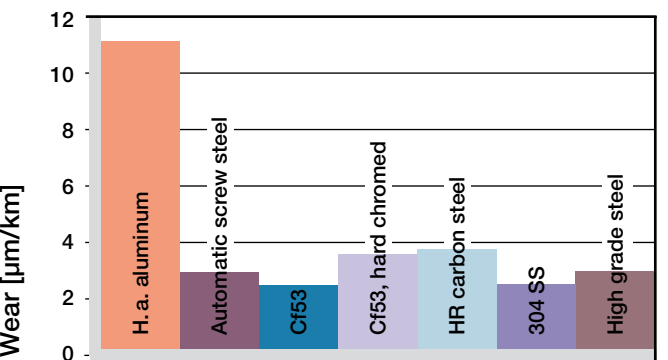


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

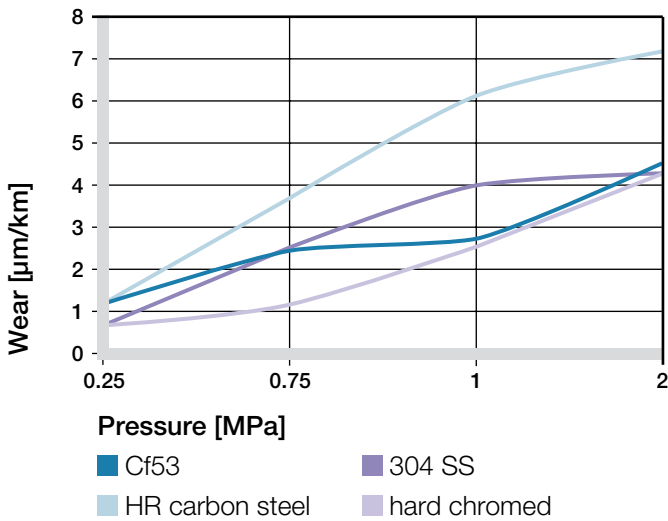


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

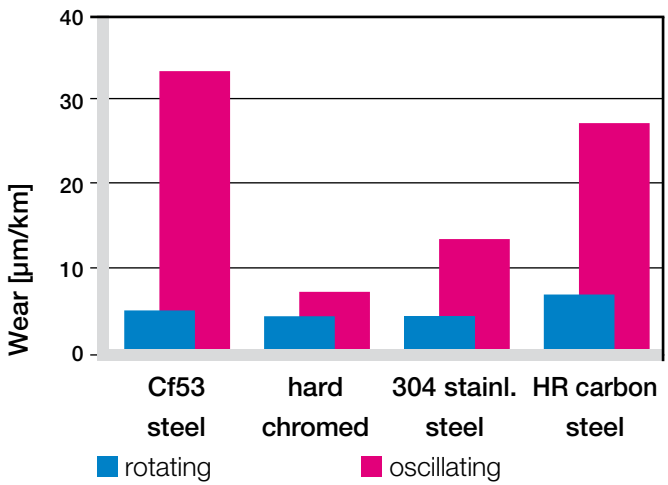


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® F | Dry      | Greases | Oil  | Water |
|------------|----------|---------|------|-------|
| C. o. f. μ | 0.1–0.39 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 μm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® F plain bearings have a good chemical resistance. They have a high resistance to lubricants, even at high temperatures (around +120 °C). Hence the iglidur® F bearings are particularly suitable for applications that call for lubrication necessitated by other parts. The iglidur® F is not affected by most weak organic and inorganic acids.

- Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® F are radiation resistant up to a radiation intensity of 3 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® F plain bearings are permanently resistant to UV radiation.

Vacuum

iglidur® F plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

Electrical Properties

|                                                        |                       |
|--------------------------------------------------------|-----------------------|
| iglidur® F plain bearings are electrically conductive. |                       |
| Volume resistance                                      | < 10 <sup>3</sup> Ωcm |
| Surface resistance                                     | < 10 <sup>2</sup> Ω   |



Moisture Absorption

The moisture absorption of iglidur® F plain bearings is approximately 1.8 % in standard atmosphere. The saturation limit in water is 8.4 %. This must be taken into account along with the other applicable conditions.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 1.8 % weight |
| Max. water absorption | 8.4 % weight |

Table 06: Moisture absorption

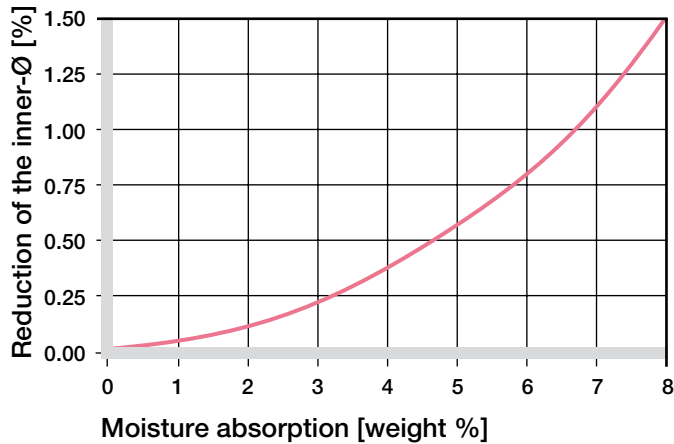


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® F plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

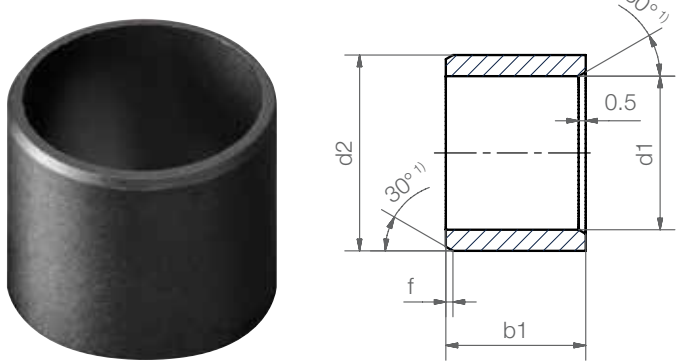
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® F<br>D11 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|------------------------|--------------------|
| up to 3             | 0–0.025          | +0.020 +0.080          | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.030 +0.105          | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.040 +0.130          | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.050 +0.160          | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.065 +0.195          | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.080 +0.240          | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.100 +0.290          | 0 +0.030           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| FSM-0203-03 | 2.0  | +0.020 +0.080 | 3.5  | 3.0       |
| FSM-0304-03 | 3.0  | +0.020 +0.080 | 4.5  | 3.0       |
| FSM-0405-04 | 4.0  | +0.030 +0.105 | 5.5  | 4.0       |
| FSM-0507-05 | 5.0  | +0.030 +0.105 | 7.0  | 5.0       |
| FSM-0507-08 | 5.0  | +0.030 +0.105 | 7.0  | 8.0       |
| FSM-0608-06 | 6.0  | +0.030 +0.105 | 8.0  | 6.0       |
| FSM-0608-08 | 6.0  | +0.030 +0.105 | 8.0  | 8.0       |
| FSM-0608-10 | 6.0  | +0.030 +0.105 | 8.0  | 10.0      |
| FSM-0608-13 | 6.0  | +0.030 +0.105 | 8.0  | 13.8      |
| FSM-0709-10 | 7.0  | +0.040 +0.130 | 9.0  | 10.0      |
| FSM-0709-12 | 7.0  | +0.040 +0.130 | 9.0  | 12.0      |
| FSM-0810-08 | 8.0  | +0.040 +0.130 | 10.0 | 8.0       |
| FSM-0810-10 | 8.0  | +0.040 +0.130 | 10.0 | 10.0      |
| FSM-0810-15 | 8.0  | +0.040 +0.130 | 10.0 | 15.0      |
| FSM-1012-06 | 10.0 | +0.040 +0.130 | 12.0 | 6.0       |
| FSM-1012-09 | 10.0 | +0.040 +0.130 | 12.0 | 9.0       |
| FSM-1012-10 | 10.0 | +0.040 +0.130 | 12.0 | 10.0      |
| FSM-1214-10 | 12.0 | +0.050 +0.160 | 14.0 | 10.0      |
| FSM-1214-15 | 12.0 | +0.050 +0.160 | 14.0 | 15.0      |
| FSM-1315-20 | 13.0 | +0.050 +0.160 | 15.0 | 20.0      |
| FSM-1416-15 | 14.0 | +0.050 +0.160 | 16.0 | 15.0      |
| FSM-1517-15 | 15.0 | +0.050 +0.160 | 17.0 | 15.0      |
| FSM-1517-20 | 15.0 | +0.050 +0.160 | 17.0 | 20.0      |
| FSM-1618-15 | 16.0 | +0.050 +0.160 | 18.0 | 15.0      |
| FSM-1820-12 | 18.0 | +0.050 +0.160 | 20.0 | 12.0      |

\* after pressfit. Testing methods ► page 75



Order key

FSM-0203-03

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® F

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Sleeve bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| FSM-1820-15 | 18.0 | +0.050 +0.160 | 20.0 | 15.0      |
| FSM-1820-20 | 18.0 | +0.050 +0.160 | 20.0 | 20.0      |
| FSM-2022-14 | 20.0 | +0.065 +0.195 | 22.0 | 14.5      |
| FSM-2022-20 | 20.0 | +0.065 +0.195 | 22.0 | 20.0      |
| FSM-2023-15 | 20.0 | +0.065 +0.195 | 23.0 | 15.0      |
| FSM-2023-20 | 20.0 | +0.065 +0.195 | 23.0 | 20.0      |
| FSM-2225-15 | 22.0 | +0.065 +0.195 | 25.0 | 15.0      |
| FSM-2528-20 | 25.0 | +0.065 +0.195 | 28.0 | 20.0      |
| FSM-2832-20 | 28.0 | +0.065 +0.195 | 32.0 | 20.0      |
| FSM-2832-30 | 28.0 | +0.065 +0.195 | 32.0 | 30.0      |
| FSM-3034-20 | 30.0 | +0.065 +0.195 | 34.0 | 20.0      |
| FSM-3034-30 | 30.0 | +0.065 +0.195 | 34.0 | 30.0      |
| FSM-3034-40 | 30.0 | +0.065 +0.195 | 34.0 | 40.0      |
| FSM-3236-30 | 32.0 | +0.080 +0.240 | 36.0 | 30.0      |
| FSM-3539-30 | 35.0 | +0.080 +0.240 | 39.0 | 30.0      |
| FSM-3539-40 | 35.0 | +0.080 +0.240 | 39.0 | 40.0      |
| FSM-4044-30 | 40.0 | +0.080 +0.240 | 44.0 | 30.0      |
| FSM-4044-50 | 40.0 | +0.080 +0.240 | 44.0 | 50.0      |
| FSM-4550-50 | 45.0 | +0.080 +0.240 | 50.0 | 50.0      |
| FSM-5055-40 | 50.0 | +0.080 +0.240 | 55.0 | 40.0      |
| FSM-5560-50 | 55.0 | +0.100 +0.290 | 60.0 | 50.0      |
| FSM-6065-60 | 60.0 | +0.100 +0.290 | 65.0 | 60.0      |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

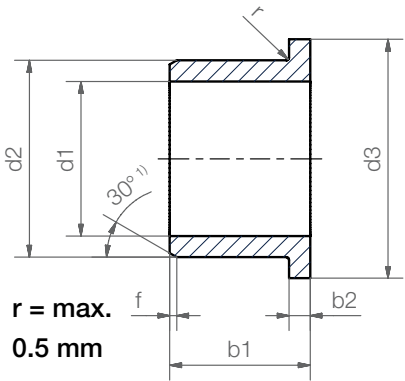


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Flange bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| FFM-0405-04 | 4.0  | +0.030 +0.105 | 5.5  | 9.5       | 4.0       | 0.75        |
| FFM-0405-06 | 4.0  | +0.030 +0.105 | 5.5  | 9.5       | 6.0       | 0.75        |
| FFM-0507-05 | 5.0  | +0.030 +0.105 | 7.0  | 11.0      | 5.0       | 1.0         |
| FFM-0608-06 | 6.0  | +0.030 +0.105 | 8.0  | 12.0      | 6.0       | 1.0         |
| FFM-0608-08 | 6.0  | +0.030 +0.105 | 8.0  | 12.0      | 8.0       | 1.0         |
| FFM-0810-06 | 8.0  | +0.040 +0.130 | 10.0 | 15.0      | 6.0       | 1.0         |
| FFM-0810-09 | 8.0  | +0.040 +0.130 | 10.0 | 15.0      | 9.0       | 1.0         |
| FFM-1012-06 | 10.0 | +0.040 +0.130 | 12.0 | 18.0      | 6.0       | 1.0         |
| FFM-1012-08 | 10.0 | +0.040 +0.130 | 12.0 | 18.0      | 8.0       | 1.0         |
| FFM-1012-09 | 10.0 | +0.040 +0.130 | 12.0 | 18.0      | 9.0       | 1.0         |
| FFM-1012-15 | 10.0 | +0.040 +0.130 | 12.0 | 18.0      | 15.0      | 1.0         |
| FFM-1012-18 | 10.0 | +0.040 +0.130 | 12.0 | 18.0      | 18.0      | 1.0         |
| FFM-1214-09 | 12.0 | +0.050 +0.160 | 14.0 | 20.0      | 9.0       | 1.0         |
| FFM-1214-12 | 12.0 | +0.050 +0.160 | 14.0 | 20.0      | 12.0      | 1.0         |
| FFM-1416-12 | 14.0 | +0.050 +0.160 | 16.0 | 22.0      | 12.0      | 1.0         |
| FFM-1416-17 | 14.0 | +0.050 +0.160 | 16.0 | 22.0      | 17.0      | 1.0         |
| FFM-1517-12 | 15.0 | +0.050 +0.160 | 17.0 | 23.0      | 12.0      | 1.0         |
| FFM-1517-17 | 15.0 | +0.050 +0.160 | 17.0 | 23.0      | 17.0      | 1.0         |
| FFM-1618-17 | 16.0 | +0.050 +0.160 | 18.0 | 24.0      | 17.0      | 1.0         |
| FFM-1820-12 | 18.0 | +0.050 +0.160 | 20.0 | 26.0      | 12.0      | 1.0         |
| FFM-1820-17 | 18.0 | +0.050 +0.160 | 20.0 | 26.0      | 17.0      | 1.0         |
| FFM-2023-21 | 20.0 | +0.065 +0.195 | 23.0 | 30.0      | 21.0      | 1.5         |
| FFM-2528-21 | 25.0 | +0.065 +0.195 | 28.0 | 35.0      | 21.0      | 1.5         |
| FFM-3034-26 | 30.0 | +0.065 +0.195 | 34.0 | 42.0      | 26.0      | 2.0         |
| FFM-3236-26 | 32.0 | +0.080 +0.240 | 36.0 | 45.0      | 26.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



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Order key

FFM-0405-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® F



Flange bearing

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| FFM-3539-06 | 35.0 | +0.080 +0.240 | 39.0 | 47.0      | 6.0       | 2.0         |
| FFM-3539-16 | 35.0 | +0.080 +0.240 | 39.0 | 47.0      | 16.0      | 2.0         |
| FFM-3539-26 | 35.0 | +0.080 +0.240 | 39.0 | 47.0      | 26.0      | 2.0         |
| FFM-4044-30 | 40.0 | +0.080 +0.240 | 44.0 | 52.0      | 30.0      | 2.0         |
| FFM-4044-40 | 40.0 | +0.080 +0.240 | 44.0 | 52.0      | 40.0      | 2.0         |
| FFM-4550-50 | 45.0 | +0.080 +0.240 | 50.0 | 58.0      | 50.0      | 2.0         |
| FFM-5055-10 | 50.0 | +0.080 +0.240 | 55.0 | 63.0      | 10.0      | 2.0         |
| FFM-5055-40 | 50.0 | +0.080 +0.240 | 55.0 | 63.0      | 40.0      | 2.0         |
| FFM-6065-40 | 60.0 | +0.100 +0.290 | 65.0 | 73.0      | 40.0      | 2.0         |
| FFM-7075-40 | 70.0 | +0.100 +0.290 | 75.0 | 83.0      | 40.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



ESD-compatible – iglidur® F2



- Standard range from stock
- Used to prevent electro-static charges
- Also suitable for wet applications
- Lubrication and maintenance-free



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

► [www.igus.co.uk/iglidur-specialbearings](http://www.igus.co.uk/iglidur-specialbearings)

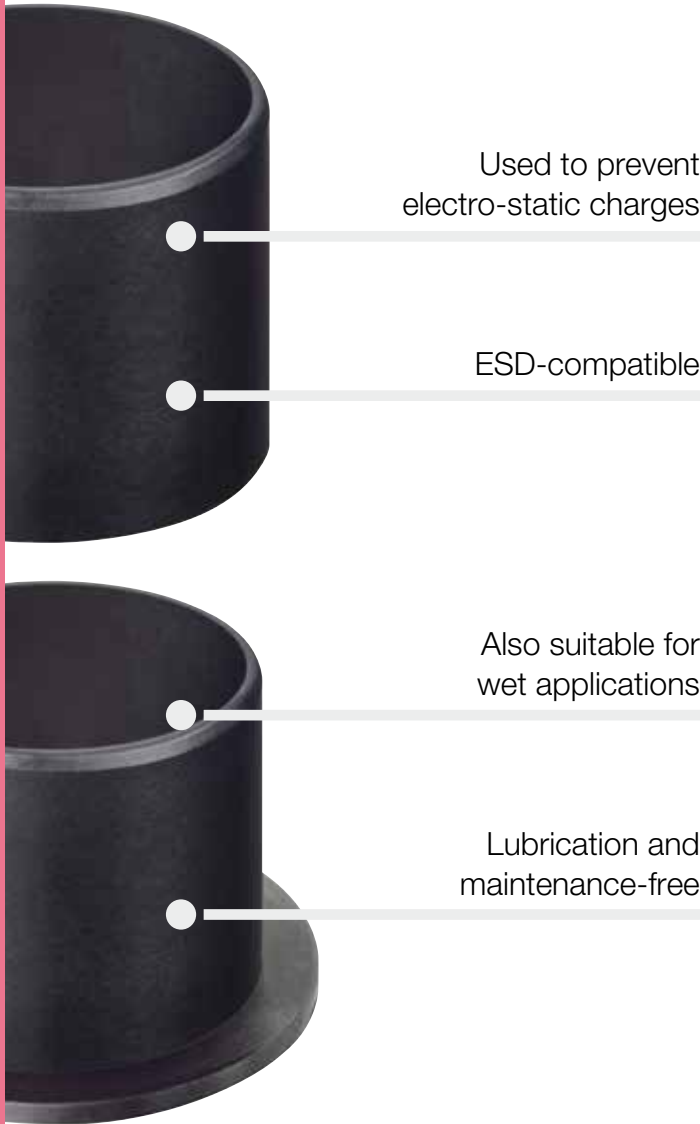


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**ESD-compatible.** iglidur® F2 helps to prevent electrostatic charging. Good resistance to media and temperature, suitable even in wet conditions due to low moisture absorption and good universal wear values pave the way for a wide range of applications.



**When to use it?**

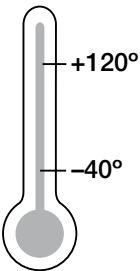
- When the bearing should be electrically discharging
- When a universal bearing is required for a broad application range



**When not to use it?**

- When a universal bearing without static discharge capacity is required
  - ▶ iglidur® G, page 81
  - ▶ iglidur® P, page 195
- For underwater application
  - ▶ iglidur® H370, page 375
- When extremely high wear resistance is required
  - ▶ iglidur® J, page 109
  - ▶ iglidur® W300, page 151

**Temperature**



**Product range**

2 types  
Ø 6–20 mm  
more dimensions  
on request

iglidur® F2 | Technical Data

| Material properties table                              |                                    |                   |                |
|--------------------------------------------------------|------------------------------------|-------------------|----------------|
| General properties                                     | Unit                               | iglidur® F2       | Testing method |
| Density                                                | g/cm³                              | 1.52              |                |
| Colour                                                 |                                    | black             |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2               | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.4               |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.16–0.22         |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.31              |                |
| Mechanical properties                                  |                                    |                   |                |
| Modulus of elasticity                                  | MPa                                | 7,418             | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 93                | DIN 53452      |
| Compressive strength                                   | MPa                                | 61                |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 47                |                |
| Shore D hardness                                       |                                    | 72                | DIN 53505      |
| Physical and thermal properties                        |                                    |                   |                |
| Max. long term application temperature                 | °C                                 | +120              |                |
| Max. short term application temperature                | °C                                 | +165              |                |
| Min. application temperature                           | °C                                 | –40               |                |
| Thermal conductivity                                   | W/m · K                            | 0.61              | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 5                 | DIN 53752      |
| Electrical properties                                  |                                    |                   |                |
| Specific volume resistance                             | Ωcm                                | < 10 <sup>9</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | < 10 <sup>9</sup> | DIN 53482      |

Table 01: Material properties table

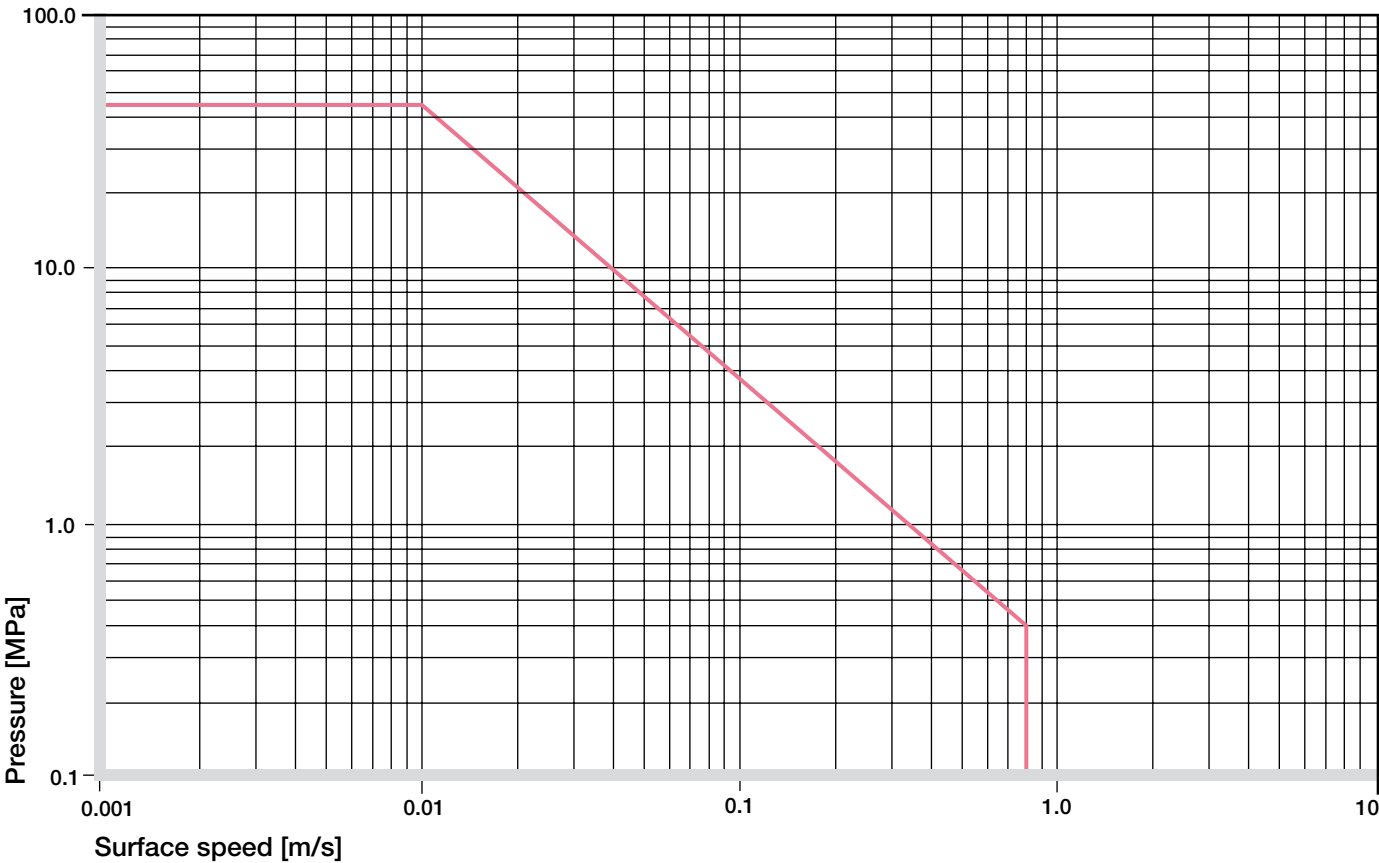


Diagram 01: Permissible pv values for iglidur® F2 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

The prevention of electrostatic charge is an important requirement in many application areas. At the same time other technical application parameters such as wear resistance, media and temperature resistance, suitability in a wet environment, etc., cannot be neglected. iglidur® F2 with its wide range of properties constitutes a new universal bearing for numerous “ESD-compatible” applications.

### Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® F2 plain bearings decreases. The Diagram 02 shows this relationship. At the longterm maximum temperature of +120°C the permissible surface pressure is almost 15 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

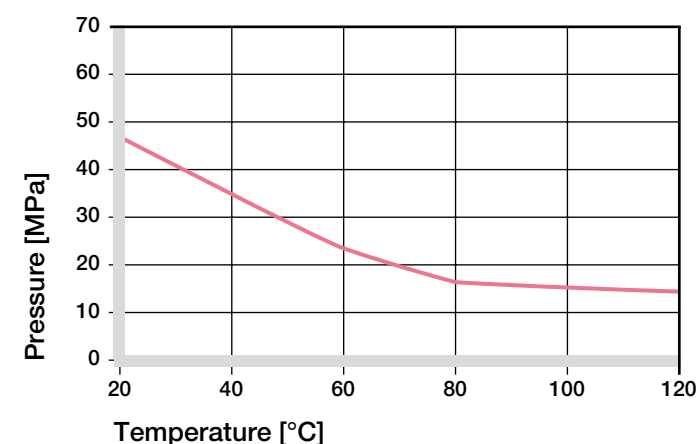


Diagram 02: Recommended maximum surface pressure as a function of temperature (47 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® F2 during radial loading. At the recommended maximum surface pressure of 47 MPa the deformation is less than 2.6 %.

A plastic deformation can be ignored up to this value. It is nonetheless depending on the duration of the applied force.

► Surface Pressure, page 63

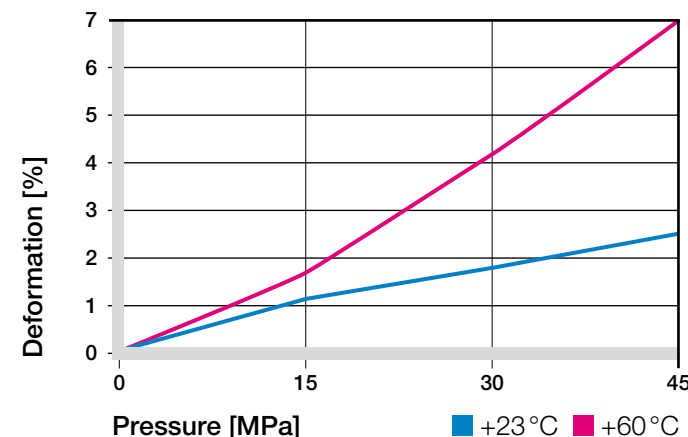


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

The maximum permitted surface speeds are based on the operation period and the type of motion. A bearing is the most stressed in long-term rotating motions. Here the maximum speed for the iglidur® F2 bearing is 0.8 m/s. The maximum values specified in Table 02 are not often attained in practice.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.7         | 3      |
| Short term | 1.4      | 1.1         | 5      |

Table 02: Maximum running speed

### Temperatures

The ambient temperatures strongly influence the features of bearings. The short term permitted maximum temperature is +165°C. Longterm operating temperatures should not exceed +120°C.

With increasing temperatures, the compressive strength of iglidur® F2 bearings decreases. Diagram 02 clarifies this connection. The occurring temperatures in the bearing system strongly influence the wear of the bearings.

► Application Temperatures, page 66

| iglidur® F2                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –40 °C                  |
| Max. long term                 | +120 °C                 |
| Max. short term                | +165 °C                 |
| Add. securing is required from | +70 °C                  |

Table 03: Temperature limits

### Friction and Wear

Coefficient of friction and wear resistance alter with the application parameters. For iglidur® F2 bearings the coefficient of friction increases significantly with the surface speed. With increasing load, however, the friction coefficient decreases continuously, whereas the influence of the surface finish of the shaft is not very pronounced (Diagram 04–06).

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

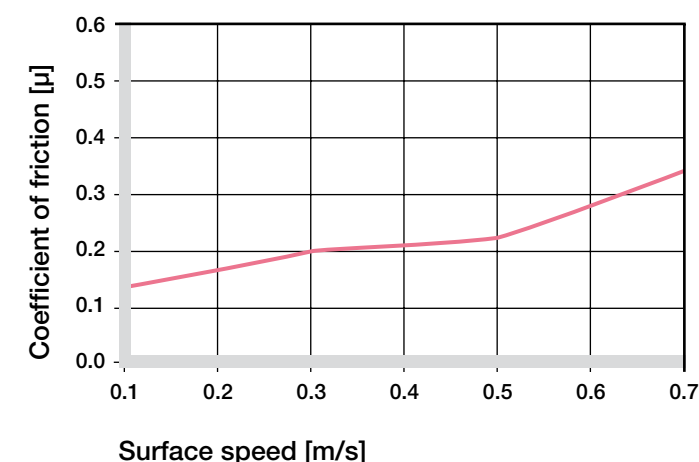


Diagram 04: Coefficient of friction as a function of the running speed, p = 1.0 MPa

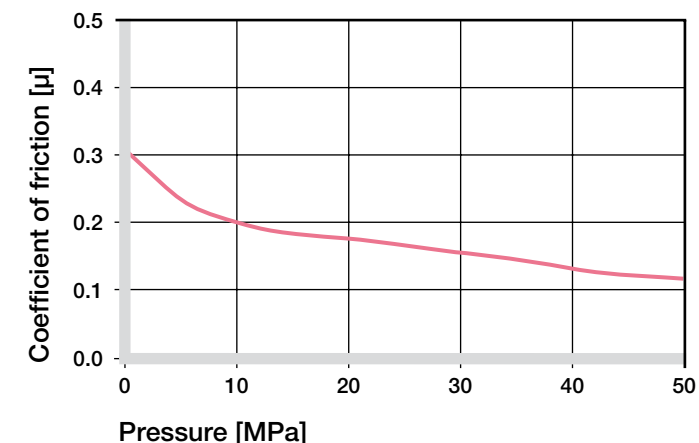


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### Shaft Materials

Diagrams 06 to 08 show results of testing different shaft materials with plain bearings made of iglidur® F2.

In the lower region of the load, cutting steel and hard anodised aluminium shafts, as well as St37 and hard-chromed steel shafts prove to be the most cost effective in rotating applications with iglidur® F2 plain bearings with respect to wear.

Diagram 08 shows a significantly less wear in rotation compared to pivoting movements over the entire load range.

► Shaft Materials, page 71

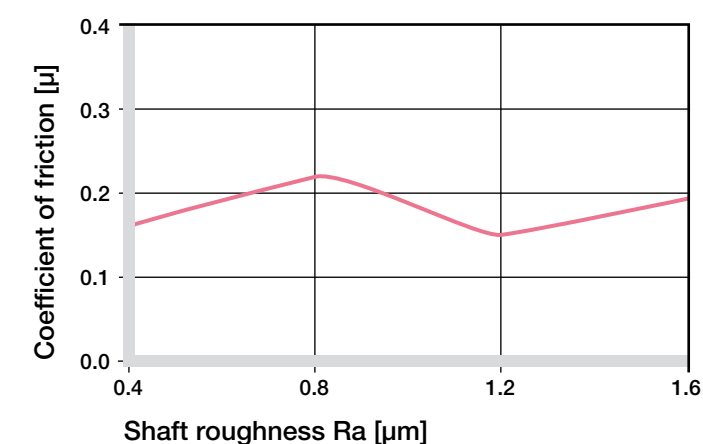


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

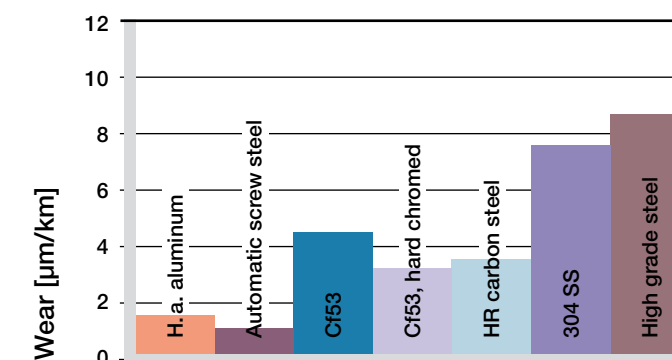


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s



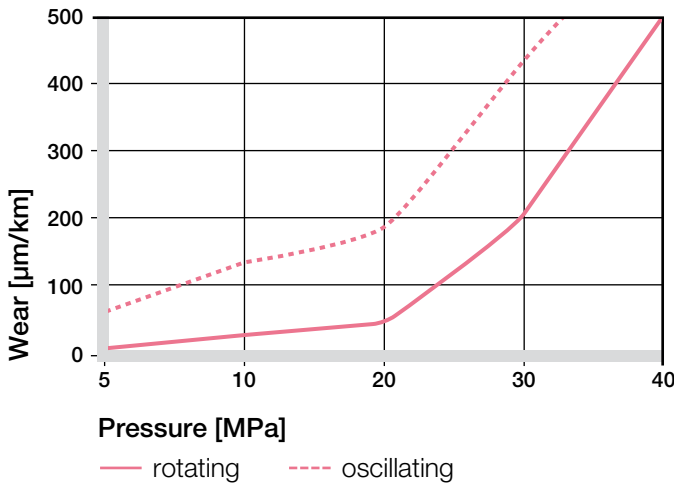


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® F2 | Dry       | Greases | Oil  | Water |
|-------------|-----------|---------|------|-------|
| C. o. f. µ  | 0.16–0.22 | 0.1     | 0.05 | 0.03  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® F2 plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® F2 is not attacked by most weak organic and inorganic acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | –          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0          |
| Strong acids                    | –          |
| Diluted alkalines               | –          |
| Strong alkalines                | –          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® F2 are radiation resistant up to a radiation intensity of 3 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® F2 plain bearings are partially UV resistant.

Vacuum

iglidur® F2 plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

Electrical Properties

iglidur® F2 plain bearings are electrically conductive.

|                    |                       |
|--------------------|-----------------------|
| Volume resistance  | < 10 <sup>9</sup> Ωcm |
| Surface resistance | < 10 <sup>9</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® F2 plain bearings is approximately 0.2 % in standard atmosphere. The saturation limit in water is 0.4 %. This must be taken into account along with the other applicable conditions.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.2 % weight |
| Max. water absorption       | 0.4 % weight |

Table 06: Moisture absorption

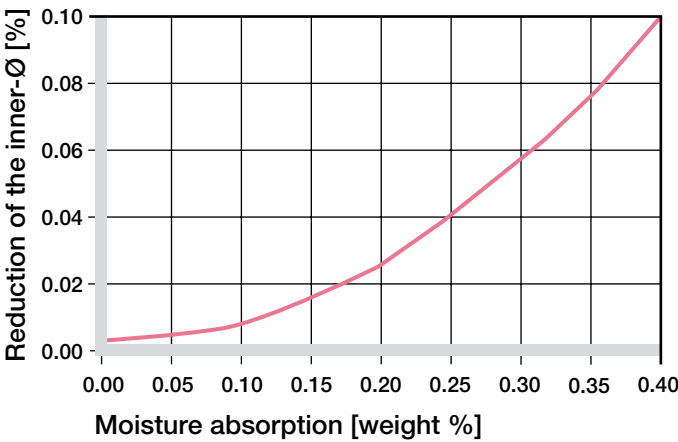


Diagram 09: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® F2 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

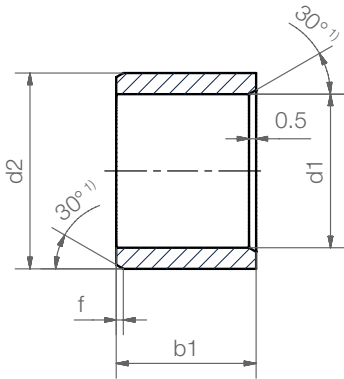
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances.

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® F2 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|----------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054        | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068        | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083        | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102        | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124        | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150        | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180        | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212        | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245        | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

F2SM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® F2

Dimensions according to ISO 3547-1 and special dimensions

1) thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

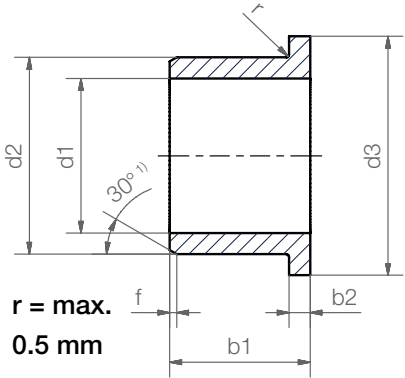
|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  |      | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|------|---------------|------|-----------|
| F2SM-0608-06 | New! | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| F2SM-0810-10 | New! | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| F2SM-1012-10 | New! | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| F2SM-1214-12 | New! | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| F2SM-1618-15 | New! | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| F2SM-2023-20 | New! | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

F2FM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® F2

Dimensions according to ISO 3547-1 and special dimensions

1) thickness < 1 mm: chamfer = 20°

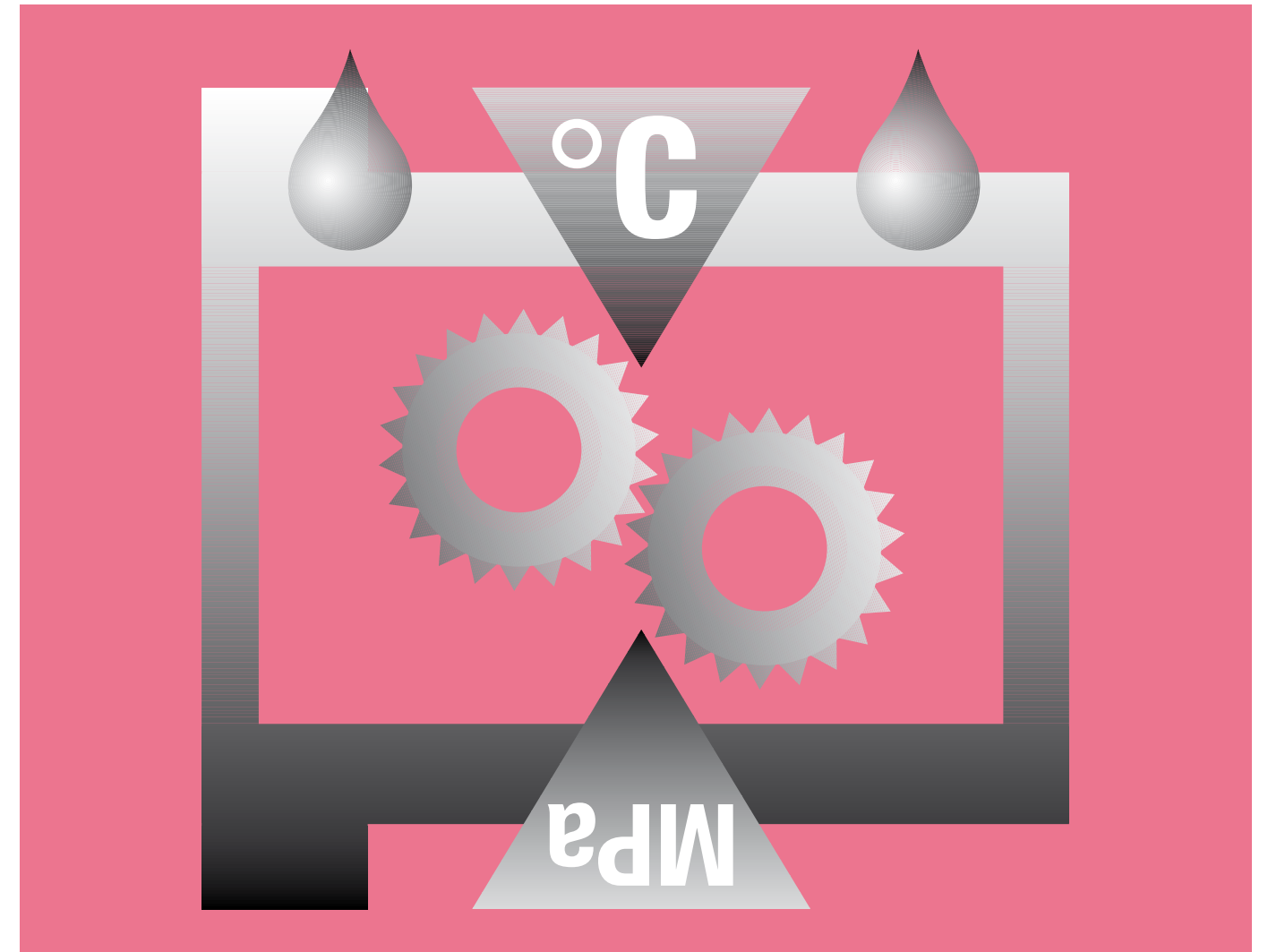
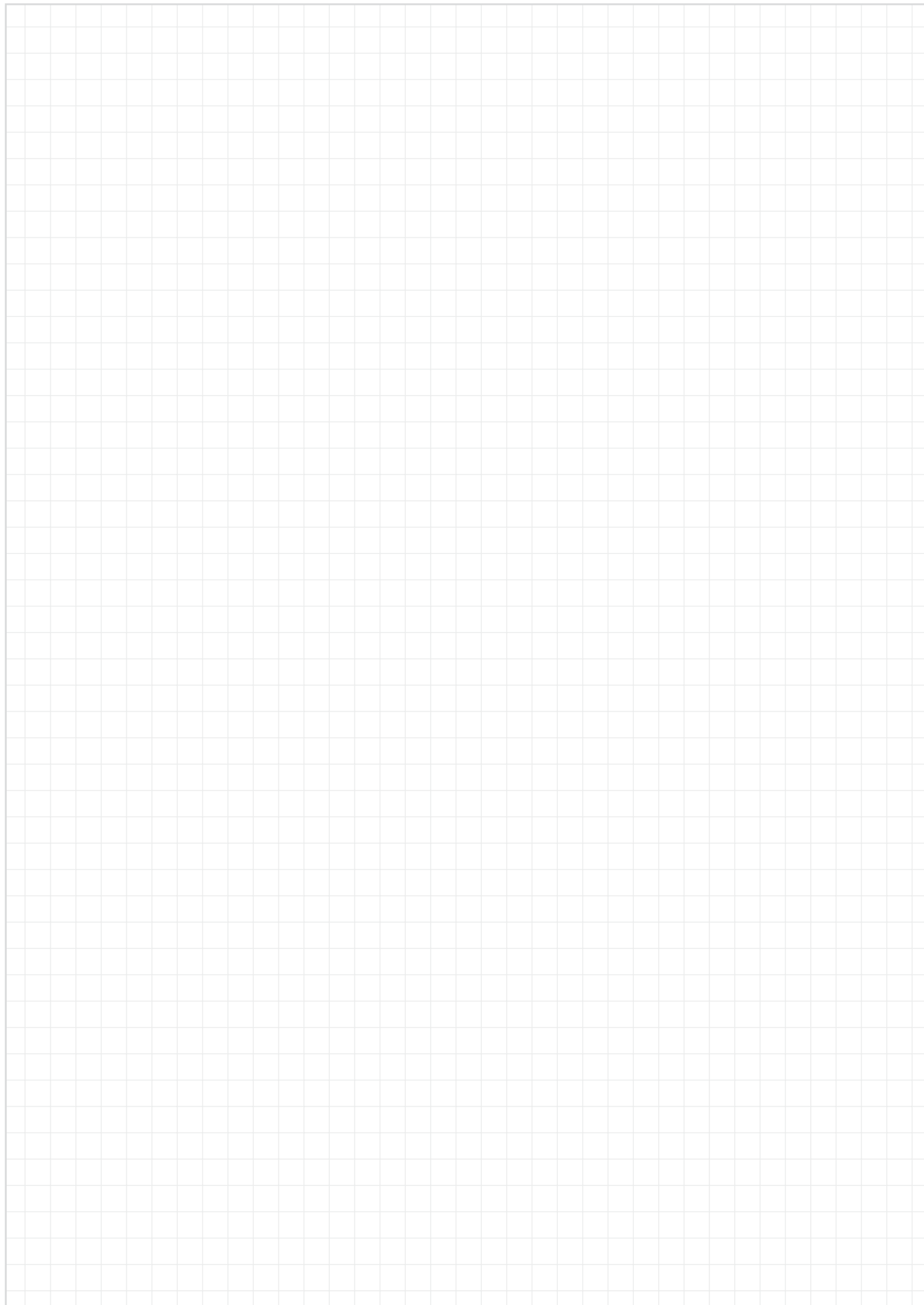
Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  |      | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|--------------|------|------|---------------|------|-----------|-----------|-------------|
| F2FM-0608-06 | New! | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| F2FM-0810-10 | New! | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| F2FM-1012-10 | New! | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| F2FM-1214-12 | New! | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| F2FM-1618-17 | New! | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| F2FM-2023-21 | New! | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



## The automotive standard – iglidur® H4



Standard range from stock

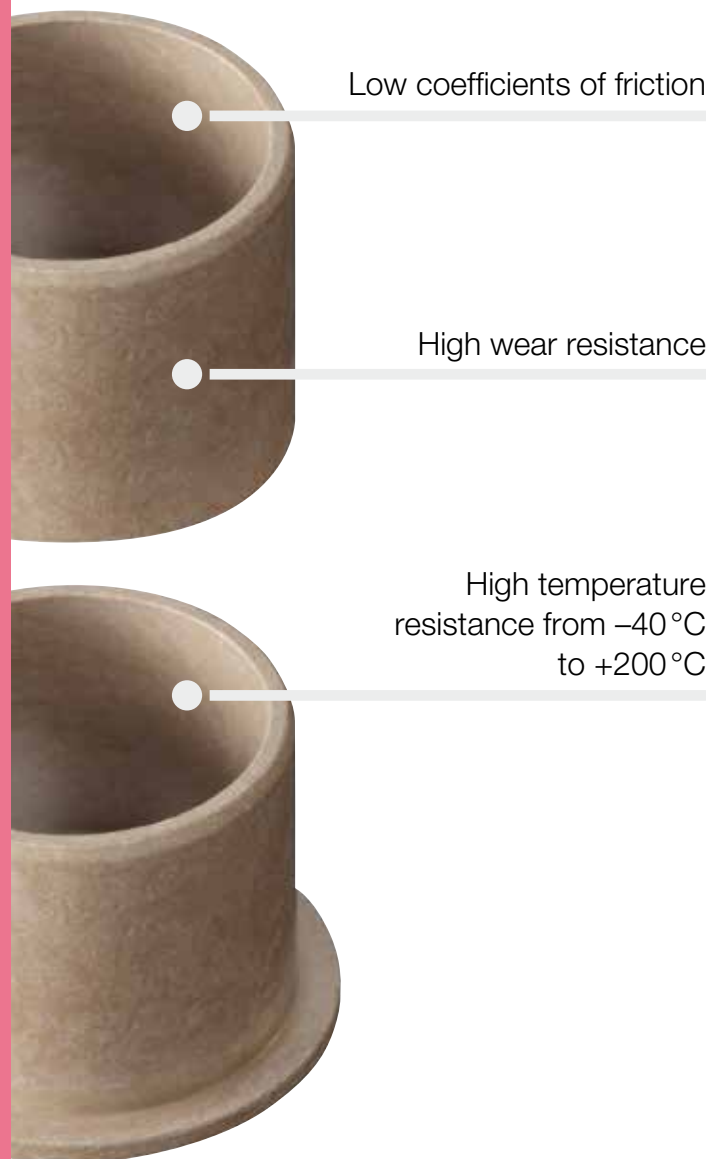
Low coefficients of friction

Good abrasion resistance

High temperature resistance from –40 °C  
to +200 °C

High chemical resistance

**The automotive standard.** Very cost-efficient high-temperature material with good dry-operation properties and “engine compartment resistance”.



#### When to use it?

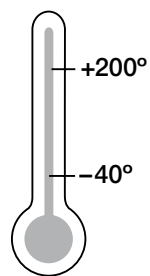
- Application with fuels, oils etc.
- When high wear resistance is required
- For low coefficients of friction
- For high temperature resistance from  $-40^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$
- For high chemical resistance



#### When not to use it?

- For underwater use  
▶ iglidur® H370, page 375
- When a cost-effective universal bearing is required  
▶ iglidur® G, page 81
- When you need a temperature- and media-resistant bearing for static applications.  
▶ iglidur® H2, page 399

#### Temperature



#### Product range

2 types  
 $\varnothing$  4–40 mm  
 more dimensions  
 on request

#### Typical sectors of industry and application areas

- Automotive ● Automation
- Packaging etc.

Improve technology and reduce costs –  
 310 exciting examples for iglidur® plain  
 bearings online

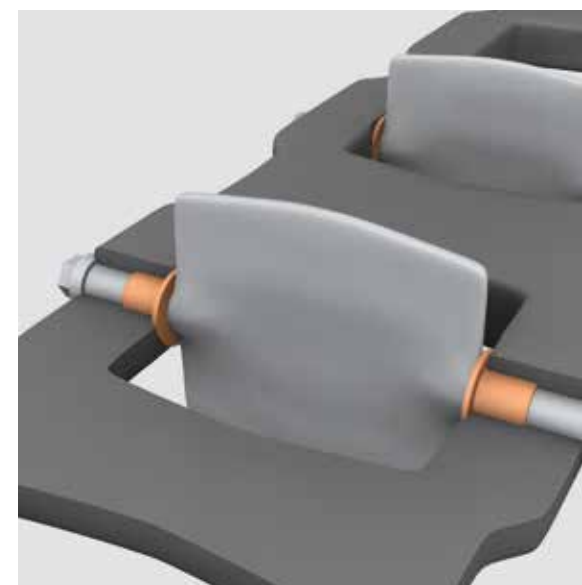
▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



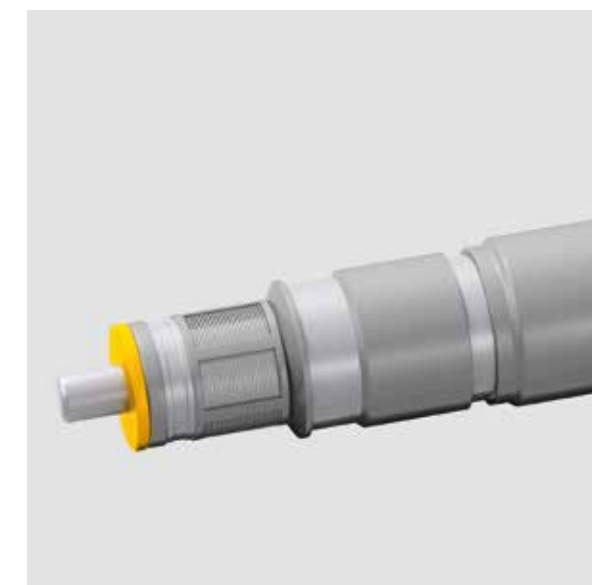
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▶ [www.igus.co.uk/automotive](http://www.igus.co.uk/automotive)





| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® H4        |
| Density                                                |  | g/cm³                              | 1.79               |
| Colour                                                 |  |                                    | brown              |
| Max. moisture absorption at +23 °C/50 % r.h.           |  | % weight                           | 0.1                |
| Max. water absorption                                  |  | % weight                           | 0.2                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.08–0.25          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.7                |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 7,500              |
| Tensile strength at +20 °C                             |  | MPa                                | 120                |
| Compressive strength                                   |  | MPa                                | 50                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 65                 |
| Shore D hardness                                       |  |                                    | 80                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +200               |
| Max. short term application temperature                |  | °C                                 | +240               |
| Max. ambient temperature, short term <sup>1)</sup>     |  | °C                                 | +260               |
| Min. application temperature                           |  | °C                                 | −40                |
| Thermal conductivity                                   |  | W/m · K                            | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>−1</sup> · 10 <sup>−5</sup> | 5                  |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>13</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>12</sup> |

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table

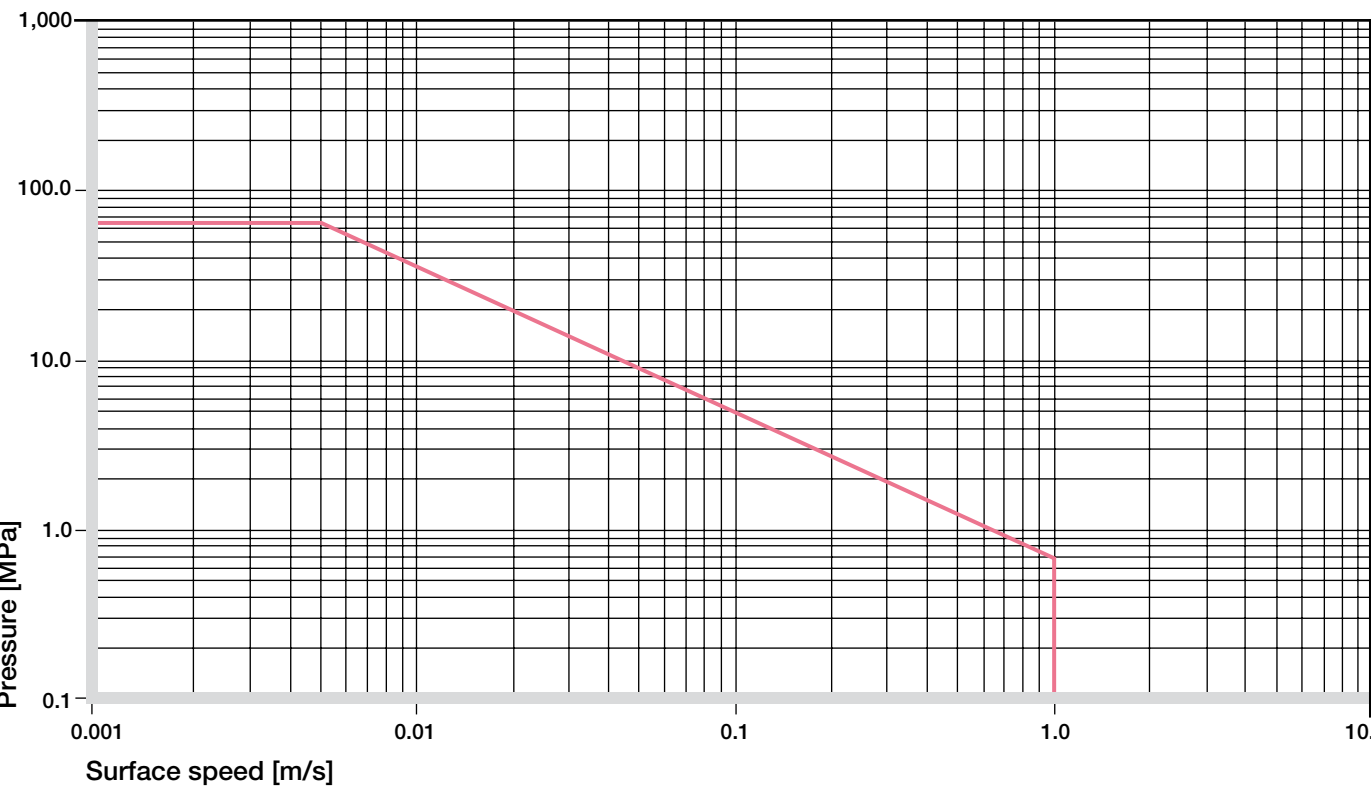


Diagram 01: Permissible pv values for iglidur® H4 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® H4 bearings stand for high carrying capacity, good abrasion resistance and good temperature resistance, besides the obvious economic factors. Temperatures up to +200 °C, permitted surface pressure up to 65 MPa, and excellent chemical resistance are only some of the essential attributes. Solid lubricants lower the coefficient of friction and support the wear resistance, which was considerably improved compared to the likewise cost-efficient iglidur® H2 bearings. iglidur® H4 bearings are self-lubricating and suitable for all motions.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® H4 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the long-term maximum temperature of +200 °C the permissible surface pressure is almost 7 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

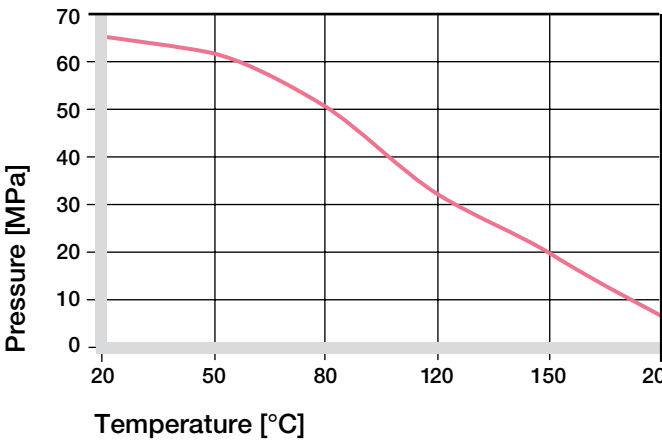


Diagram 02: Recommended maximum surface pressure as a function of temperature (65 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® H4 as a function of radial pressure.

► Surface Pressure, page 63

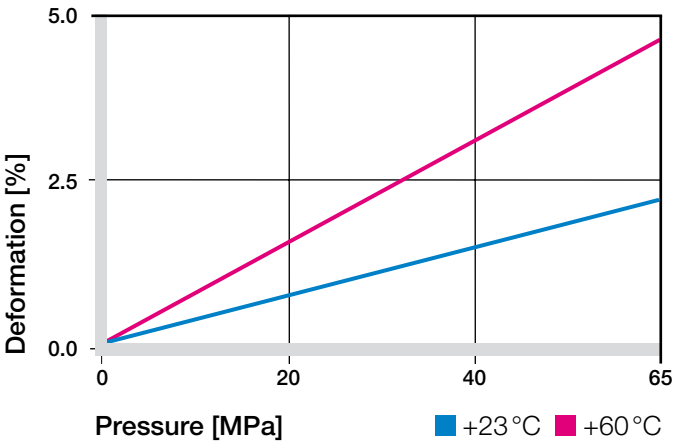


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

In contrast to the similarly cost-efficient iglidur® H2 bearings, the iglidur® H4 has an essentially favorable coefficient of friction. This accounts for the higher permitted surface speeds that can be attained with these bearings. In the dry operation, longterm speeds of 1.0 m/s are possible. The speeds stated in Table 02 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 1      |
| Short term | 1.5      | 1.1         | 2      |

Table 02: Maximum running speed

Temperatures

iglidur® H4 is a temperature resistant material. The short-term maximum permissible temperature is +240 °C, and therefore allows for the use of iglidur® H4 plain bearings in applications where the bearings for instance undergo a drying process without further loading. The compressive strength of iglidur® H4, however, decreases with increasing temperatures. The additional friction heat in the bearing system should be considered.

► Application Temperatures, page 66

| iglidur® H4                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +200 °C                 |
| Max. short term                | +240 °C                 |
| Add. securing is required from | +110 °C                 |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction of the iglidur® H4 bearing is very low. However it must be noted that an extremely coarse gliding partner can increase the friction. We recommend a shaft surface finish (Ra) of 0.1 to maximum 0.4 µm. The coefficient of friction of the iglidur® H4 bearings is dependent on the surface speed only to a minor extent. The influence of the load is greater; an increase in load lowers the coefficient of friction up to 0.08.

- Coefficients of Friction and Surfaces, page 68
- Wear Resistance, page 69

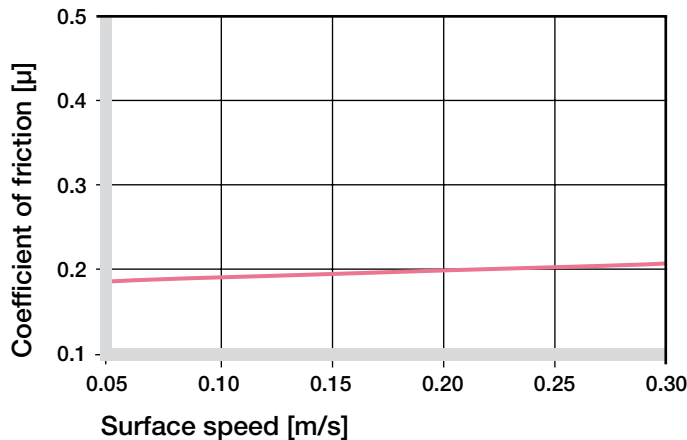


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

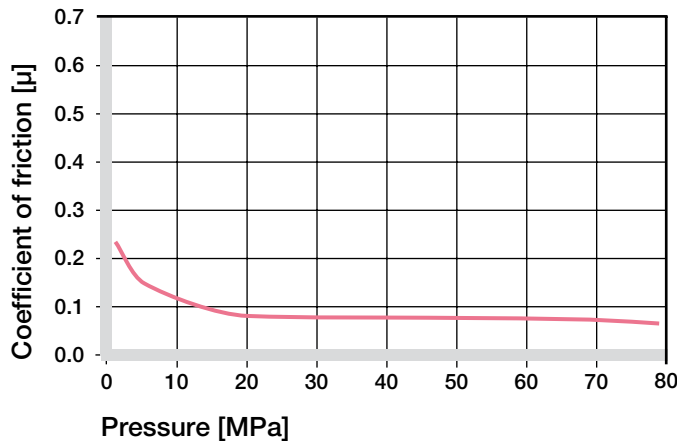


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

With many of the applicable shaft materials, the iglidur® H4 is the economical alternative to many other high-temperature bearings. The important thing is however the selection of the suitable shaft material. It cannot be generally stated that iglidur® H4 is better suited for hard or soft shafts. Tests have however shown that pivoting motions yield better wear data. In rotating applications, the wear increases markedly from 10 MPa.

- Shaft Materials, page 71

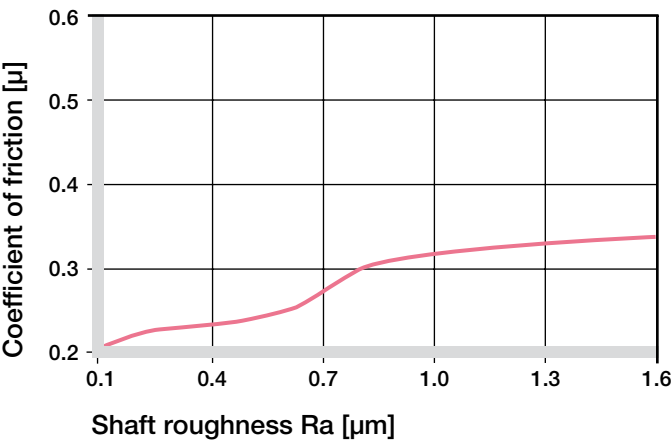


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

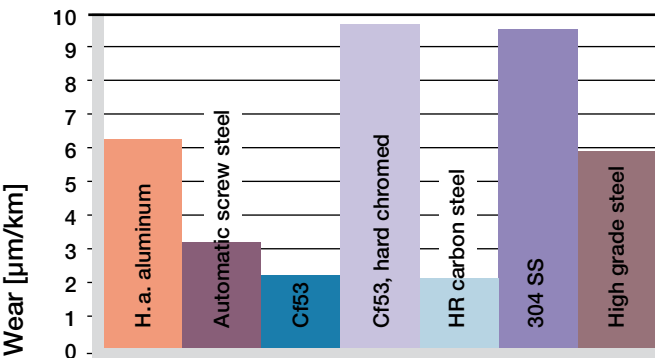


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

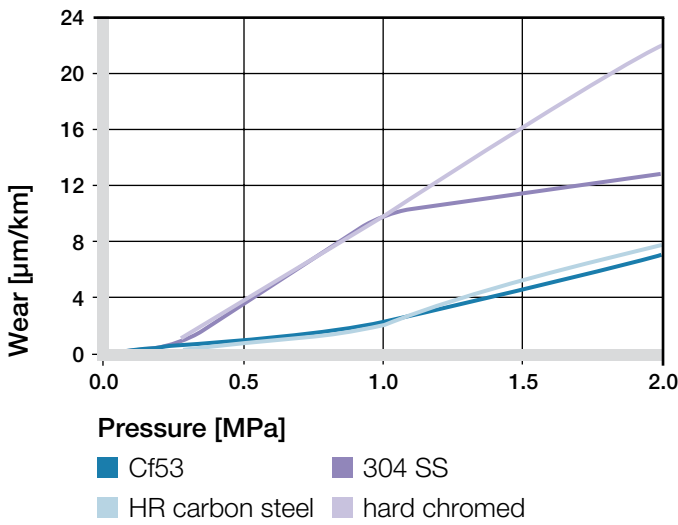


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

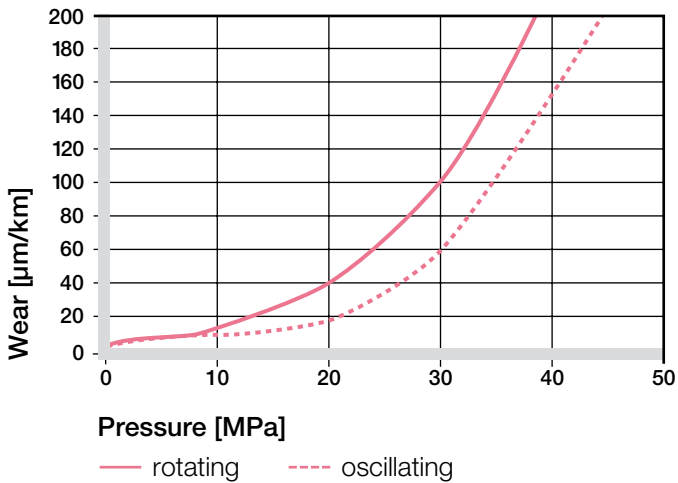


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® H4 | Dry       | Greases | Oil  | Water |
|-------------|-----------|---------|------|-------|
| C.o.f. µ    | 0.08–0.25 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H4 plain bearings feature good chemical resistance. They are resistant to most lubricants. The iglidur® H4 is not affected by most weak organic and inorganic acids.

- Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | + to 0     |
| Strong acids                    | + to -     |
| Diluted alkalines               | +          |
| Strong alkalines                | +          |

+ resistant 0 conditionally resistant - not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur® H4 withstands neutron radiation as well as gamma radiation without noticeable losses of its excellent mechanical characteristics. Plain bearings of iglidur® H4 are radiation resistant up to a radiation intensity of 2 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® H4 plain bearings change under the influence of UV radiation and other climatic influences. The surface gets rougher, and the compressive strength decreases. The use of iglidur® H4 in applications directly exposed to atmospheric conditions should therefore be tested.

Vacuum

In a vacuum, any moisture present will outgas. Use in a vacuum is usually possible.

Electrical Properties

|                                                         |                        |
|---------------------------------------------------------|------------------------|
| iglidur® H4 plain bearings are electrically insulating. |                        |
| Volume resistance                                       | > 10 <sup>13</sup> Ωcm |
| Surface resistance                                      | > 10 <sup>12</sup> Ω   |

Moisture Absorption

The moisture absorption of iglidur® H4 plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is 0.2 %. iglidur® H4 is therefore an ideal material for wet environments.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r. h.        | 0.1 % weight |
| Max. water absorption       | 0.2 % weight |

Table 06: Moisture absorption

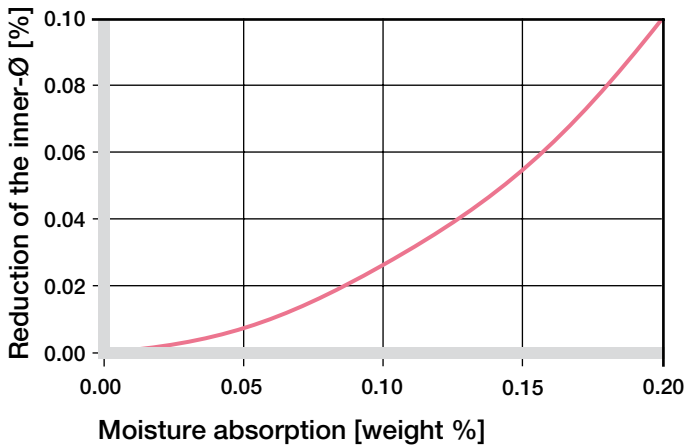


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H4 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

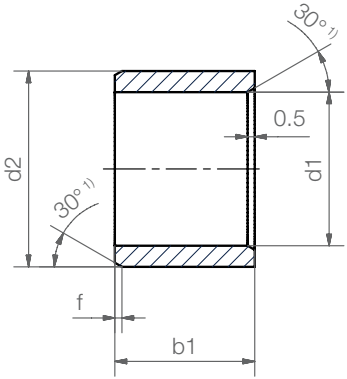
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® H4<br>F10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|-------------------------|--------------------|
| up to 3             | 0–0.025          | +0.006 +0.046           | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.010 +0.058           | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.013 +0.071           | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.016 +0.086           | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.020 +0.104           | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.025 +0.125           | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.030 +0.150           | 0 +0.030           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| H4SM-0405-04 | 4.0  | +0.010 +0.058 | 5.5  | 4.0       |
| H4SM-0608-08 | 6.0  | +0.010 +0.058 | 8.0  | 8.0       |
| H4SM-0810-20 | 8.0  | +0.013 +0.071 | 10.0 | 20.0      |
| H4SM-1618-20 | 16.0 | +0.016 +0.086 | 18.0 | 20.0      |
| H4SM-1820-15 | 18.0 | +0.016 +0.086 | 20.0 | 15.0      |
| H4SM-2022-15 | 20.0 | +0.020 +0.104 | 22.0 | 15.0      |
| H4SM-3943-40 | 39.0 | +0.025 +0.125 | 43.0 | 40.0      |

\* after pressfit. Testing methods ► page 75



Order key

H4SM-0405-04

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material: iglidur® H4



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

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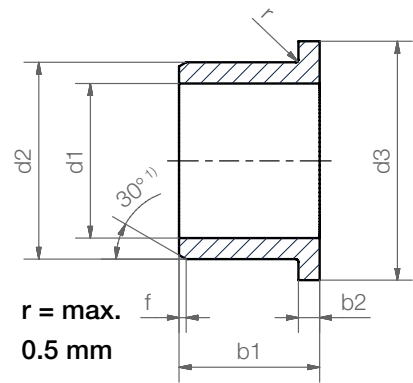


delivery from stock  
time



prices price list online  
[www.igus.co.uk/en/h4](http://www.igus.co.uk/en/h4)

Flange bearing



Order key

H4FM-0405-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material: iglidur® H4

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number    | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| H4FM-0405-04   | 4.0  | +0.010 +0.058 | 5.5  | 9.5       | 4.0       | 0.75        |
| H4FM-0608-08   | 6.0  | +0.010 +0.058 | 8.0  | 12.0      | 8.0       | 1.0         |
| H4FM-0810-10   | 8.0  | +0.013 +0.071 | 10.0 | 15.0      | 10.0      | 1.0         |
| H4FM-1012-05   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 5.0       | 1.0         |
| H4FM-1012-12   | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 12.0      | 1.0         |
| H4FM-101218-25 | 10.0 | +0.013 +0.071 | 12.0 | 18.0      | 25.0      | 1.0         |
| H4FM-1214-12   | 12.0 | +0.016 +0.086 | 14.0 | 20.0      | 12.0      | 1.0         |
| H4FM-1517-12   | 15.0 | +0.016 +0.086 | 17.0 | 23.0      | 12.0      | 1.0         |
| H4FM-1618-17   | 16.0 | +0.016 +0.086 | 18.0 | 24.0      | 17.0      | 1.0         |
| H4FM-1820-17   | 18.0 | +0.016 +0.086 | 20.0 | 26.0      | 17.0      | 1.0         |
| H4FM-2023-21   | 20.0 | +0.020 +0.104 | 23.0 | 30.0      | 21.5      | 1.5         |
| H4FM-2528-21   | 25.0 | +0.020 +0.104 | 28.0 | 35.0      | 21.5      | 1.5         |
| H4FM-3034-30   | 30.0 | +0.020 +0.104 | 34.0 | 40.0      | 30.0      | 2.0         |
| H4FM-4044-40   | 40.0 | +0.030 +0.150 | 44.0 | 52.0      | 40.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



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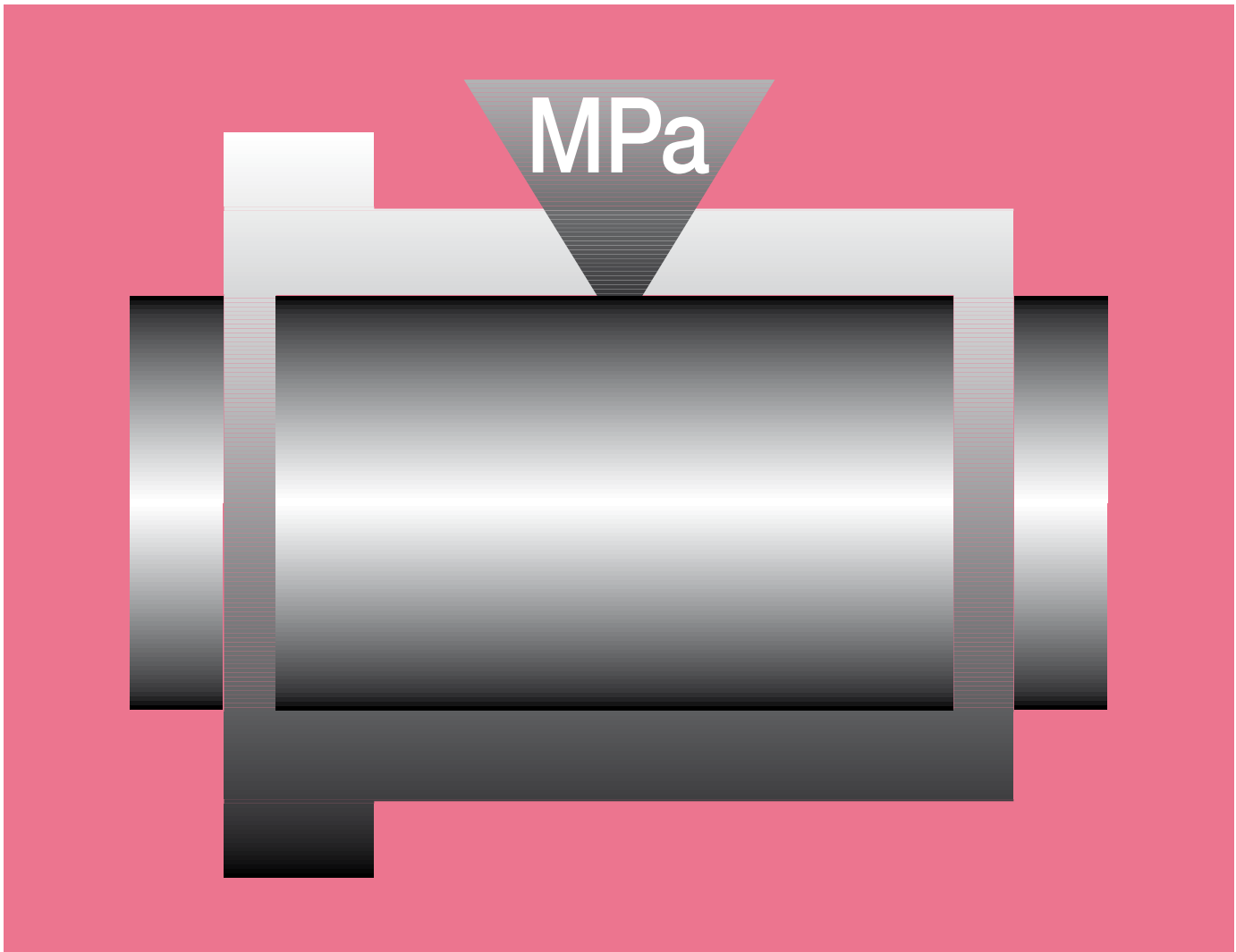
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For high loads – iglidur® Q



Standard range from stock

Excellent wear resistance, especially for extreme loads

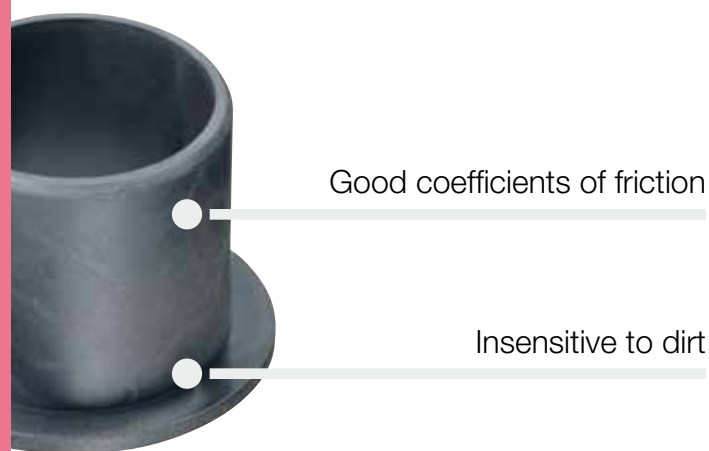
Recommended for extreme pv values

Good coefficients of friction

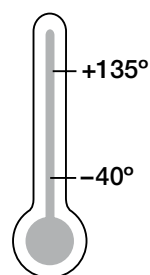
Insensitive to dirt



**For high loads.** iglidur® Q is the low priced solution for high duty cycles at high to extreme loads. Bearing made from this material can be used in all types of motion, but is best suited to oscillating applications.



Temperature



## When to use it?

- For oscillating applications
- Excellent wear resistance, especially for extreme loads
- Recommended for extreme pv values
- If the bearing should be insensitive to dirt



## When not to use it?

- For underwater applications  
▶ iglidur® H370, page 375
- When temperatures are constantly greater than +135 °C  
▶ iglidur® H, page 353  
▶ iglidur® X, page 173  
▶ iglidur® Z, page 327
- When electrically conductive bearings are needed  
▶ iglidur® F, page 509  
▶ iglidur® H, page 353

## Product range

3 types  
Ø 6–90 mm  
more dimensions  
on request

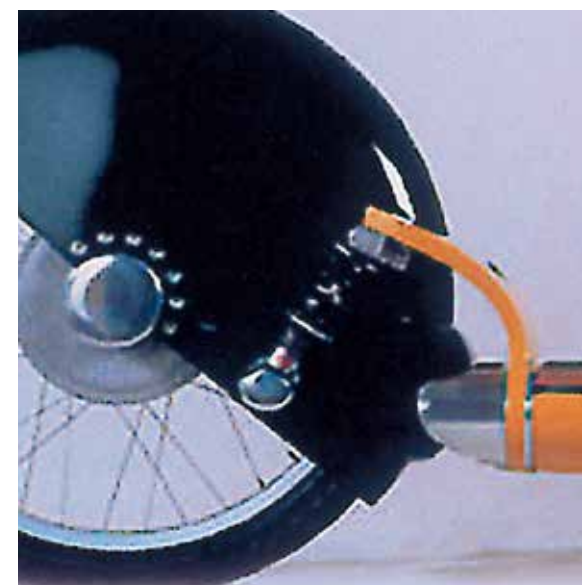


## Typical sectors of industry and application areas

- Construction machinery
- Sheet metal industry ● Agricultural machines ● Railway technology
- Doors and gates etc.

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▶ [www.igus.co.uk/tv-stand](http://www.igus.co.uk/tv-stand)

| Material properties table                              |  |                                    |                    |
|--------------------------------------------------------|--|------------------------------------|--------------------|
| General properties                                     |  | Unit                               | iglidur® Q         |
| Density                                                |  | g/cm³                              | 1.40               |
| Colour                                                 |  |                                    | black              |
| Max. moisture absorption at +23 °C/50 % r. h.          |  | % weight                           | 0.9                |
| Max. water absorption                                  |  | % weight                           | 4.9                |
| Coefficient of sliding friction, dynamic against steel |  | μ                                  | 0.05–0.15          |
| pv value, max. (dry)                                   |  | MPa · m/s                          | 0.55               |
| Mechanical properties                                  |  |                                    |                    |
| Modulus of elasticity                                  |  | MPa                                | 4,500              |
| Tensile strength at +20 °C                             |  | MPa                                | 120                |
| Compressive strength                                   |  | MPa                                | 89                 |
| Max. recommended surface pressure (+20 °C)             |  | MPa                                | 100                |
| Shore D hardness                                       |  |                                    | 83                 |
| Physical and thermal properties                        |  |                                    |                    |
| Max. long term application temperature                 |  | °C                                 | +135               |
| Max. short term application temperature                |  | °C                                 | +155               |
| Min. application temperature                           |  | °C                                 | –40                |
| Thermal conductivity                                   |  | W/m · K                            | 0.23               |
| Coefficient of thermal expansion (at +23 °C)           |  | K <sup>-1</sup> · 10 <sup>-5</sup> | 5                  |
| Electrical properties                                  |  |                                    |                    |
| Specific volume resistance                             |  | Ωcm                                | > 10 <sup>15</sup> |
| Surface resistance                                     |  | Ω                                  | > 10 <sup>12</sup> |

Table 01: Material properties table

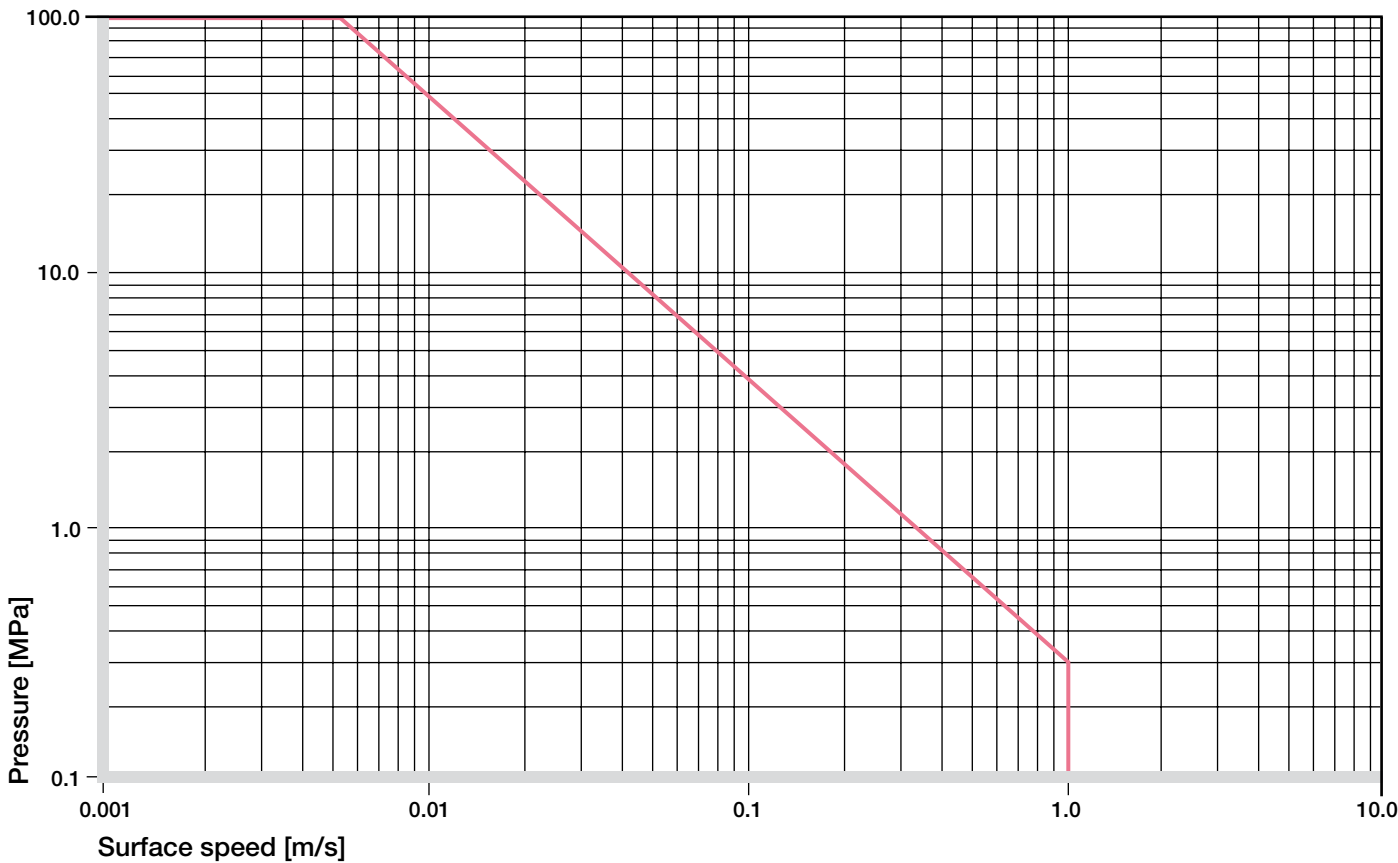


Diagram 01: Permissible pv values for iglidur® Q with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® Q bearings were developed especially for extreme loads. Under high loads, iglidur® Q figures among the iglidur® materials that display the best wear resistance. From a radial pressure of 25 MPa, it outclasses even bearings made of the highly abrasion-resistant iglidur® W300. Specific solid lubricants, precisely integrated into the material, ensure that the maintenance-free dry operation is guaranteed under any load.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® Q plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +135 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

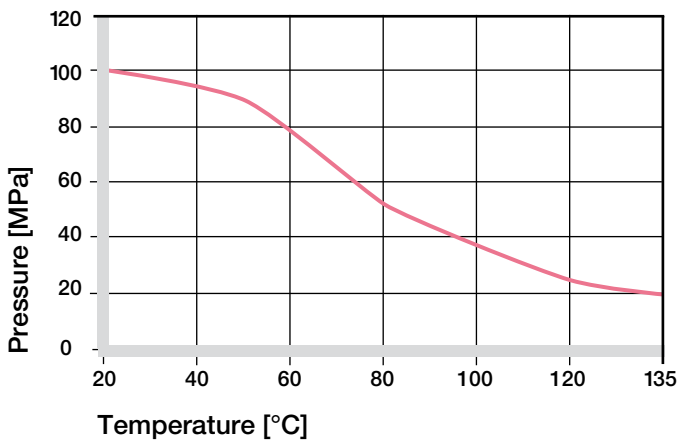


Diagram 02: Recommended maximum surface pressure of as a function of temperature (100 MPa at +20 °C)

iglidur® Q is a material used when high pv values are reached with high loads. Diagram 03 shows the elastic deformation of iglidur® Q at radial loads. At the maximum recommended surface pressure of 100 MPa, the deformation at room temperature is less than 3 %.

► Surface Pressure, page 63

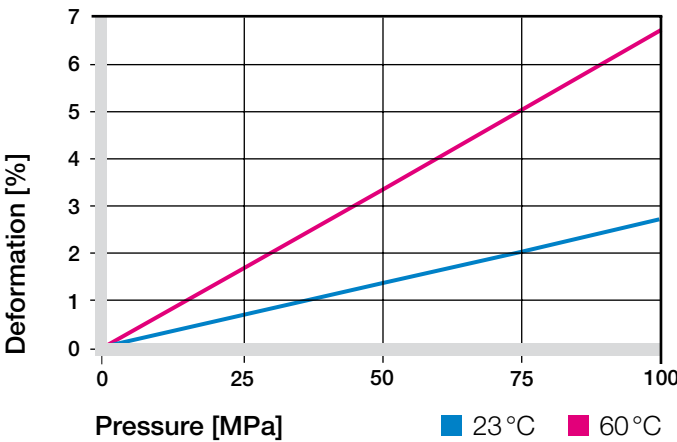


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Under extreme radial loads, the iglidur® Q bearings can reach the maximum pv values, which are possible in the dry operation with plain bearings. Though the iglidur® Q bearings have the greatest advantages with high loads and low speeds, high surface speeds are also attainable due to the excellent coefficients of friction. The values stated in Table 02 show the speed at which the temperature rises to the maximum permitted value as a result of friction.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 5      |
| Short term | 2        | 1.4         | 6      |

Table 02: Maximum running speed

Temperatures

Plain bearings made of iglidur® Q have excellent wear resistance even at high temperatures. The maximum long term application temperature is +135 °C. Because of different environmental influences, the bearing can lose pressfit at lower temperatures. Therefore, it may be necessary to secure the bearings in the housing bore. Also, notice that the coefficient of friction increases rapidly as temperature increases from around +100 °C.

► Application Temperatures, page 66



| iglidur® Q                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40°C                   |
| Max. long term                 | +135°C                  |
| Max. short term                | +155°C                  |
| Add. securing is required from | +50°C                   |

Table 03: Temperature limits

## Friction and Wear

Although most dry running plastic bearings feature decreasing coefficients of friction with increasing pressure, iglidur® Q goes further than most, under high pressures the material gives excellent low values. Soon after the short run-in period, the coefficient of friction stabilizes to the final value. The shaft material also has significant influence on friction and wear. Extremely smooth shafts enhance the coefficient of friction of the bearing. For applications with high loads, we recommend hardened and ground surfaces with an average surface finish of  $R_a = 0.15$  to  $0.3 \mu\text{m}$ .

► Coefficients of Friction and Surfaces, **page 68**

► Wear Resistance, **page 69**

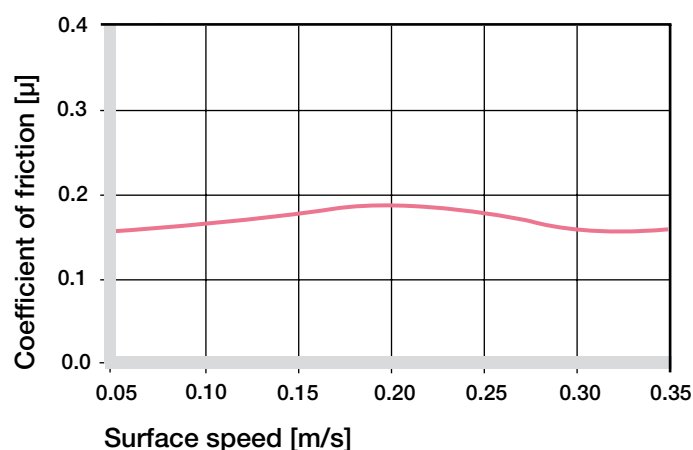


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 0.75 \text{ MPa}$

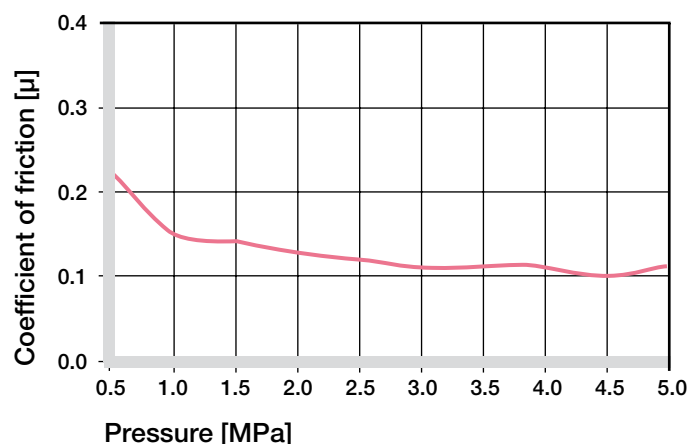


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01 \text{ m/s}$

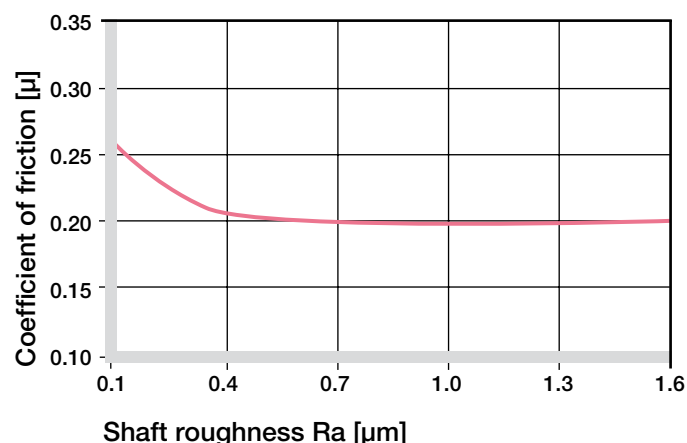


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

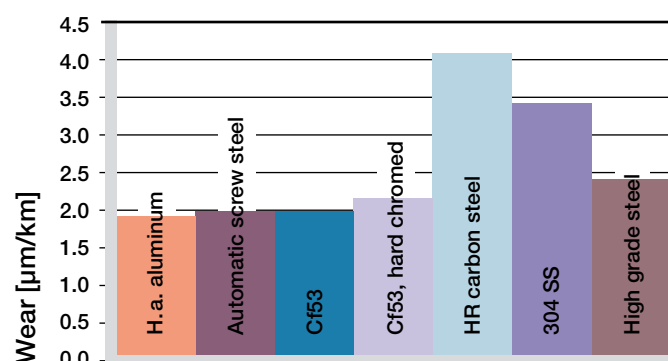


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

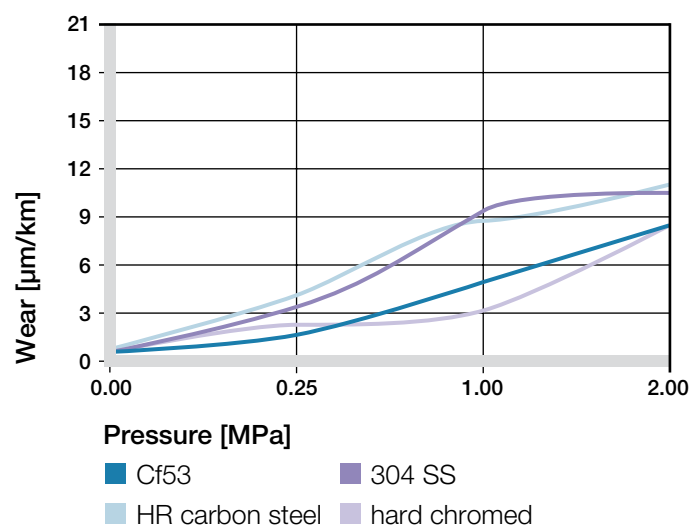


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

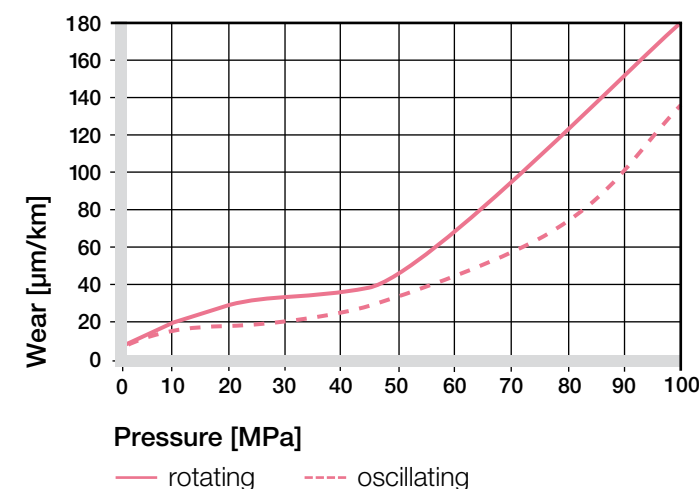


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

## Shaft Materials

The diagrams 06 and 07 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® Q.

In applications with lower to medium loads iglidur® Q bearings show no advantage compared to e.g. iglidur® J or iglidur® W300. The actual strength of iglidur® Q lies in the wear resistance under heavy loads and in pivoting applications. In pivoting applications, the iglidur® Q pairings with hard-chromed shafts and machining steel shafts turn out to be the best among the tested combinations.

► Shaft Materials, **page 71**

| iglidur® Q   | Dry       | Greases | Oil  | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. $\mu$ | 0.05–0.15 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \mu\text{m}$ , 50 HRC)

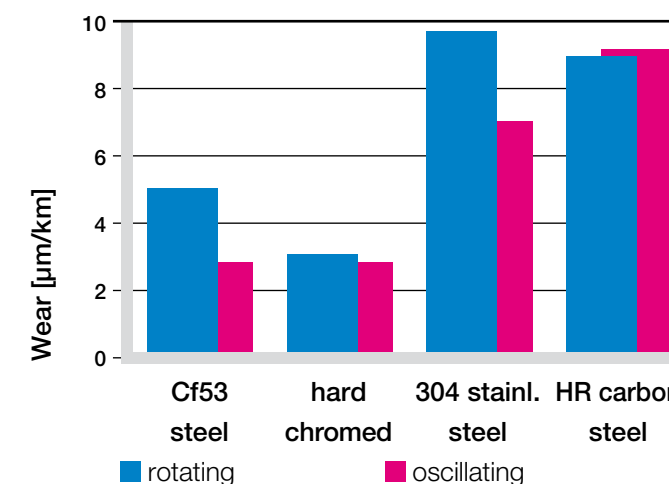


Diagram 10: Wear for rotating and oscillating applications with different shaft materials,  $p = 2 \text{ MPa}$

## Additional Properties

### Chemical Resistance

iglidur® Q bearings have a good resistance against chemicals. They possess an excellent resistance to organic solvents, fuels, oils and fats. The material is only partially resistant to weak acids and alkalis.

► Chemical Table, **page 1258**

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature  $[+20^\circ\text{C}]$

Table 05: Chemical resistance

### Radiation Resistance

Plain bearings made from iglidur® Q are resistant to radiation up to an intensity of applications  $3 \cdot 10^2 \text{ Gy}$ .

UV Resistance

The tribological properties of iglidur® Q plain bearings stay constant for the most part under weathering effects. However, the material may become slightly brittle.

Vacuum

When used in a vacuum, the iglidur® Q plain bearings release existing moisture as a vapour. Therefore, only dehumidified bearings made of iglidur® Q are suitable for use in a vacuum.

Electrical Properties

|                                                        |                         |
|--------------------------------------------------------|-------------------------|
| iglidur® Q plain bearings are electrically insulating. |                         |
| Volume resistance                                      | > 10 <sup>15</sup> Ωcm  |
| Surface resistance                                     | > 10 <sup>12</sup> Ω 10 |

Moisture Absorption

The moisture absorption of iglidur® Q plain bearings is approximately 0.9 % in standard atmosphere. The saturation limit in water is 4.9 %. This must be taken into account along with any other application conditions.

| Maximum moisture absorption |              |  |
|-----------------------------|--------------|--|
| At +23 °C/50 % r. h.        | 0.9 % weight |  |
| Max. water absorption       | 4.9 % weight |  |

Table 06: Moisture absorption

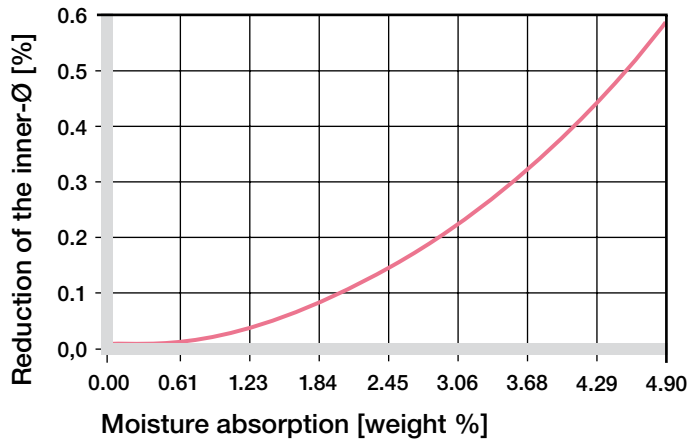


Diagram 11: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® Q plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

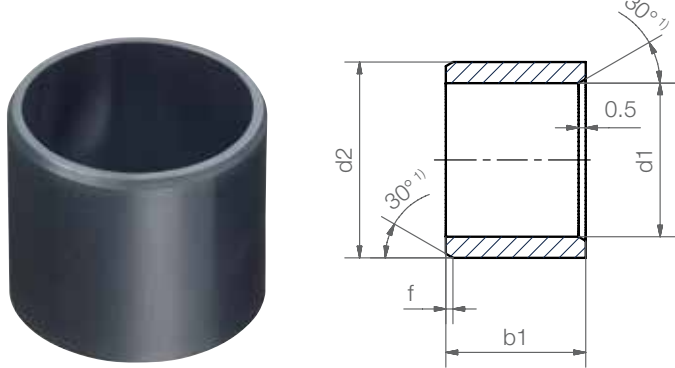
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft h9<br>[mm] | iglidur® Q<br>E10 [mm] | Housing H7<br>[mm] |
|---------------------|------------------|------------------------|--------------------|
| up to 3             | 0–0.025          | +0.014 +0.054          | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.020 +0.068          | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.025 +0.083          | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.032 +0.102          | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.040 +0.124          | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.050 +0.150          | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.060 +0.180          | 0 +0.030           |
| > 80 to 120         | 0–0.087          | +0.072 +0.212          | 0 +0.035           |
| > 120 to 180        | 0–0.100          | +0.085 +0.245          | 0 +0.040           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|-------------|------|---------------|------|-----------|
| QSM-0608-10 | 6.0  | +0.020 +0.068 | 8.0  | 10.0      |
| QSM-0810-08 | 8.0  | +0.025 +0.083 | 10.0 | 8.0       |
| QSM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| QSM-1214-10 | 12.0 | +0.032 +0.102 | 14.0 | 10.0      |
| QSM-1214-20 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      |
| QSM-1618-08 | 16.0 | +0.032 +0.102 | 18.0 | 8.0       |
| QSM-1618-12 | 16.0 | +0.032 +0.102 | 18.0 | 12.5      |
| QSM-1618-20 | 16.0 | +0.032 +0.102 | 18.0 | 20.0      |
| QSM-1820-20 | 18.0 | +0.032 +0.102 | 20.0 | 20.0      |
| QSM-2022-15 | 20.0 | +0.040 +0.124 | 22.0 | 15.0      |
| QSM-2023-15 | 20.0 | +0.040 +0.124 | 23.0 | 15.0      |
| QSM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| QSM-2023-25 | 20.0 | +0.040 +0.124 | 23.0 | 25.0      |
| QSM-2023-30 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      |
| QSM-2528-25 | 25.0 | +0.040 +0.124 | 28.0 | 25.0      |
| QSM-2528-48 | 25.0 | +0.040 +0.124 | 28.0 | 48.0      |
| QSM-3034-20 | 30.0 | +0.040 +0.124 | 34.0 | 20.0      |
| QSM-3034-40 | 30.0 | +0.040 +0.124 | 34.0 | 40.0      |
| QSM-3539-15 | 35.0 | +0.050 +0.150 | 39.0 | 15.0      |

\* after pressfit. Testing methods ► page 75



Order key

QSM-0608-10

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® Q

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| QSM-3539-30  | 35.0 | +0.050 +0.150 | 39.0 | 30.0      |
| QSM-3539-35  | 35.0 | +0.050 +0.150 | 39.0 | 35.0      |
| QSM-3539-50  | 35.0 | +0.050 +0.150 | 39.0 | 50.0      |
| QSM-4044-30  | 40.0 | +0.050 +0.150 | 44.0 | 30.0      |
| QSM-4044-40  | 40.0 | +0.050 +0.150 | 44.0 | 40.0      |
| QSM-4044-47  | 40.0 | +0.050 +0.150 | 44.0 | 47.0      |
| QSM-4550-252 | 45.0 | +0.050 +0.150 | 50.0 | 25.2      |
| QSM-4550-50  | 45.0 | +0.050 +0.150 | 50.0 | 50.0      |
| QSM-5055-50  | 50.0 | +0.050 +0.150 | 55.0 | 50.0      |
| QSM-5055-60  | 50.0 | +0.050 +0.150 | 55.0 | 60.0      |
| QSM-5055-80  | 50.0 | +0.050 +0.150 | 55.0 | 80.0      |
| QSM-5560-50  | 55.0 | +0.060 +0.180 | 60.0 | 50.0      |
| QSM-6065-50  | 60.0 | +0.060 +0.180 | 65.0 | 50.0      |
| QSM-6570-34  | 65.0 | +0.060 +0.180 | 70.0 | 34.0      |
| QSM-7075-50  | 70.0 | +0.060 +0.180 | 75.0 | 50.0      |
| QSM-7580-40  | 75.0 | +0.060 +0.180 | 80.0 | 40.0      |
| QSM-8085-60  | 80.0 | +0.060 +0.180 | 85.0 | 60.0      |
| QSM-9095-50  | 90.0 | +0.072 +0.212 | 95.0 | 50.0      |



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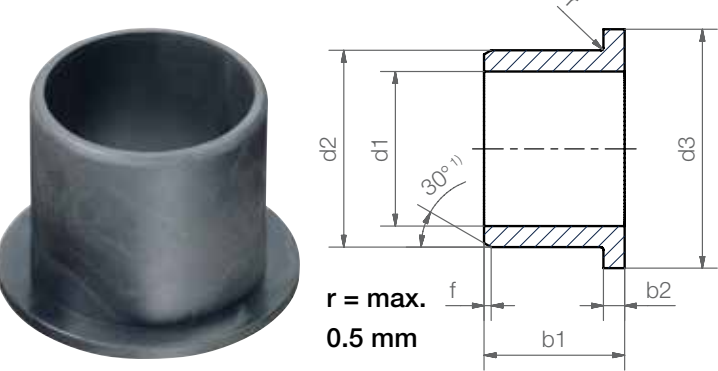
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Flange bearing



Dimensions according to ISO 3547-1 and special dimensions

1) thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

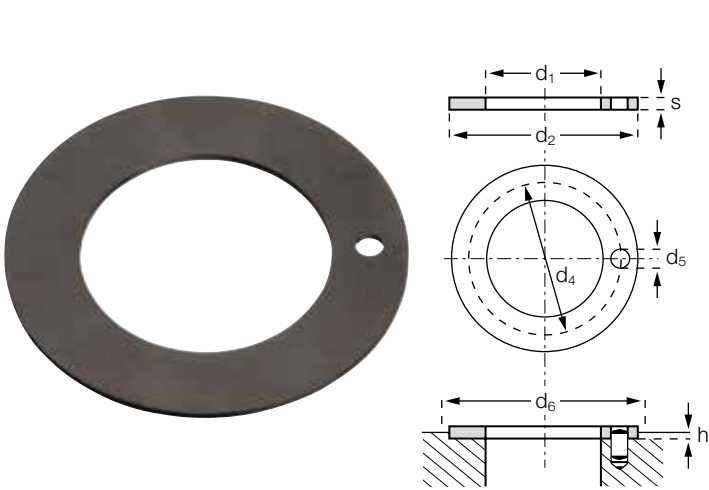
| Part number    | d1   | d1-Tolerance* | d2   | d3, d13 | b1, h13 | b2, -0.14 |
|----------------|------|---------------|------|---------|---------|-----------|
| QFM-0608-03    | 6.0  | +0.020 +0.068 | 8.0  | 12.0    | 3.0     | 1.0       |
| QFM-0608-04    | 6.0  | +0.020 +0.068 | 8.0  | 12.0    | 4.0     | 1.0       |
| QFM-0810-05    | 8.0  | +0.025 +0.083 | 10.0 | 15.0    | 5.5     | 1.0       |
| QFM-0810-06    | 8.0  | +0.025 +0.083 | 10.0 | 15.0    | 6.0     | 1.0       |
| QFM-1012-06    | 10.0 | +0.025 +0.083 | 12.0 | 18.0    | 6.0     | 1.0       |
| QFM-1012-10    | 10.0 | +0.025 +0.083 | 12.0 | 18.0    | 10.0    | 1.0       |
| QFM-101215-035 | 10.0 | +0.025 +0.083 | 12.0 | 15.0    | 3.5     | 1.0       |
| QFM-101215-08  | 10.0 | +0.025 +0.083 | 12.0 | 15.0    | 8.0     | 1.0       |
| QFM-1214-08    | 12.0 | +0.032 +0.102 | 14.0 | 20.0    | 8.0     | 1.0       |
| QFM-1214-12    | 12.0 | +0.032 +0.102 | 14.0 | 20.0    | 12.0    | 1.0       |
| QFM-1214-20    | 12.0 | +0.032 +0.102 | 14.0 | 20.0    | 20.0    | 1.0       |
| QFM-1416-12    | 14.0 | +0.032 +0.102 | 16.0 | 22.0    | 12.0    | 1.0       |
| QFM-1618-17    | 16.0 | +0.032 +0.102 | 18.0 | 24.0    | 17.0    | 1.0       |
| QFM-1820-12    | 18.0 | +0.032 +0.102 | 20.0 | 26.0    | 12.0    | 1.0       |
| QFM-182026-051 | 18.0 | +0.032 +0.102 | 20.0 | 26.0    | 5.0     | 1.0       |
| QFM-2023-21    | 20.0 | +0.040 +0.124 | 23.0 | 30.0    | 21.5    | 1.5       |
| QFM-2528-21    | 25.0 | +0.040 +0.124 | 28.0 | 35.0    | 21.5    | 1.5       |
| QFM-2629-05    | 26.0 | +0.040 +0.124 | 29.0 | 35.0    | 5.0     | 1.5       |
| QFM-2730-20    | 27.0 | +0.040 +0.124 | 30.0 | 38.0    | 20.0    | 1.5       |
| QFM-3034-37    | 30.0 | +0.040 +0.124 | 34.0 | 42.0    | 37.0    | 2.0       |
| QFM-3539-26    | 35.0 | +0.050 +0.150 | 39.0 | 47.0    | 26.0    | 2.0       |
| QFM-353950-35  | 35.0 | +0.050 +0.150 | 39.0 | 50.0    | 35.0    | 2.0       |
| QFM-4044-40    | 40.0 | +0.050 +0.150 | 44.0 | 52.0    | 40.0    | 2.0       |
| QFM-5055-10    | 50.0 | +0.050 +0.150 | 55.0 | 63.0    | 10.0    | 2.0       |
| QFM-5055-50    | 50.0 | +0.050 +0.150 | 55.0 | 63.0    | 50.0    | 2.0       |
| QFM-6065-50    | 60.0 | +0.060 +0.180 | 65.0 | 78.0    | 50.0    | 2.0       |
| QFM-7075-50    | 70.0 | +0.060 +0.180 | 75.0 | 83.0    | 50.0    | 2.0       |

\* after pressfit. Testing methods ► page 75

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Thrust washer



Dimensions according to ISO 3547-1 and special dimensions

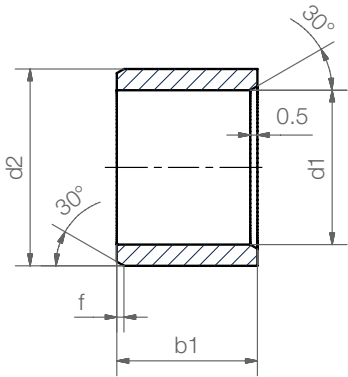
Dimensions [mm]

| Part number  | d1   | d2   | s     | d4          | d5            | h         | d6    |
|--------------|------|------|-------|-------------|---------------|-----------|-------|
|              | +0.3 | -0.3 | -0.06 | -0.12/+0.12 | -0.375/+0.125 | +0.2/-0.2 | +0.12 |
| QTM-2842-015 | 28.0 | 42.0 | 1.5   | 35.0        | 4.0           | 1.0       | 42.0  |
| QTM-3254-015 | 32.0 | 54.0 | 1.5   | 43.0        | 4.0           | 1.0       | 54.0  |

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Sleeve bearing



Order key

QSI-0607-04



Length b1  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form S)  
Material iglidur® Q

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       | max.   | min.   | max.         | min.   | max.       | min.   |
| QSI-0607-04 | 3/8   | 15/32   | 1/4   | .3773  | .3750  | .4691        | .4684  | .3740      | .3731  |
| QSI-0607-06 | 3/8   | 15/32   | 3/8   | .3773  | .3750  | .4691        | .4684  | .3740      | .3731  |
| QSI-0607-08 | 3/8   | 15/32   | 1/2   | .3773  | .3750  | .4691        | .4684  | .3740      | .3731  |
| QSI-0708-08 | 7/16  | 17/32   | 1/2   | .4406  | .4379  | .5316        | .5309  | .4365      | .4355  |
| QSI-0809-12 | 1/2   | 19/32   | 3/4   | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| QSI-1011-12 | 5/8   | 23/32   | 3/4   | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| QSI-1214-08 | 3/4   | 7/8     | 1/2   | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| QSI-1214-12 | 3/4   | 7/8     | 3/4   | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| QSI-1214-16 | 3/4   | 7/8     | 1     | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| QSI-1416-16 | 7/8   | 1       | 1     | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| QSI-1618-16 | 1     | 1 1/8   | 1     | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| QSI-1618-24 | 1     | 1 1/8   | 1 1/2 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| QSI-1820-24 | 1 1/8 | 1 9/32  | 1 1/2 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| QSI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| QSI-2022-24 | 1 1/4 | 1 13/32 | 1 1/2 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| QSI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| QSI-2629-20 | 1 5/8 | 1 25/32 | 1 1/4 | 1.6297 | 1.6258 | 1.7818       | 1.7808 | 1.6238     | 1.6222 |
| QSI-2831-32 | 1 3/4 | 1 15/16 | 2     | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| QSI-3235-12 | 2     | 2 3/16  | 3/4   | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| QSI-3235-16 | 2     | 2 3/16  | 1     | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| QSI-3235-24 | 2     | 2 3/16  | 1 1/2 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| QSI-3235-32 | 2     | 2 3/16  | 2     | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| QSI-3235-40 | 2     | 2 3/16  | 2 1/2 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| QSI-3639-32 | 2 1/4 | 2 7/16  | 2     | 2.2577 | 2.2531 | 2.4377       | 2.4365 | 2.2507     | 2.2489 |

\* after pressfit. Testing methods ► page 75

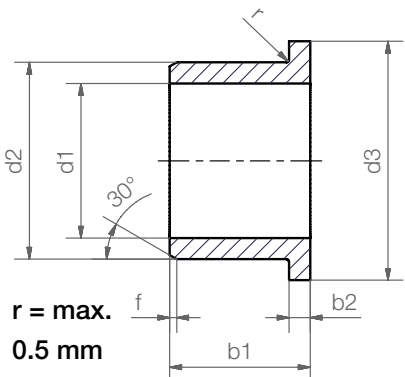


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Flange bearing



Order key

QFI-0607-04



Length b1  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form F)  
Material iglidur® Q

Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [Inch]

| Part number | d1    | d2      | b1    | d3    | b2   | d1*    |        | Housing bore |        | Shaft size |        |
|-------------|-------|---------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
|             |       |         |       |       |      | max.   | min.   | max.         | min.   | max.       | min.   |
| QFI-0607-04 | 3/8   | 15/32   | 1/4   | .687  | .046 | .3773  | .3750  | .4691        | .4684  | .3740      | .3731  |
| QFI-0607-08 | 3/8   | 15/32   | 1/2   | .687  | .046 | .3773  | .3750  | .4691        | .4684  | .3740      | .3731  |
| QFI-0809-04 | 1/2   | 19/32   | 1/4   | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| QFI-0809-08 | 1/2   | 19/32   | 1/2   | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| QFI-0809-12 | 1/2   | 19/32   | 3/4   | .875  | .046 | .5030  | .5003  | .5941        | .5934  | .4990      | .4980  |
| QFI-1011-12 | 5/8   | 23/32   | 3/4   | .937  | .046 | .6280  | .6253  | .7192        | .7184  | .6240      | .6230  |
| QFI-1012-08 | 5/8   | 3/4     | 3/4   | 1.000 | .062 | .6290  | .6263  | .7510        | .7500  | .6250      | .6240  |
| QFI-1214-08 | 3/4   | 7/8     | 1/2   | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| QFI-1214-12 | 3/4   | 7/8     | 3/4   | 1.125 | .062 | .7541  | .7507  | .8755        | .8747  | .7491      | .7479  |
| QFI-1214-16 | 3/4   | 7/8     | 1     | 1.125 | .062 | .7541  | .7505  | .8755        | .8747  | .7491      | .7479  |
| QFI-1416-12 | 7/8   | 1       | 3/4   | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| QFI-1416-16 | 7/8   | 1       | 1     | 1.250 | .062 | .8791  | .8757  | 1.0005       | .9997  | .8741      | .8729  |
| QFI-1618-08 | 1     | 1 1/8   | 1/2   | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| QFI-1618-16 | 1     | 1 1/8   | 1     | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| QFI-1618-24 | 1     | 1 1/8   | 1 1/2 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255       | 1.1247 | .9991      | .9979  |
| QFI-1820-12 | 1 1/8 | 1 9/32  | 3/4   | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| QFI-1820-24 | 1 1/8 | 1 9/32  | 1 1/2 | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818       | 1.2808 | 1.1238     | 1.1226 |
| QFI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| QFI-2022-24 | 1 1/4 | 1 13/32 | 1 1/2 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068       | 1.4058 | 1.2488     | 1.2472 |
| QFI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568       | 1.6558 | 1.4988     | 1.4972 |
| QFI-2831-32 | 1 3/4 | 1 15/16 | 2     | 2.375 | .093 | 1.7547 | 1.7507 | 1.9381       | 1.9371 | 1.7487     | 1.7471 |
| QFI-3235-32 | 2     | 2 3/16  | 2     | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883       | 2.1871 | 1.9981     | 1.9969 |
| QFI-3639-32 | 2 1/4 | 2 7/16  | 2     | 2.750 | .093 | 2.2577 | 2.2531 | 2.4377       | 2.4365 | 2.2507     | 2.2489 |

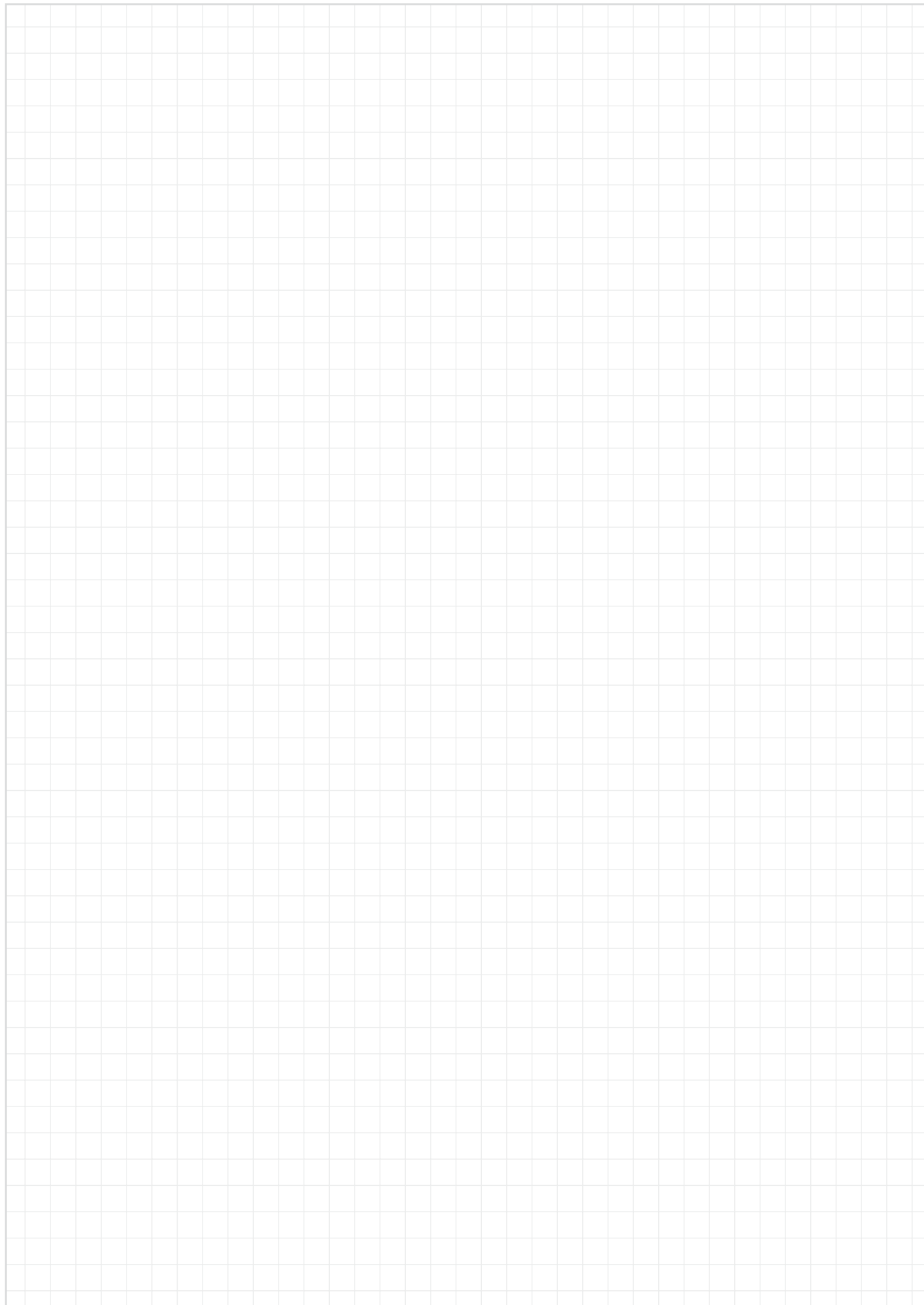
\* after pressfit. Testing methods ► page 75



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**For extreme loads – iglidur® Q2**



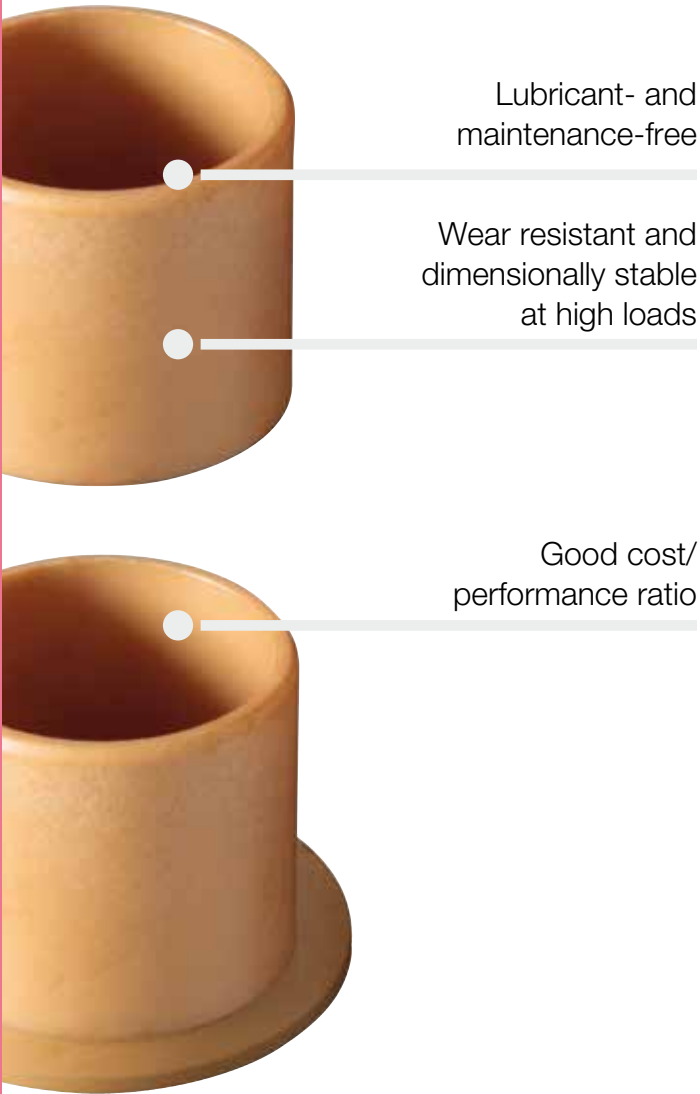
Standard range from stock

Lubricant- and maintenance-free

Wear resistant and dimensionally stable  
at high loads

Good cost/performance ratio

**For extreme loads.** Where previous iglidur® bearing solutions in the extreme load range end, the iglidur® Q2 starts. Made for heavy-duty pivoting applications under extreme conditions.



**When to use it?**

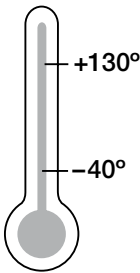
- When high dynamic loads occurs
- When impacts, shocks and contamination occur in addition to high loads
- For highly load pivoting motions



**When not to use it?**

- When only static loads occur
  - ▶ iglidur® X, page 173
  - ▶ iglidur® H2, page 399
- When high pv values occur in conjunction with high speeds
  - ▶ iglidur® Z, page 327
- When you need a low cost all-round bearing
  - ▶ iglidur® G, page 81
- When soft shafts are in use
  - ▶ iglidur® W300, page 151

**Temperature**



**Product range**

2 types  
Ø 5–75 mm  
more dimensions  
on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® Q2        | Testing method |
| Density                                                | g/cm³                              | 1.46               |                |
| Colour                                                 |                                    | beige-brown        |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.1                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 4.6                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.22–0.42          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.7                |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 8,370              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 240                | DIN 53452      |
| Compressive strength                                   | MPa                                | 130                |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 120                |                |
| Shore D hardness                                       |                                    | 80                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +130               |                |
| Max. short term application temperature                | °C                                 | +200               |                |
| Max. ambient temperature, short term <sup>1)</sup>     | °C                                 | +220               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> | 8                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

<sup>1)</sup> Without additional load; no gliding motion; relaxation cannot be excluded

Table 01: Material properties table

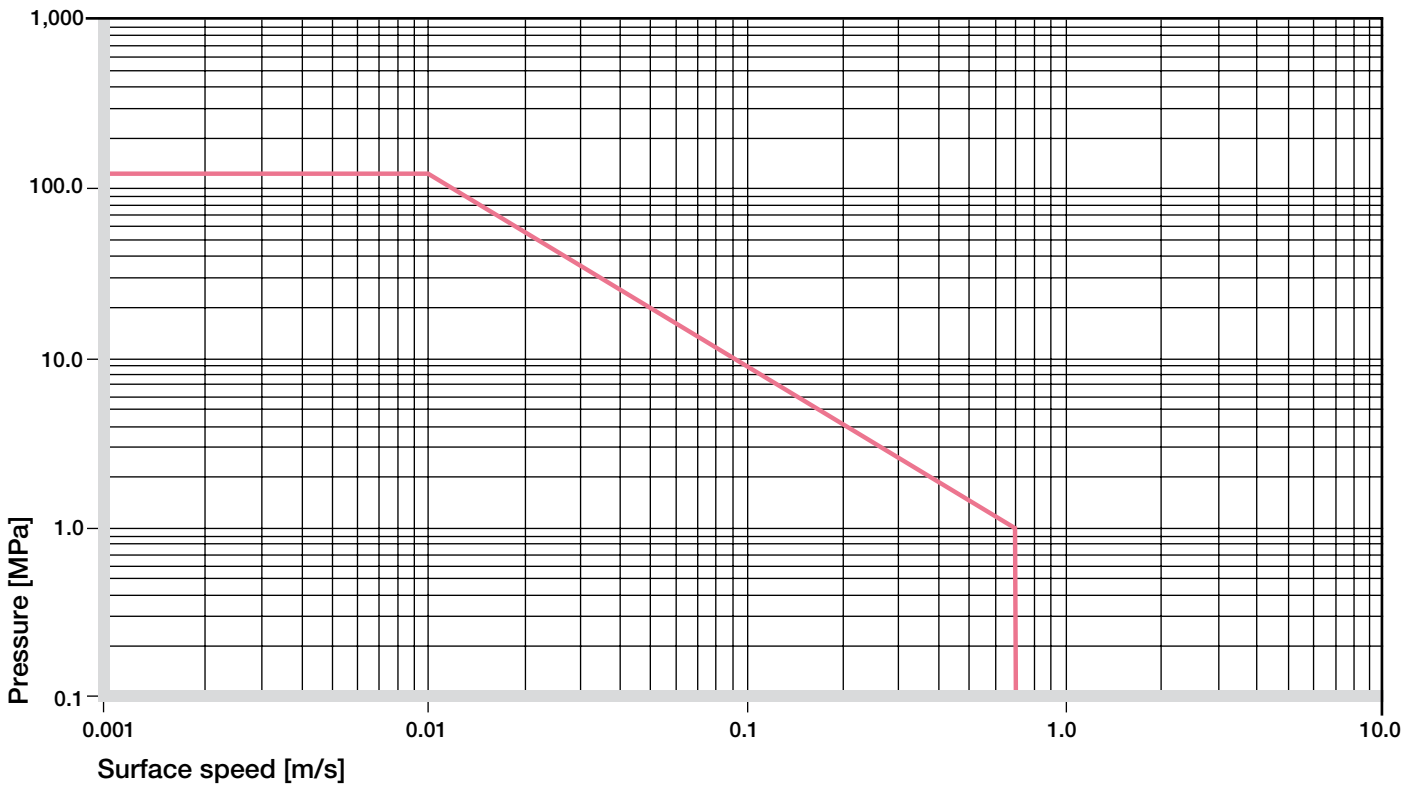


Diagram 01: Permissible pv values for iglidur® Q2 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing





The maximum recommended surface pressure is a mechanical material parameter. This does not permit conclusions to be drawn about the tribological properties. The pressure resistance of iglidur® Q2 plain bearings declines with increasing temperatures. Diagram 02 clarifies this relationship. At a longterm permitted application temperature of +130°C, the permitted surface pressure is still 20 MPa.

### Mechanical properties

iglidur® Q2 plain bearings represent high load capacities and good abrasion resistance at high loads. The price-performance ratio is outstanding. Solid lubricants reduce the coefficient of friction and improve the resistance to wear, which was markedly improved as compared to other iglidur® plain bearings, especially for highly loaded pivot applications. iglidur® Q2 plain bearings are self-lubricating and suitable for all motions.

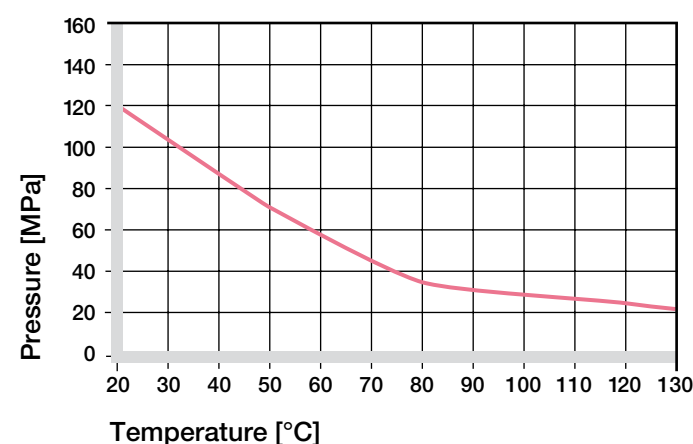


Diagram 02: Recommended maximum surface pressure of as a function of temperature (120 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® Q2 at radial loads.

► Surface Pressure, page 63

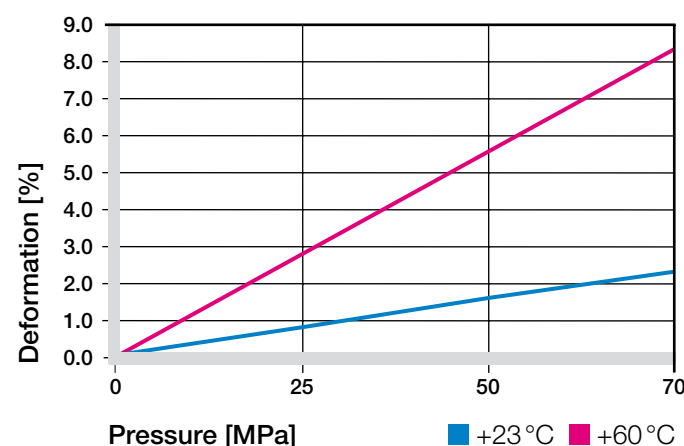


Diagram 03: Deformation under pressure and temperature

### Permissible Surface Speeds

The typical applications for iglidur® Q2 plain bearings are highly loaded pivoting motions at comparatively low speeds. However relatively high speeds are still attainable. The speeds shown in Table 02 are threshold values for minimal bearing loads. As loads increase, the permissible speed is reduced with higher loads due to the limitations of the pv value.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 4      |
| Short term | 2        | 1.4         | 5      |

Table 02: Maximum running speed

### Temperatures

iglidur® Q2 is a very temperature resistant material. The short-term upper temperature limit is +200. The longterm upper temperature limit of +130 °C permits the broad use in applications typical for the agricultural, utility vehicle or construction equipment sectors. However, the pressure resistance of iglidur® Q2 plain bearings declines as temperatures increase.

When considering temperatures, the additional frictional heat in the bearing system must be taken into account.

► Application Temperatures, page 66

| iglidur® Q2                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +130 °C                 |
| Max. short term                | +200 °C                 |
| Add. securing is required from | +70 °C                  |

Table 03: Temperature limits

### Friction and Wear

iglidur® Q2 has a low coefficient of friction. Please note that a sliding surface with a rough surface finish will increase the friction. The highest coefficients of friction occur at Ra = 1 µm. We recommend shaft surface finishes (Ra) of 0.1 to a maximum of 0.4 µm. Furthermore, the coefficient of friction of iglidur® Q2 plain bearings largely depends on the speed and load. The coefficient of friction also quickly increases as speeds increase. However, as the load is reduced, the coefficient of friction initially drops significantly, then moderately.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

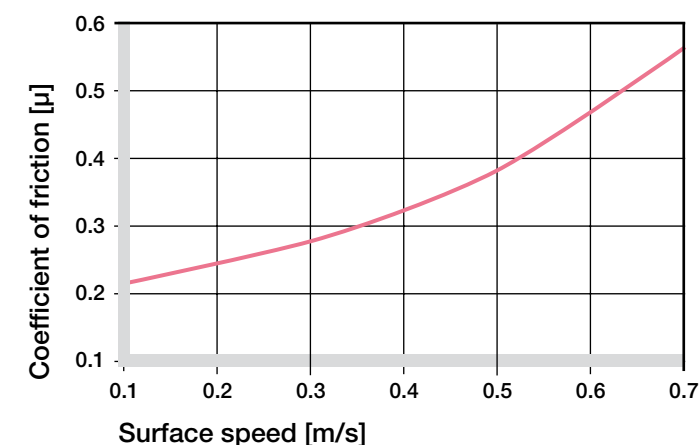


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

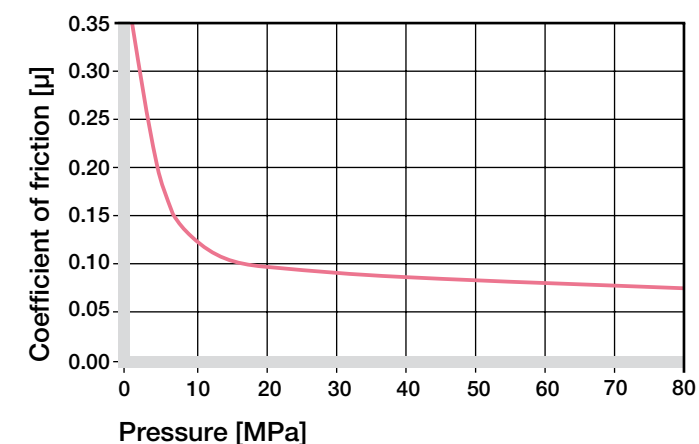


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### Shaft Materials

Generally speaking, we recommend the use of hardened shafts for highly loaded applications. Furthermore, even at low to medium loads, iglidur® Q2 will give increased service life with "hard" shafts as compared to "soft" shafts. But for low load applications, the results are outstanding with free cutting steel as well. For high loads, the wear in pivoting applications is much lower than for rotations.

► Shaft Materials, page 71

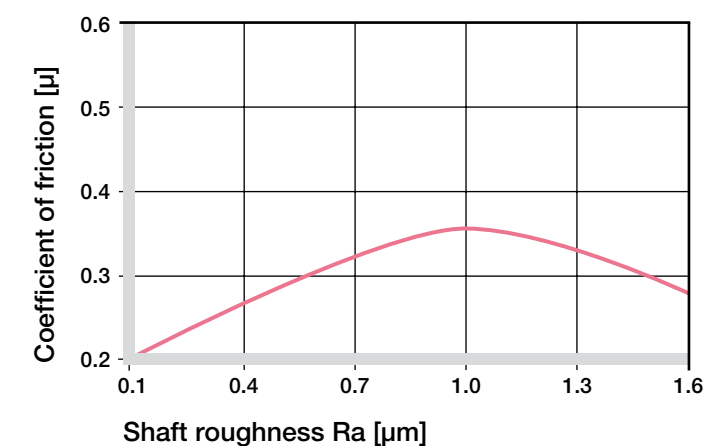


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

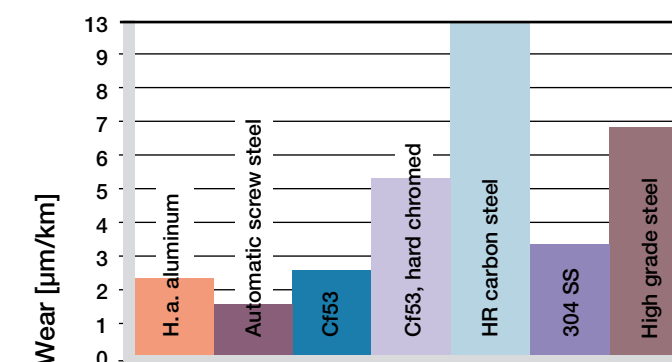


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

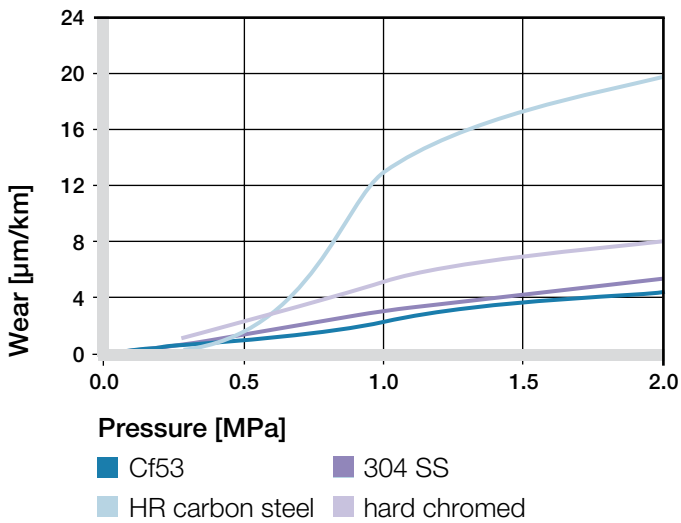


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

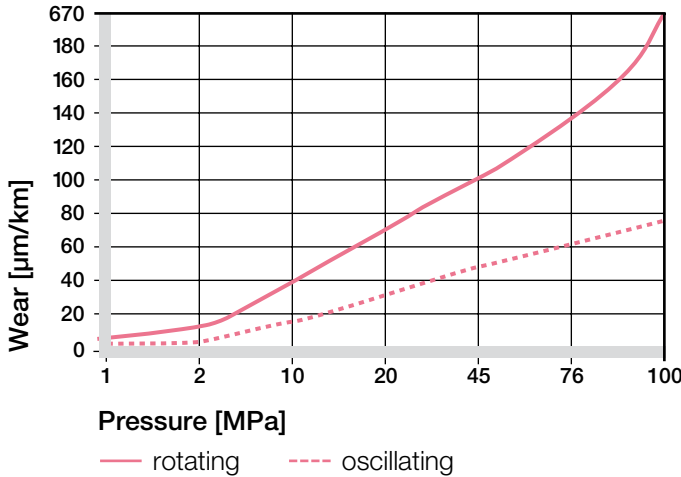


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® Q2    | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.22–0.42 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \mu\text{m}$ , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® Q2 bearings have a good resistance against chemicals. They are resistant to most lubricants. The resistance is only limited for acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [ $+20^\circ\text{C}$ ]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® Q2 are resistant to radiation up to an intensity of applications  $3 \cdot 10^2 \text{ Gy}$ .

UV Resistance

iglidur® Q2 are permanently resistant to UV radiation.

Vacuum

Any absorbed water will be emitted as gas in a vacuum. Applications under vacuum conditions are possible with restrictions.

Electrical Properties

iglidur® Q2 plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{13} \Omega\text{cm}$ |
| Surface resistance | $> 10^{11} \Omega$          |

Moisture Absorption

The humidity absorption of iglidur® Q2 bearings amounts to about 1.1 % in standard climatic conditions. The saturation limit in water is 4.6 %.

Maximum moisture absorption

|                                           |              |
|-------------------------------------------|--------------|
| At $+23^\circ\text{C}/50\% \text{ r. h.}$ | 1.1 % weight |
| Max. water absorption                     | 4.6 % weight |

Table 06: Moisture absorption

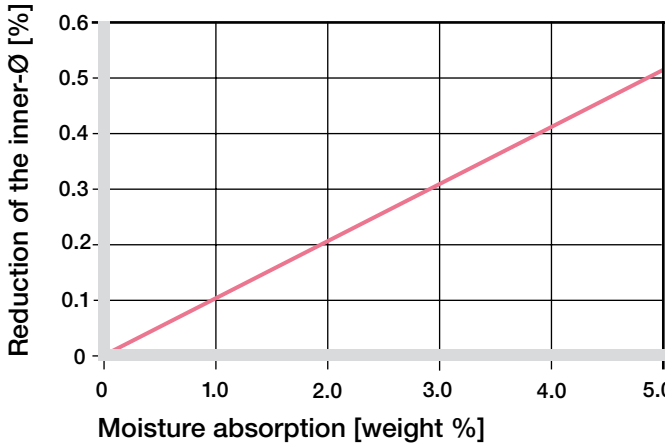


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® Q2 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

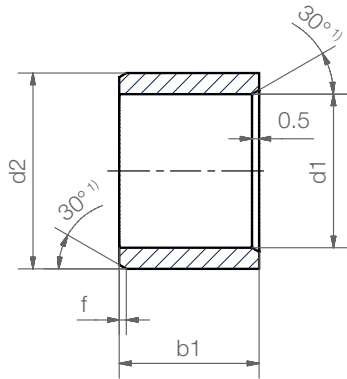
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® Q2 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|----------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054        | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068        | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083        | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102        | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124        | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150        | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180        | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212        | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245        | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

Q2SM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® Q2

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|---------------|------|-----------|
| Q2SM-0507-05 | 5.0  | +0.020 +0.068 | 7.0  | 5.0       |
| Q2SM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| Q2SM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| Q2SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| Q2SM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| Q2SM-1517-15 | 15.0 | +0.032 +0.102 | 17.0 | 15.0      |
| Q2SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| Q2SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| Q2SM-2023-30 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      |
| Q2SM-2528-20 | 25.0 | +0.040 +0.124 | 28.0 | 20.0      |
| Q2SM-3034-30 | 30.0 | +0.040 +0.124 | 34.0 | 30.0      |
| Q2SM-3240-40 | 32.0 | +0.050 +0.150 | 40.0 | 40.0      |
| Q2SM-3539-40 | 35.0 | +0.050 +0.150 | 39.0 | 40.0      |
| Q2SM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 40.0      |
| Q2SM-4550-50 | 45.0 | +0.050 +0.150 | 50.0 | 50.0      |
| Q2SM-5055-50 | 50.0 | +0.050 +0.150 | 55.0 | 50.0      |
| Q2SM-6065-60 | 60.0 | +0.060 +0.180 | 65.0 | 60.0      |
| Q2SM-6570-60 | 65.0 | +0.060 +0.180 | 70.0 | 60.0      |
| Q2SM-7075-60 | 70.0 | +0.060 +0.180 | 75.0 | 60.0      |
| Q2SM-7580-40 | 75.0 | +0.060 +0.180 | 80.0 | 40.0      |

\* after pressfit. Testing methods ► page 75

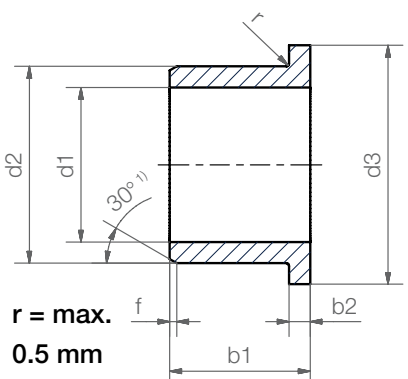


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Flange bearing



Order key

Q2FM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® Q2

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|--------------|------|---------------|------|-----------|-----------|-------------|
| Q2FM-0507-05 | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 5.0       | 1.0         |
| Q2FM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| Q2FM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| Q2FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| Q2FM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| Q2FM-1416-05 | New! | +0.032 +0.102 | 16.0 | 22.0      | 5.0       | 1.0         |
| Q2FM-1517-17 | 15.0 | +0.032 +0.102 | 17.0 | 23.0      | 17.0      | 1.0         |
| Q2FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| Q2FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |
| Q2FM-2528-21 | 25.0 | +0.040 +0.124 | 28.0 | 35.0      | 21.5      | 1.5         |
| Q2FM-3034-37 | New! | +0.040 +0.124 | 34.0 | 42.0      | 37.0      | 2.0         |
| Q2FM-3034-40 | 30.0 | +0.040 +0.124 | 34.0 | 42.0      | 40.0      | 2.0         |
| Q2FM-3539-40 | 35.0 | +0.050 +0.150 | 39.0 | 47.0      | 40.0      | 2.0         |
| Q2FM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 52.0      | 40.0      | 2.0         |
| Q2FM-4550-50 | 45.0 | +0.050 +0.150 | 50.0 | 58.0      | 50.0      | 2.0         |
| Q2FM-5055-50 | 50.0 | +0.050 +0.150 | 55.0 | 63.0      | 50.0      | 2.0         |
| Q2FM-6065-60 | 60.0 | +0.060 +0.180 | 65.0 | 73.0      | 60.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.

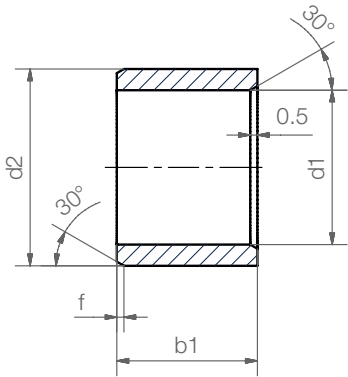


delivery from stock  
time



prices price list online  
www.igus.co.uk/en/q2

Sleeve bearing



Order key

Q2SI-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Inch  
Type (Form S)  
Material iglidur® Q2

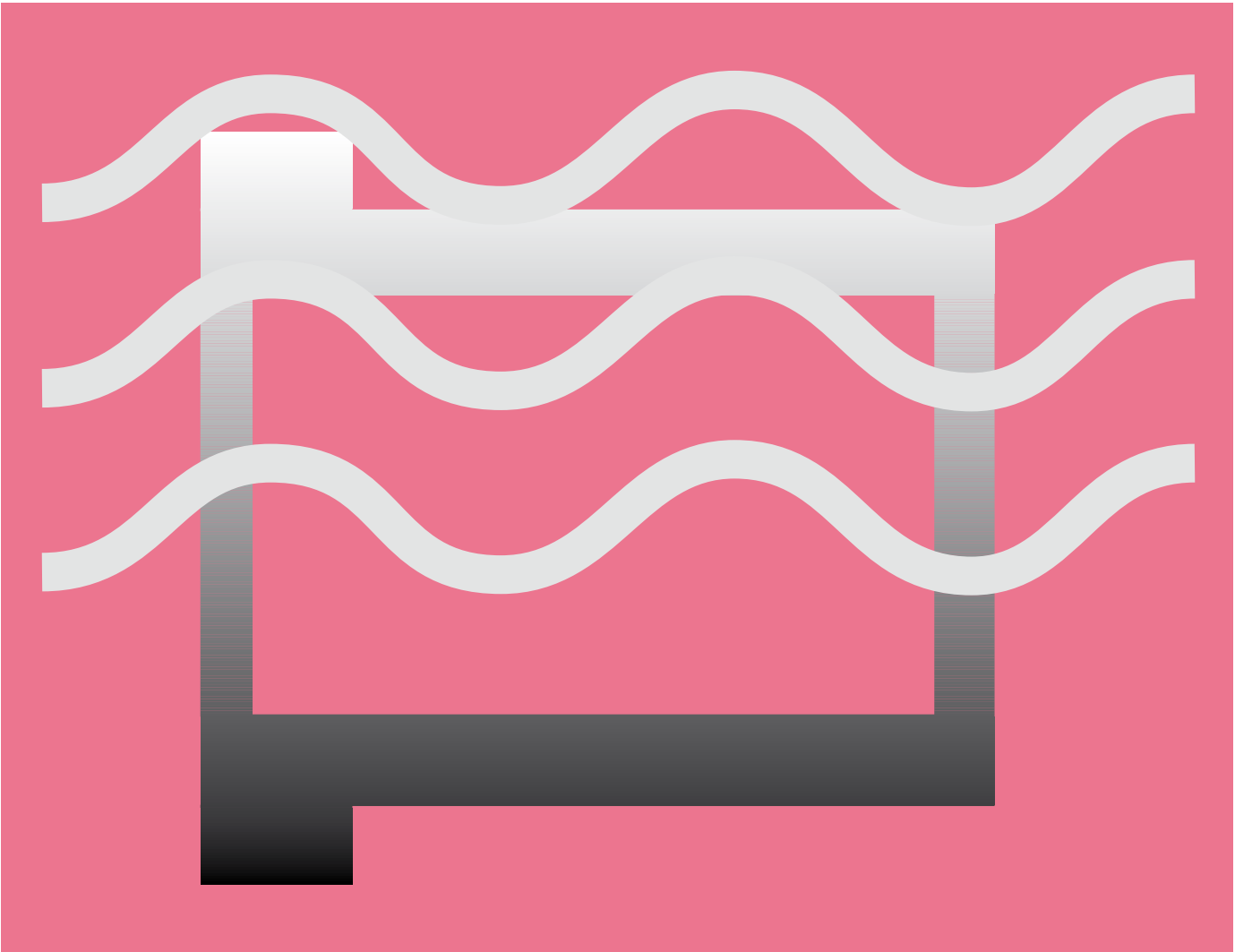
Chamfer in relation to the d1

|            |               |               |              |          |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]:  | 0.012         | 0.019         | 0.031        | 0.047    |

Dimensions [mm]

| Part number  |      | d1    | d2    | b1    | d1*    |        | Housing bore |        | Shaft size |        |
|--------------|------|-------|-------|-------|--------|--------|--------------|--------|------------|--------|
|              |      |       |       |       | max.   | min.   | max.         | min.   | max.       | min.   |
| Q2SI-1216-16 | New! | 3/4   | 1     | 3/4   | 0.7541 | 0.7508 | 1.0010       | 1.0000 | 0.7491     | 0.7479 |
| Q2SI-1620-24 | New! | 1     | 1 1/4 | 1 1/2 | 1.0041 | 1.0007 | 1.2510       | 1.2500 | 0.9991     | 0.9979 |
| Q2SI-2024-24 | New! | 1 1/4 | 1 1/2 | 1 1/2 | 1.2548 | 1.2508 | 1.5005       | 1.4995 | 1.2488     | 1.2472 |
| Q2SI-2428-24 | New! | 1 1/2 | 1 3/4 | 1 1/2 | 1.5048 | 1.5008 | 1.7505       | 1.7495 | 1.4988     | 1.4972 |
| Q2SI-3236-36 | New! | 2     | 2 1/4 | 2 1/4 | 2.0059 | 2.0012 | 2.2505       | 2.2495 | 1.9981     | 1.9969 |

\* after pressfit. Testing methods ► page 75



## For fast rotation under water – iglidur® UW



Standard range from stock  
For underwater applications  
For fast and constant motion  
Long service life



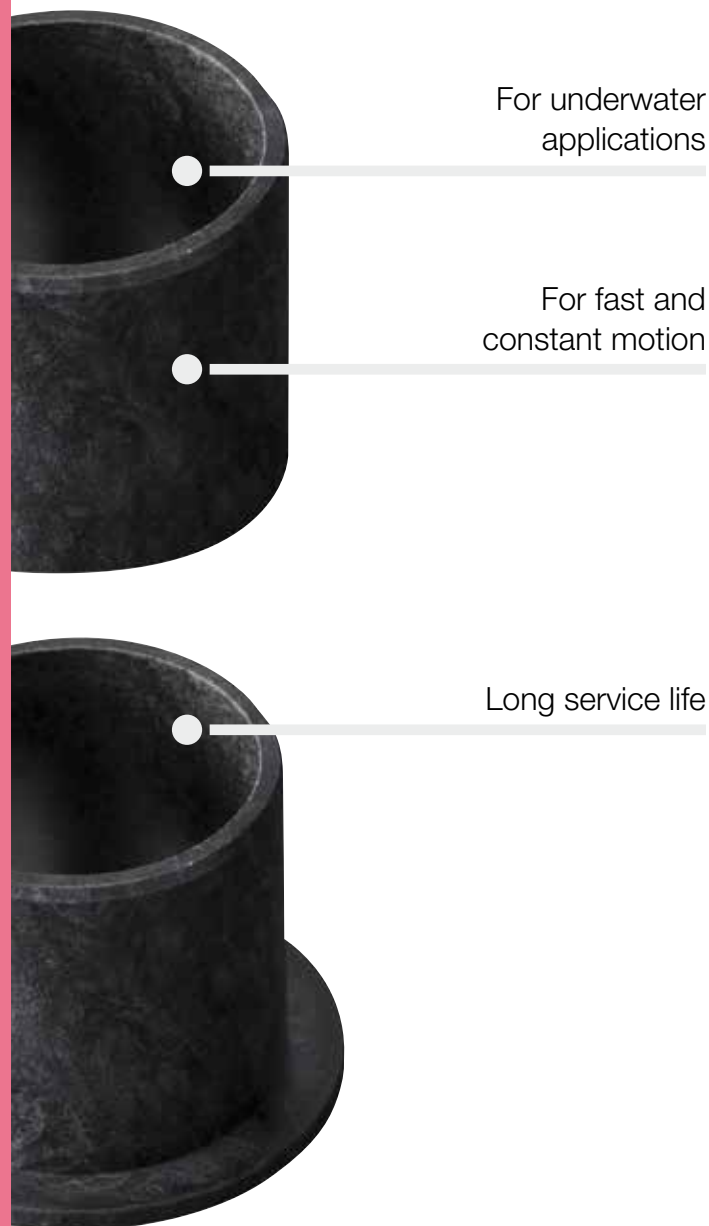
delivery from stock  
time



prices price list online  
www.igus.co.uk/en/q2



**For fast rotations under water.** The best iglidur® bearings for underwater applications. Extremely wear resistant under water, tested and free from maintenance. The first choice for pumping applications.



#### When to use it?

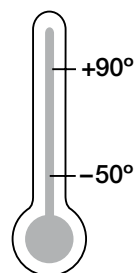
- For underwater applications and in liquid media
- For low loads
- For high speeds
- For extreme wear resistance in media-lubricated continuous operation



#### When not to use it?

- When temperatures are continuously higher than +90 °C  
▶ iglidur® UW500, page 341
- When high loads are required  
▶ iglidur® H370, page 375  
▶ iglidur® UW500, page 341  
▶ iglidur® X, page 173
- When only dry operation is feasible  
▶ iglidur® J, page 109

#### Temperature



#### Product range

2 types  
Ø 3–20 mm  
more dimensions  
on request

#### Typical sectors of industry and application areas

- Fluid technology etc.



Improve technology and reduce costs –  
310 exciting examples for iglidur® plain  
bearings online  
▶ [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



▶ [www.igus.co.uk/underwater-powerpump](http://www.igus.co.uk/underwater-powerpump)



| Material properties table                              |            |       |             |
|--------------------------------------------------------|------------|-------|-------------|
| General properties                                     |            | Unit  | iglidur® UW |
| Density                                                |            | g/cm³ | 1.52        |
| Colour                                                 |            |       | black       |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight   |       | 0.2         |
| Max. water absorption³)                                | % weight   |       | 0.8         |
| Coefficient of sliding friction, dynamic against steel | μ          |       | 0.15–0.35   |
| pv value, max. (dry)                                   | MPa · m/s  |       | 0.11        |
| Mechanical properties                                  |            |       |             |
| Modulus of elasticity                                  | MPa        |       | 9,600       |
| Tensile strength at +20 °C                             | MPa        |       | 90          |
| Compressive strength                                   | MPa        |       | 70          |
| Max. recommended surface pressure (+20 °C)             | MPa        |       | 40          |
| Shore D hardness                                       |            |       | 78          |
| Physical and thermal properties                        |            |       |             |
| Max. long term application temperature                 | °C         |       | +90         |
| Max. short term application temperature                | °C         |       | +110        |
| Max. short term ambient temperature¹)                  | °C         |       | +140        |
| Min. application temperature                           | °C         |       | –50         |
| Thermal conductivity                                   | W/m · K    |       | 0.60        |
| Coefficient of thermal expansion (at +23 °C)           | K⁻¹ · 10⁻⁵ |       | 6           |
| Electrical properties²)                                |            |       |             |
| Specific volume resistance                             | Ωcm        |       | < 10⁵       |
| Surface resistance                                     | Ω          |       | < 10⁵       |

¹) Without additional load, no sliding movement; relaxation possible  
²) The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact component.  
³) With respect to the use of the material in direct contact with water, it has to be pointed out that all results have been attained under laboratory conditions DW (demineralised water). We therefore recommend custom-designed tests under real application conditions.

Table 01: Material properties table

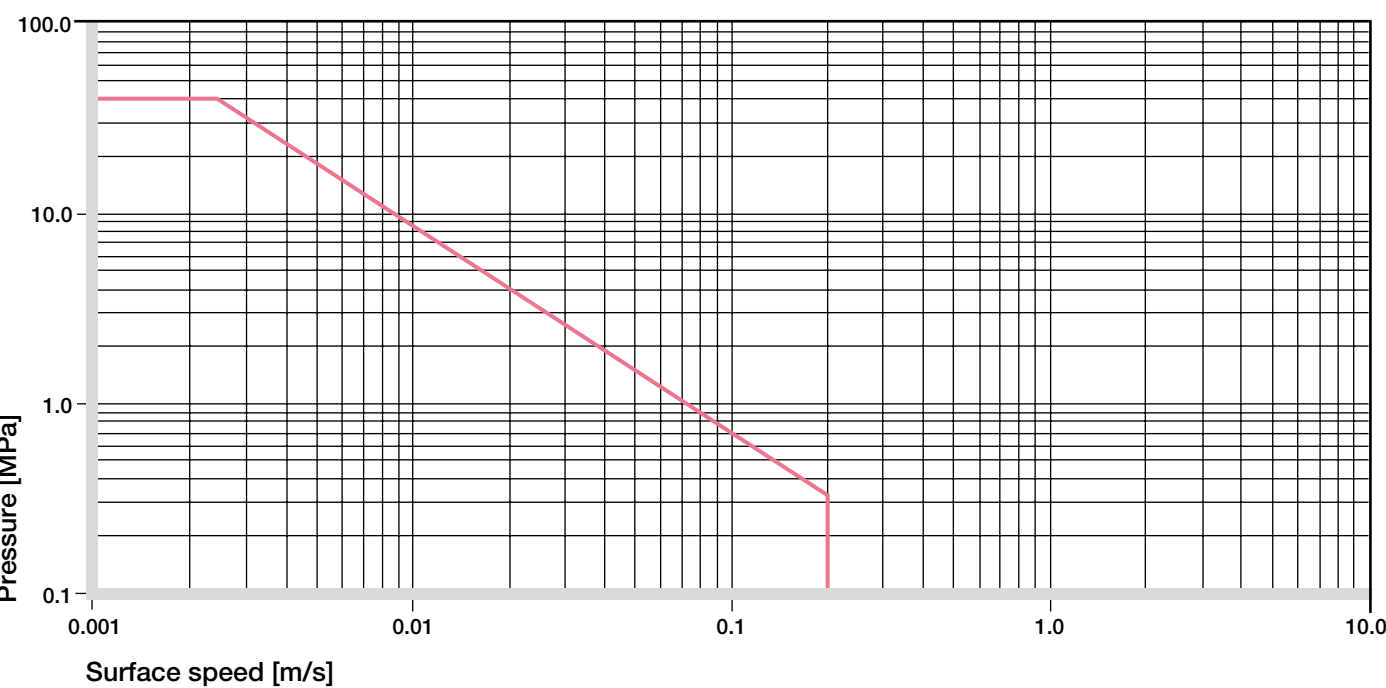


Diagram 01: Permissible pv values for iglidur® UW with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® UW was developed for underwater applications in which the maximum temperatures clearly lie below +100 °C. For application temperatures above this limit, the bearings made of iglidur® UW500 (► **page 341**) are available. Though iglidur® UW was developed for application in liquids, it is also suitable for dry operation. This one is particularly important in applications that call for both dry and wet operations. These applications can be seen often in practice. The features of the bearings made of iglidur® UW described in this section apply to the dry operation. Unless it is expressly mentioned otherwise.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® UW plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

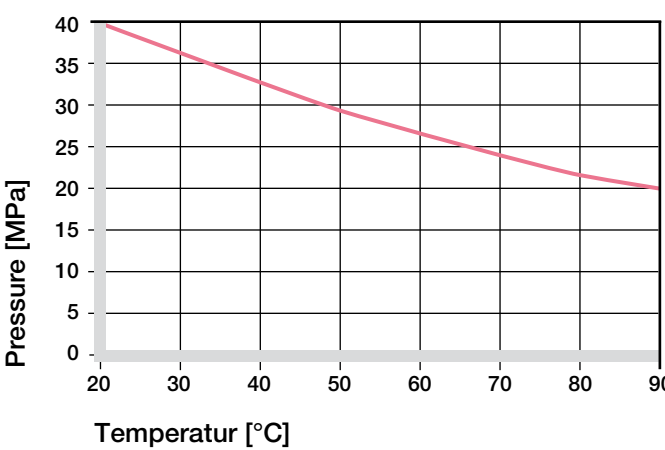


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

Diagram 02 shows the permissible bearing loads at the respective temperatures. It can be said that iglidur® UW plain bearings are not very suitable for high loads. Normally in underwater applications there is no question of high loads being present. Diagram 03 shows the elastic deformation of iglidur® UW as a function of radial pressure. At the maximum recommended surface pressure of 40 MPa, the deformation at room temperature is less than 1 %.

► Surface Pressure, **page 63**

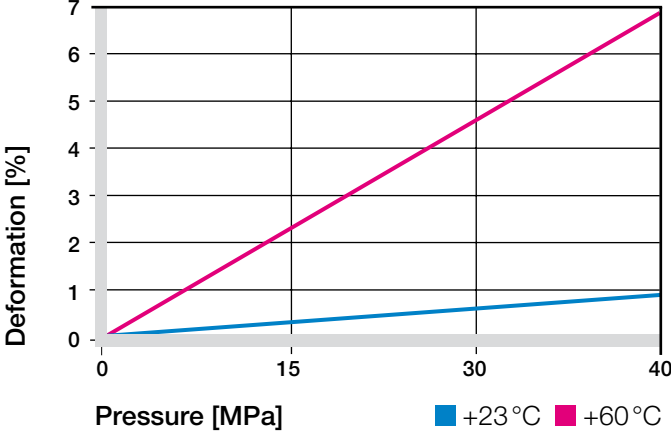


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® UW is excellent in both dry and wet operations. Through a hydrodynamic lubrication, attained under water with high speeds, surface speeds far above 2 m/s can be achieved. In dry operation the iglidur® UW bearings can be used anyhow up to 1.5 m/s on the short term.

► Surface Speed, **page 65**

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.5      | 0.4         | 2      |
| Short term | 1.5      | 1.1         | 3      |

Table 02: Maximum running speed

Temperatures

As stated earlier, iglidur® UW plain bearings are recommended for the low temperature range. The bearing temperature can be up to 90 °C, although the frictional heat must also be considered here, especially when running dry. In underwater applications, the fluid helps to support the heat dissipation, so the temperature of the fluid itself is more important.

► Application Temperatures, **page 66**

| iglidur® UW                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +110 °C                 |
| Add. securing is required from | +80 °C                  |

Table 03: Temperature limits

Friction and Wear

In dry operation the coefficient of friction rises up to 0.4 with low loads. With higher loads, it lowers to 0.1. The surface of the shafts should not be extremely smooth in order to prevent a high adhesion effect and the related increase of the coefficient of friction.

Please contact us for the specifications of shaft surface finishes in underwater applications.

- Coefficients of Friction and Surfaces, page 68
- Wear Resistance, page 69

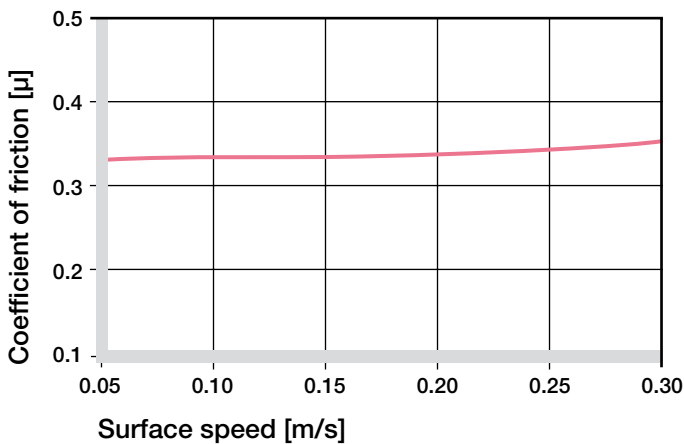


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

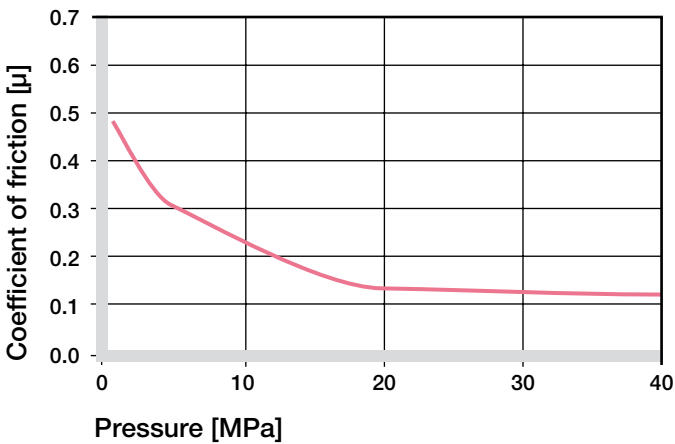


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

For low loads with rotation, the combinations achieve the best wear values with the stainless steels X90 and V2A. The conditions shift with increasing loads. It is also important to note that the wear rate increases significantly from loads of 5 MPa.

- Shaft Materials, page 71

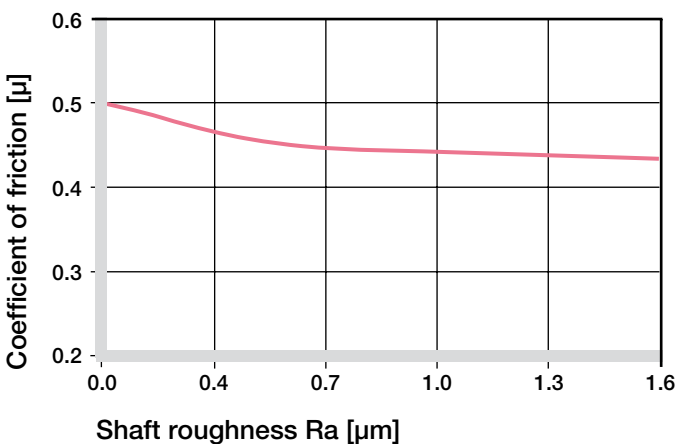


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

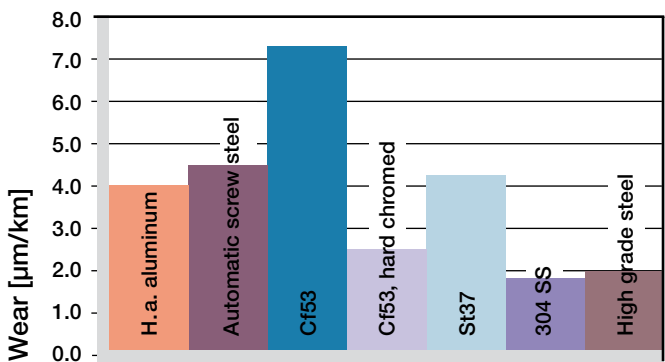


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

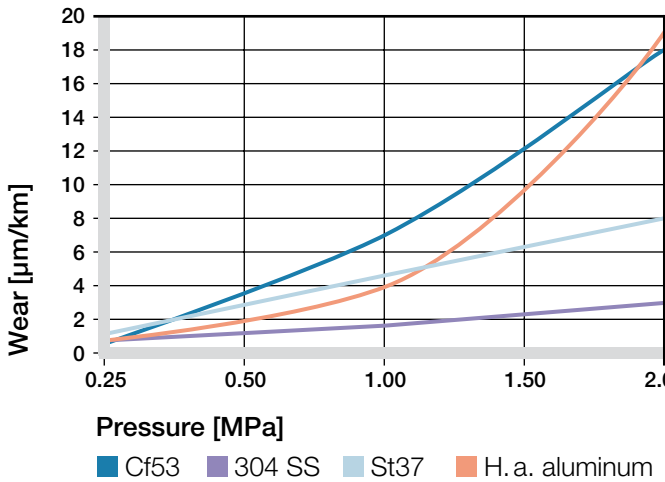


Diagram 08: Wear with different shaft materials in rotational applications

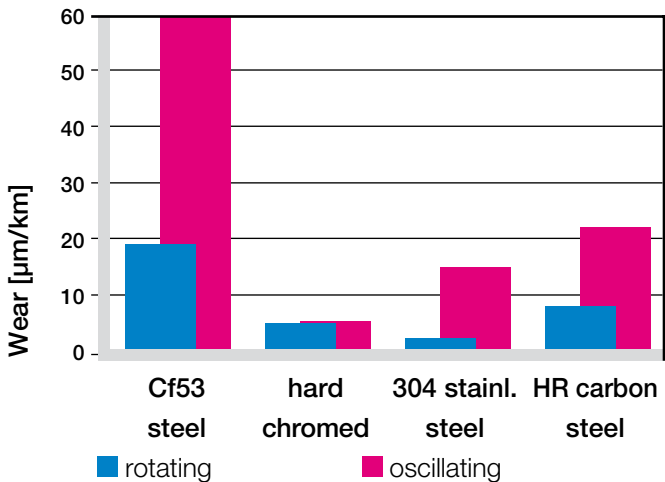


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® UW | Dry       | Greases | Oil  | Water |
|-------------|-----------|---------|------|-------|
| C. o. f. μ  | 0.15–0.35 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 μm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® UW bearings are resistant to diluted alkalis and very weak acids as well as to solvents and all kinds of lubricants.

- Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® UW are resistant to a radiation intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® UW plain bearings are resistant to the impact of UV radiation.

Vacuum

Applications in a vacuum are only possible to a limited extent. Only dehumidified bearings of iglidur® UW should be tested in a vacuum.

Electrical Properties

|                                                         |                           |
|---------------------------------------------------------|---------------------------|
| iglidur® UW plain bearings are electrically conductive. |                           |
| Volume resistance                                       | < $10^5 \Omega \text{cm}$ |
| Surface resistance                                      | < $10^5 \Omega 10$        |

Moisture Absorption

The humidity absorption of iglidur® UW bearings amounts to about 0.2 % in standard climatic conditions. The saturation limit in water is 0.8 %. These values are so low that a moisture expansion need to be considered only in extreme cases.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r. h.  | 0.2 % weight |
| Max. water absorption | 0.8 % weight |

Table 06: Moisture absorption

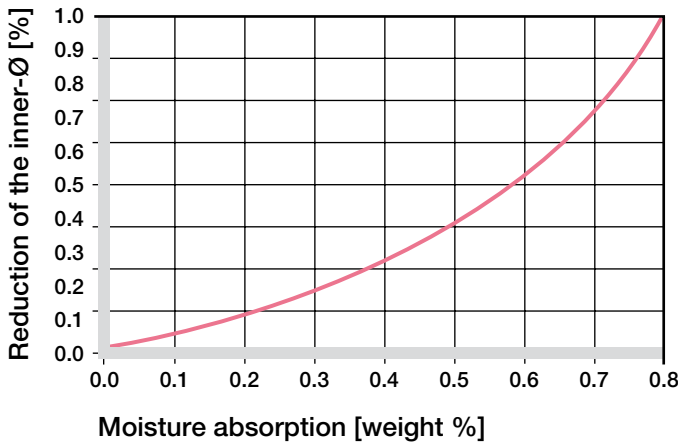


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® UW plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

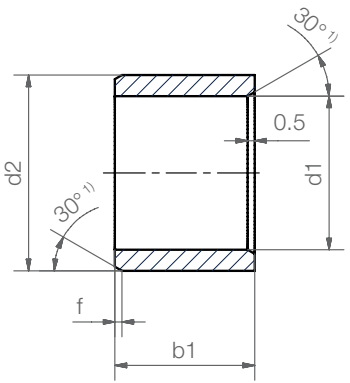
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® UW E10 [mm] | Housing H7 [mm] |
|------------------|---------------|----------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054        | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068        | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083        | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102        | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124        | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150        | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180        | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212        | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245        | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1–6 | Ø 6–12 | Ø 12–30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | b1 h13 |
|--------------|------|---------------|------|--------|
| UWSM-0304-05 | 3.0  | +0.014 +0.054 | 4.5  | 5.0    |
| UWSM-0405-06 | 4.0  | +0.020 +0.068 | 5.5  | 6.0    |
| UWSM-0507-08 | 5.0  | +0.020 +0.068 | 7.0  | 8.0    |
| UWSM-0608-08 | 6.0  | +0.020 +0.068 | 8.0  | 8.0    |
| UWSM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0   |
| UWSM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0   |
| UWSM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0   |
| UWSM-1618-12 | 16.0 | +0.032 +0.102 | 18.0 | 12.0   |
| UWSM-1820-15 | 18.0 | +0.032 +0.102 | 20.0 | 15.0   |

\* after pressfit. Testing methods ► page 75



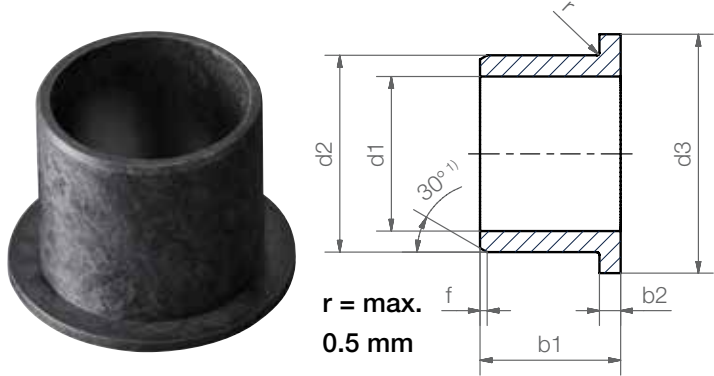
Order key

UWSM-0304-05

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® UW



Flange bearing



Order key

UWFM-0304-05

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® UW

Dimensions according to ISO 3547-1 and special dimensions

1) thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number  | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|--------------|------|---------------|------|-----------|-----------|-------------|
| UWFM-0304-05 | 3.0  | +0.014 +0.054 | 4.5  | 7.5       | 5.0       | 0.75        |
| UWFM-0405-06 | 4.0  | +0.020 +0.068 | 5.5  | 9.5       | 6.0       | 0.75        |
| UWFM-0507-05 | 5.0  | +0.020 +0.068 | 7.0  | 11.0      | 5.0       | 1.0         |
| UWFM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| UWFM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| UWFM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| UWFM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| UWFM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| UWFM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

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time



prices price list online  
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# The biopolymer – iglidur® N54



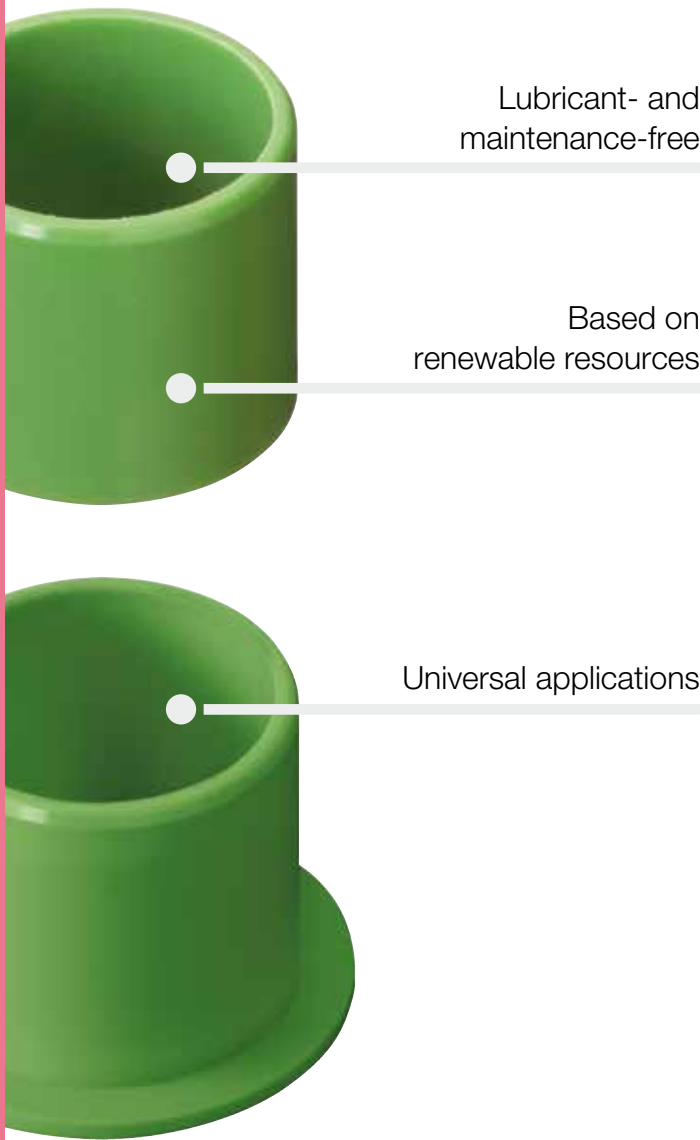
Standard range from stock

Lubricant- and maintenance-free

Based on renewable resources

Universal applications

The biopolymer. Based on 54 % renewable resources, technically this new material also meets high requirements.



When to use it?

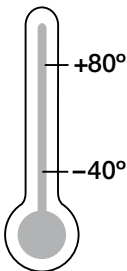
- For applications with sporadic movements at low to medium loads
- At quasi static loads
- If the environmental impact of a product needs to be optimized



When not to use it?

- When looking for a universal standard bearing
  - ▶ iglidur® G, page 81
- When dealing with high motion frequencies and continuous operation
  - ▶ iglidur® J, page 109
- When dealing with high temperatures
  - ▶ iglidur® J350, page 257

Temperature



Product range

2 types  
Ø 6–20 mm  
more dimensions  
on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® N54       | Testing method |
| Density                                                | g/cm³                              | 1.13               |                |
| Colour                                                 |                                    | green              |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.6                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 3.6                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.15–0.23          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.5                |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 1,800              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 70                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 30                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 36                 |                |
| Shore D hardness                                       |                                    | 74                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +80                |                |
| Max. short term application temperature                | °C                                 | +120               |                |
| Max. ambient temperature, short term <sup>1)</sup>     | °C                                 | +140               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>–1</sup> · 10 <sup>–5</sup> | 9                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

<sup>1)</sup> Without additional load; no gliding motion; relaxation cannot be eliminated

Table 01: Material properties table

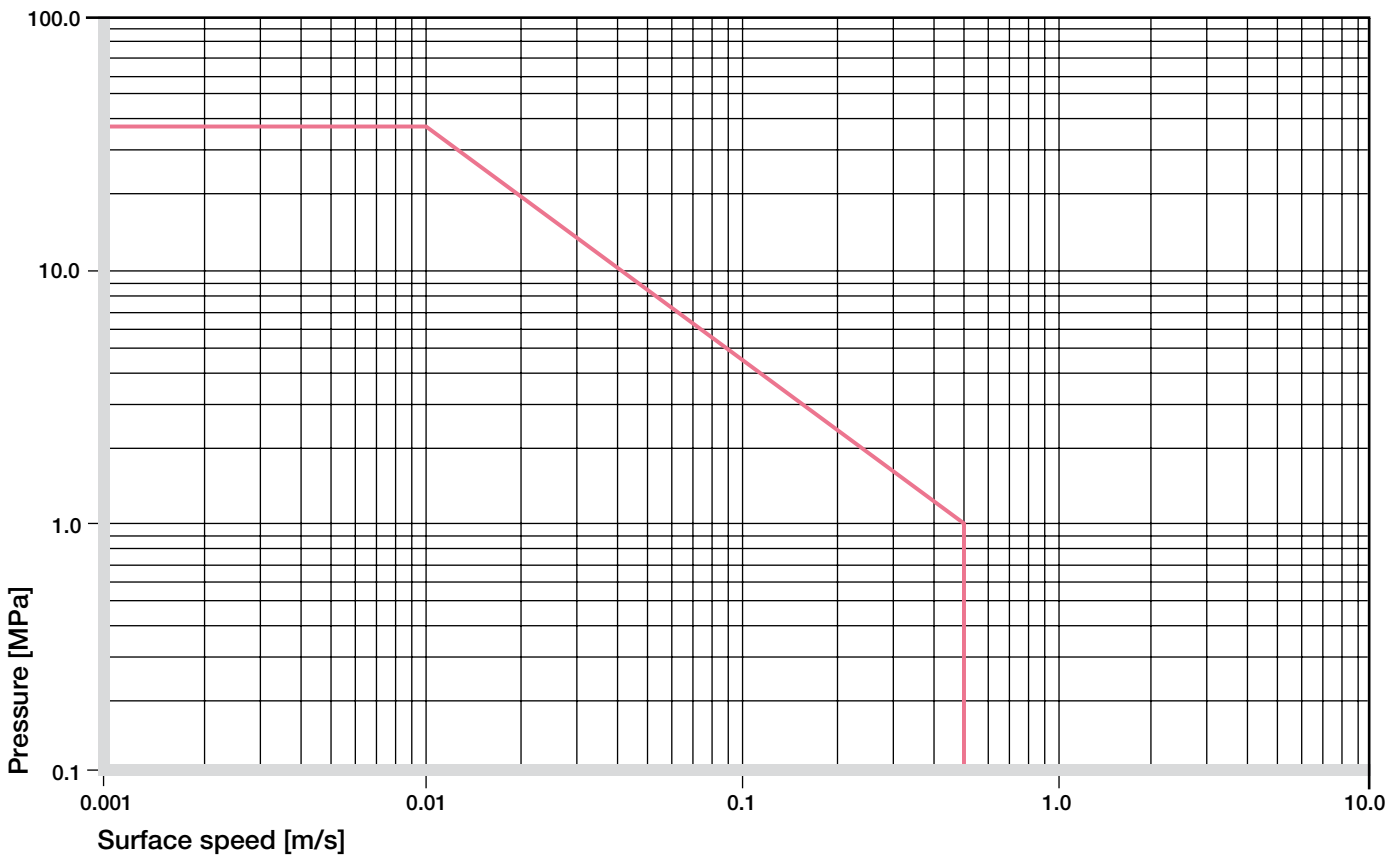


Diagram 01: Permissible pv values for iglidur® N54 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Maximum recommended surface pressure is a mechanical material parameter. Tribological conclusions cannot be drawn from it. With increasing temperatures, the compressive strength of iglidur® N54 bearings decreases.

Mechanical properties

iglidur® N54 is the first iglidur® material based largely on biopolymers. In addition to the proven lubricant-free properties of all iglidur® materials, this is one further contribution to positive environmental stewardship. The good coefficients of friction in conjunction with long life ensure that these materials have a permanent place in the iglidur® product range.

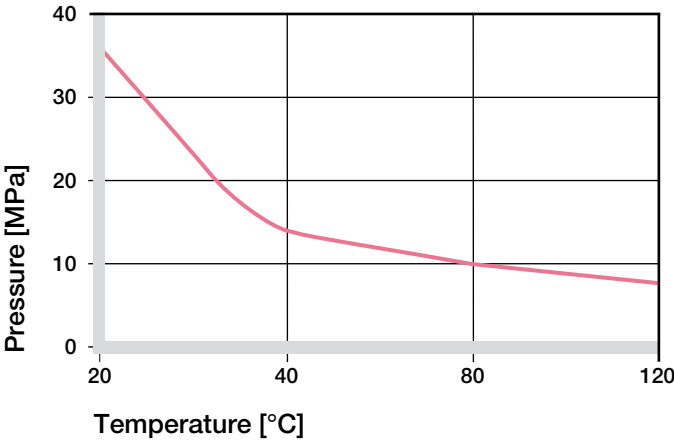


Diagram 02: Recommended maximum surface pressure as a function of temperature (36 MPa bei +20 °C)

With increasing temperatures, the compressive strength of iglidur® N54 plain bearings decreases. The Diagram 02 shows this relationship. With the longterm permitted application temperature of +120 °C the permitted surface pressure is less than 10 MPa.

Diagram 03 shows the elastic deformation of iglidur® N54 with radial loads.

► Surface Pressure, page 63

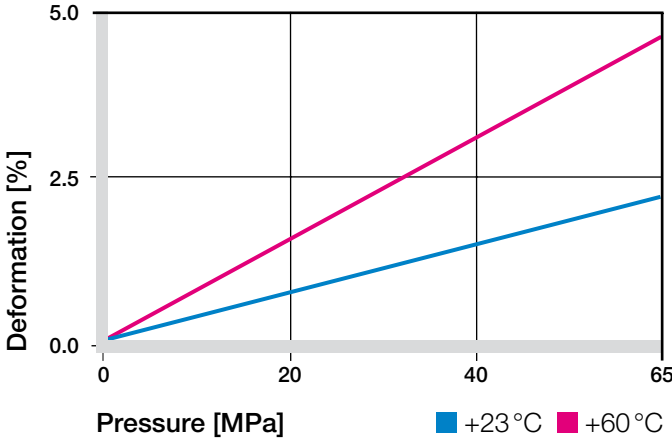


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Even if the typical applications for iglidur® N54 plain bearings are generally for intermittent service, depending on the type of motion, the maximum attainable speeds can be quite high. The speeds shown in Table 02 are threshold values for minimal bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 1      |
| Short term | 1.5      | 1.1         | 2      |

Table 02: Maximum running speed

Temperatures

The short-term permissible temperature limit is +140 °C, thus permitting the use of iglidur® N54 plain bearings in all applications with elevated ambient temperatures. However, the compressive strength of iglidur® N54 bearings decreases as temperatures increase. The additional frictional heat in the bearing system should be taken into account when considering the temperature limits.

► Application Temperatures, page 66

| iglidur® N54                   | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | −40 °C                  |
| Max. long term                 | +80 °C                  |
| Max. short term                | +120 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

Friction and Wear

iglidur® N54 has a low coefficient of friction. However it must be noted that a gliding partner with a rough surface finish increases the friction. We recommend shaft surface finishes (Ra) of 0.1 to a maximum of 0.4 µm. The coefficient of friction of iglidur® N54 bearings is only marginally dependent on the surface speed. The influence of the load is greater; an increase in load lowers the coefficient of friction to as low as 0.08.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

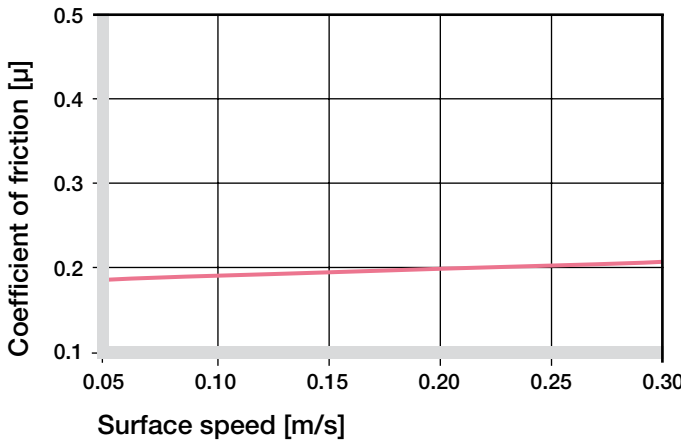


Diagram 04: Coefficient of friction as a function of the running speed, p = 1 MPa

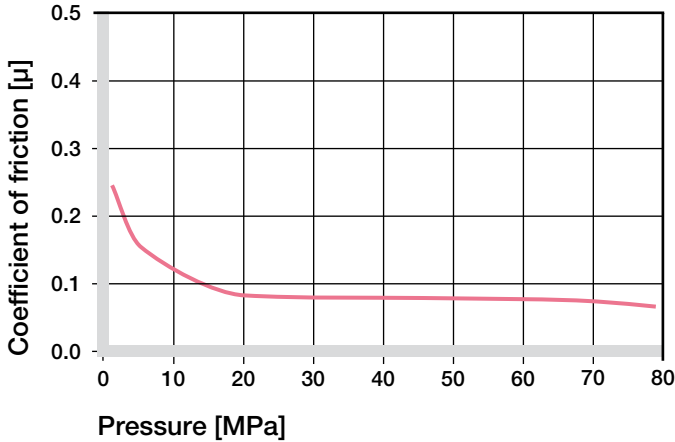


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

It is important to select a suitable shaft material. As a rule, iglidur® N54 is suitable for use with hard or soft shafts, but “hard” shaft surfaces tend to give better life times. Starting at loads of 1 MPa, wear increases measurably and continuously.

► Shaft Materials, page 71

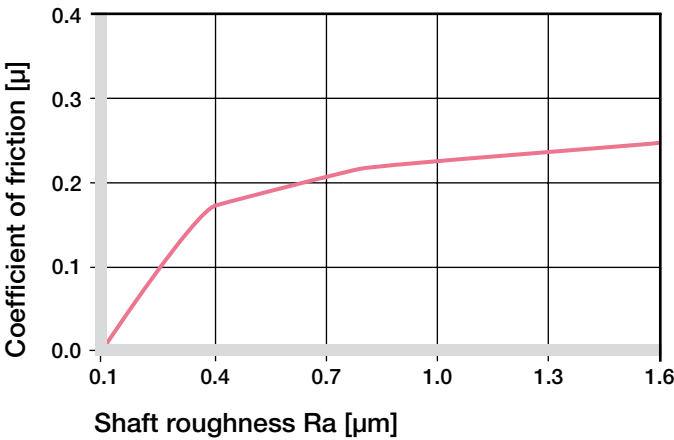


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

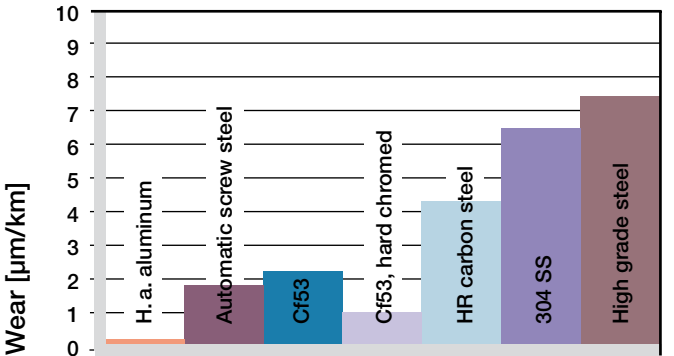


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

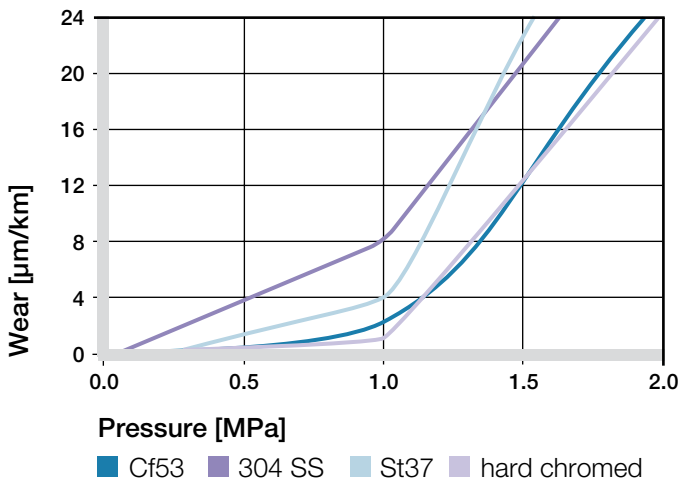


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

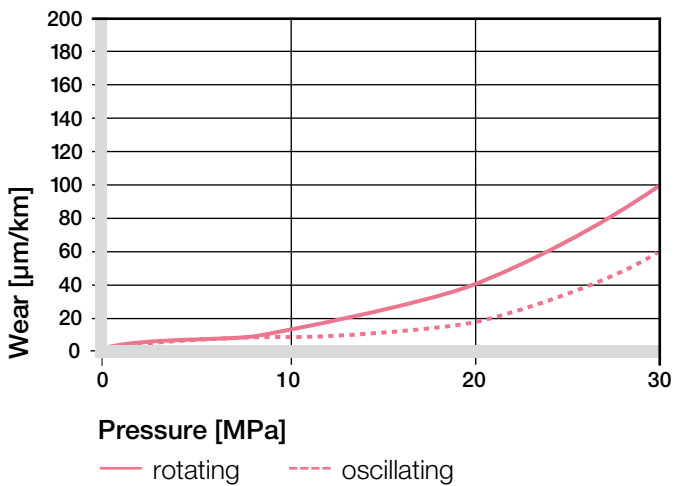


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® N54   | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.15–0.23 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel ( $R_a = 1 \mu\text{m}$ , 50 HRC)

Further properties

Chemical Resistance

iglidur® N54 plain bearings have good resistance to chemicals. They are resistant to most lubricants. iglidur® N54 is not impaired by most weak organic and inorganic acids and bases.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to +     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Bearings made of iglidur® N54 are conditionally usable under radioactive radiation. They are resistant up to a radiation intensity of  $1 \times 10^4 \text{ Gy}$ .

UV Resistance

iglidur® N54 bearings are resistant to UV rays.

Vacuum

Any absorbed water will be emitted as gas in a vacuum. Applications under vacuum conditions are possible with restrictions.

Electrical Properties

iglidur® N54 plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{13} \Omega\text{cm}$ |
| Surface resistance | $> 10^{11} \Omega$          |

Moisture Absorption

The humidity absorption of iglidur® N54 bearings amounts to about 1.6 Wt.-% in standard climatic conditions. The saturation limit in water is 3.6 %.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r. h.  | 1.6 % weight |
| Max. water absorption | 3.6 % weight |

Table 06: Moisture absorption

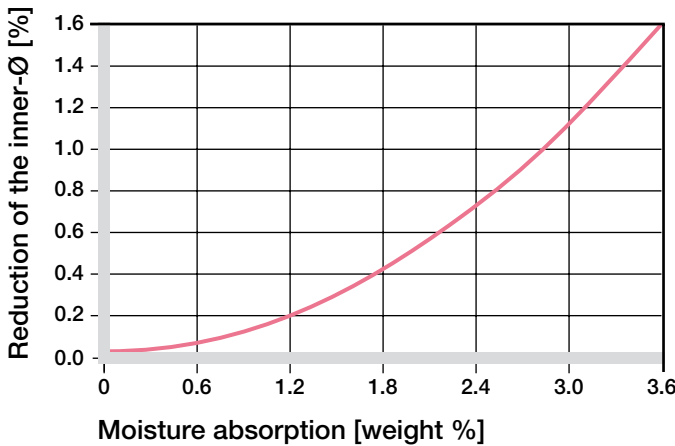


Diagram 10: Effect of moisture absorption on plain bearings

Installation tolerances

iglidur® N54 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance changes, depending on the wall thickness (please see product range table).

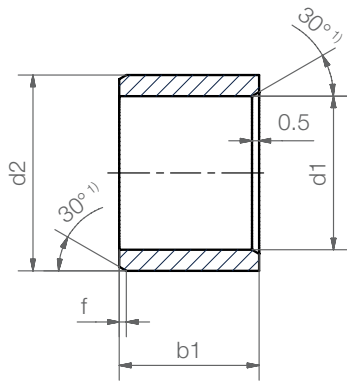
► Testing Methods, page 75

| Diameter<br>d1 [mm] | Shaft<br>h9 [mm] | iglidur® N54<br>E10 [mm] | Housing<br>H7 [mm] |
|---------------------|------------------|--------------------------|--------------------|
| to 3                | 0–0.025          | +0.014 +0.054            | 0 +0.010           |
| > 3 to 6            | 0–0.030          | +0.020 +0.068            | 0 +0.012           |
| > 6 to 10           | 0–0.036          | +0.025 +0.083            | 0 +0.015           |
| > 10 to 18          | 0–0.043          | +0.032 +0.102            | 0 +0.018           |
| > 18 to 30          | 0–0.052          | +0.040 +0.124            | 0 +0.021           |
| > 30 to 50          | 0–0.062          | +0.050 +0.150            | 0 +0.025           |
| > 50 to 80          | 0–0.074          | +0.060 +0.180            | 0 +0.030           |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Sleeve bearing



Order key

N54SM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® N54

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|---------------|------|---------------|------|-----------|
| N54SM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| N54SM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| N54SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| N54SM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| N54SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| N54SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |

\* after pressfit. Testing methods ► page 75

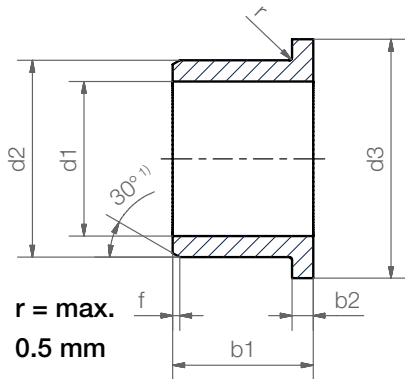


delivery from stock  
time



prices price list online  
www.igus.co.uk/en/n54

Flange bearing



Order key

N54FM-0608-06



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
Material iglidur® N54

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| N54FM-0608-06 | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| N54FM-0810-10 | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| N54FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| N54FM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| N54FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| N54FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

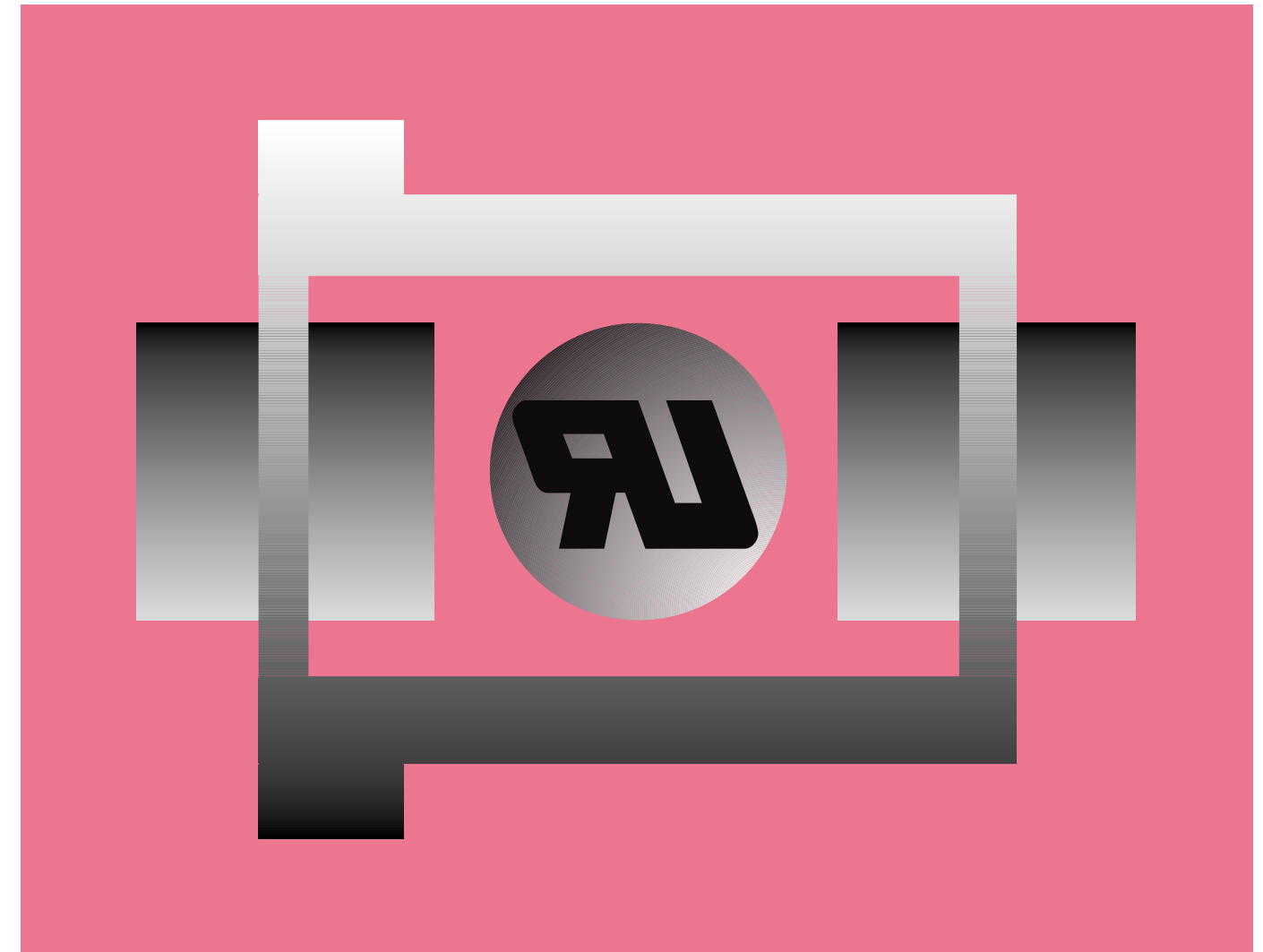
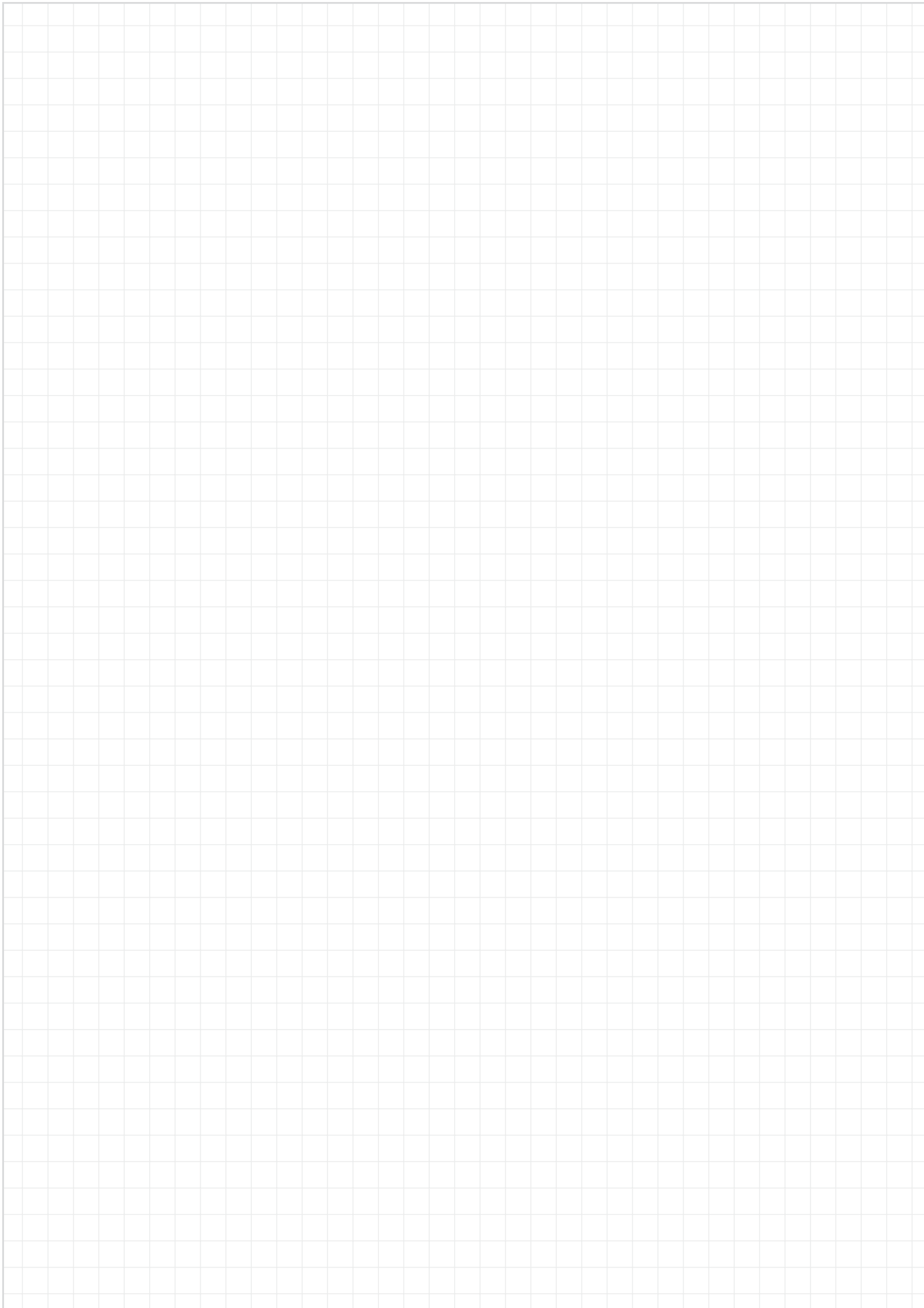
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/n54



**V0 rating according to UL94,  
universal – iglidur® G V0**



Standard range from stock

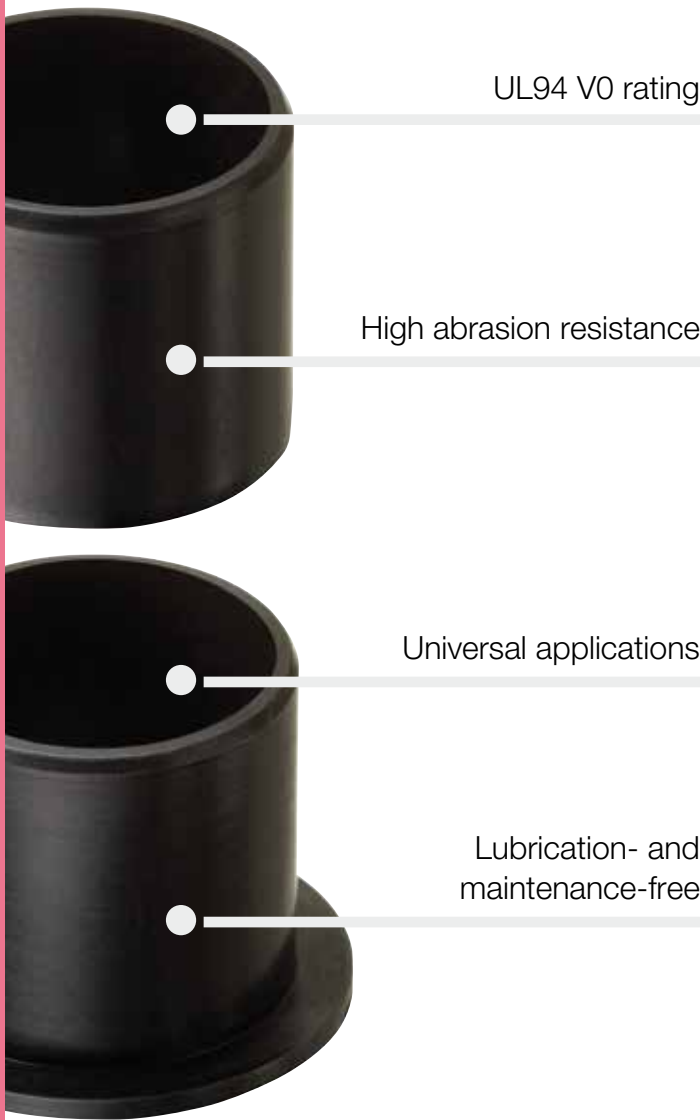
Lubrication- and maintenance-free

UL94 V0 rating

High abrasion resistance

Universal applications

**V0 rating according to UL94, universal.** The new material achieves the UL94 V0 rating and is therefore ideally suited for applications with stringent fire protection regulations (vehicle and aircraft interiors, building interior systems, etc.). Other properties are similar to the general purpose iglidur® G material.



**When to use it?**

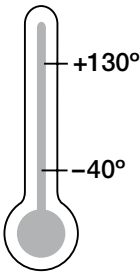
- When you need a UL94 V0 classified bearing for normal environmental conditions
- When you need an economic UL94 V0 classified bearing



**When not to use it?**

- When you need a UL94 V0 classified bearing for high-temperature applications  
▶ iglidur® X, page 173
- When you need a standard bearing without having to meet special fire codes  
▶ iglidur® G, page 81

**Temperature**



**Product range**

2 types  
Ø 6–40 mm  
more dimensions  
on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® G V0      | Testing method |
| Density                                                | g/cm³                              | 1.53               |                |
| Colour                                                 |                                    | black              |                |
| Max. moisture absorption at +23 °C/50 % r. h.          | % weight                           | 0.7                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 4.0                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.07–0.20          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.5                |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 7,900              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 140                | DIN 53452      |
| Compressive strength                                   | MPa                                | 100                |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 75                 |                |
| Shore D hardness                                       |                                    | 80                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +130               |                |
| Max. short term application temperature                | °C                                 | +210               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 9                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | DIN 53482      |

Table 01: Material properties table

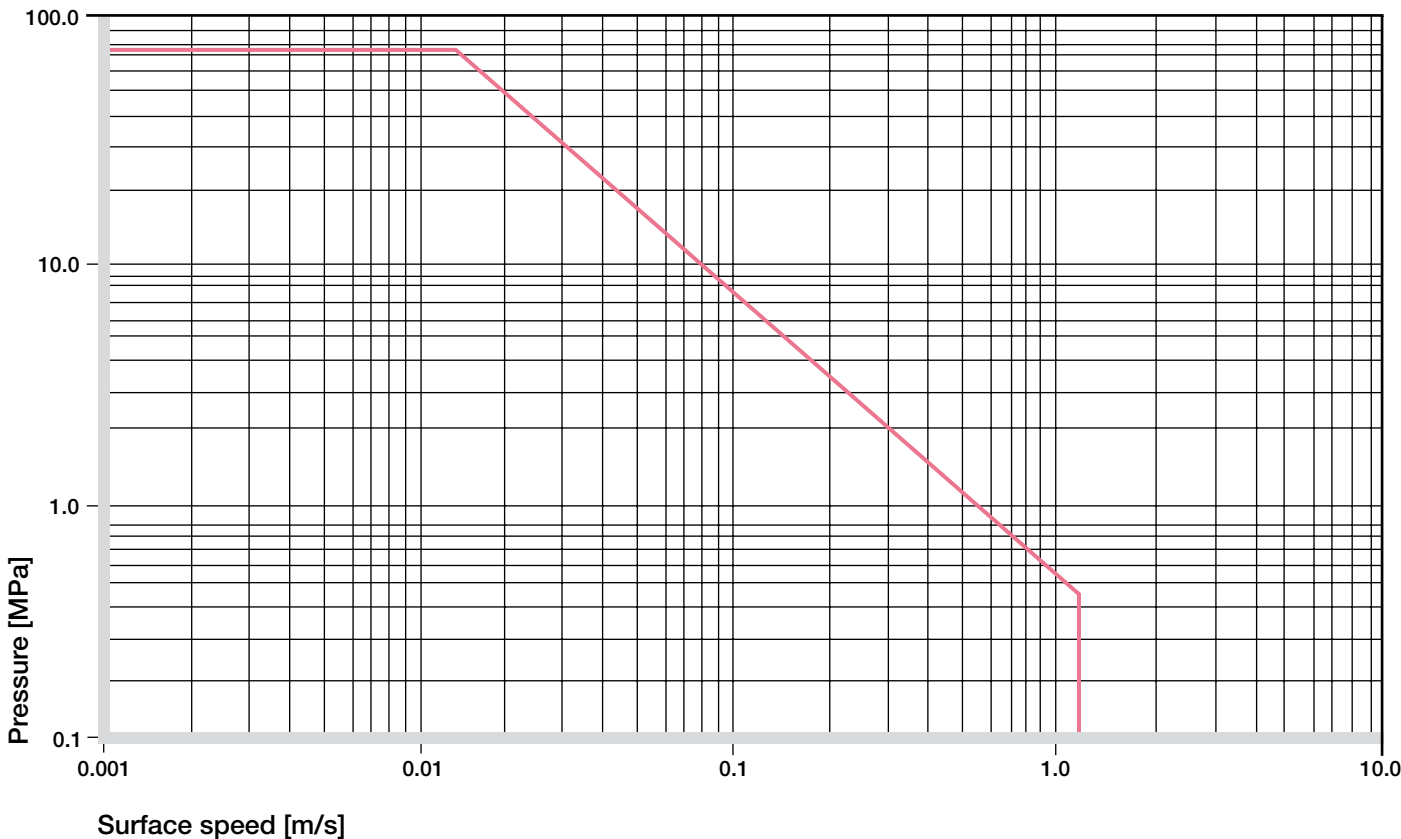


Diagram 01: Permissible pv values for iglidur® G V0 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® G V0 is the first iglidur® material with a V0 rating in accordance with UL94 for universal applications at normal temperature ranges. All other iglidur® materials with V0 rating are part of the high-temperature segment. The general mechanical and thermal specifications are largely comparable to the all-rounder, iglidur® G.

## Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® G V0 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +130 °C the permissible surface pressure is still around 35 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

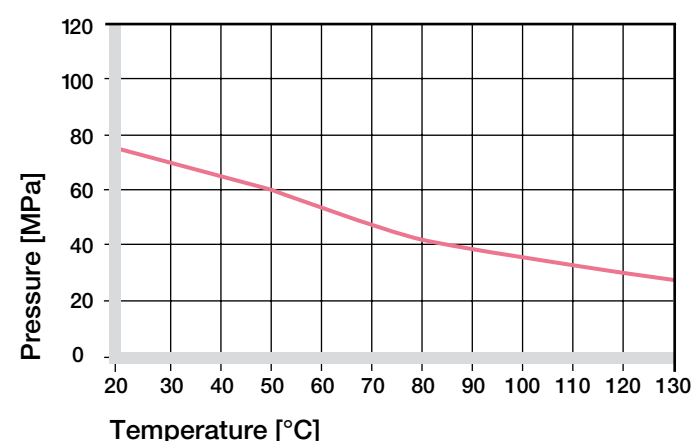


Diagram 02: Recommended maximum surface pressure as a function of temperature (75 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® G V0 during radial loading. At the recommended maximum surface pressure of 75 MPa the deformation at room temperature is merely 3 %. The plastic deformation is minimal up to a pressure of approximately 100 MPa. However, it is also dependant on the cycle time.

► Surface Pressure, [page 63](#)

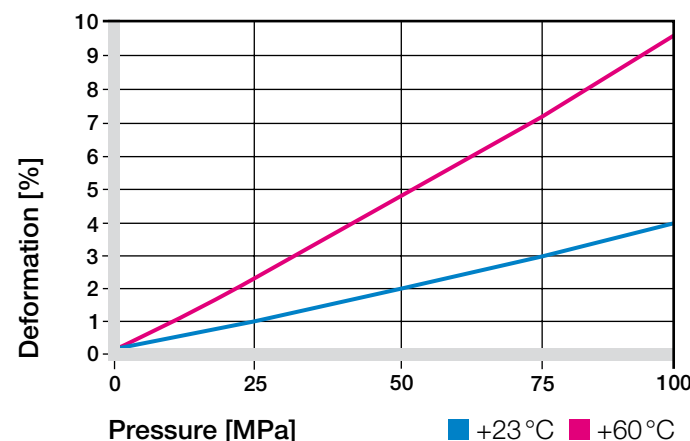


Diagram 03: Deformation under pressure and temperature

## Permissible Surface Speeds

iglidur® G V0 has been developed for low to medium surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. In practice, though, this temperature level is rarely reached due to varying application conditions.

► Surface Speed, [page 65](#)

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 4      |
| Short term | 2        | 1.4         | 5      |

Table 02: Maximum running speed

## Temperatures

Application temperatures greatly affect the properties of plain bearings.

The short term maximum temperature is +210 °C, this allows the use of iglidur® G V0 plain bearings in heat treating applications in which the bearings are not subjected to additional loading.

The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +120 °C.

► Application Temperatures, [page 66](#)

| iglidur® G V0                  | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +130 °C                 |
| Max. short term                | +210 °C                 |
| Add. securing is required from | +100 °C                 |

Table 03: Temperature limits

## Friction and Wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. The coefficient of friction decreases considerably with increasing pressures, whereas a slight increase in surface speed causes an increase of the coefficient of friction. This relationship explains the excellent results of iglidur® G V0 plain bearings for high loads and low speeds (Diagrams 04 and 05).

► Coefficients of Friction and Surfaces, [page 68](#)

► Wear Resistance, [page 69](#)

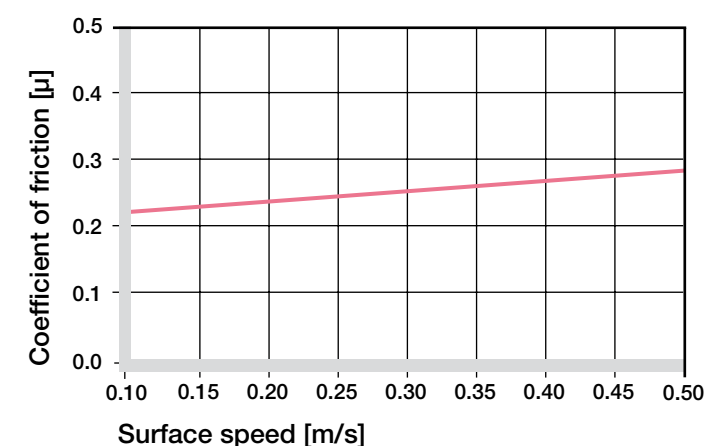


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 1$  MPa

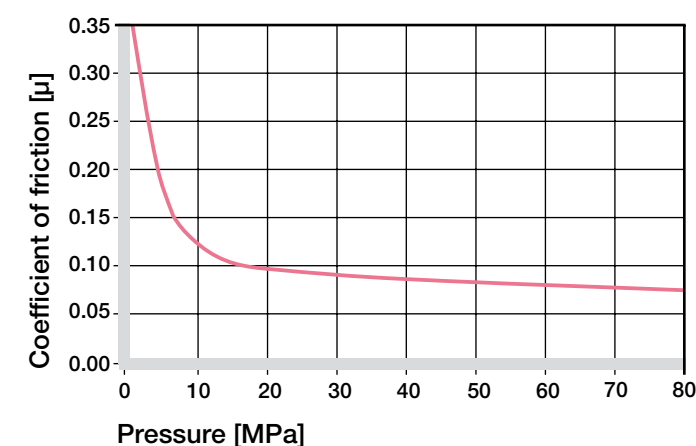


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01$  m/s

## Shaft Materials

The friction and wear are also dependent to a large degree on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® G V0 a ground surface with an average roughness between 0.6 and 0.8  $\mu\text{m}$  is recommended (Diagram 06). Diagrams 07 and 08 show results of testing different shaft materials with plain bearings made of iglidur® G V0. In Diagram 07 it shows that iglidur® G V0 can be combined with various shaft materials. The best performance at low loads has proven to be with HC Aluminum and the standard shaft materials Cf53 and St37. This helps to design cost-effective systems, like for example in seat systems. It is important to notice that with increasing loads, the recommended hardness of the shaft increases. The “soft” shafts tend to wear more easily and thus affect the clearance of the overall system. If the loads exceed 2 MPa it is important to recognize that the wear rate (the gradient of the curves) clearly decreases with the hard shaft materials. In combination with iglidur® G V0 this also applies to HC Aluminum. The comparison of rotational movements to oscillating movements shows that iglidur® G V0 provides advantages in oscillating movements at loads up to 30 MPa.

► Shaft Materials, [page 71](#)

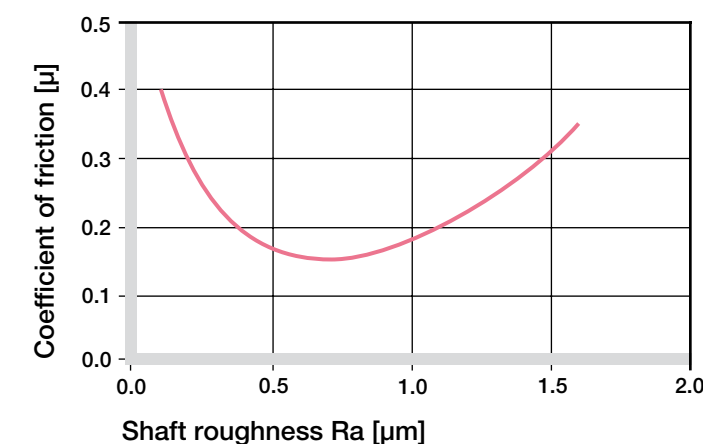


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



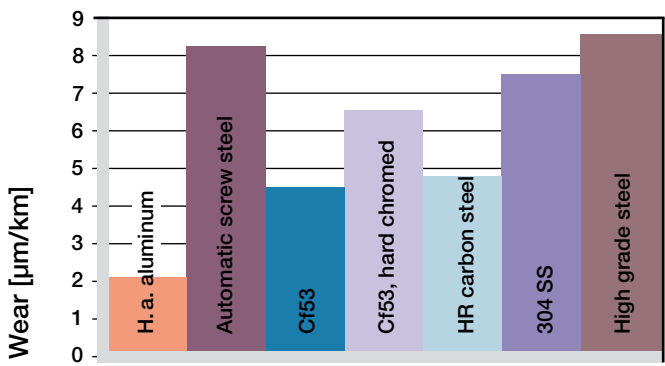


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

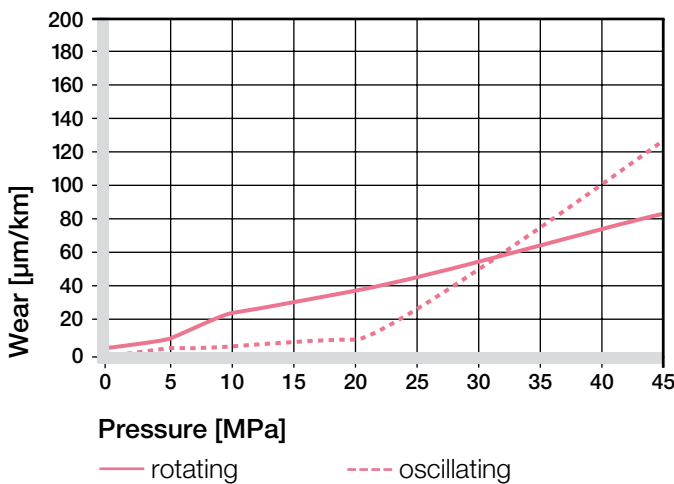


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® G V0  | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.07–0.20 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® G V0 plain bearings have strong resistance to chemicals. They are also resistant to most lubricants. iglidur® G V0 plain bearings are not attacked by most weak organic or inorganic acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® G V0 are resistant to radiation up to an intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® G V0 plain bearings are permanently resistant to UV radiation.

Vacuum

iglidur® G V0 plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

Electrical Properties

iglidur® G V0 plain bearings are electrically insulating.

|                    |                             |
|--------------------|-----------------------------|
| Volume resistance  | $> 10^{12} \Omega\text{cm}$ |
| Surface resistance | $> 10^{11} \Omega$          |

Moisture Absorption

The moisture absorption of iglidur® G V0 plain bearings is approximately 0.7 % in standard atmosphere. The saturation limit submerged in water is 4 %. This must be taken into account for these types of applications.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.7 % weight |
| Max. water absorption       | 4.0 % weight |

Table 06: Moisture absorption

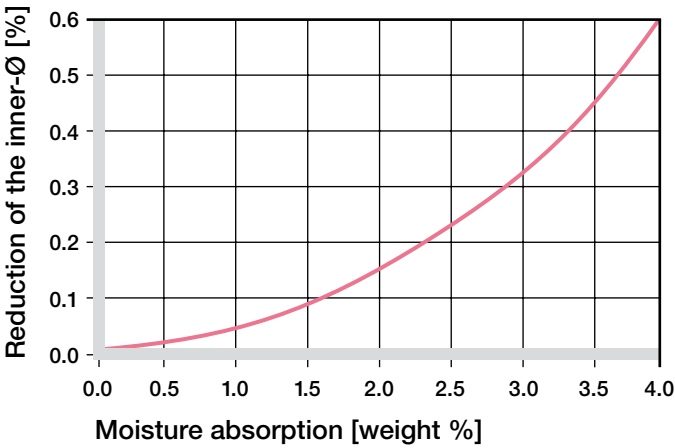


Diagram 09: Effect of moisture absorption on plain bearings

Installation Tolerances

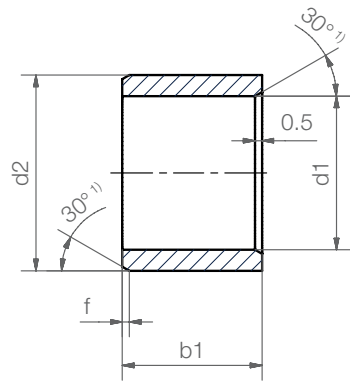
iglidur® G V0 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter automatically adjusts to the E10 tolerances.

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® G V0 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|------------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054          | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068          | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083          | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102          | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124          | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150          | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180          | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212          | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245          | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

GV0SM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® G V0

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

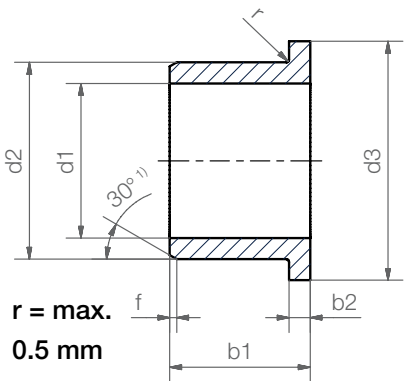
|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1<br>Tolerance* | d2   | b1<br>h13 |
|---------------|------|------------------|------|-----------|
| GV0SM-0608-06 | 6.0  | +0.020 +0.068    | 8.0  | 6.0       |
| GV0SM-0810-10 | 8.0  | +0.025 +0.083    | 10.0 | 10.0      |
| GV0SM-1012-10 | 10.0 | +0.025 +0.083    | 12.0 | 10.0      |
| GV0SM-1214-12 | 12.0 | +0.032 +0.102    | 14.0 | 12.0      |
| GV0SM-1618-15 | 16.0 | +0.032 +0.102    | 18.0 | 15.0      |
| GV0SM-2023-20 | 20.0 | +0.040 +0.124    | 23.0 | 20.0      |
| GV0SM-2528-20 | 25.0 | +0.040 +0.124    | 28.0 | 20.0      |
| GV0SM-3034-30 | 30.0 | +0.040 +0.124    | 34.0 | 30.0      |
| GV0SM-3539-40 | 35.0 | +0.050 +0.150    | 39.0 | 40.0      |
| GV0SM-4044-40 | 40.0 | +0.050 +0.150    | 44.0 | 40.0      |

\* after pressfit. Testing methods ► page 75

Flange bearing



Order key

GV0FM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® G V0

Dimensions according to ISO 3547-1 and special dimensions

<sup>1)</sup> thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

|          |       |        |         |        |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]:  | 0.3   | 0.5    | 0.8     | 1.2    |

Dimensions [mm]

| Part number   | d1   | d1<br>Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|---------------|------|------------------|------|-----------|-----------|-------------|
| GV0FM-0608-06 | 6.0  | +0.020 +0.068    | 8.0  | 12.0      | 6.0       | 1.0         |
| GV0FM-0810-10 | 8.0  | +0.025 +0.083    | 10.0 | 15.0      | 10.0      | 1.0         |
| GV0FM-1012-10 | 10.0 | +0.025 +0.083    | 12.0 | 18.0      | 10.0      | 1.0         |
| GV0FM-1214-12 | 12.0 | +0.032 +0.102    | 14.0 | 20.0      | 12.0      | 1.0         |
| GV0FM-1618-17 | 16.0 | +0.032 +0.102    | 18.0 | 24.0      | 17.0      | 1.0         |
| GV0FM-2023-21 | 20.0 | +0.040 +0.124    | 23.0 | 30.0      | 21.5      | 1.5         |
| GV0FM-2528-21 | 25.0 | +0.040 +0.124    | 28.0 | 35.0      | 21.5      | 1.5         |
| GV0FM-3034-37 | 30.0 | +0.040 +0.124    | 34.0 | 42.0      | 37.0      | 2.0         |
| GV0FM-3539-36 | 35.0 | +0.050 +0.150    | 39.0 | 47.0      | 36.0      | 2.0         |
| GV0FM-4044-40 | 40.0 | +0.050 +0.150    | 44.0 | 52.0      | 40.0      | 2.0         |

\* after pressfit. Testing methods ► page 75



Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



delivery from stock  
time



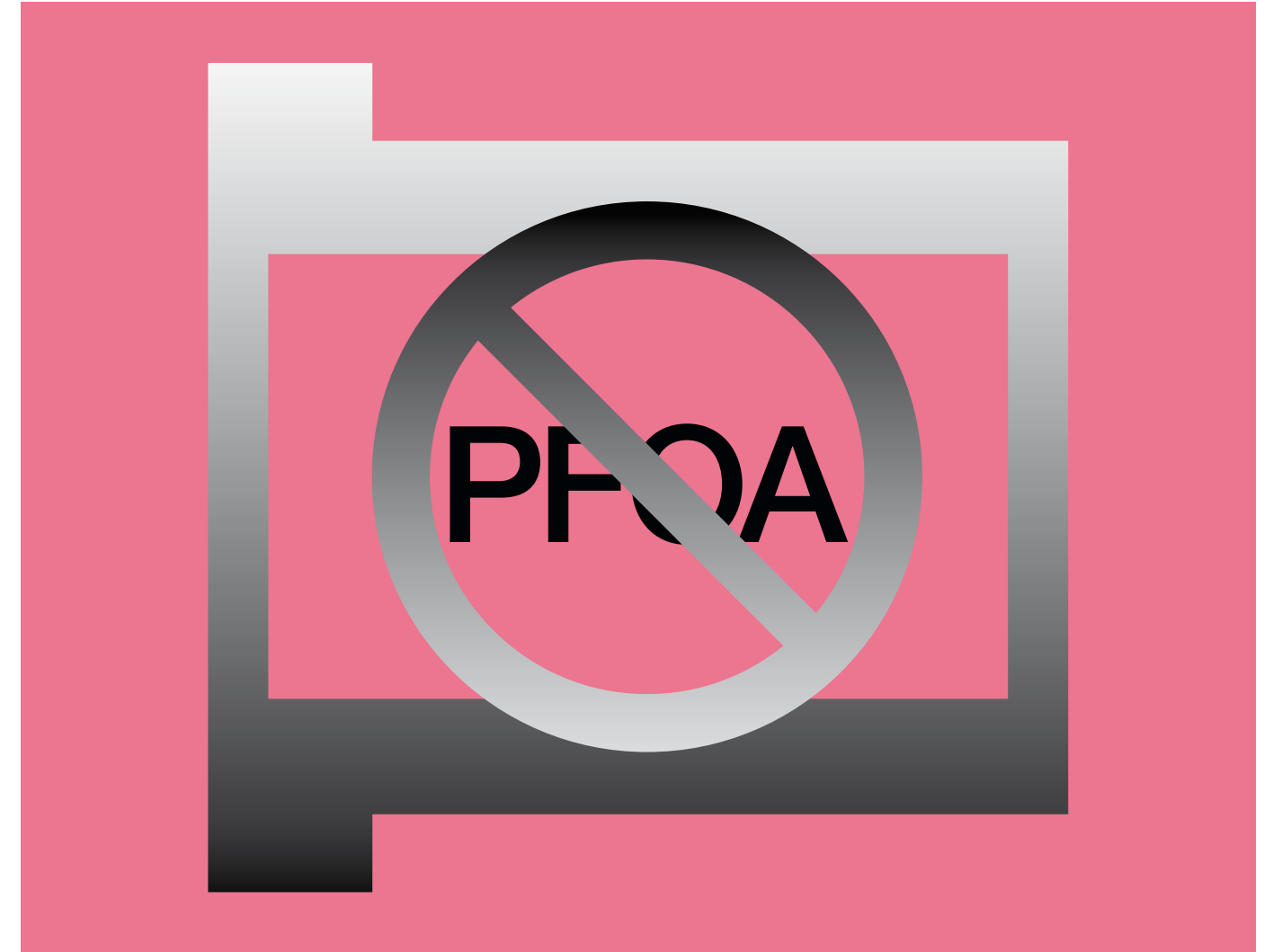
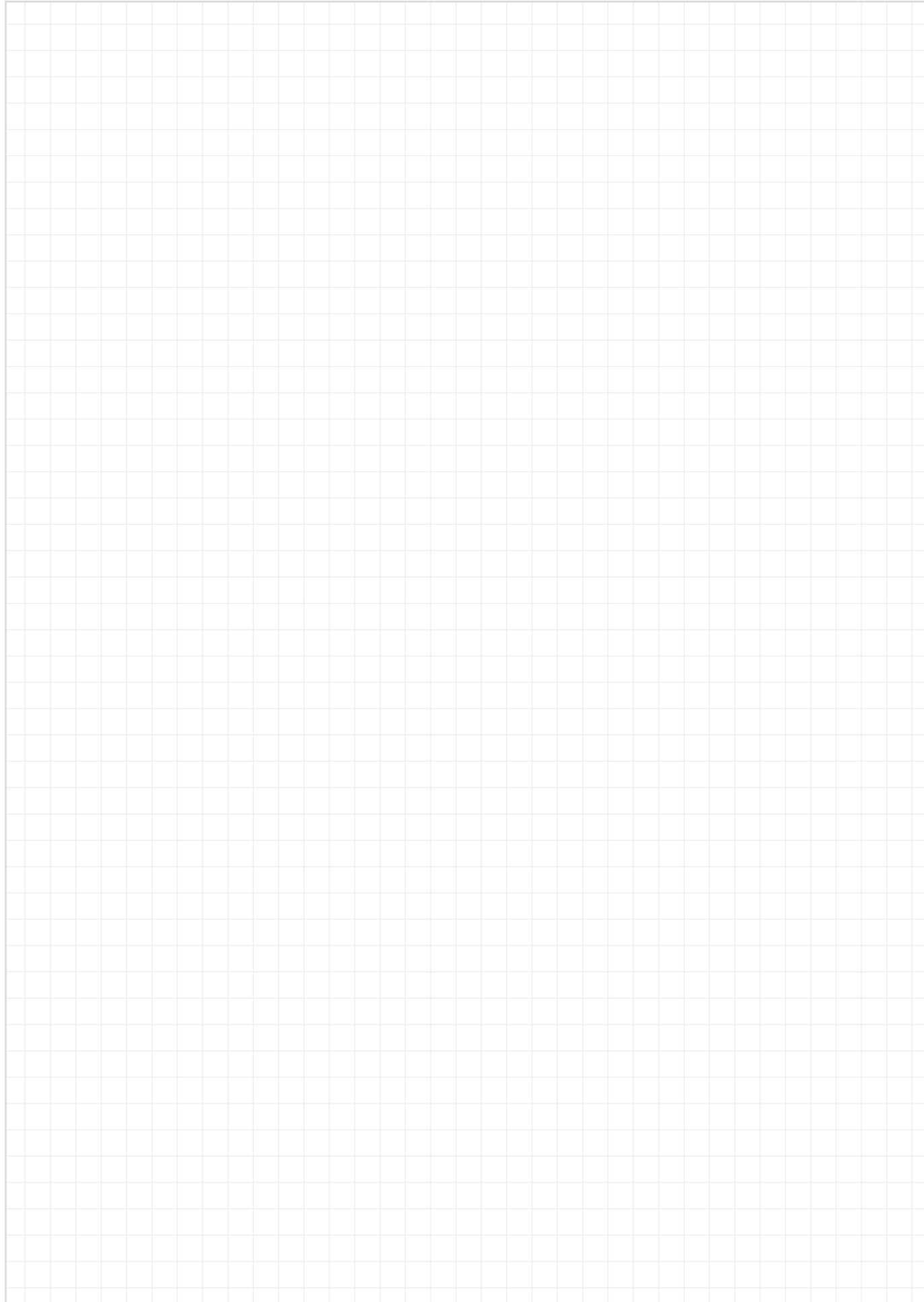
prices price list online  
www.igus.co.uk/en/gv0



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/gv0



## PFOA-free – iglidur® J2



Standard range from stock

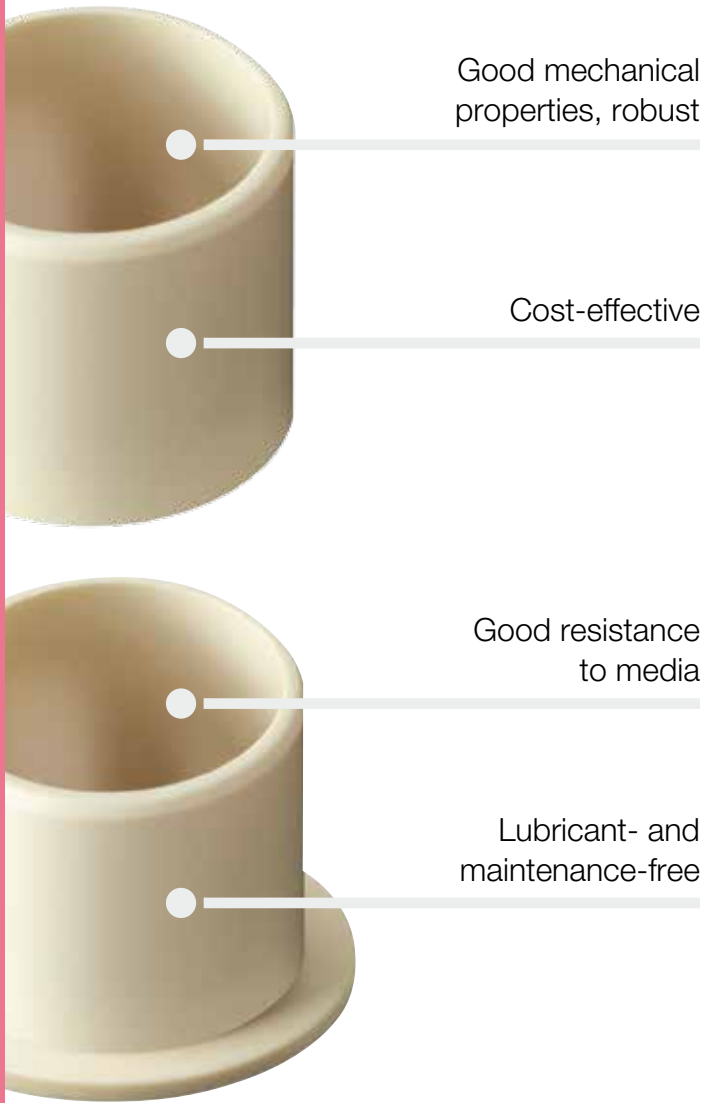
Good mechanical properties, robust

Cost-effective

Good resistance to media

Lubricant- and maintenance-free

**Environmentally friendly.** The growing demand for PFOA-free iglidur® materials\* is met by igus® with an ongoing review of all iglidur® materials – the list of already PFOA-free iglidur® materials is thus getting continuously longer – and a new iglidur® material: iglidur® J2.



**When to use it?**

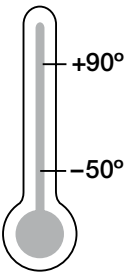
- When low moisture absorption and good chemical resistance is required for primarily static load
- When a low-priced bearing is required for use in a wet environment with low PxV values
- When there is a basic lubrication of the bearing



**When not to use?**

- When a highly wear-resistant bearing is required for continuous operation in dry running  
▶ iglidur® J3, page 247
- When low moisture absorption and media resistance play a minor role  
▶ iglidur® M250, page 127
- When a resistance to high temperatures and chemicals is required  
▶ iglidur® X, page 173

**Temperature**



**Product range**

2 types  
Ø 6–25 mm  
more dimensions  
on request

\*iglidur® material recipes without PFOA

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® J2        | Testing method |
| Density                                                | g/cm³                              | 1.44               |                |
| Colour                                                 |                                    | light yellow       |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 1.3                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.11–0.27          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.23               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 3,605              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 101                | DIN 53452      |
| Compressive strength                                   | MPa                                | 77                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 46                 |                |
| Shore D hardness                                       |                                    | n.b.               | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +90                |                |
| Max. short term application temperature                | °C                                 | +110               |                |
| Min. application temperature                           | °C                                 | –50                |                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 7                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | DIN 53482      |

Table 01: Material properties table

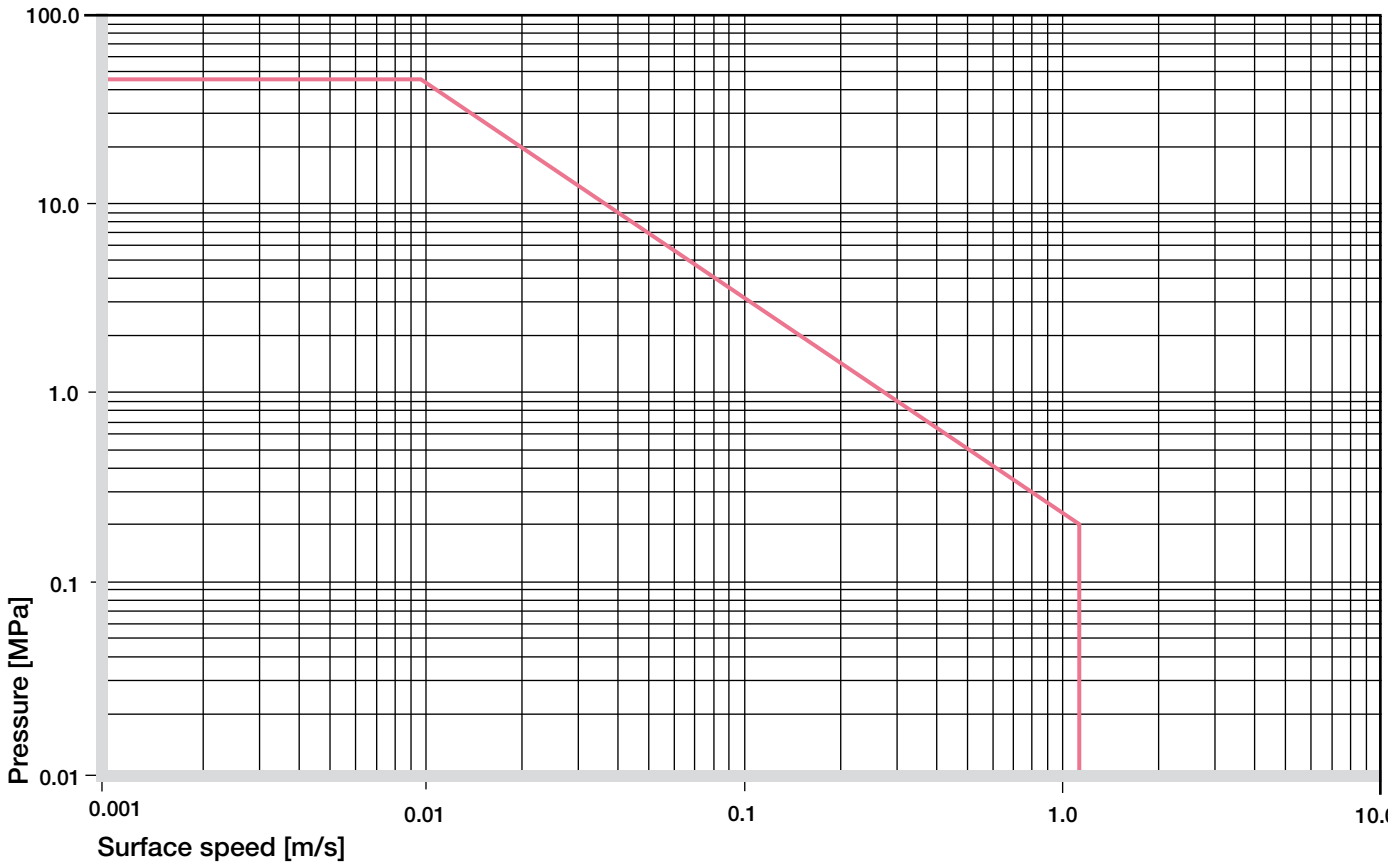


Diagram 01: Permissible pv values for iglidur® J2 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing



iglidur® J2 is directly comparable with our classic iglidur® J in terms of the general chemical and thermal properties. Therefore the iglidur® J2 is superior to iglidur® J with respect to the mechanical properties, such as maximum recommended surface pressure. However, wear resistance is reduced when running dry.

## Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® J2 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90°C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

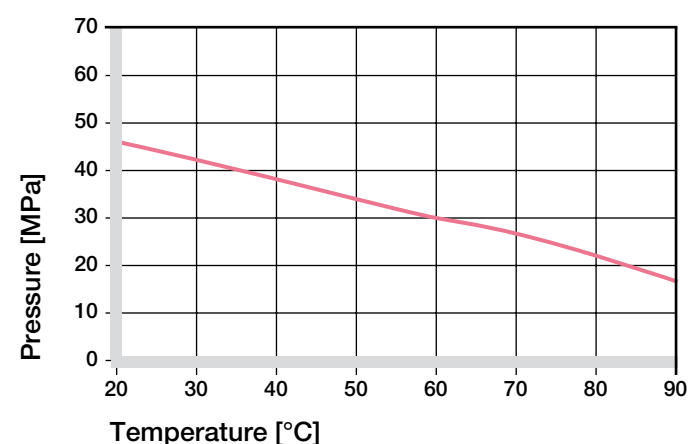


Diagram 02: Recommended maximum surface pressure as a function of temperature (46 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® J2 at radial loads. At the maximum recommended surface pressure of 46 MPa at room temperature, the deformation is less than 3 %. A possible deformation could be, among others, dependent on the duty cycle of the load.

► Surface Pressure, [page 63](#)

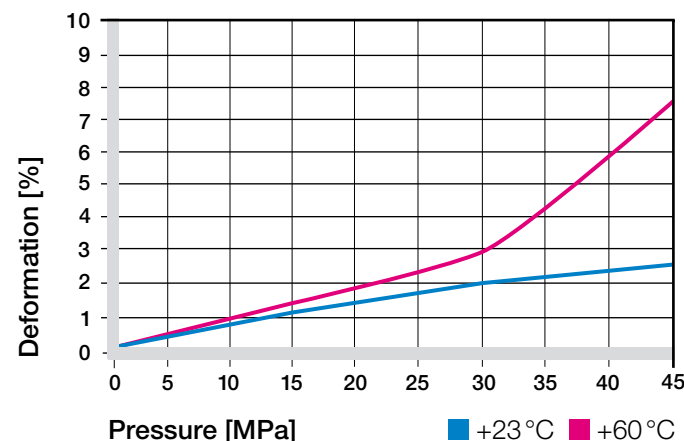


Diagram 03: Deformation under pressure and temperature

## Permissible Surface Speeds

iglidur® J2 is mainly suitable for low speeds in dry running, but the specified values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, [page 65](#)

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.7         | 3      |
| Short term | 1.9      | 1.1         | 5      |

Table 02: Maximum running speed

## Temperatures

iglidur® J2 plain bearings can be used at temperatures from –50 °C up to +90 °C. The short term maximum temperature is +110 °C. The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +90 °C.

► Application Temperatures, [page 66](#)

| iglidur® J2                    | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | –50 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +110 °C                 |
| Add. securing is required from | +60 °C                  |

Table 03: Temperature limits

## Friction and Wear

Coefficient of friction and wear resistance are dependent on the application parameters. The coefficient of friction reaches the optimum at a sliding speed of 0.4 m/s and decreases with increasing load, especially up to 10 MPa. The influence of the surface finish of the shaft is also more pronounced than in other iglidur® materials (Diagram 06).

► Coefficients of Friction and Surfaces, [page 68](#)

► Wear Resistance, [page 69](#)

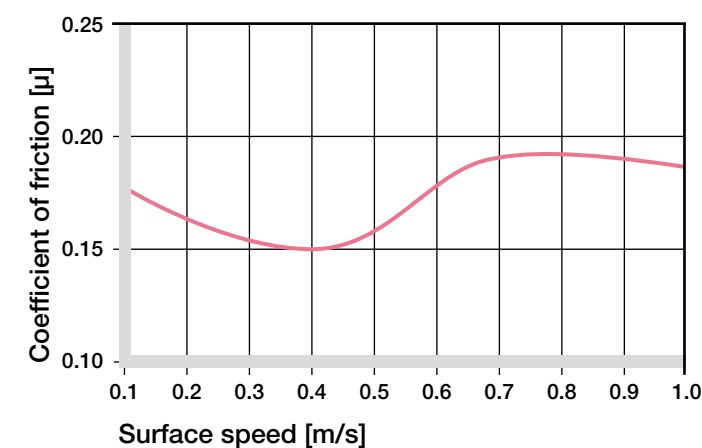


Diagram 04: Coefficient of friction as a function of the running speed, p = 1.0 MPa

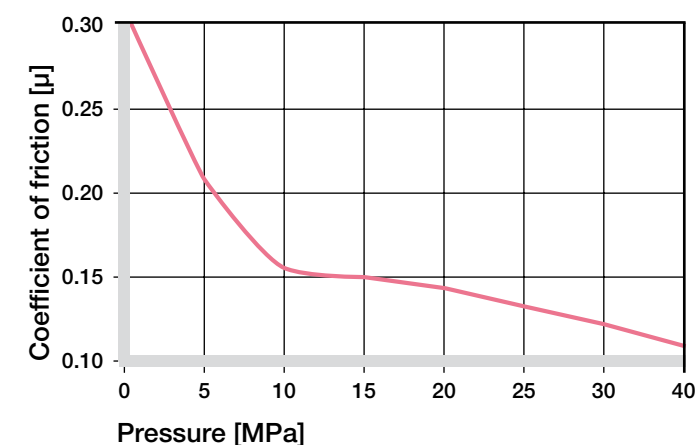


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

## Shaft Materials

Friction and wear are also dependent, to a large extent, on the shaft material. Very smooth shafts increase both the coefficient of friction and the wear of the bearings. Diagram 07 to 08 show a summary of the results of tests with different shaft materials. Diagram 07 shows that iglidur® J2 delivers good wear values especially with cutting steel in rotation at 1 MPa. When running dry, the wear values are sometimes significantly higher on other shafts. Unlike many other iglidur® materials, the wear rate in pivoting is slightly higher compared to the rate in rotation with otherwise identical parameters (Diagram 08).

► Shaft Materials, [page 71](#)

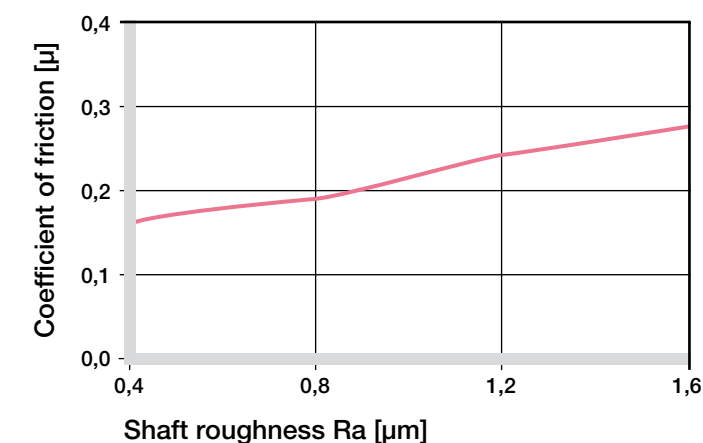


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

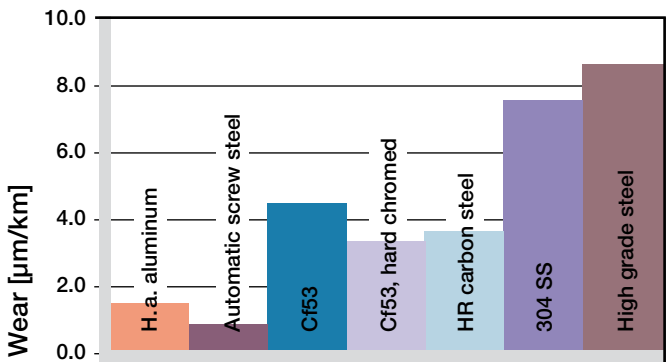


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

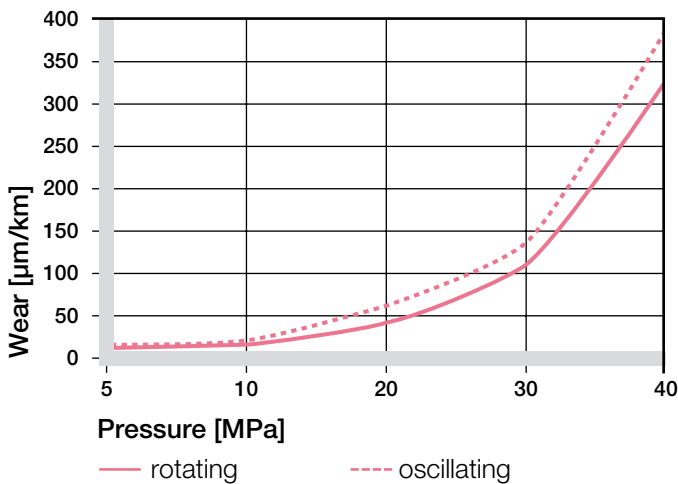


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® J2    | Dry       | Greases | Oil  | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. $\mu$ | 0.11–0.27 | 0.08    | 0.07 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J2 plain bearings are resistant to diluted alkaline and very weak acids, as well as fuels and all types of lubricants. The low moisture absorption also permits use in wet or damp environments. Plain bearings made of iglidur® J2 are resistant to common cleaning agents used in the food industry.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | +          |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | + to 0     |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® J2 are resistant to radiation up to an intensity of  $3 \cdot 10^2$  Gy.

UV Resistance

iglidur® J2 plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

Vacuum

In vacuum applications, any absorbed moisture content is out gassed. For this reason only dehumidified iglidur® J2 bearings are suitable for use in a vacuum.

Electrical Properties

iglidur® J2 plain bearings are electrically insulating.

|                    |                              |
|--------------------|------------------------------|
| Volume resistance  | $> 10^{13} \Omega \text{cm}$ |
| Surface resistance | $> 10^{12} \Omega$           |

Moisture Absorption

The moisture absorption of iglidur® J2 plain bearings is approximately 0.2 % in the standard atmosphere. The saturation limit submerged in water is 1.3 %. These values are so low that design changes due to absorption are only necessary in extreme cases.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 0.2 % weight |
| Max. water absorption       | 1.3 % weight |

Table 06: Moisture absorption

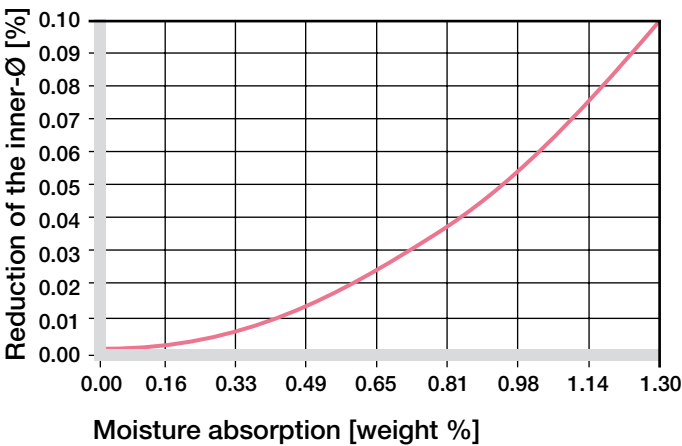


Diagram 09: Effect of moisture absorption on plain bearings

Installation Tolerances

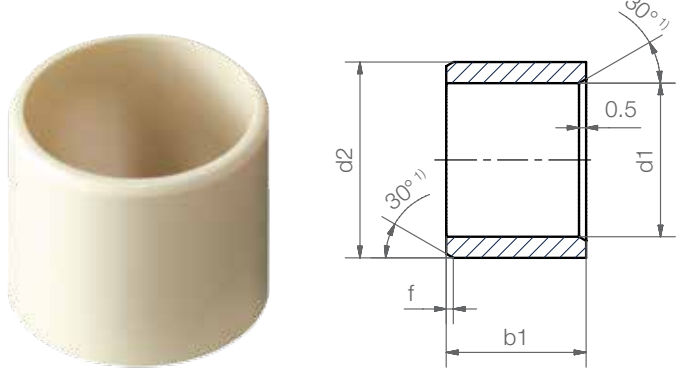
iglidur® J2 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® J2 E10 [mm] | Housing H7 [mm] |
|------------------|---------------|----------------------|-----------------|
| up to 3          | 0–0.025       | +0.014 +0.054        | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.020 +0.068        | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.025 +0.083        | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.032 +0.102        | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.040 +0.124        | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.050 +0.150        | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.060 +0.180        | 0 +0.030        |
| > 80 to 120      | 0–0.087       | +0.072 +0.212        | 0 +0.035        |
| > 120 to 180     | 0–0.100       | +0.085 +0.245        | 0 +0.040        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions  
1) thickness < 1 mm: chamfer = 20°  
Chamfer in relation to the d1  
d1 [mm]:    Ø 1-6    |    Ø 6-12    |    Ø 12-30    |    Ø > 30  
f [mm]:        0.3     |     0.5     |     0.8     |     1.2

Dimensions [mm]

| Part number  |      | d1   | d1-Tolerance* | d2   | b1<br>h13 |
|--------------|------|------|---------------|------|-----------|
| J2SM-0608-06 | New! | 6.0  | +0.020 +0.068 | 8.0  | 6.0       |
| J2SM-0810-10 | New! | 8.0  | +0.025 +0.083 | 10.0 | 10.0      |
| J2SM-1012-10 | New! | 10.0 | +0.025 +0.083 | 12.0 | 10.0      |
| J2SM-1214-12 | New! | 12.0 | +0.032 +0.102 | 14.0 | 12.0      |
| J2SM-1618-15 | New! | 16.0 | +0.032 +0.102 | 18.0 | 15.0      |
| J2SM-2023-20 | New! | 20.0 | +0.040 +0.124 | 23.0 | 20.0      |
| J2SM-2528-20 | New! | 25.0 | +0.040 +0.124 | 28.0 | 20.0      |

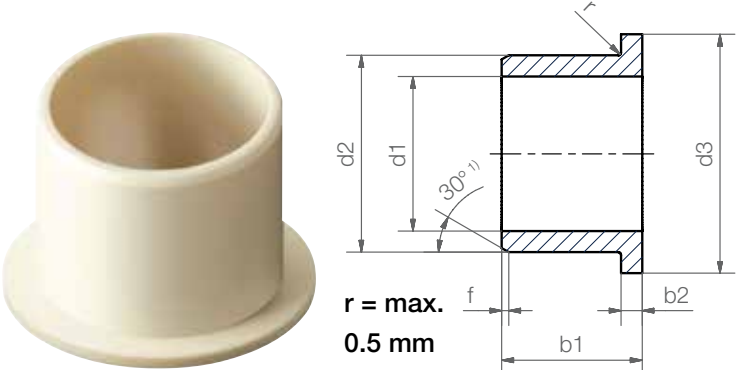
\* after pressfit. Testing methods ► page 75

Order key

J2SM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® J2

Flange bearing



Dimensions according to ISO 3547-1 and special dimensions  
1) thickness < 1 mm: chamfer = 20°  
Chamfer in relation to the d1  
d1 [mm]:    Ø 1-6    |    Ø 6-12    |    Ø 12-30    |    Ø > 30  
f [mm]:        0.3     |     0.5     |     0.8     |     1.2

Dimensions [mm]

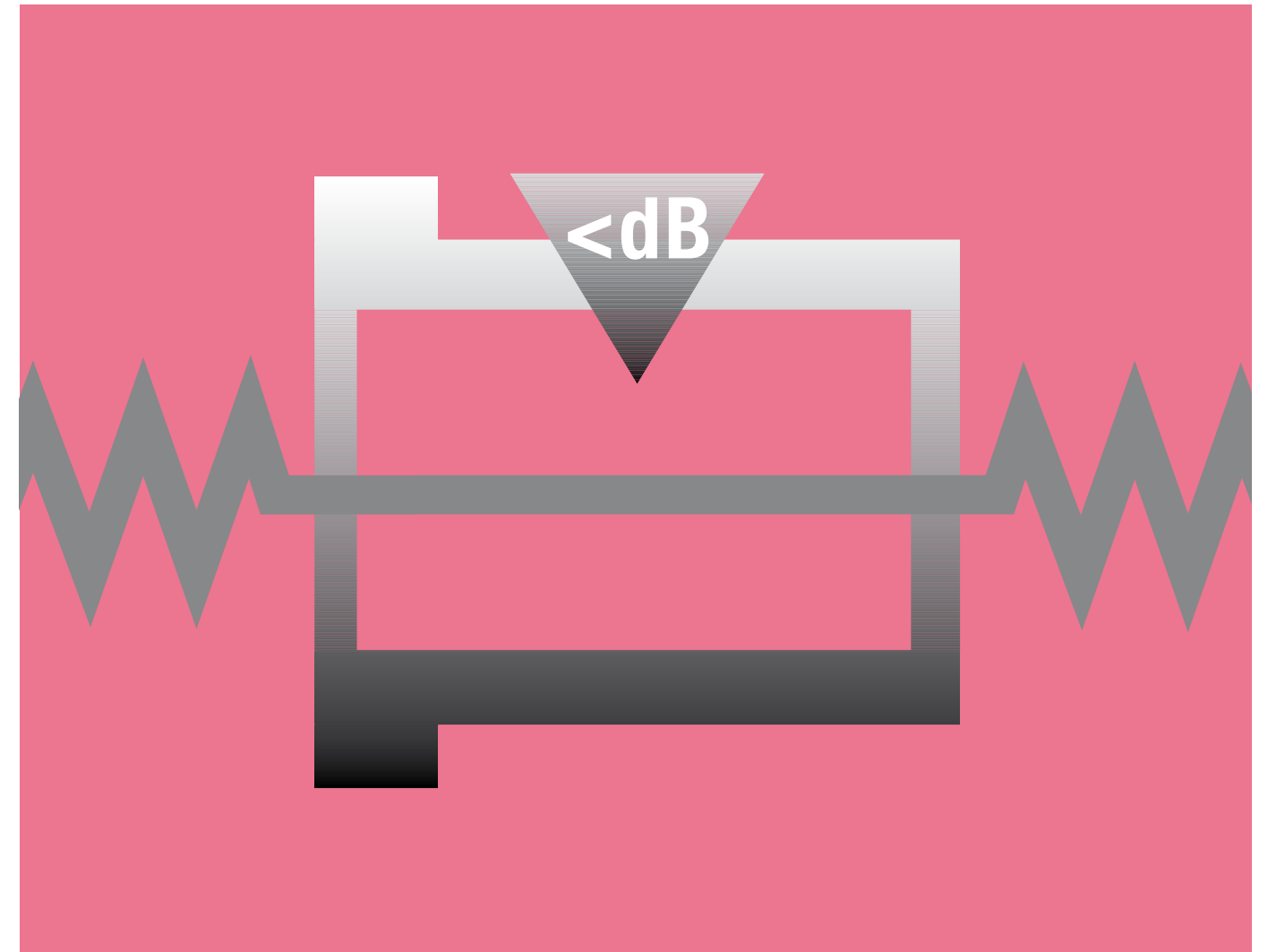
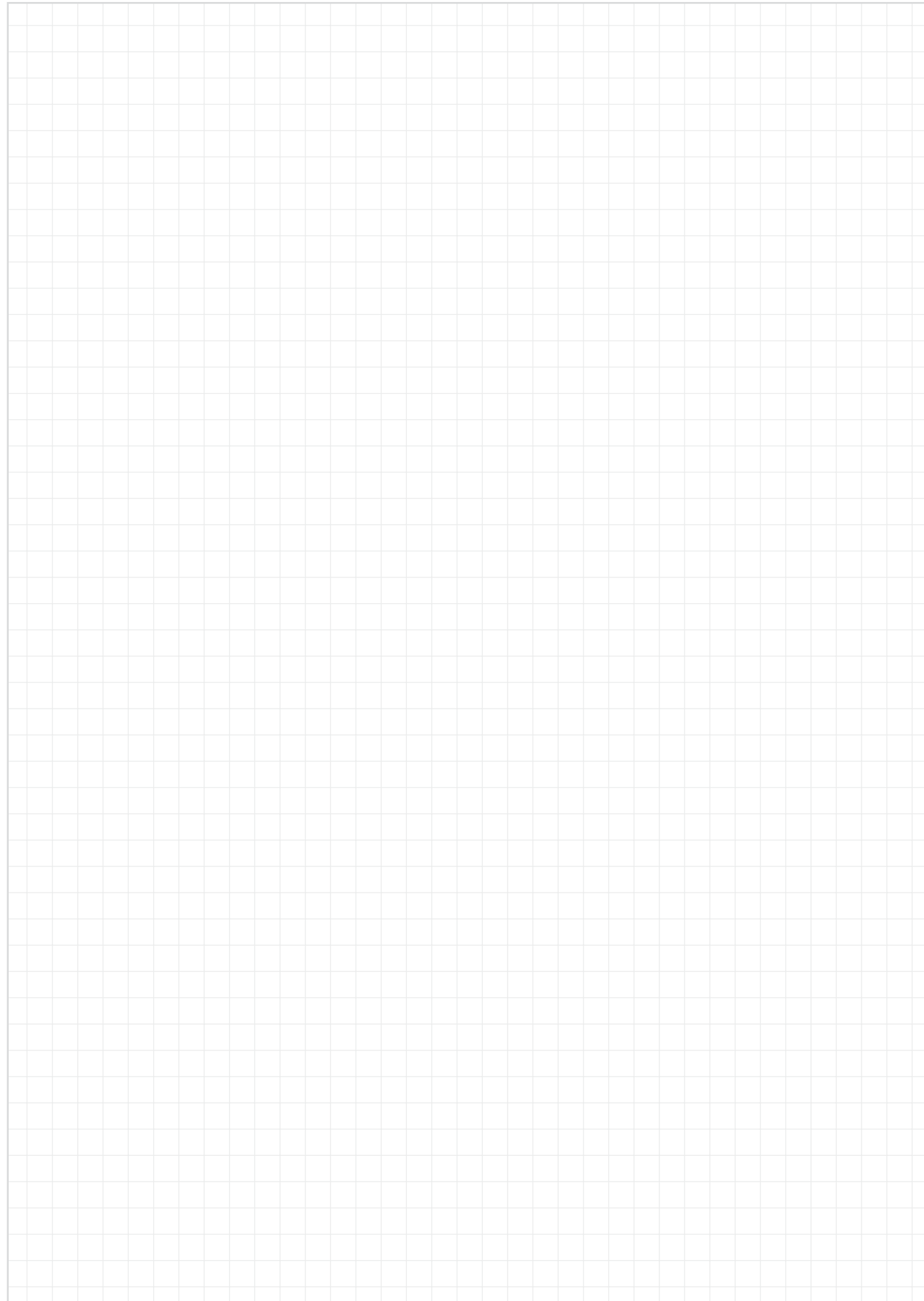
| Part number  |      | d1   | d1-Tolerance* | d2   | d3<br>d13 | b1<br>h13 | b2<br>-0.14 |
|--------------|------|------|---------------|------|-----------|-----------|-------------|
| J2FM-0608-06 | New! | 6.0  | +0.020 +0.068 | 8.0  | 12.0      | 6.0       | 1.0         |
| J2FM-0810-10 | New! | 8.0  | +0.025 +0.083 | 10.0 | 15.0      | 10.0      | 1.0         |
| J2FM-1012-10 | New! | 10.0 | +0.025 +0.083 | 12.0 | 18.0      | 10.0      | 1.0         |
| J2FM-1214-12 | New! | 12.0 | +0.032 +0.102 | 14.0 | 20.0      | 12.0      | 1.0         |
| J2FM-1618-17 | New! | 16.0 | +0.032 +0.102 | 18.0 | 24.0      | 17.0      | 1.0         |
| J2FM-2023-21 | New! | 20.0 | +0.040 +0.124 | 23.0 | 30.0      | 21.5      | 1.5         |

\* after pressfit. Testing methods ► page 75

Order key

J2FM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® J2



## High elasticity – iglidur® B



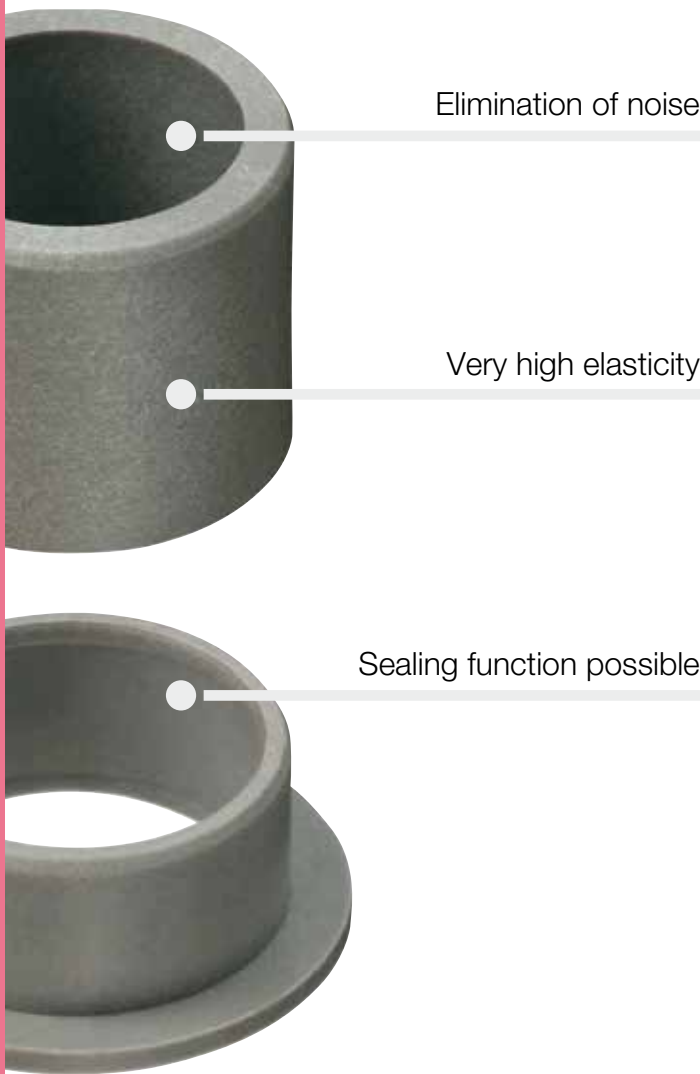
Elimination of noise

Very high elasticity

Sealing function possible



**High elasticity.** Vibration dampening is the predominant feature of the iglidur® B material which is also well-suited for edge loads at low pressure.



**When to use it?**

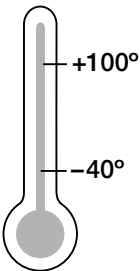
- When maximum vibration dampening is required
- When sealing function has to be integrated
- When high edge loads occur



**When not to use it?**

- In applications with high atmospheric humidity
  - ▶ iglidur® J, page 109
- When a cost-effective universal bearing is required
  - ▶ iglidur® R, page 277
- When the highest wear resistance is required
  - ▶ iglidur® J, page 109

**Temperature**



**Product range**

on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® B         | Testing method |
| Density                                                | g/cm³                              | 1.15               |                |
| Colour                                                 |                                    | grey               |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.0                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 6.3                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.18–0.28          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.15               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 1,800              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 55                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 20                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 40                 |                |
| Shore D hardness                                       |                                    | 69                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +100               |                |
| Max. short term application temperature                | °C                                 | +130               |                |
| Max. short term ambient temperature <sup>1)</sup>      | °C                                 | +150               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 12                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>10</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>9</sup>  | DIN 53482      |

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table

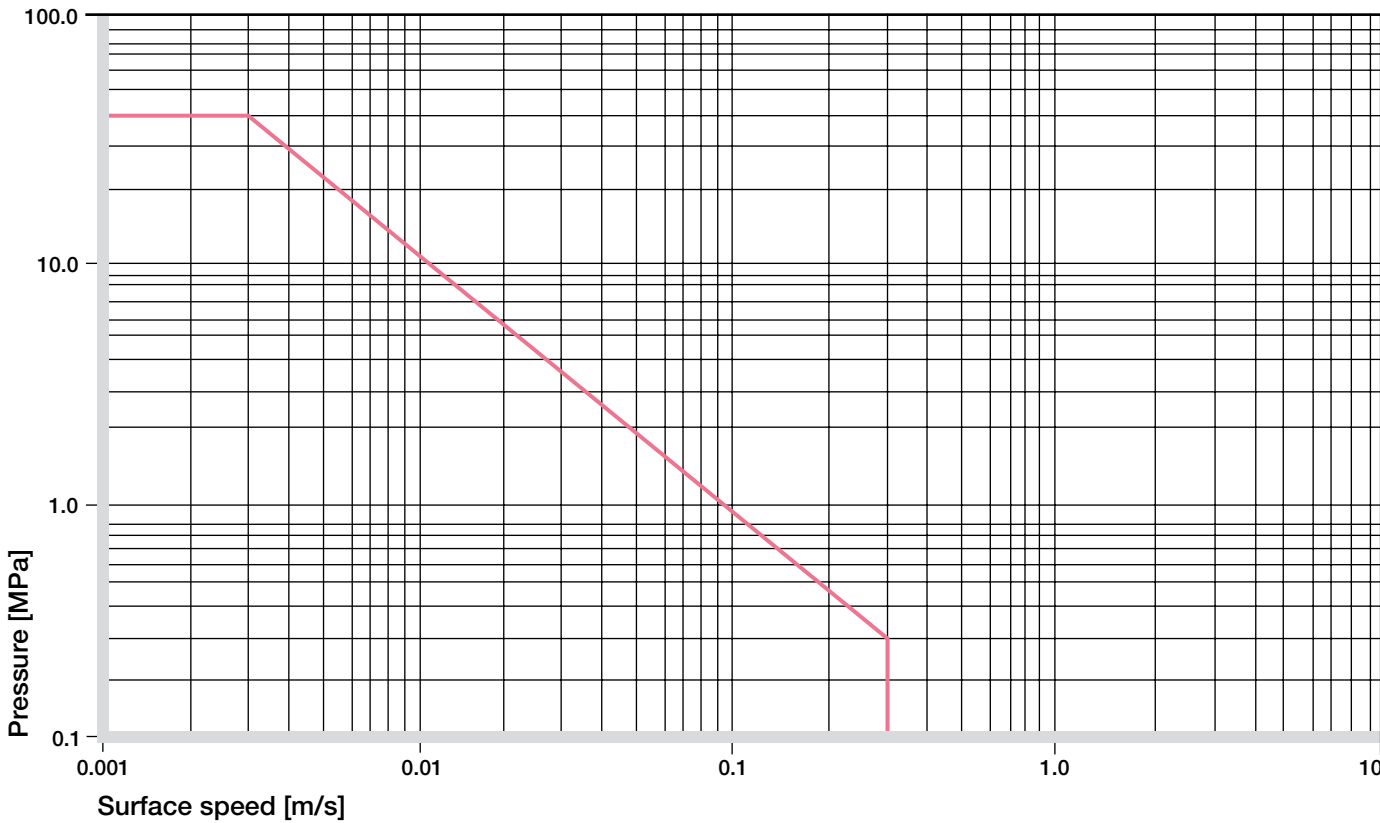


Diagram 01: Permissible pv values for iglidur® B with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

The compressive strength of the iglidur® B bearings is on the one hand low, but on the other, is an important property of the bearing. They are mainly used where vibration dampening and acoustic separation are required.

## Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® B plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +100°C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

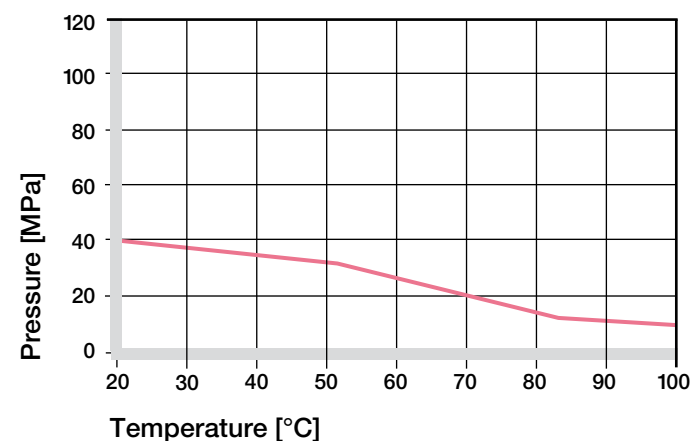


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

The elastic deformation at 40 MPa at room temperature is 5.3 % (Diagram 03).

## ► Surface Pressure, page 63

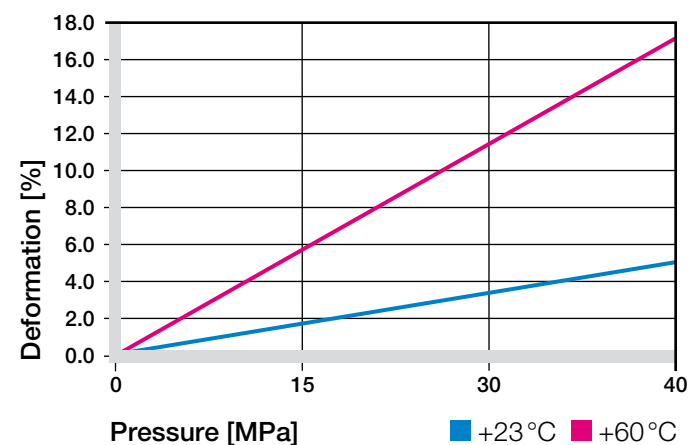


Diagram 03: Deformation under pressure and temperature

## Permissible Surface Speeds

iglidur® B bearings can be continuously used up to 0.7 m/s. The frictional heat provides the speed limits. In practice, though, this temperature level is rarely reached, due to varying application conditions.

## ► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.7      | 0.5         | 2      |
| Short term | 1        | 0.7         | 3      |

Table 02: Maximum running speed

## Temperatures

The operating temperature of the iglidur® B bearings is limited to +100°C. From +50°C onward, the very soft bearing should be mechanically fastened, so that the danger of bushings creeping out of the bores is avoided. The wear resistance declines disproportionately from +70°C.

## ► Application Temperatures, page 66

| iglidur® B                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +100 °C                 |
| Max. short term                | +130 °C                 |
| Add. securing is required from | +50 °C                  |

Table 03: Temperature limits

## Friction and Wear

The coefficients of friction increase slightly with the speed and decrease with the load. Surface finishes of the shaft between 0.4 and 0.6 Ra are ideal. The iglidur® B bearings assume a center position in wear resistance. As far as the bearing load is not too high, the attained wear values are pretty good. An increase in load results in a disproportionate increase in abrasion.

## ► Coefficients of Friction and Surfaces, page 68

## ► Wear Resistance, page 69

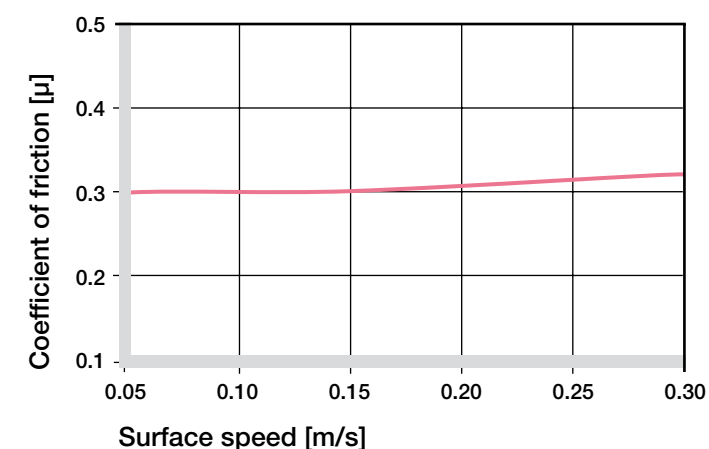


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

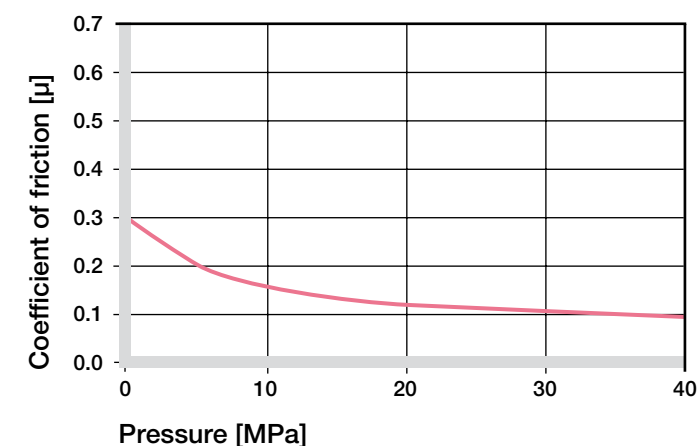


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

## Shaft Materials

The influence of the shaft is not very large on the wear resistance. Diagram 07 and 08 clarify that very similar wear data are attained with different shaft materials. If high operational performances are expected, the bearing load should not be too high.

## ► Shaft Materials, page 71

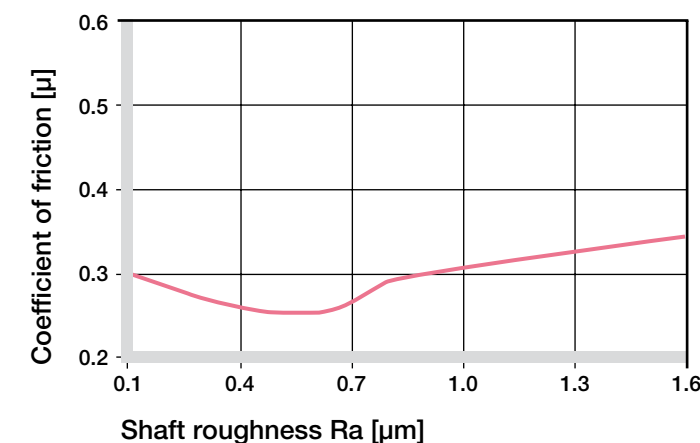


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

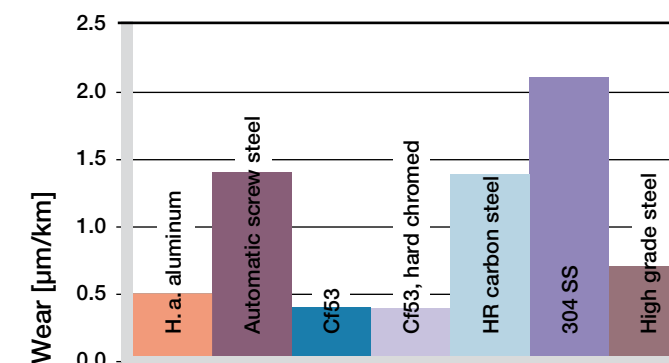


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

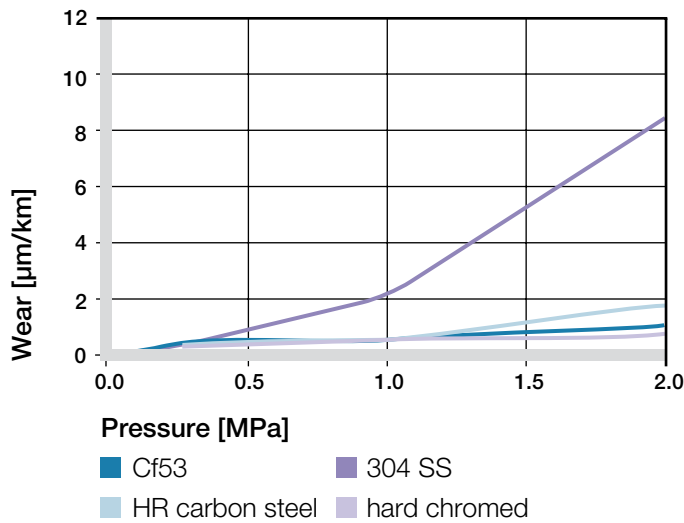


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

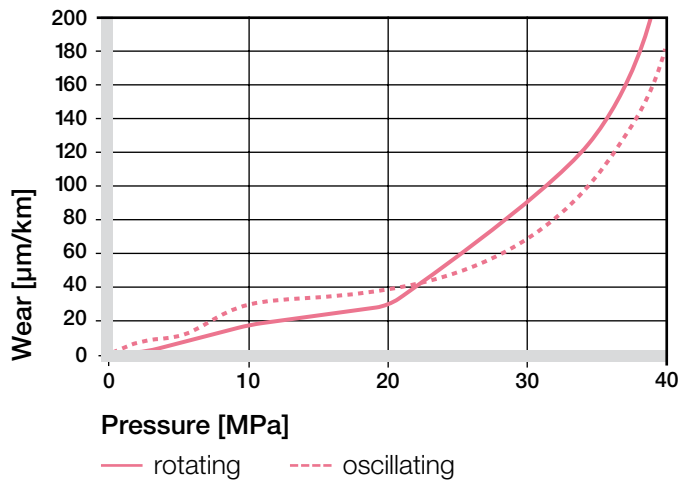


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® B | Dry       | Greases | Oil  | Water |
|------------|-----------|---------|------|-------|
| C. o. f. µ | 0.18–0.28 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® B plain bearings are not very resistant to chemicals. Where chemical resistance is required, other iglidur® materials featuring better characteristics should be used.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | –          |
| Greases, oils without additives | –          |
| Fuels                           | –          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | –          |
| Strong alkalines                | –          |

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® B are radiation resistant to a radiation intensity of 3 · 10<sup>2</sup> Gy.

UV Resistance

iglidur® B plain bearings are not resistant to the impact of UV radiation.

Vacuum

Use of iglidur® B plain bearings is limited in vacuum. Only dehumidified bearings should be tested.

Electrical Properties

iglidur® B plain bearings are electrically insulating.

|                    |                        |
|--------------------|------------------------|
| Volume resistance  | > 10 <sup>10</sup> Ωcm |
| Surface resistance | > 10 <sup>9</sup> Ω 10 |

Moisture Absorption

The moisture absorption is relatively high and must be considered in the selection and design.

Maximum moisture absorption

|                       |              |
|-----------------------|--------------|
| At +23 °C/50 % r.h.   | 1.0 % weight |
| Max. water absorption | 6.3 % weight |

Table 06: Moisture absorption

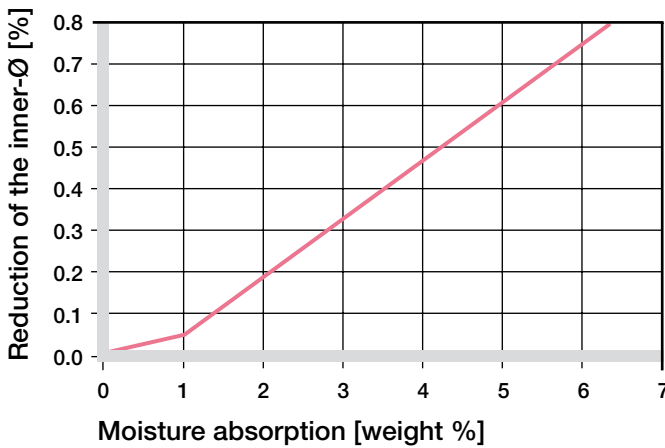


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® B plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

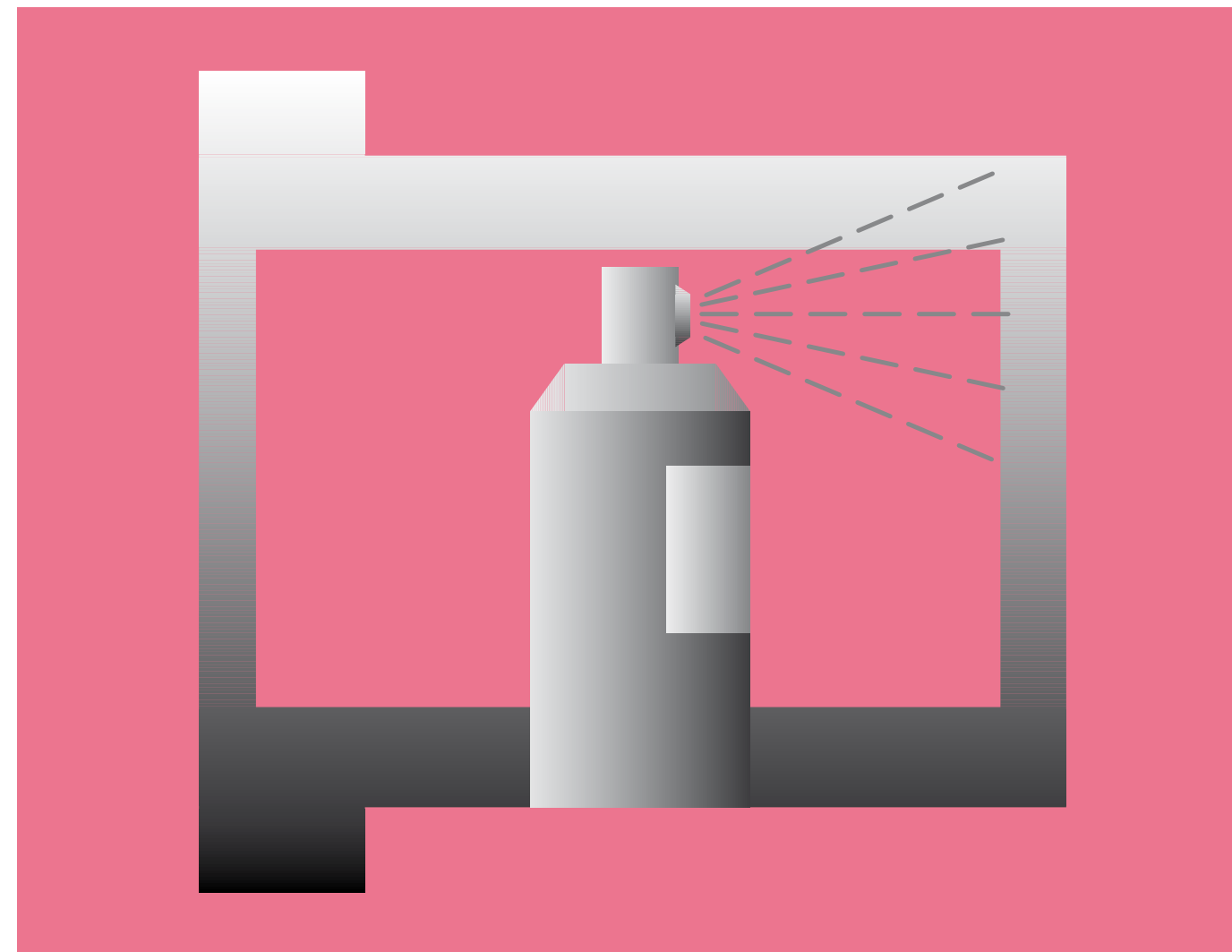
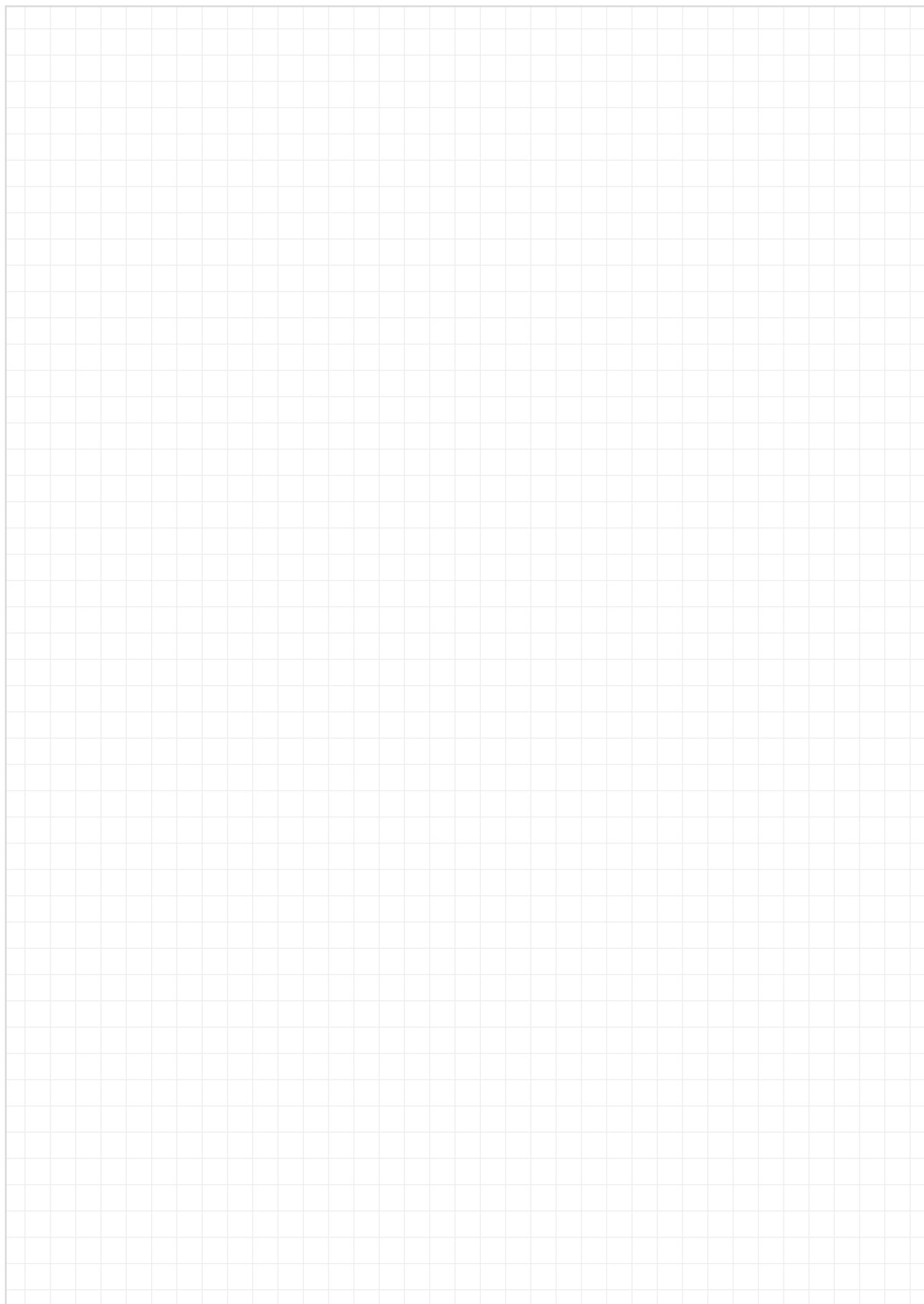
► Testing Methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® B D11 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.020 +0.080       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.030 +0.105       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.040 +0.130       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.050 +0.160       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.065 +0.195       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.080 +0.240       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.100 +0.290       | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® B plain bearings are manufactured to special order.



**Free of PTFE and silicone – iglidur® C**



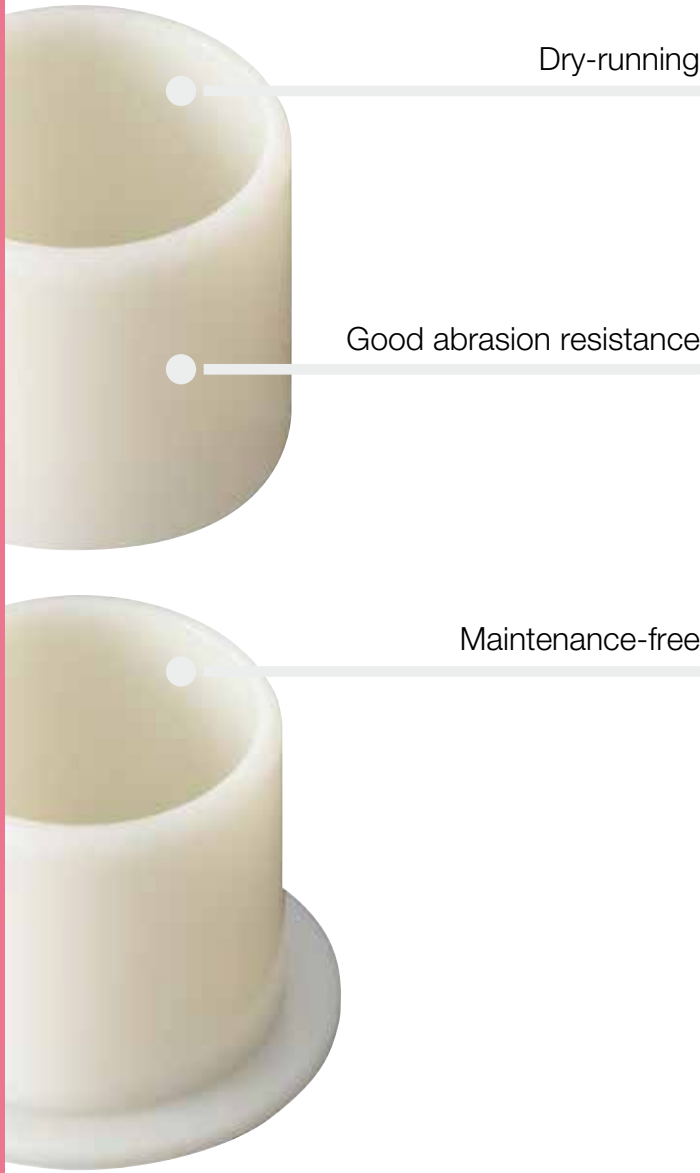
Dry-running

Good abrasion resistance

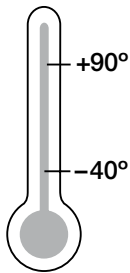
Maintenance-free



**Free of PTFE and silicone.** In iglidur® C, the use of Teflon and silicone as lubricants is deliberately avoided. However the bearings display excellent wear resistance at low loads.



Temperature



**When to use it?**

- When PTFE and silicone are not allowed in your application
- For applications with low speed
- If you need dirt-resistant bearings
- If you need maintenance-free, self-lubricating bearings



**When not to use it?**

- When highest wear resistance is required  
▶ iglidur® W300, page 151
- When low coefficients of friction are required  
▶ iglidur® J, page 109  
▶ iglidur® L250, page 267
- If a cost-effective option is requested  
▶ iglidur® M250, page 127
- When low moisture absorption is required  
▶ iglidur® R, page 277

**Product range**

on request

| Material properties table                              |                                    |                    |                |
|--------------------------------------------------------|------------------------------------|--------------------|----------------|
| General properties                                     | Unit                               | iglidur® C         | Testing method |
| Density                                                | g/cm³                              | 1.1                |                |
| Colour                                                 |                                    | off white          |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 1.0                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 6.9                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.17–0.25          |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.10               |                |
| Mechanical properties                                  |                                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 1,900              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 60                 | DIN 53452      |
| Compressive strength                                   | MPa                                | 30                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 40                 |                |
| Shore D hardness                                       |                                    | 72                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                |
| Max. long term application temperature                 | °C                                 | +90                |                |
| Max. short term application temperature                | °C                                 | +130               |                |
| Maximum short term ambient temperature <sup>1)</sup>   | °C                                 | +150               |                |
| Min. application temperature                           | °C                                 | –40                |                |
| Thermal conductivity                                   | W/m · K                            | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 15                 | DIN 53752      |
| Electrical properties                                  |                                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>10</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>9</sup>  | DIN 53482      |

<sup>1)</sup> Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table

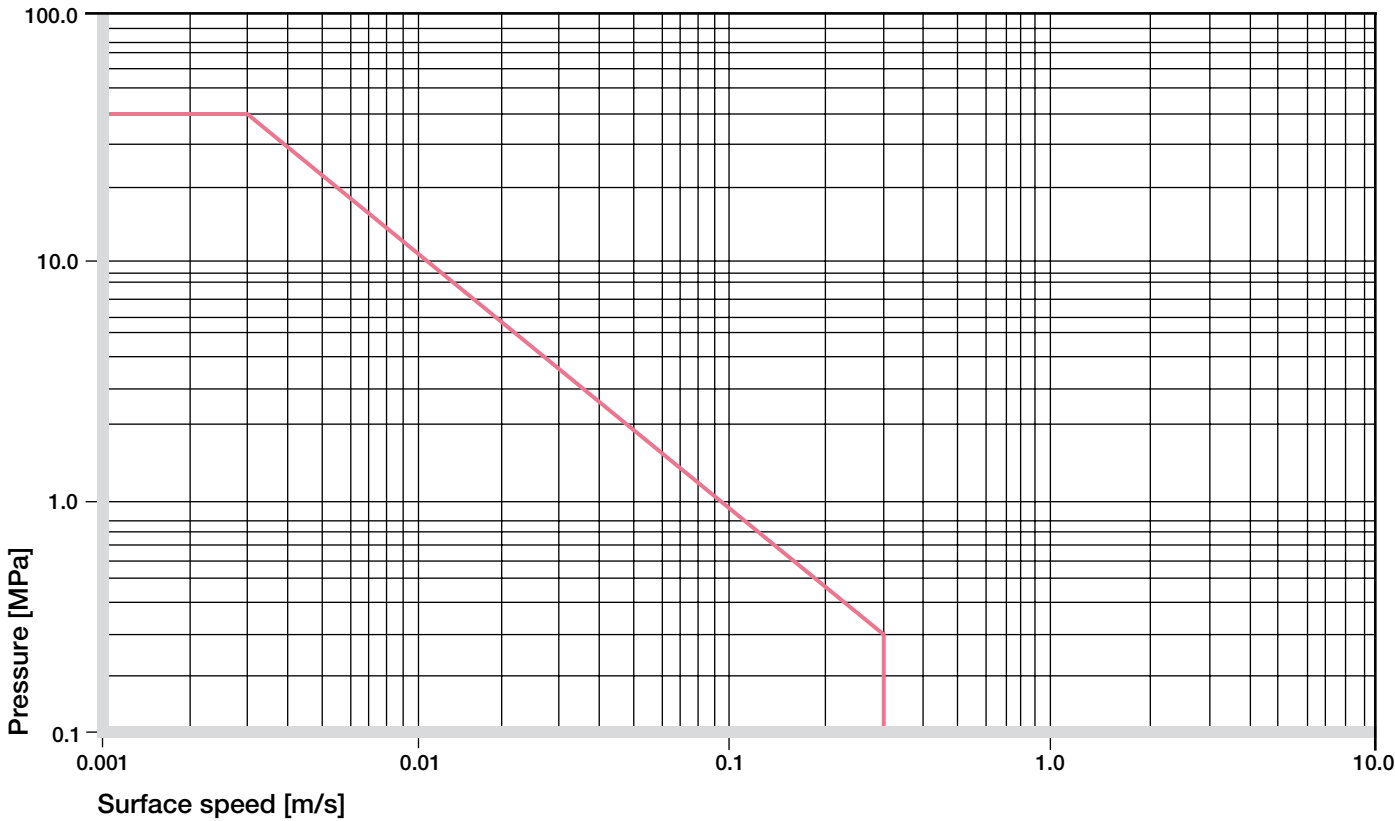


Diagram 01: Permissible pv values for iglidur® C with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Though iglidur® C is a very soft material, it also has a maximum surface pressure limit of 40 MPa. The high elasticity makes the bearing suitable for vibrations and edge loads.

## Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® C plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

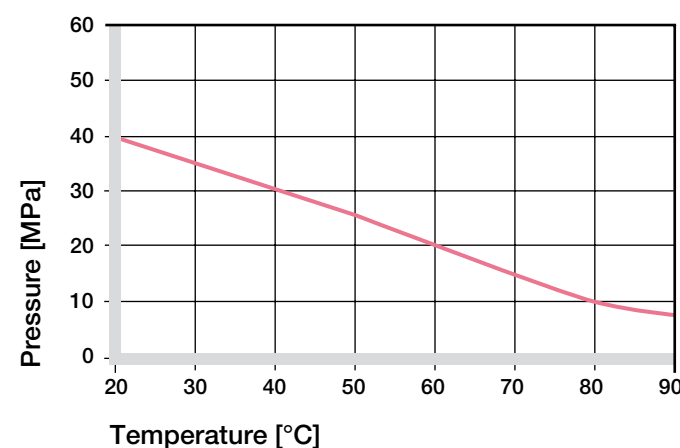


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

► Surface Pressure, page 63

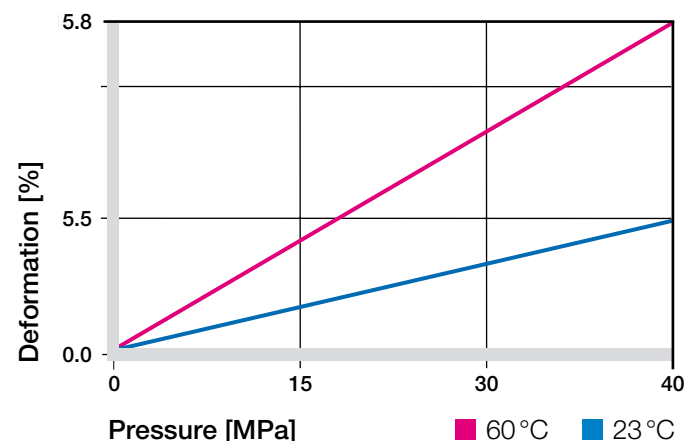


Diagram 03: Deformation under pressure and temperature

## Permissible Surface Speeds

Though important solid lubricants have been deliberately avoided in the development of the iglidur® C, the bearings are very wear resistant and for this reason suitable also for continuous movements at medium surface speeds. Though speeds up to 1.5 m/s can be achieved short term, for general long term applications the speeds should be below 0.5 m/s.

► Surface Speed, page 65

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1        | 0.7         | 2      |
| Short term | 1.5      | 1.1         | 3      |

Table 02: Maximum running speed

## Temperatures

The short-term maximum application temperature is +130 °C. However no real loads are possible at this temperature. Therefore it would be reasonable to limit the operating temperature to about +120 °C.

Note that the bearing should be mechanically secured in the housing from temperatures of +40 °C to prevent the bearing coming out of the housing.

► Application Temperatures, page 66

| iglidur® C                     | Application temperature |
|--------------------------------|-------------------------|
| Minimum                        | -40 °C                  |
| Max. long term                 | +90 °C                  |
| Max. short term                | +130 °C                 |
| Add. securing is required from | +40 °C                  |

Table 03: Temperature limits

## Friction and Wear

The coefficient of friction of the iglidur® C bearing is dependent to a large degree on the shaft surface finish. Even though PTFE and silicone have been designed out of this material, iglidur® C still gives very low coefficients of friction. Similarly the wear of the bearing is very good in applications with rotating or pivoting motions with low loads.

► Coefficients of Friction and Surfaces, page 68

► Wear Resistance, page 69

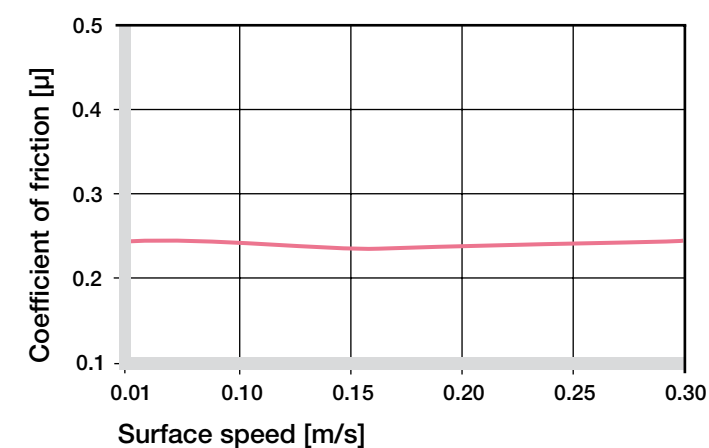


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

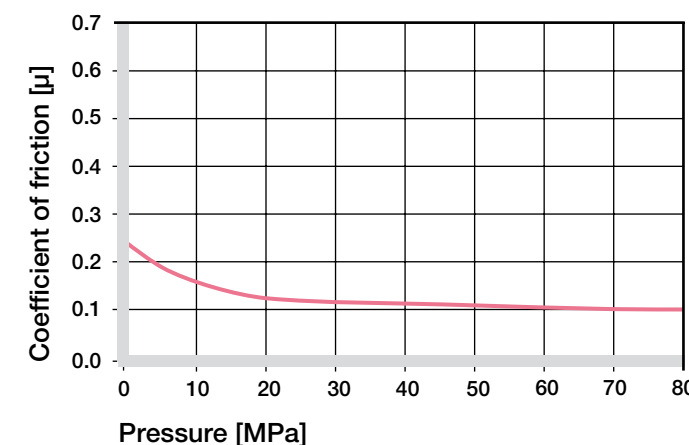


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

## Shaft Materials

Diagram 07 clearly shows how critical the choice of shaft material is. Though all results of this rotation test under the load of 0.75 MPa can be read as excellent, the difference is significant.

Diagram 08 shows eventually that this difference rises still further with increasing pressures.

► Shaft Materials, page 71

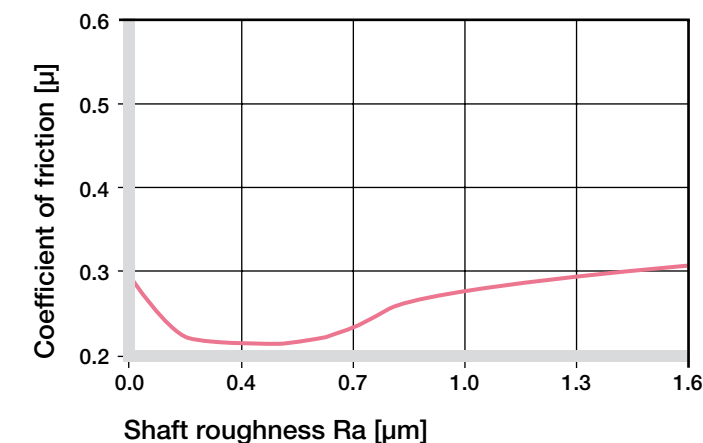


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

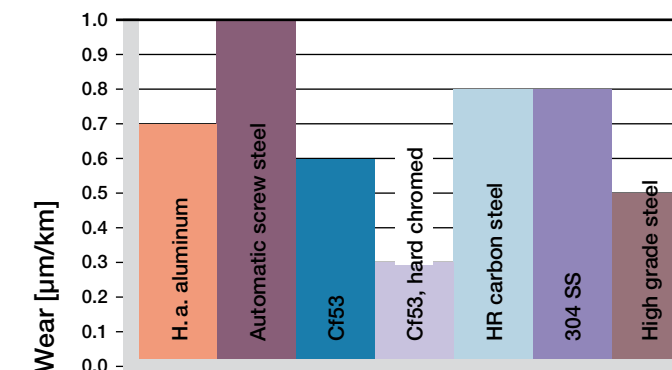


Diagram 07: Wear, rotating with different shaft materials, pressure, p = 1 MPa, v = 0.3 m/s

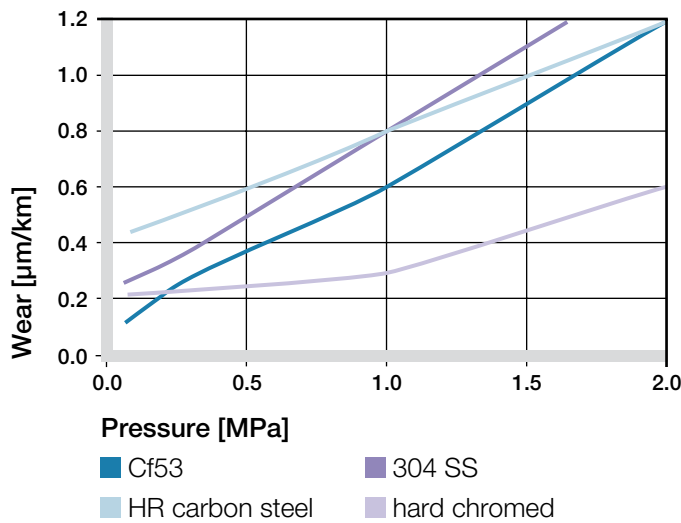


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

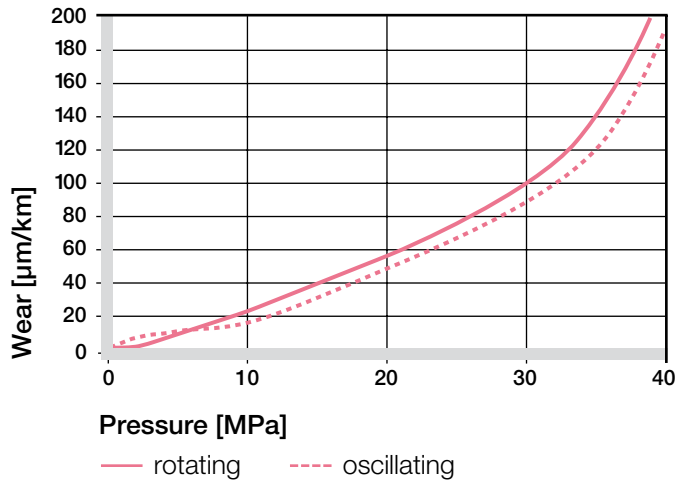


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® C | Dry       | Greases | Oil  | Water |
|------------|-----------|---------|------|-------|
| C. o. f. µ | 0.17–0.25 | 0.09    | 0.04 | 0.04  |

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® C plain bearings are resistant to detergents, greases, oils, diluted alkalines and weak acids.

► Chemical Table, page 1258

| Medium                          | Resistance |
|---------------------------------|------------|
| Alcohol                         | + to 0     |
| Hydrocarbons                    | +          |
| Greases, oils without additives | +          |
| Fuels                           | +          |
| Diluted acids                   | 0 to –     |
| Strong acids                    | –          |
| Diluted alkalines               | +          |
| Strong alkalines                | 0          |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® C are radiation resistant up to a radiation intensity of  $2 \cdot 10^4$  Gy. Higher radiation affects the material and can result in a loss of important mechanical characteristics.

UV Resistance

iglidur® C plain bearings are not resistant to UV radiation. For applications in outdoor areas, or in cases of other intensive radiation, adequate protection against direct radiation must be provided.

Vacuum

When used in a vacuum environment, the iglidur® C plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® C plain bearings are electrically insulating.

|                    |                              |
|--------------------|------------------------------|
| Volume resistance  | $> 10^{10} \Omega \text{cm}$ |
| Surface resistance | $> 10^9 \Omega 10$           |

Moisture Absorption

The moisture absorption of iglidur® C plain bearings is approx. 7 % when saturated in water, and this needs to be taken into account if this material is to be used in wet environments.

| Maximum moisture absorption |              |
|-----------------------------|--------------|
| At +23 °C/50 % r.h.         | 1.0 % weight |
| Max. water absorption       | 6.9 % weight |

Table 06: Moisture absorption

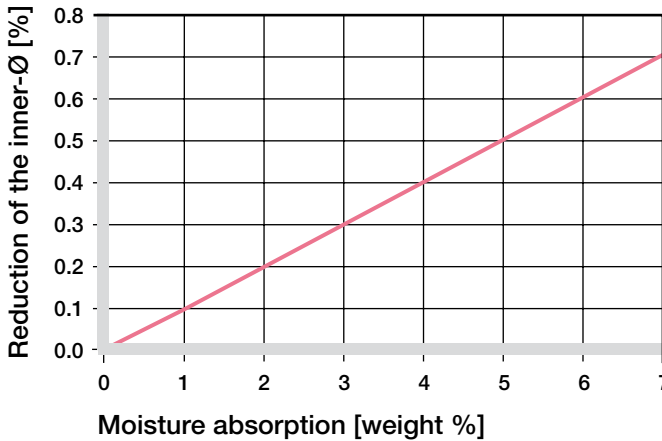


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® C plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 75

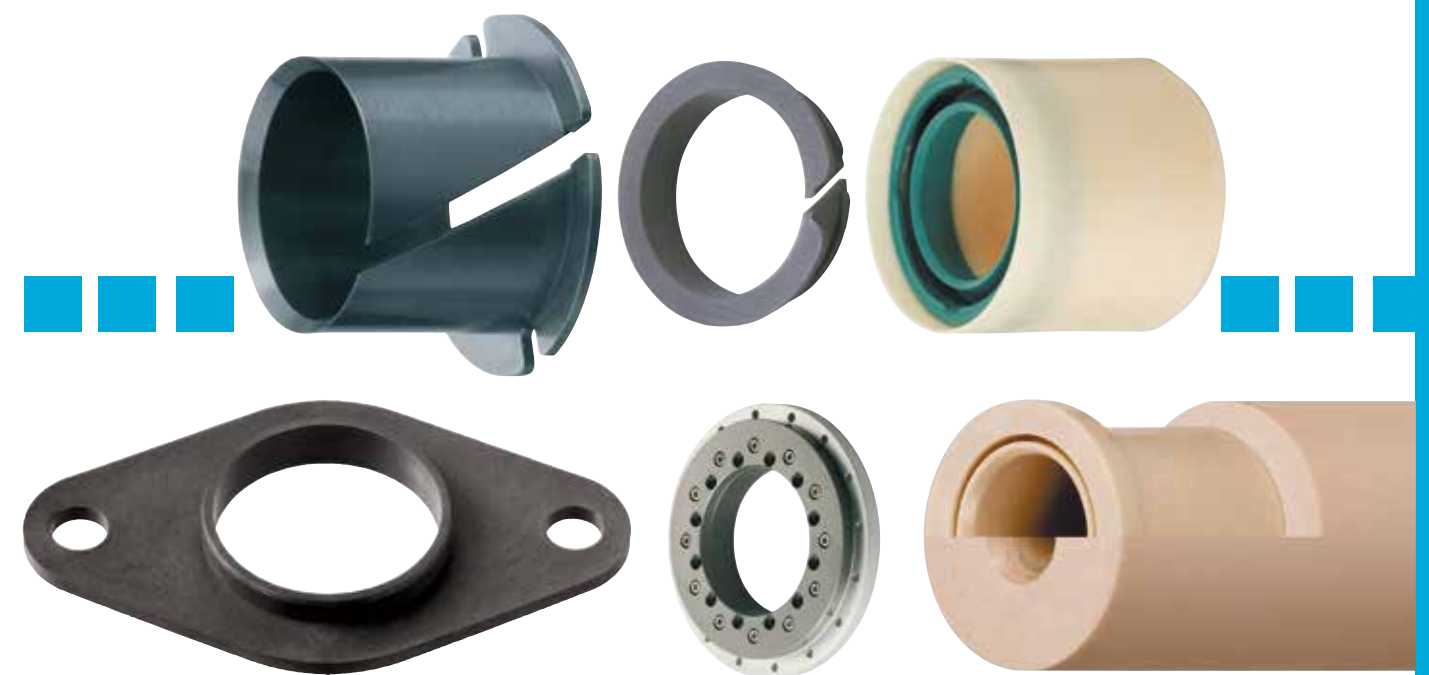
| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® C D11 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.020 +0.080       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.030 +0.105       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.040 +0.130       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.050 +0.160       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.065 +0.195       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.080 +0.240       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.100 +0.290       | 0 +0.030        |

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® C plain bearings are produced to special order.

# 2. iglidur®



Other designs: clip and slewing ring bearings, bar stock and much more ...

# ...plastics



## Guiding shafts through sheet metal

### iglidur® Clip Bearings

► from page 625



Easy installation, fixed  
by two flanges

Clip

► page 625



Easy installation due to  
splitted design

Clips2

► page 631



New!

Easy installation due  
to splitted design

Clips2 with anti-rotation feature

► page 634



Press in and  
fold down

MKM

► page 637



Press and plug

MDM

► page 641

## Slewing Ring Bearings

### iglidur® PRT

► from page 645



High stiffness,  
PRT-01

► page 645



For high temperature,  
PRT-01-H1

► page 648



With toothed outer ring  
PRT-01-TO

► page 650



Very low weight  
PRT-02

► page 651



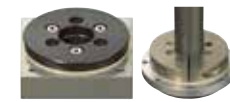
FDA-compliant  
PRT-02/A180

► page 651



Low-cost  
PRT-03

► page 652



Special geometries  
and accessories

► page 653



New!

Universal gliding  
elements

► page 657

## Solutions for special applications

### Special types

► from page 659



Secured by screws

Flange bearings

► page 659



Zero-clearance and  
pre-tensioned bearings

JVSM/JVFM

► page 663



Polymer disc springs

polysorb

► page 667



For all shaft surfaces  
and materials

PEP

► page 671

## Piston rings

### Alternative to stamped PTFE tapes

► from page 675



Custom-made:  
choose material and  
dimensions

► page 675

## Knife edge rollers

### Ideal for conveyor belts

► from page 679



New!

Knife edge rollers  
3 different materials

► page 679

## For different applications

### Special designs

► from page 683



Incorporated radial  
shaft seal

Bearings with lip seal

► page 683



Matching sliding surfaces

Axial bearing

► page 687

## Bar stock and customised moulded parts

### For design freedom

► from page 691



Fast manufacturing with  
speedicut:  
round stocks made from  
iglidur® materials

► page 694



New!

Fast manufacturing with  
speedicut:  
plate materials made of  
iglidur® J

► page 698

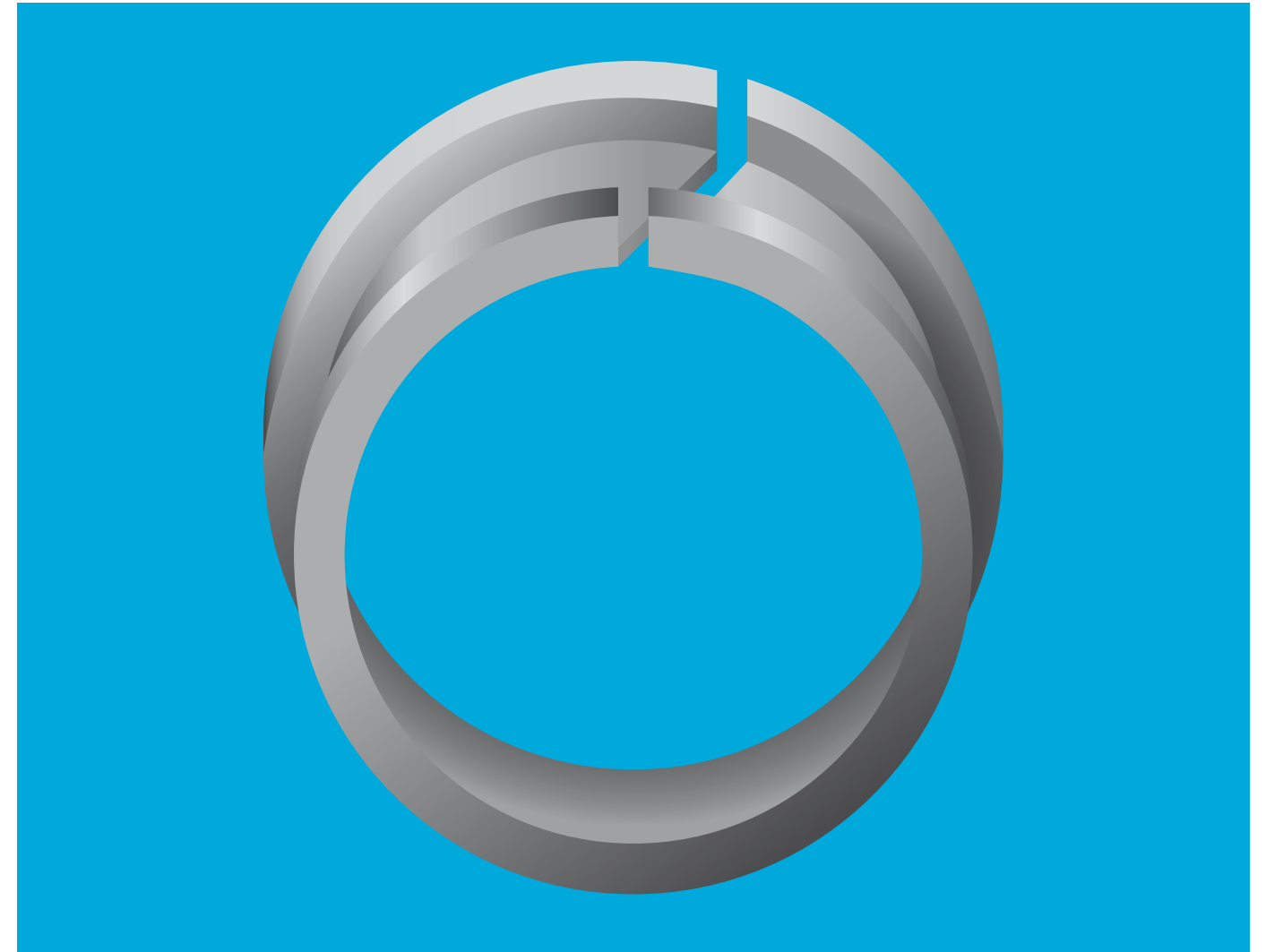
### speedigus

► from page 701



customised special  
parts:  
speedimold, speedicut  
and speedifit

► page 702



## iglidur® Clip Bearings



Standard range from stock

Easy to fit

Increased security with the double flange design

Good wear resistance

Maintenance-free and predictable lifetime

Material iglidur® M250

Special dimensions are possible

**For putting shafts through sheet metal.** iglidur® clip bearings are designed specifically for putting shafts through sheet metal. For this reason, the bearings have flanges located on both ends. The bearings are secured in the sheet metal plate on both sides after fitting.



## When to use it?

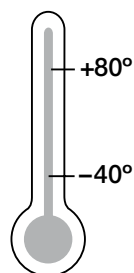
- When a sheet metal bearing is required
- When the bearing should be fitted into a drilled or punched hole with a wide tolerance
- For rotating, linear and pivoting movements
- When a quick-fitting bearing solution is sought



## When not to use it?

- When continuous temperatures of above +80 °C occur  
▶ iglidur® G, page 81
- When a high-precision bearing is needed  
▶ iglidur® J, page 109
- When the sheet metal is more than 4 mm thick  
▶ iglidur® Clips2, page 631  
▶ iglidur® MKM, page 637
- When extremely high surface pressures occur  
▶ iglidur® G, page 81

## Temperature



## Product range

1 style  
Ø 3–25 mm  
more dimensions  
on request

## Main Criteria

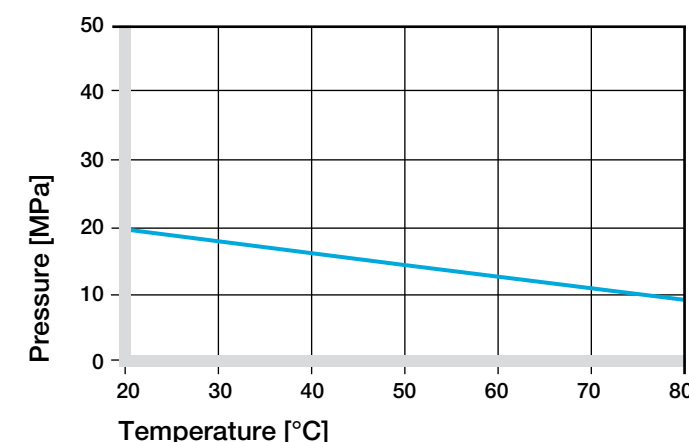
The clip bearings have an angled slot which allows the bearings to be fitted from one side. After fitting, the bearing expands and forms a lining for the bore in the metal plate. The shaft prevents the clip bearing from falling out the housing. Even during linear movement, the bearing cannot slide out of the housing. iglidur® clip bearings are made of wear resistant material iglidur® M250.

iglidur® M250 is a plain bearing material with strong wear resistance at average loads. The bearings are self-lubricating and can be used dry. The bearings can also be lubricated as iglidur® M250 material is resistant to all common lubricants.

## Mechanical Properties

The permissible static pressure of iglidur® clip bearings at room temperature is 20 MPa. Due to the possibility of high tolerances in the housing bore, the clip bearing has a high compressive strength even for punched holes. For bearing surfaces that are very small, the vibration dampening properties and the resistance to edge loads are especially important.

▶ iglidur® M250, page 127



**Diagram 01: Recommended maximum surface pressure as a function of temperature (20 MPa at +20 °C)**

## Permissible Surface Speeds

Clip bearings are extremely wear resistant in slow rotating, oscillating, and linear movements. The maximum surface speeds for the different movements are the same as for the material iglidur® M250 (Table 01).

With lubrication the permissible speeds can be increased.

▶ Surface Pressure, page 63

| m/s        | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8      | 0.6         | 2.5    |
| Short term | 2        | 1.4         | 5      |

**Table 01: Maximum running speed**

## Temperatures

For operating temperatures up to +80 °C iglidur® clip bearings display high wear resistance. Even in the cold, the plain bearings remain elastic and resistant to wear.

▶ Application Temperatures, page 66

| iglidur® M250   | Application temperature |
|-----------------|-------------------------|
| Minimum         | –40 °C                  |
| Max. long term  | +80 °C                  |
| Max. short term | +170 °C                 |

**Table 02: Temperature limits**

## Installation

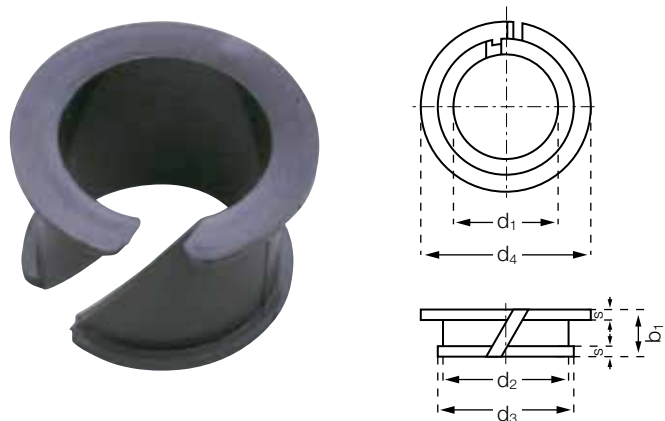
For installation, the plain bearings are pressed together on the side with the large flange. The angled slot makes the bearing spiral shaped so that it can be placed easily into the metal plate. The slot also compensates for expansions of the circumference. In this way, a tight clearance is possible with the clip bearings.

The recommended clearance allows a nominal size shaft to turn easily. The clip bearings should be fitted into a housing with a “H” class tolerance, up to H13. The clip bearing can also rotate within the housing bore.

| Diameter d1 [mm] | Shaft h9 [mm] | Tolerances D11 [mm] | Housing H7 [mm] |
|------------------|---------------|---------------------|-----------------|
| up to 3          | 0–0.025       | +0.020 +0.080       | 0 +0.010        |
| > 3 to 6         | 0–0.030       | +0.030 +0.105       | 0 +0.012        |
| > 6 to 10        | 0–0.036       | +0.040 +0.130       | 0 +0.015        |
| > 10 to 18       | 0–0.043       | +0.050 +0.160       | 0 +0.018        |
| > 18 to 30       | 0–0.052       | +0.065 +0.195       | 0 +0.021        |
| > 30 to 50       | 0–0.062       | +0.080 +0.240       | 0 +0.025        |
| > 50 to 80       | 0–0.074       | +0.100 +0.290       | 0 +0.030        |

**Table 03: Important tolerances for plain bearings according to ISO 3547-1 after pressfit**

Clip Bearings



Order key

**MCM-06-015**

- Sheet metal thickness
- Inner diameter d1
- Metric
- Clip Bearings
- Material iglidur® M250



Material:  
iglidur® M250 ► page 127

Dimensions [mm]

| Part number | d1<br>D11* | d2   | d3   | d4 | s   | b1  |
|-------------|------------|------|------|----|-----|-----|
| MCM-03-02   | 3          | 4.2  | 4.8  | 6  | 0.6 | 3.2 |
| MCM-03-03   | 3          | 4.2  | 4.8  | 6  | 0.6 | 4.2 |
| MCM-04-02   | 4          | 5.2  | 5.9  | 7  | 0.6 | 3.2 |
| MCM-04-03   | 4          | 5.2  | 5.9  | 7  | 0.6 | 4.2 |
| MCM-05-02   | 5          | 6.2  | 6.8  | 8  | 0.6 | 3.2 |
| MCM-05-03   | 5          | 6.2  | 6.8  | 8  | 0.6 | 4.2 |
| MCM-06-015  | 6          | 7.2  | 7.8  | 11 | 0.6 | 3.2 |
| MCM-06-02   | 6          | 7.2  | 7.8  | 11 | 0.6 | 3.2 |
| MCM-06-03   | 6          | 7.2  | 7.8  | 11 | 0.6 | 4.2 |
| MCM-06-04   | 6          | 7.2  | 7.8  | 11 | 0.6 | 5.2 |
| MCM-07-03   | 7          | 9    | 9.8  | 13 | 0.8 | 4.6 |
| MCM-08-02   | 8          | 9.6  | 10.4 | 13 | 0.8 | 3.6 |
| MCM-08-03   | 8          | 9.6  | 10.4 | 13 | 0.8 | 4.6 |
| MCM-09-02   | 9          | 10.6 | 11.4 | 14 | 0.8 | 3.6 |

\* d1 measurement is measured with a plug gauge after fitting into a reference housing d2 (+0.005). Please see D11 tolerances table ► page 627.

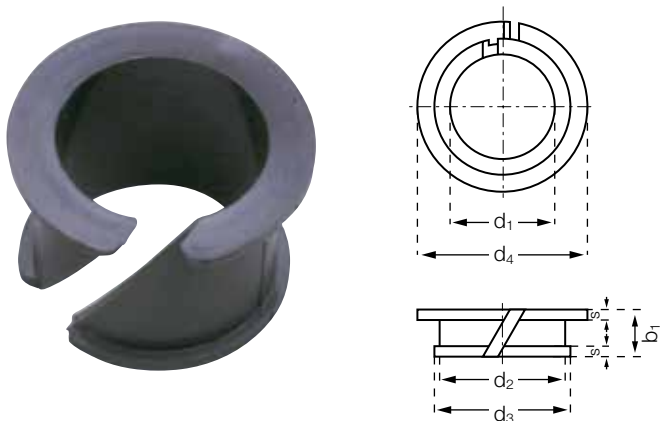


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time



prices price list online  
www.igus.co.uk/en/clips

Clip Bearings



Order key

**MCI-03-01**

- Sheet metal thickness
- Inner diameter d1
- Inch
- Clip Bearings
- Material iglidur® M250



Material:  
iglidur® M250 ► page 127

Dimensions [Inch]

| Part number | d1<br>D11* | d2     | d3    | d4    | s     | b1     |
|-------------|------------|--------|-------|-------|-------|--------|
| MCI-03-01   | 3/16       | 0.2343 | 1/4   | 5/16  | 0.032 | 0.1380 |
| MCI-03-02   | 3/16       | 0.2343 | 1/4   | 5/16  | 0.032 | 0.2000 |
| MCI-04-01   | 1/4        | 0.3125 | 11/32 | 7/16  | 0.032 | 0.1380 |
| MCI-04-02   | 1/4        | 0.3125 | 11/32 | 7/16  | 0.032 | 0.2000 |
| MCI-05-01   | 5/16       | 0.3750 | 13/32 | 1/2   | 0.032 | 0.1380 |
| MCI-05-02   | 5/16       | 0.3750 | 13/32 | 1/2   | 0.032 | 0.2000 |
| MCI-06-01   | 3/8        | 0.4375 | 15/32 | 9/16  | 0.032 | 0.1380 |
| MCI-06-02   | 3/8        | 0.4375 | 15/32 | 9/16  | 0.032 | 0.2000 |
| MCI-07-01   | 7/16       | 0.5000 | 17/32 | 5/8   | 0.032 | 0.1380 |
| MCI-07-02   | 7/16       | 0.5000 | 17/32 | 5/8   | 0.032 | 0.2000 |
| MCI-08-01   | 1/2        | 0.5625 | 19/32 | 11/16 | 0.032 | 0.1380 |
| MCI-08-02   | 1/2        | 0.5625 | 19/32 | 11/16 | 0.032 | 0.2000 |

\* d1 measurement is measured with a plug gauge after fitting into a reference housing d2 (+0.005). Please see D11 tolerances table ► page 627.



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time



prices price list online  
www.igus.co.uk/en/clips





## iglidur® Clips2 – easy assembly and precise



Available from stock

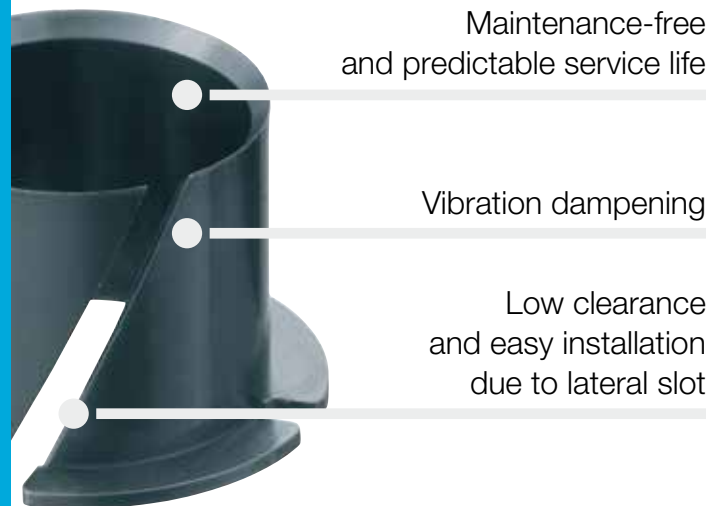
Low bearing clearance, high precision

Easy installation due to chamfered edge

Material: iglidur® M250

Maintenance-free and predictable service life

**Easy assembly in sheet metal and precise.** Clip bearings easy to install made of the proven iglidur® M250 material. The lateral slot compensates the housing bore tolerances, enables low clearances and ensures an easy assembly.



#### When to use it?

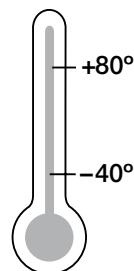
- When simple assembly (by hand) is required
- When there is a very imprecise housing bore
- When a simple and cost effective bearing solution is sought



#### When not to use it?

- When the bearing should be secured by press fit  
► iglidur® M250, page 127
- When continuous temperatures of above +80° C occur  
► iglidur® G, page 81
- When extremely high surface pressures occur  
► iglidur® G, page 81

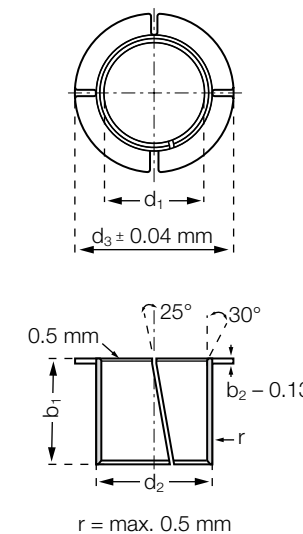
#### Temperature



#### Product range

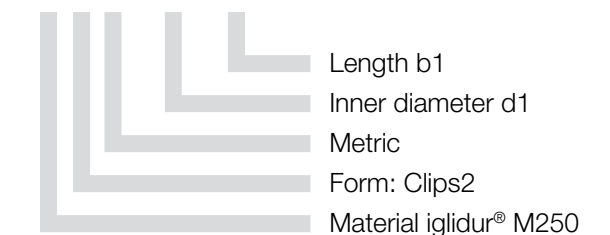
1 style  
Ø 4–25 mm  
more dimensions  
on request

#### Clips2



#### Order key

**MYM-04-04**



**Material:**  
iglidur® M250 ► page 127

#### Dimensions [mm]

| Part number | d1 | d1-Tolerance* | d2**  | d3<br>±0.40 | b1<br>-0.40 | b2<br>-0.13 |
|-------------|----|---------------|-------|-------------|-------------|-------------|
| MYM-04-04   | 4  | +0.025 +0.075 | 5.20  | 7.00        | 4.00        | 0.60        |
| MYM-05-05   | 5  | +0.025 +0.075 | 6.20  | 8.00        | 5.00        | 0.60        |
| MYM-06-06   | 6  | +0.025 +0.075 | 7.20  | 9.50        | 6.00        | 0.60        |
| MYM-08-08   | 8  | +0.025 +0.075 | 9.60  | 12.00       | 8.00        | 0.80        |
| MYM-10-10   | 10 | +0.025 +0.075 | 11.60 | 15.00       | 10.00       | 0.80        |
| MYM-12-12   | 12 | +0.025 +0.075 | 13.60 | 18.00       | 12.00       | 0.80        |
| MYM-14-14   | 14 | +0.025 +0.075 | 15.60 | 21.00       | 14.00       | 0.80        |
| MYM-16-16   | 16 | +0.025 +0.075 | 17.60 | 24.00       | 16.00       | 0.80        |
| MYM-20-20   | 20 | +0.025 +0.075 | 21.60 | 30.00       | 20.00       | 0.80        |
| MYM-25-25   | 25 | +0.025 +0.075 | 27.40 | 37.50       | 25.00       | 1.20        |

\* d1 measurement is measured with a plug gauge after fitting into a reference housing d2 (+0.005)

\*\* Recommended housing bore tolerance: H9

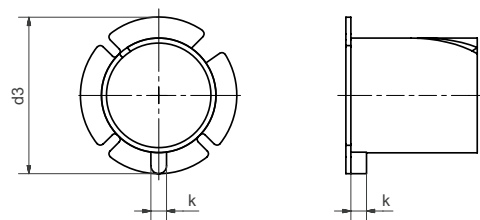
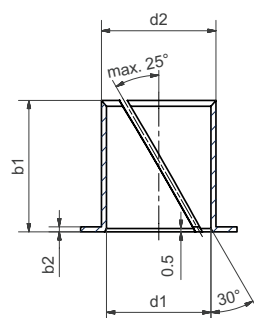


**delivery** from stock  
time



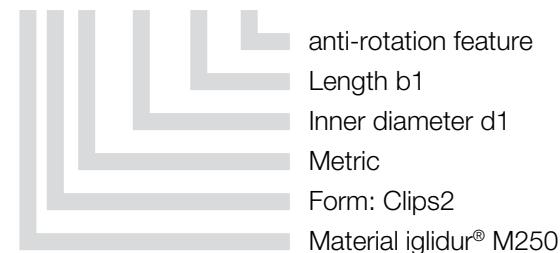
**prices** price list online  
www.igus.co.uk/en/clips2

## Clips2 bearing with anti-rotation feature



Order key

MYM-04-04-K


Material:  
iglidur® M250 ► page 127

## Dimensions [mm]

| Part number             | d1 | d1-Tolerance* | d2**  | d3<br>±0.40 | b1<br>-0.40 | b2<br>-0.13 | k   |
|-------------------------|----|---------------|-------|-------------|-------------|-------------|-----|
| MYM-04-04-K <b>New!</b> | 4  | +0.025 +0.075 | 5.20  | 7.00        | 4.00        | 0.60        | 1.0 |
| MYM-05-05-K <b>New!</b> | 5  | +0.025 +0.075 | 6.20  | 8.00        | 5.00        | 0.60        | 1.0 |
| MYM-06-06-K <b>New!</b> | 6  | +0.025 +0.075 | 7.20  | 9.50        | 6.00        | 0.60        | 1.5 |
| MYM-10-10-K <b>New!</b> | 10 | +0.025 +0.075 | 11.60 | 15.00       | 10.00       | 0.80        | 2.0 |
| MYM-14-14-K <b>New!</b> | 14 | +0.025 +0.075 | 15.60 | 21.00       | 14.00       | 0.80        | 3.0 |

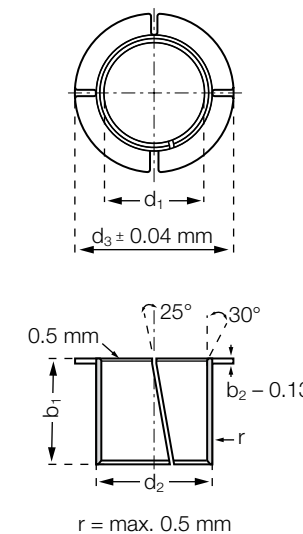
\* d1 measurement is measured with a plug gauge after fitting into a reference housing d2 (+0.005)

\*\* Recommended housing bore tolerance: H9


delivery from stock  
time

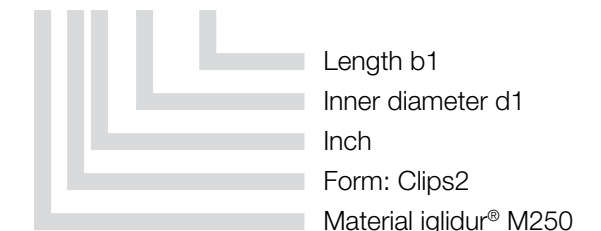
prices price list online  
www.igus.co.uk/en/clips2

## Clips2



Order key

MYI-03-03


Material:  
iglidur® M250 ► page 127

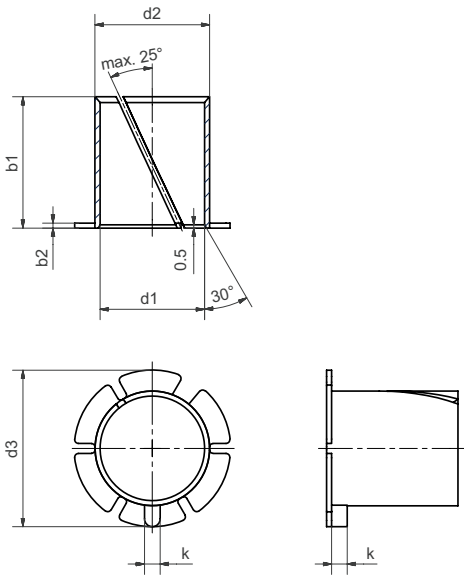
## Dimensions [Inch]

| Part number | d1   | Shaft diameter<br>min. max. | d2     | Housing bore<br>min. max. | d3     | b1    | b1-Tolerance | b2     |
|-------------|------|-----------------------------|--------|---------------------------|--------|-------|--------------|--------|
| MYI-03-03   | 3/16 | .1875 .1865                 | 0.2339 | .2351 .2339               | 19/61  | 3/16  | -0.016       | 0.0252 |
| MYI-04-04   | 1/4  | .0025 .2490                 | 0.2965 | .2979 .2965               | 13/32  | 1/4   | -0.016       | 0.0252 |
| MYI-05-05   | 5/16 | .3125 .3115                 | 0.3744 | .3758 .3744               | 1/2    | 5/16  | -0.017       | 0.0299 |
| MYI-06-06   | 3/8  | .3750 .3740                 | 0.4370 | .4387 .4370               | 19/32  | 3/8   | -0.017       | 0.0299 |
| MYI-07-07   | 7/16 | .4375 .4365                 | 0.4996 | .5013 .4996               | 21/32  | 7/16  | -0.017       | 0.0299 |
| MYI-08-06   | 1/2  | .5000 .4990                 | 0.5618 | .5635 .5618               | 3/4    | 3/4   | -0.018       | 0.0299 |
| MYI-08-08   | 1/2  | .5000 .4990                 | 0.5618 | .5635 .5618               | 3/4    | 1/2   | -0.018       | 0.0299 |
| MYI-10-07   | 5/8  | .6250 .6240                 | 0.6870 | .6887 .6870               | 15/16  | 7/16  | -0.018       | 0.0299 |
| MYI-10-10   | 5/8  | .6250 .6240                 | 0.6870 | .6887 .6870               | 15/16  | 5/8   | -0.018       | 0.0299 |
| MYI-10-18   | 5/8  | .6250 .6240                 | 0.6870 | .6887 .6870               | 15/16  | 1 1/8 | -0.018       | 0.0299 |
| MYI-12-12   | 3/4  | .7500 .7490                 | 0.8118 | .8139 .8118               | 1 1/8  | 3/4   | -0.019       | 0.0299 |
| MYI-12-18   | 3/4  | .7500 .7490                 | 0.8118 | .8139 .8118               | 1 1/8  | 1 1/8 | -0.019       | 0.0299 |
| MYI-14-7.5  | 7/8  | .8750 .8740                 | 0.9370 | .9391 .9370               | 1 5/16 | 15/32 | -0.019       | 0.0299 |
| MYI-14-14   | 7/8  | .8750 .8740                 | 0.9370 | .9391 .9370               | 1 5/16 | 7/8   | -0.019       | 0.0299 |
| MYI-16-14   | 1    | 1.0000 .9985                | 1.0933 | 1.0954 1.0933             | 1 1/2  | 7/8   | -0.020       | 0.0449 |
| MYI-16-16   | 1    | 1.0000 .9985                | 1.0933 | 1.0954 1.0933             | 1 1/2  | 1     | -0.020       | 0.0449 |


delivery from stock  
time

prices price list online  
www.igus.co.uk/en/clips2

Clips2 bearing with anti-rotation feature



Order key

MYI-04-04-K



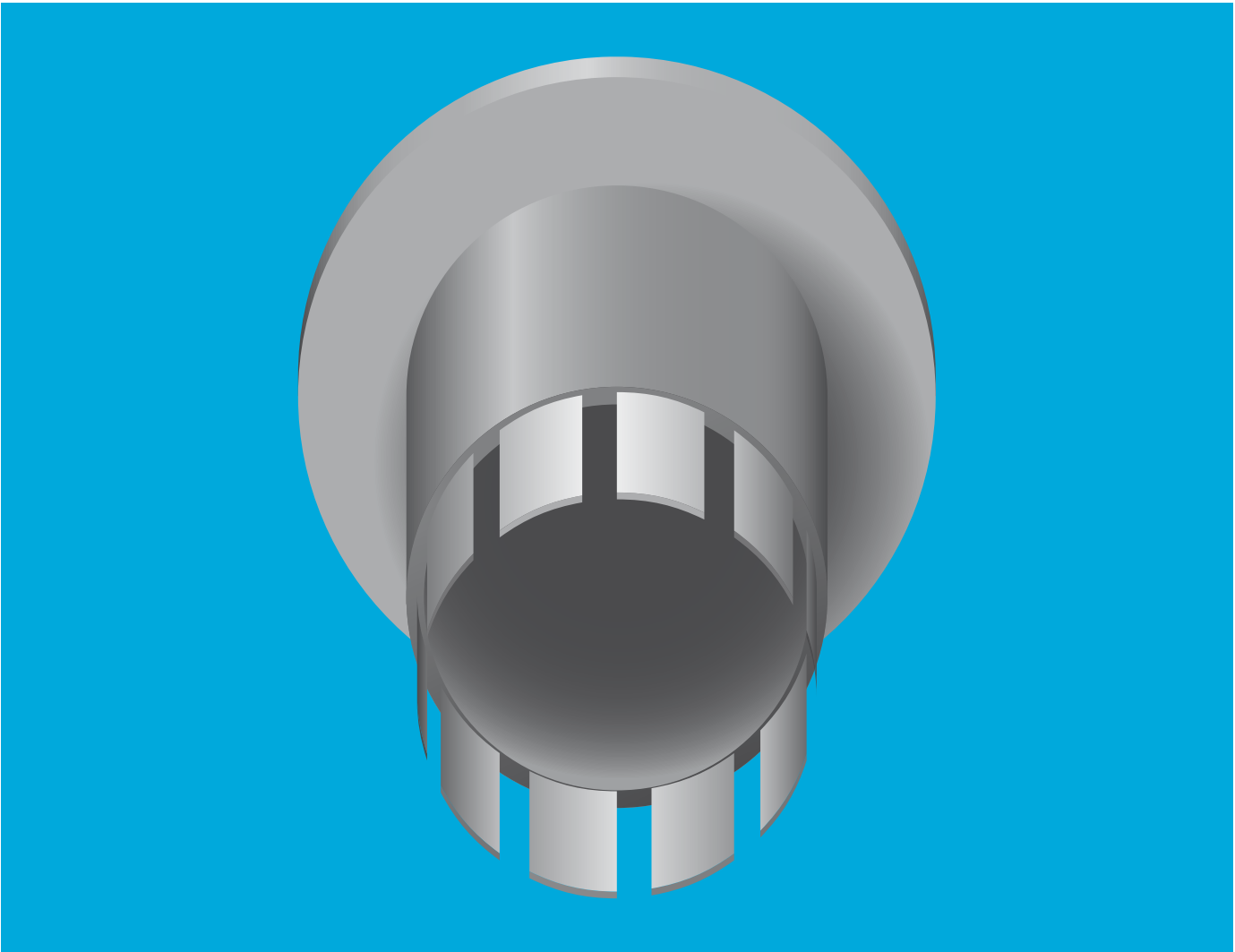
anti-rotation feature  
Length b1  
Inner diameter d1  
Inch  
Form: Clips2  
Material iglidur® M250



Material:  
iglidur® M250 ► page 127

Dimensions [Inch]

| Part number             | d1   | Shaft diameter |       | d2     | Housing bore |        | d3    | b1   | b1-<br>Tolerance | b2     | k    |
|-------------------------|------|----------------|-------|--------|--------------|--------|-------|------|------------------|--------|------|
|                         |      | min.           | max.  |        | min.         | max.   |       |      |                  |        |      |
| MYI-04-04-K <b>New!</b> | 1/4  | .0025          | .2490 | 0.2965 | .2979        | .2965  | 13/32 | 1/4  | −0.016           | 0.0252 | 1/16 |
| MYI-05-05-K <b>New!</b> | 5/16 | .3125          | .3115 | 0.3744 | .3758        | .3744  | 1/2   | 5/16 | −0.017           | 0.0299 | 3/32 |
| MYI-08-08-K <b>New!</b> | 1/2  | .5000          | .4990 | 0.5618 | .5635        | .5618  | 3/4   | 1/2  | −0.018           | 0.0299 | 3/32 |
| MYI-10-07-K <b>New!</b> | 5/8  | .6250          | .6240 | 0.6870 | .6887        | .6870  | 15/16 | 7/16 | −0.018           | 0.0299 | 1/8  |
| MYI-10-10-K <b>New!</b> | 5/8  | .6250          | .6240 | 0.6870 | .6887        | .6870  | 15/16 | 5/8  | −0.018           | 0.0299 | 1/8  |
| MYI-12-12-K <b>New!</b> | 3/4  | .7500          | .7490 | 0.8118 | .8139        | .8118  | 1 1/8 | 3/4  | −0.019           | 0.0299 | 1/8  |
| MYI-16-16-K <b>New!</b> | 1    | 1.0000         | .9985 | 1.0933 | 1.0954       | 1.0933 | 1 1/2 | 1    | −0.020           | 0.0449 | 5/32 |



iglidur® MKM-Double Flange Bearing:  
press in – fold down – ready



Pressfit

Axial load on both sides

Compensation of tolerances of the sheet metal

Easy assembly

Axial pre-tension

Special design possible, conductive material available



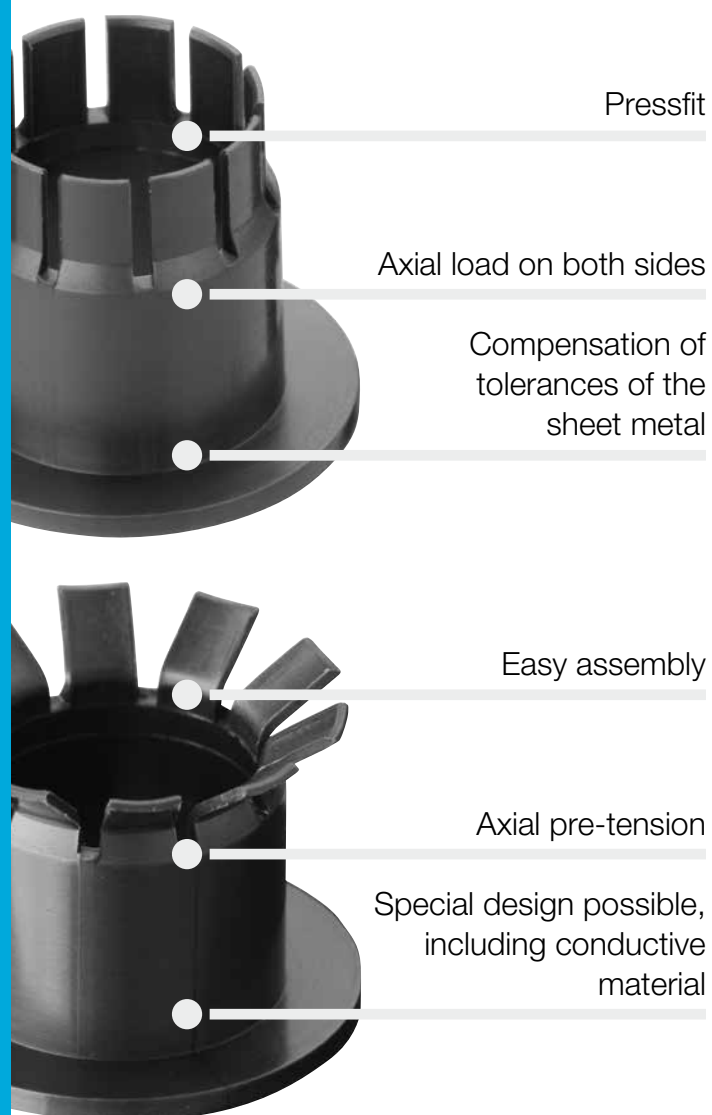
delivery from stock  
time



prices price list online  
www.igus.co.uk/en/clips2



**Press in sheet metal and fold down.** Double flange bearings easy to install made of the proven iglidur® M250 material. By pressing and turning down the „second flange“ the bearing is axially secured even when fitted into widely tolerated housing bores.



## When to use it?

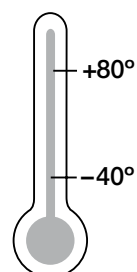
- When a double flanged bearing is needed
- When the housing bore is more than 4 mm long
- When the press fit force cannot be guaranteed
- When a double flange is required as a thrust surface



## When not to use it?

- When extreme compressive strengths are required  
► iglidur® G, page 81
- When a simple press-fit bearing is required  
► iglidur® M250, page 127
- When a clip bearing for sheet metal is required  
► iglidur® clip bearings, page 625

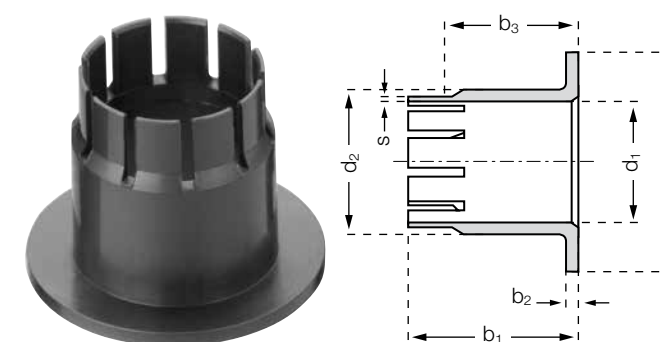
## Temperature



## Product range

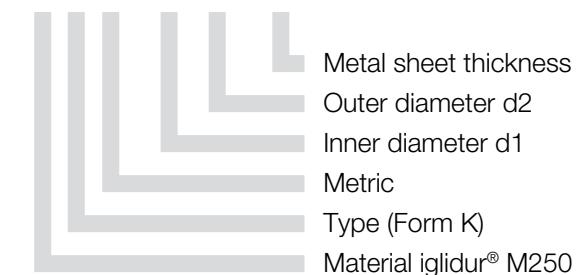
1 style  
more dimensions on request

## Double Flange Bearing



## Order key

**MKM-1012-10**



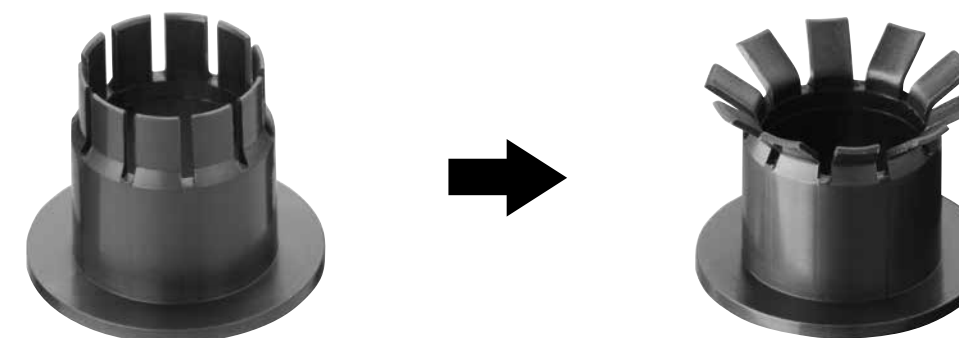
**Material:**  
iglidur® M250 ► page 127

## Sample dimension [mm]

| Part number | d1 | d1-Tolerance*<br>E10 | d2 | d3<br>d13 | b1<br>h13 | b2<br>-0.14 | b3<br>+0.1/+0.7 | s<br>±0.1 |
|-------------|----|----------------------|----|-----------|-----------|-------------|-----------------|-----------|
| MKM-1012-10 | 10 | +0.025 +0.083        | 12 | 18        | 14        | 1           | 10              | 0.4       |

\* after pressfit. Testing methods ► page 75

## Assembly:



Press in, fold down, finished: axial load on both sides



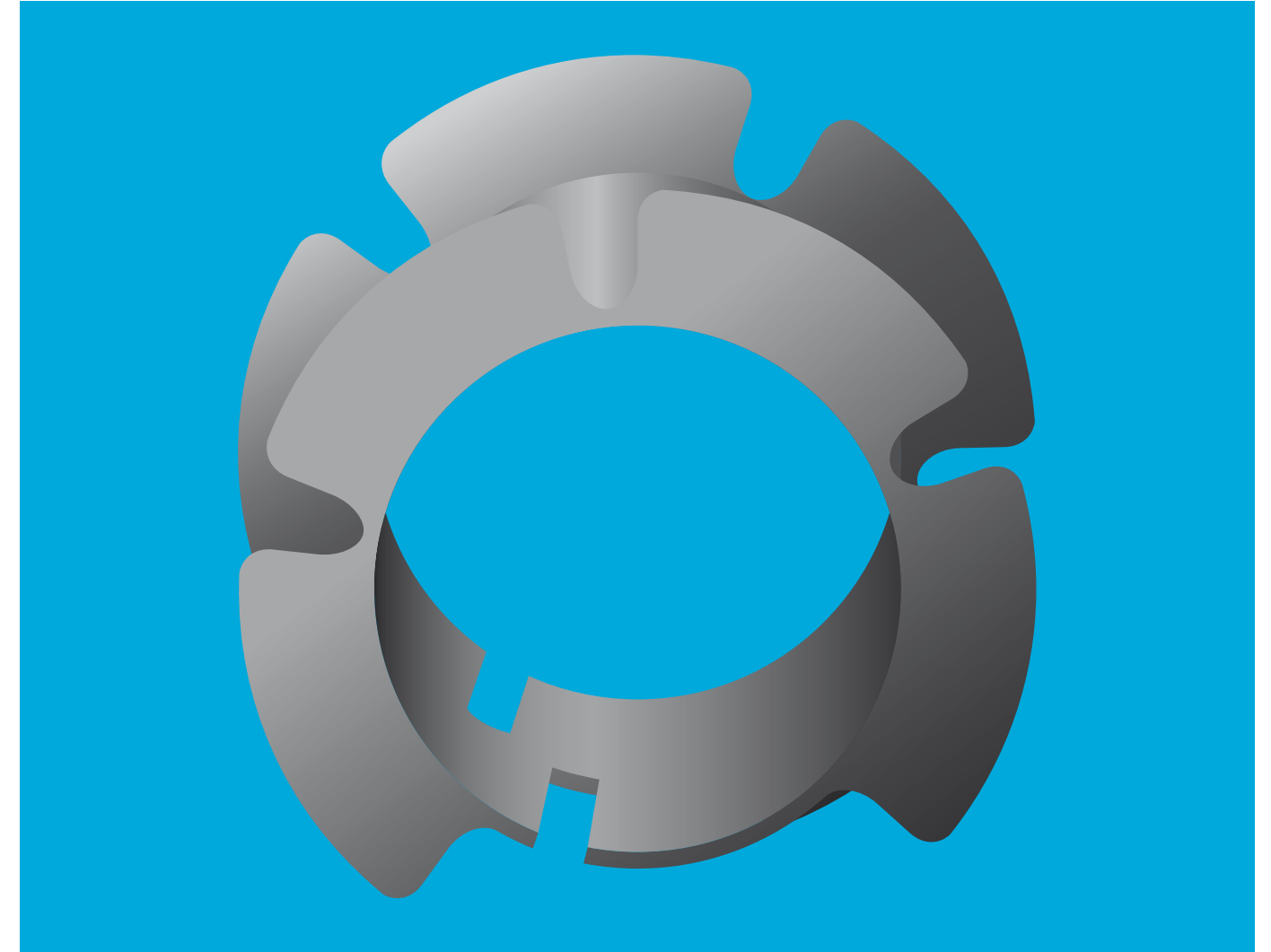
Please contact us if you need a custom-made bearing for your application. We will help you with your design, drawing on the experience that we have with a large number of custom bearing solutions. Let us work together on your application!



**delivery** from stock  
**time**



**prices** price list online  
[www.igus.co.uk/en/mkm](http://www.igus.co.uk/en/mkm)



## iglidur® MDM Double Flange Bearing: clip in – ready



Large flange surfaces

Symmetrical flange

Easy assembly

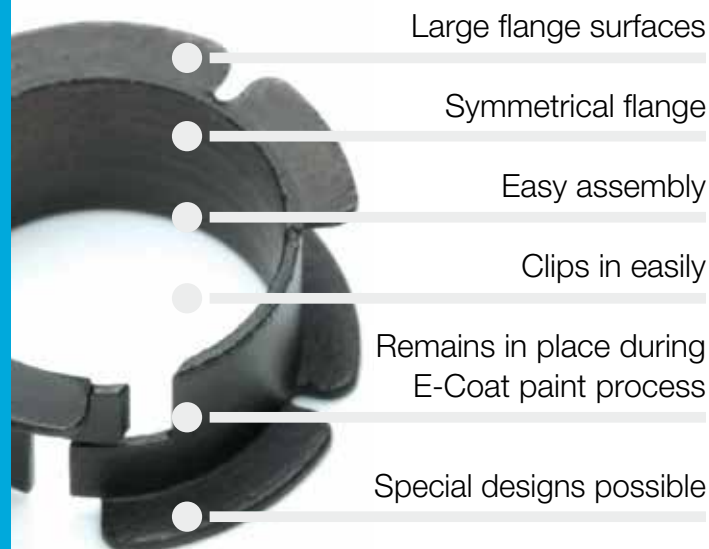
Clips in easily

Remains in place during E-Coat paint process

Special designs possible

# iglidur® MDM Double Flange Bearing

**Press in sheet metal and plug.** Clip-in double flange bearing with symmetrical flange. The large second flange allows the bearing to take high axial forces, and the bearing is secure even when fitted to wide tolerated bores.



Large flange surfaces

Symmetrical flange

Easy assembly

Clips in easily

Remains in place during  
E-Coat paint process

Special designs possible



## When to use it?

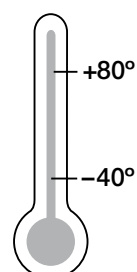
- When the axial security of an iglidur® clip bearing is not sufficient
- When there is a housing with very wide tolerance
- For high axial loads



## When not to use it?

- When an automated assembly is required  
▶ iglidur® MKM, page 637
- When the iglidur® clip bearings offer adequate fit  
▶ iglidur® clip bearings, page 625
- When a large bearing length is required  
▶ iglidur® MKM, page 637

## Temperature

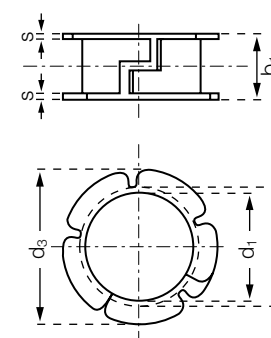


## Product range

1 style  
more dimensions on request

# iglidur® Double Flange Bearing | Product Range

## Double Flange Bearing



## Order key

**MDM-1213-06**



Sheet metal thickness  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form D)  
Material iglidur® M250



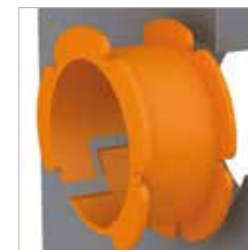
**Material:**  
iglidur® M250 ▶ page 127

## Sample dimension [mm]

| Part number | d1 | d1-Tolerance* | d2 | d3   | b1 | s   |
|-------------|----|---------------|----|------|----|-----|
| MDM-1213-06 | 12 | +0.050 +0.160 | 13 | 16.5 | 7  | 0.5 |

\* d1 measurement is measured with a plug gauge after fitting into a reference housing d2 (+0.005)

## Assembly:



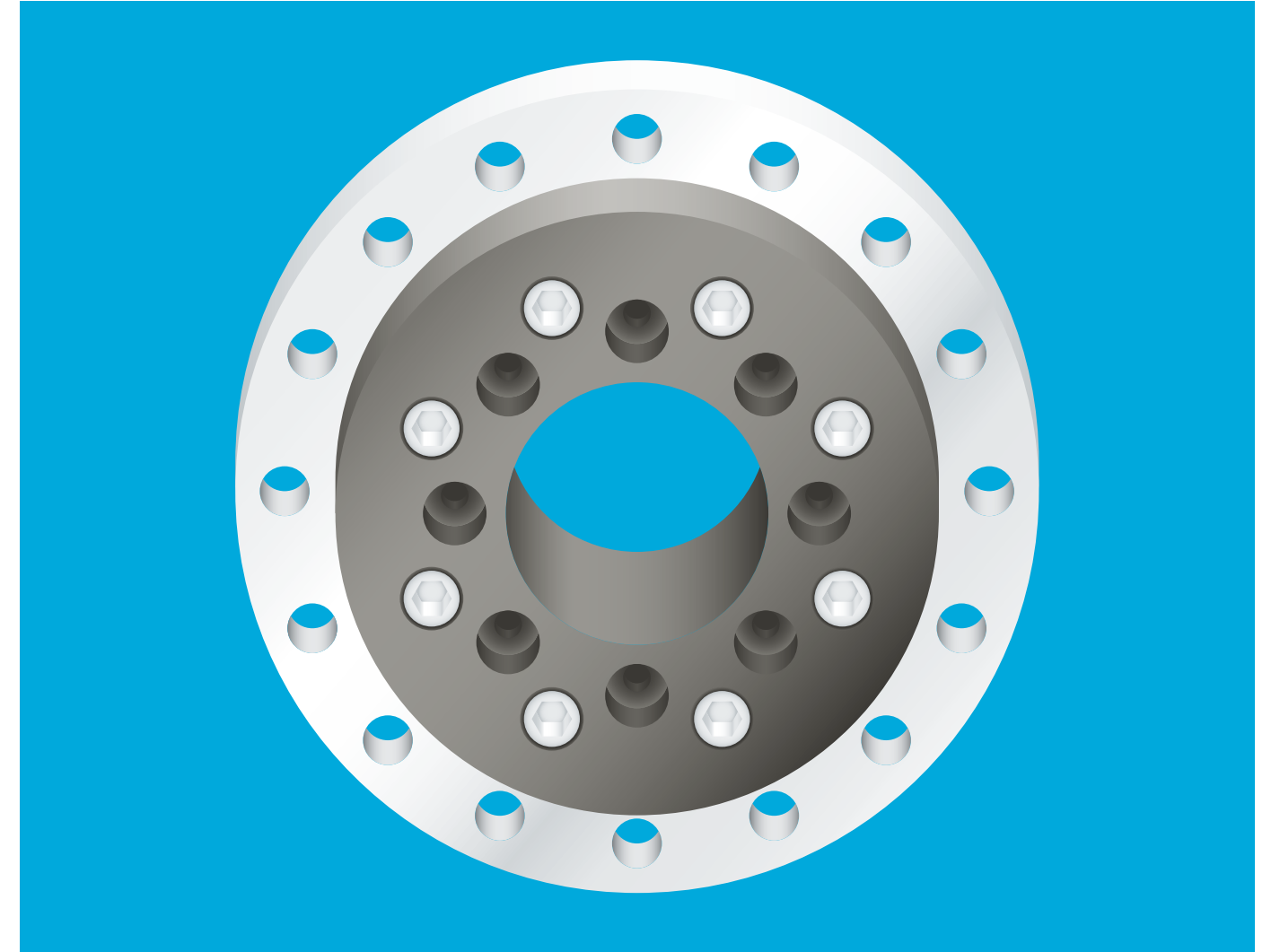
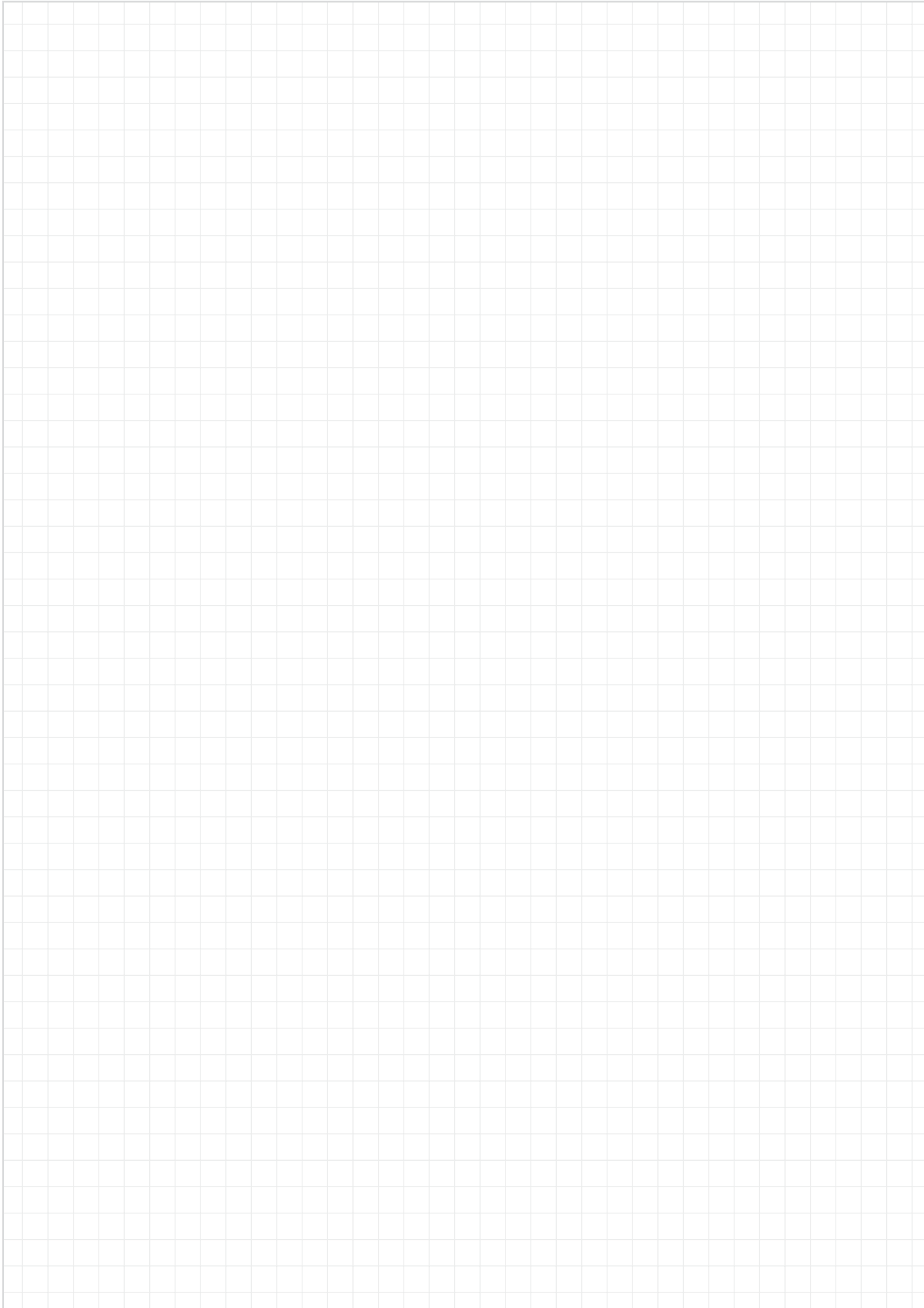
Please contact us if you need a custom-made bearing for your application. We will help you with your design, drawing on the experience that we have with a large number of custom bearing solutions. Let us work together on your application!



**delivery** from stock  
**time**



**prices** price list online  
[www.igus.co.uk/en/mdm](http://www.igus.co.uk/en/mdm)



## iglidur® PRT – Slewing Ring Bearing



Standard range from stock

Completely maintenance-free

Easy installation, iglidur® sliding pads

High wear resistance

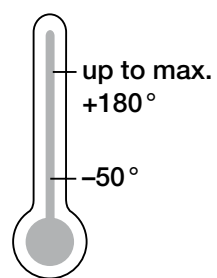
For high load capacity, high stiffness

Available as stainless steel version

Wide range of accessories



iglidur® PRT is a Slewing ring bearing with the proven advantages of the igus® polymer bearings. The sliding pads made of iglidur® high-performance polymers are completely free from maintenance and lubrication. All the housing components are made from anodized aluminum or stainless steel, the surfaces which mate with the iglidur® sliding pads are all hard anodized or (optional) stainless steel. All the fixing screws are made of stainless steel.



#### When to use it?

- When a ready-to-fit solution is needed
- As a robust and corrosion resistant bearing unit for high loads
- For high tilting moments
- For use with different surrounding media
- When a lubrication and maintenance free Slewing Ring Bearing is needed
- For slow to medium speed

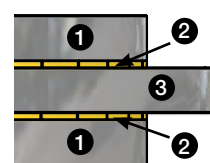


#### When not to use it?

- For fast rotations
- With temperatures over +180°C
- When there is not enough driving torque at high loads
- When highest precision is needed

#### Product range

3 types  
42 dimensions  
Ø 20–300 mm



#### 1 Type 01:

Aluminum, hard anodized, or Stainless steel V4A

#### Type 02:

iglidur® J4 or A180

#### 2 Type 01:

iglidur® J or H1

#### 3 Type 01 and 02:

Aluminum, anodized, or Stainless steel V4A

#### Typical sectors of industry and application areas

- Conveyors ● Automation
- Assembly stations ● Theatre/Stage and lighting technology ● Renewable energy etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► [www.igus.co.uk/iglidur-applications](http://www.igus.co.uk/iglidur-applications)



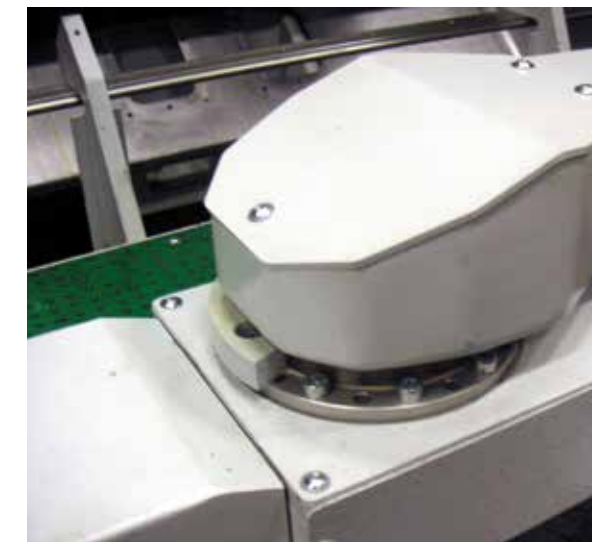
Handling and conveyance system for semiconductor transport/box.



► [www.igus.co.uk/projector](http://www.igus.co.uk/projector)

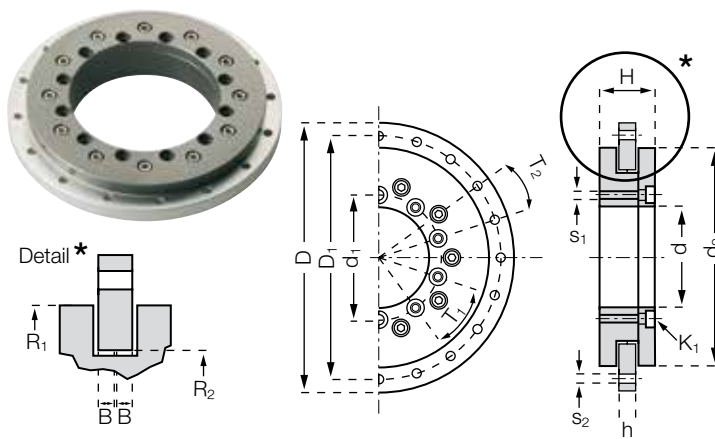


► [www.igus.co.uk/welding-plant](http://www.igus.co.uk/welding-plant)



► [www.igus.co.uk/cnc-machining](http://www.igus.co.uk/cnc-machining)

Slewing ring bearing



Order key

PRT-01-30-ES-H1

blank = iglidur® J  
Sliding pads from  
iglidur® H1  
Blank: Aluminium  
ES: Stainless steel V4A  
Inner-Ø  
Type  
Slewing Ring



Available in stainless  
steel

Special properties

- Slewing ring with high stiffness
- Easy to fit
- High wear resistance
- Maintenance-free sliding pads made of iglidur® J ▶ [page 109](#)
- Available in aluminium or stainless steel V4A

Dimensions [mm]

| Part Number | D*  | D1  | d1   | d   | d2   | H  | h  | T1       | T2         | S1 | S2  | K1          | R1   | R2    | B   |
|-------------|-----|-----|------|-----|------|----|----|----------|------------|----|-----|-------------|------|-------|-----|
|             |     |     |      |     | ±0.2 |    |    |          |            |    |     | for screw   |      |       |     |
| PRT-01-20   | 80  | 70  | 31   | 20  | 60   | 24 | 8  | 3 x 120° | 6 x 60°    | M4 | 4.5 | DIN 7984 M4 | 30   | 20    | 3.5 |
| PRT-01-30   | 100 | 91  | 42.5 | 30  | 82   | 29 | 10 | 8 x 45°  | 8 x 45°    | M4 | 4.5 | DIN 7984 M4 | 41   | 29    | 4.5 |
| PRT-01-50   | 150 | 135 | 65   | 50  | 120  | 33 | 10 | 8 x 45°  | 16 x 22.5° | M6 | 6.6 | DIN 912 M6  | 11.4 | 33    | 4.5 |
| PRT-01-60   | 160 | 145 | 74   | 60  | 130  | 33 | 10 | 10 x 36° | 20 x 18°   | M5 | 5.5 | DIN 912 M5  | 65   | 51.5  | 4.5 |
| PRT-01-100  | 185 | 170 | 112  | 100 | 160  | 34 | 12 | 12 x 30° | 16 x 22.5° | M5 | 5.5 | DIN 912 M5  | 80   | 69    | 5.5 |
| PRT-01-150  | 250 | 235 | 165  | 150 | 220  | 35 | 12 | 12 x 30° | 16 x 22.5° | M5 | 5.5 | DIN 912 M5  | 110  | 96.5  | 5.5 |
| PRT-01-200  | 300 | 285 | 215  | 200 | 274  | 38 | 15 | 12 x 30° | 16 x 22.5° | M6 | 6.6 | DIN 912 M6  | 137  | 124   | 7.0 |
| PRT-01-300  | 450 | 430 | 320  | 300 | 410  | 42 | 15 | 12 x 30° | 16 x 22.5° | M8 | 9.0 | DIN 7984 M8 | 205  | 186.6 | 7.0 |

\* Tolerance according to DIN ISO 2768 mK

High temperature slewing ring bearing



Special properties

- Suitable up to +180°C, high chemical resistance
- Available for 6 standard dimensions of type 01
- Body in aluminium or stainless steel
- Sliding pads in iglidur® H1 ▶ [page 365](#)

Dimensions [mm]

| Part Number   | D*  | D1  | d1   | d   | d2   | H  | h  | T1       | T2         | S1 | S2  | K1          | R1  | R2    | B   |
|---------------|-----|-----|------|-----|------|----|----|----------|------------|----|-----|-------------|-----|-------|-----|
|               |     |     |      |     | ±0.2 |    |    |          |            |    |     | for screw   |     |       |     |
| PRT-01-30-H1  | 100 | 91  | 42.5 | 30  | 82   | 29 | 10 | 8 x 45°  | 8 x 45°    | M4 | 4.5 | DIN 7984 M4 | 41  | 29    | 4.5 |
| PRT-01-60-H1  | 160 | 145 | 74   | 60  | 130  | 33 | 10 | 10 x 36° | 20 x 18°   | M5 | 5.5 | DIN 912 M5  | 65  | 51.5  | 4.5 |
| PRT-01-100-H1 | 185 | 170 | 112  | 100 | 160  | 34 | 12 | 12 x 30° | 16 x 22.5° | M5 | 5.5 | DIN 912 M5  | 80  | 69    | 5.5 |
| PRT-01-150-H1 | 250 | 235 | 165  | 150 | 220  | 35 | 12 | 12 x 30° | 16 x 22.5° | M5 | 5.5 | DIN 912 M5  | 110 | 96.5  | 5.5 |
| PRT-01-200-H1 | 300 | 285 | 215  | 200 | 274  | 38 | 15 | 12 x 30° | 16 x 22.5° | M6 | 7.0 | DIN 912 M6  | 137 | 124   | 7.0 |
| PRT-01-300-H1 | 450 | 430 | 320  | 300 | 410  | 42 | 15 | 12 x 30° | 16 x 22.5° | M8 | 9.0 | DIN 7984 M8 | 205 | 186.6 | 7.0 |

\* Tolerance according to DIN ISO 2768 mK



| Properties PRT-01-            | Unit  | -20    | -30    | -50    | -60    | -100   | -150   | -200    | -300    |
|-------------------------------|-------|--------|--------|--------|--------|--------|--------|---------|---------|
| Weight                        | kg    | 0.2    | 0.4    | 1.0    | 1.1    | 1.3    | 2.2    | 3.2     | 7.6     |
| Max. axial load, static       | N     | 15,000 | 27,000 | 40,000 | 50,000 | 55,000 | 80,000 | 100,000 | 150,000 |
| Max. axial load, dynamic      | N     | 4,000  | 7,000  | 10,000 | 15,000 | 16,000 | 25,000 | 30,000  | 90,000  |
| Max. radial load, static      | N     | 2,300  | 5,000  | 8,000  | 10,000 | 16,000 | 25,000 | 35,000  | 45,000  |
| Max. radial load, dynamic     | N     | 600    | 1,500  | 2,500  | 3,000  | 5,000  | 8,000  | 10,000  | 27,000  |
| Max. rotat. speed dry running | 1/min | 300    | 250    | 200    | 200    | 150    | 100    | 80      | 50      |
| Rigidity, axial               | N/μm  | 80     | 100    | 250    | 300    | 400    | 450    | 500     | 500     |
| Rigidity, radial              | N/μm  | 10     | 50     | 60     | 65     | 65     | 65     | 65      | 65      |
| Max. perm. tilting moment     | Nm    | 100    | 200    | 600    | 800    | 1,500  | 2,000  | 3,800   | 5,000   |

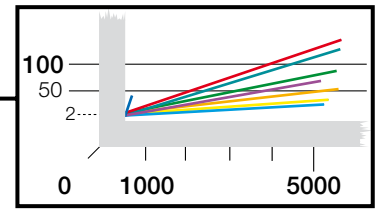
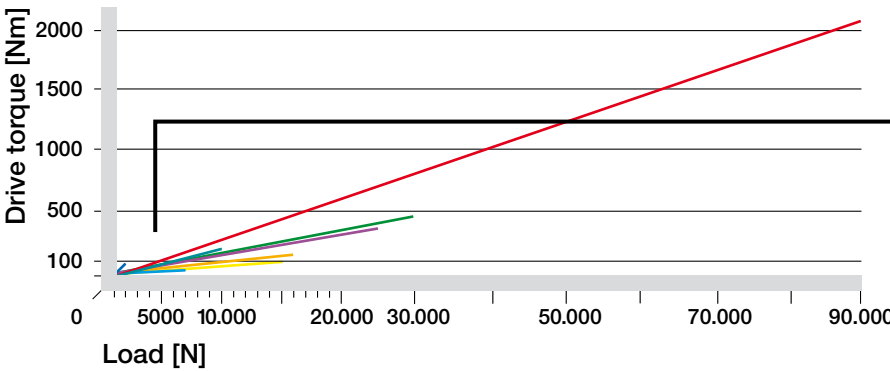


Diagram 01: Required drive torque versus applied moment

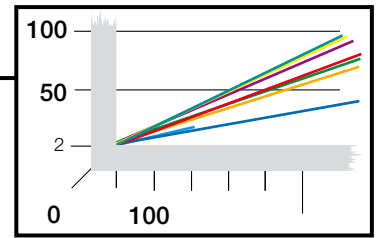
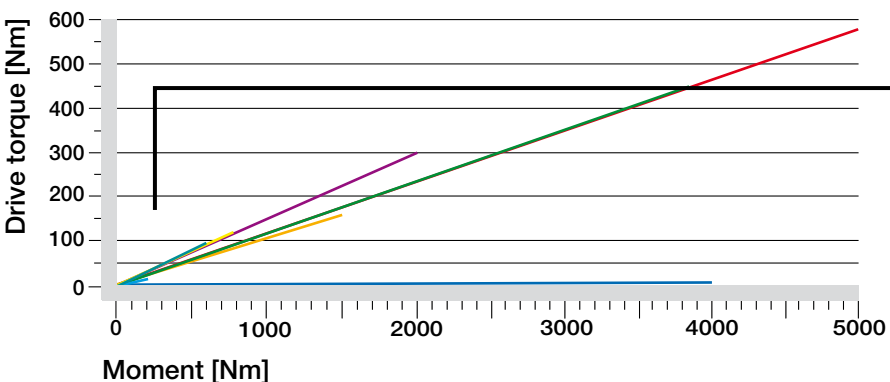


Diagram 02: Required drive torque versus applied moment

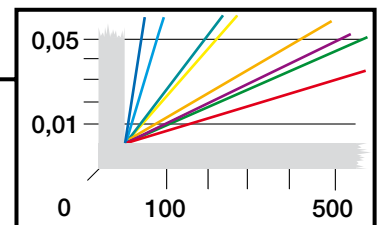
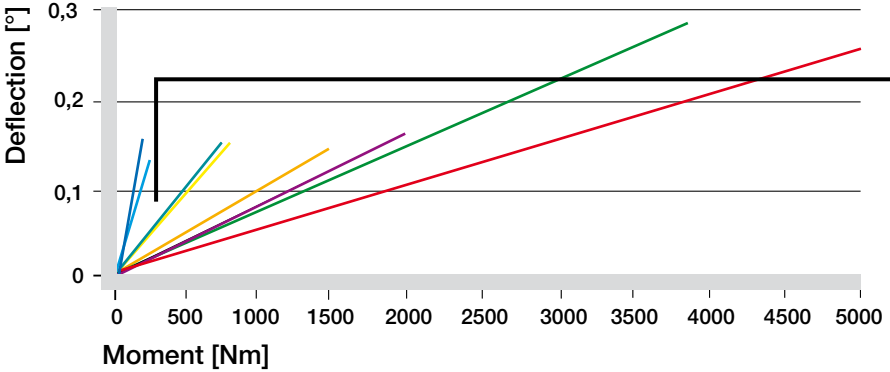


Diagram 03: Deflection versus applied moment

— PRT-01-20 M4, min. 6 Screws — PRT-01-30 M4, min. 8 Screws — PRT-01-50 M6, min. 12 Screws — PRT-01-60 M5, min. 10 Screws — PRT-01-100 M5, min. 12 Screws — PRT-01-150 M5, min. 12 Screws — PRT-01-200 M6, min. 12 Screws — PRT-01-300 M8, min. 12 Screws

All load values assume the PRT is assembled with socket head screws (strength class 8.8) on the outside pitch circle diameter. For the assembly of the PRT the screws have to be inserted to a minimum thread depth of 2 x d in every bore location in the outer ring. All data can be used for both lateral and horizontal assembly.



## Slewing ring bearing with toothed outer ring

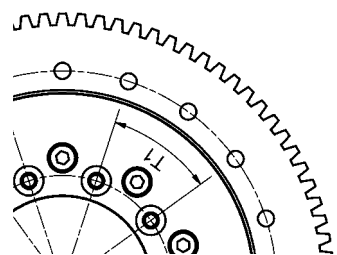


For each of the 6 sizes of the PRT-01 design version, 4 standards for toothed outer ring are available.  
A classic spur gear teeth according to DIN3967 for use with a plastic gear or gear rack, and three commercially available belt profiles: T10, AT10, HTD8M. In the case of the externally toothed PRT, the inner ring is fixed and the outer ring driven.

### Dimensions [mm]

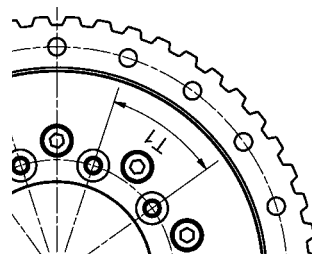
| Part number       | D1  | d1    | d   | d2  | h  | T1     | T2       | S1 | S2  | K1         | R1  | R2    | B   | H      |
|-------------------|-----|-------|-----|-----|----|--------|----------|----|-----|------------|-----|-------|-----|--------|
|                   |     |       |     |     |    |        |          |    |     | for screw  |     |       |     |        |
| PRT-01-30-TO-...  | 91  | 42.5  | 30  | 82  | 21 | 8x45°  | 8x45°    | M4 | 4.5 | DIN 912 M4 | 41  | 29.0  | 4.5 | (30.4) |
| PRT-01-60-TO-...  | 145 | 74.0  | 60  | 130 | 23 | 10x36° | 20x18°   | M5 | 5.5 | DIN 912 M5 | 65  | 51.5  | 4.5 | (34.5) |
| PRT-01-100-TO-... | 170 | 112.0 | 100 | 160 | 25 | 12x30° | 16x22.5° | M5 | 5.5 | DIN 912 M5 | 80  | 69.0  | 5.5 | (36.0) |
| PRT-01-150-TO-... | 235 | 165.0 | 150 | 220 | 25 | 12x30° | 16x22.5° | M5 | 5.5 | DIN 912 M5 | 110 | 96.5  | 5.5 | (37.5) |
| PRT-01-200-TO-... | 285 | 215.0 | 200 | 274 | 30 | 12x30° | 16x22.5° | M6 | 7.0 | DIN 912 M6 | 137 | 124.0 | 7.0 | (41.5) |
| PRT-01-300-TO-... | 430 | 320.0 | 300 | 410 | 30 | 12x30° | 16x22.5° | M8 | 9.0 | DIN 912 M8 | 205 | 186.5 | 8.5 | (46.5) |

### Spur gearing DIN3967



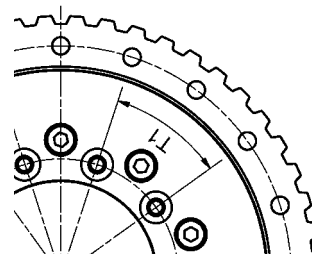
| Part number | m | z   | D     |
|-------------|---|-----|-------|
| ...-ST      | 2 | 54  | (112) |
| ...-ST      | 2 | 90  | (184) |
| ...-ST      | 2 | 96  | (196) |
| ...-ST      | 2 | 126 | (256) |
| ...-ST      | 2 | 152 | (308) |
| ...-ST      | 3 | 152 | (462) |

### Toothed belt profile AT10



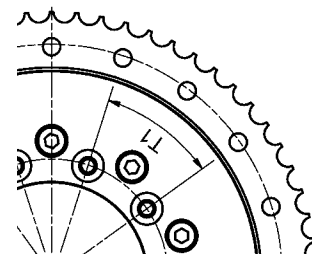
| Part number | z   | D       |
|-------------|-----|---------|
| ...-AT10    | 34  | (106.4) |
| ...-AT10    | 52  | (163.8) |
| ...-AT10    | 60  | (189.2) |
| ...-AT10    | 80  | (252.9) |
| ...-AT10    | 96  | (303.9) |
| ...-AT10    | 144 | (456.7) |

### Toothed belt profile T10



| Part number | z   | D       |
|-------------|-----|---------|
| ...-T10     | 34  | (106.4) |
| ...-T10     | 52  | (163.8) |
| ...-T10     | 60  | (189.2) |
| ...-T10     | 80  | (252.9) |
| ...-T10     | 96  | (303.9) |
| ...-T10     | 144 | (456.7) |

### Toothed belt profile HTD8M

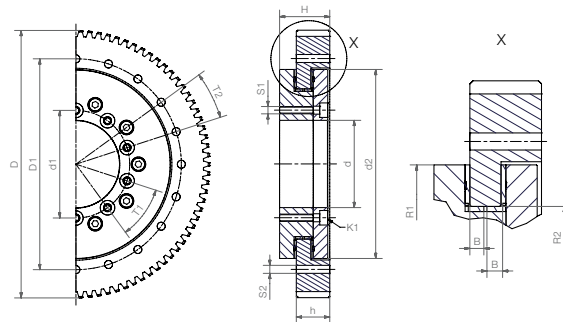


| Part number | z   | D       |
|-------------|-----|---------|
| ...-HTD8M   | 44  | (110.7) |
| ...-HTD8M   | 66  | (166.7) |
| ...-HTD8M   | 74  | (187.1) |
| ...-HTD8M   | 100 | (253.3) |
| ...-HTD8M   | 120 | (304.3) |
| ...-HTD8M   | 180 | (457.1) |

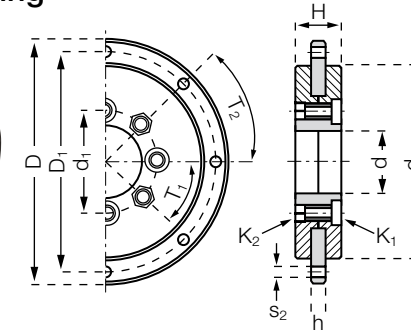


Order key

PRT-01-30-TO-...

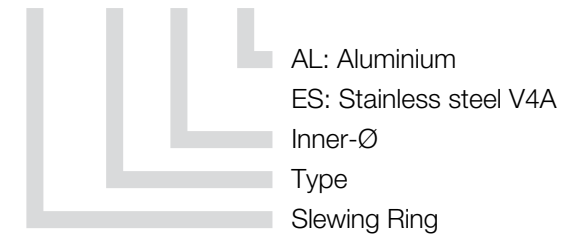


## Slewing ring bearing



Order key

PRT-02-20-AL



Outer ring available in stainless steel as an option. Headings made of iglidur® J4

### Special properties

- Slewing ring with very low weight
- Outer ring made from hard anodized Aluminium or stainless steel (V4A)
- iglidur® J4 – head rings – sliding against the outer ring without lubrication
- Low cost

### Dimensions [mm]

| Part number     | D   | D1  | d1   | d  | d2  | H  | h  | T1       | T2       | S2  | K1             | K2            |
|-----------------|-----|-----|------|----|-----|----|----|----------|----------|-----|----------------|---------------|
|                 |     |     |      |    |     |    |    |          |          |     | for screw      | for screw     |
| PRT-02-20-AL/ES | 80  | 70  | 31   | 20 | 60  | 16 | 5  | 6 x 60°  | 6 x 60°  | 4.5 | DIN 6912-A2 M5 | DIN 439-A2 M5 |
| PRT-02-30-AL/ES | 100 | 91  | 42.5 | 30 | 80  | 19 | 6  | 8 x 45°  | 8 x 45°  | 4.5 | DIN 7984 M5    | DIN 439-A2 M5 |
| PRT-02-60-AL    | 160 | 145 | 86.0 | 60 | 130 | 30 | 10 | 12 x 30° | 20 x 18° | 5.5 | DIN 931 M5X25  | DIN 934 M5    |

## Slewing ring bearing, FDA compliant



### Special properties

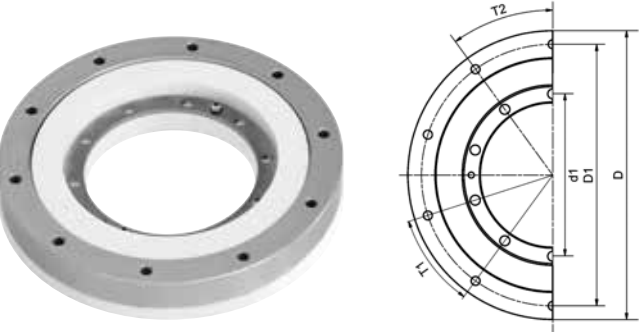
- For use in the food technology with headings made from FDA-conforming material iglidur® A180
- The stainless steel outer ring and the material iglidur® A180 ► **page 411** are suitable for the direct contact with food, pharmaceuticals and humidity
- Low profile and low weight
- Ready to fit

### Dimensions [mm]

| Part Number       | D   | D1 | d1   | d  | d2 | H  | h | T1      | T2      | S2  | K1          | K2            |
|-------------------|-----|----|------|----|----|----|---|---------|---------|-----|-------------|---------------|
|                   |     |    |      |    |    |    |   |         |         |     | for screw   | for screw     |
| PRT-02-30-ES-A180 | 100 | 91 | 42.5 | 30 | 80 | 19 | 6 | 8 x 45° | 8 x 45° | 4.5 | DIN 7984 M5 | DIN 439-A2 M5 |

| Properties                      | Unit  | PRT-02-20 | PRT-02-30 | PRT-02-60 |
|---------------------------------|-------|-----------|-----------|-----------|
| Weight                          | kg    | 0.1       | 0.2       | 0.7       |
| Max. axial load, stat.          | N     | 13,000    | 25,000    | 45,000    |
| Max. axial load, dyn.           | N     | 4,000     | 7,000     | 12,000    |
| Max. radial load, stat.         | N     | 2,000     | 2,500     | 10,000    |
| Max. radial load, dyn.          | N     | 500       | 700       | 2,800     |
| Max. rotat. speed dry running   | 1/min | 250       | 200       | 120       |
| Max. permissible tilting moment | Nm    | 60        | 100       | 200       |

Slewing ring bearing in a new Low-Cost-Design

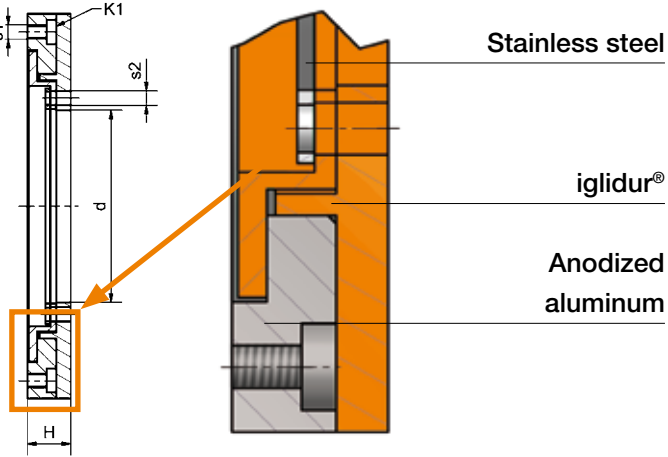


Order key

PRT-03-80



Inner-Ø  
Type  
Slewing Ring



iglidur® PRT slewing ring bearings in a new economic design. Ongoing cost engineering has resulted in a new design, with a greater use of plastics.

- Maintenance- and lubrication-free
- Low priced and lightweight
- Low installation space
- Ready to fit

| Properties                                                  | Unit | PRT-03-80 |
|-------------------------------------------------------------|------|-----------|
| max. rpm                                                    | rpm  | 120       |
| max. recommended static load rating axial (push direction)  | N    | 12,000    |
| recommended dynamic load rating axial (push direction)      | N    | 45,000    |
| max. recommended static load rating axial (pull direction)  | N    | 5,000     |
| max. recommended dynamic load rating axial (pull direction) | N    | 2,000     |
| max. recommended static overturning moment                  | Nm   | 120       |
| max. recommended static load rating radial                  | N    | 4,000     |
| max. recommended dynamic load rating radial                 | N    | 1,000     |
| max. temperature                                            | °C   | 60        |
| Weight                                                      | kg   | 0.45      |

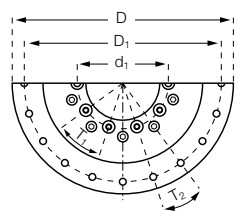
Dimension [mm]

| Part number | D   | D1  | d1 | d  | H  | T1       | T2       | s1 | s2  | K1<br>for screw |
|-------------|-----|-----|----|----|----|----------|----------|----|-----|-----------------|
| PRT-03-80   | 160 | 145 | 90 | 80 | 18 | 10 x 36° | 10 x 36° | M6 | 5.5 | DIN 7984 M5     |

 delivery from stock  
time

 prices price list online  
www.igus.co.uk/en/prt

Slewing ring bearing with large outer ring

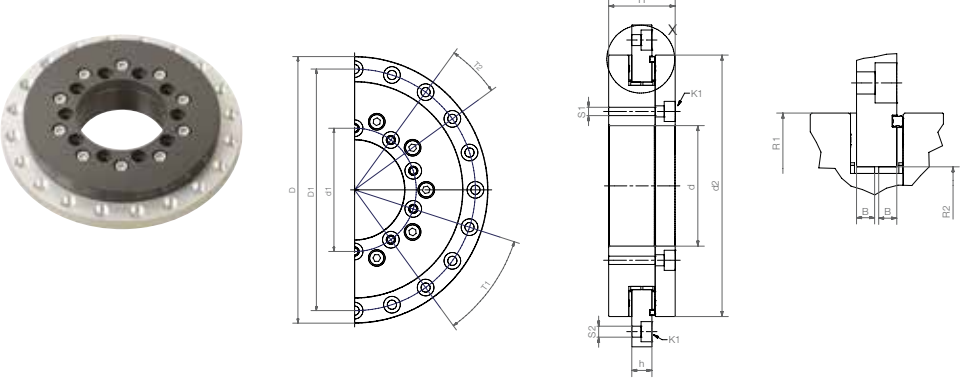


Dimensions [mm] – other dimensions similar to standard type PRT-01 ► page 648

| Part number        | D   | D1  |
|--------------------|-----|-----|
| PRT-01-100-M-ARG*  | 205 | 185 |
| PRT-01-100-M-ARGG* | 205 | 185 |
| PRT-01-100-M-ARGS* | 205 | 185 |
| PRT-01-200-M-ARG*  | 320 | 300 |
| PRT-01-200-M-ARGG* | 320 | 300 |
| PRT-01-200-M-ARGS* | 320 | 300 |

\* Ending: -G standard, -GG thread- or -GS counterbore

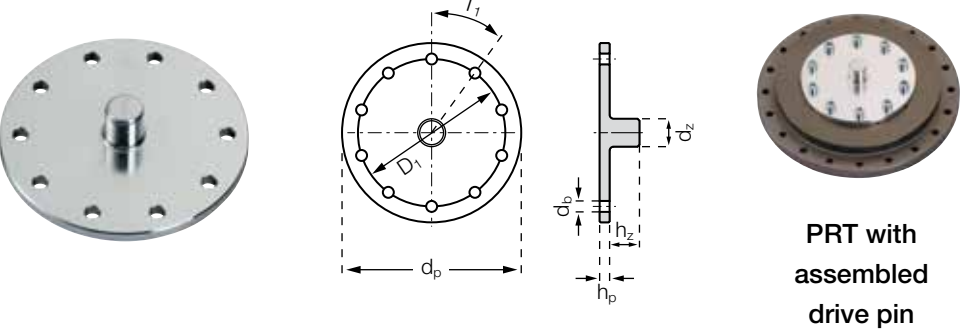
PRT-01 with dust seal (-D: one-sided, -DD: both-sided)



Dimensions [mm]

| Part number     | D*  | D1  | d1  | d   | d2<br>±0.2 | H  | h  | T1       | T2         | S1 | S2  | K1<br>for screw | R1 | R2   | B   |
|-----------------|-----|-----|-----|-----|------------|----|----|----------|------------|----|-----|-----------------|----|------|-----|
| PRT-01-60-D/DD  | 160 | 145 | 74  | 60  | 130        | 33 | 10 | 10 x 36° | 20 x 18°   | M5 | 5.5 | DIN 912 M5      | 65 | 51.5 | 4.5 |
| PRT-01-100-D/DD | 185 | 170 | 112 | 100 | 160        | 34 | 12 | 12 x 30° | 16 x 22.5° | M5 | 5.5 | DIN 912 M5      | 80 | 69   | 5.5 |

Drive pin

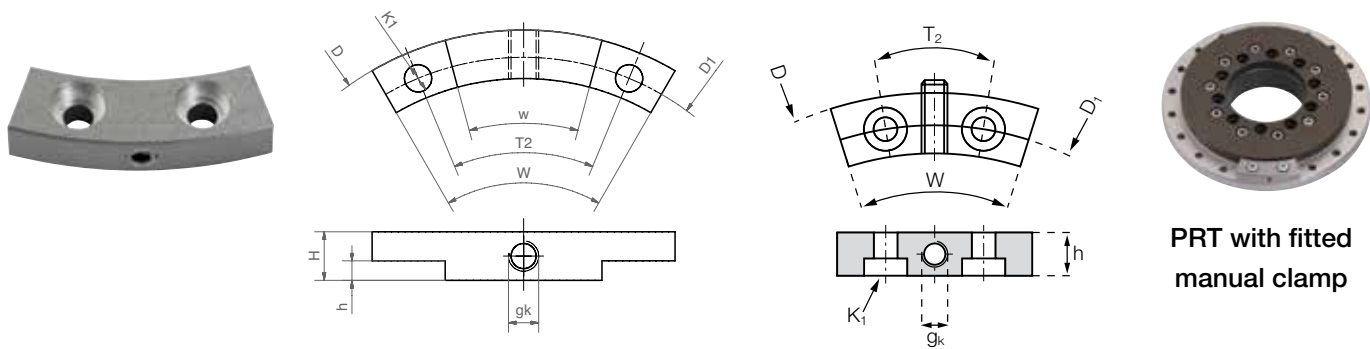


Dimensions [mm]

| Part number | dp | hp | dz | hz | D1   | T1       | db  |
|-------------|----|----|----|----|------|----------|-----|
| PRT-AZ-30   | 55 | 5  | 10 | 15 | 42.5 | 8 x 45°  | 4.5 |
| PRT-AZ-60   | 90 | 5  | 14 | 15 | 74   | 10 x 36° | 5.5 |



Hand clamp



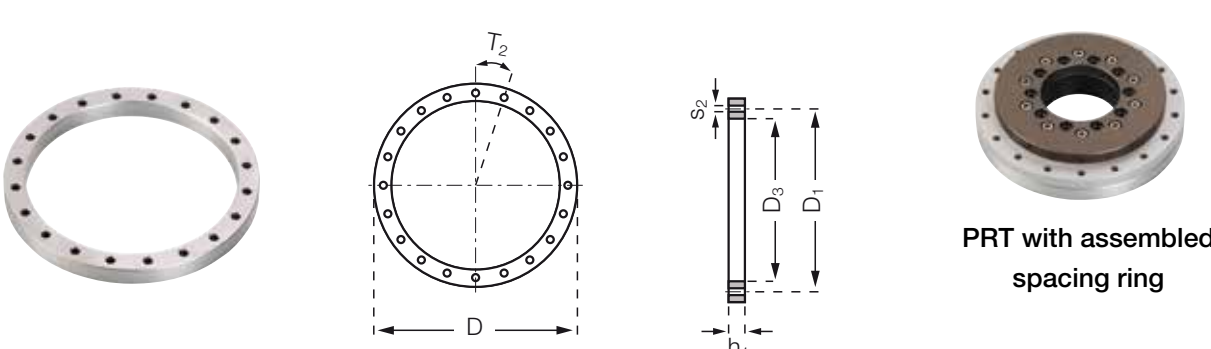
- With 1 Nm screw torque, a holding torque up to 10 Nm is possible
- Easy to screw onto outer ring

Dimensions [mm]

| Part number | D   | D1  | T2         | K1<br>for screw | H | h   | gk | W   |
|-------------|-----|-----|------------|-----------------|---|-----|----|-----|
| PRT-HK-30   | 100 | 91  | 8 x 45°    | 4.5             | 8 | 3.2 | M5 | 60° |
| PRT-HK-60   | 160 | 145 | 20 x 18°   | DIN 7984 M5     | – | 10  | M6 | 35° |
| PRT-HK-100* | 205 | 185 | 16 x 22.5° | DIN 7984 M5     | – | 10  | M6 | 40° |
| PRT-HK-200* | 320 | 300 | 16 x 22.5° | DIN 7984 M6     | – | 10  | M6 | 40° |

\* Only available with large outer rings

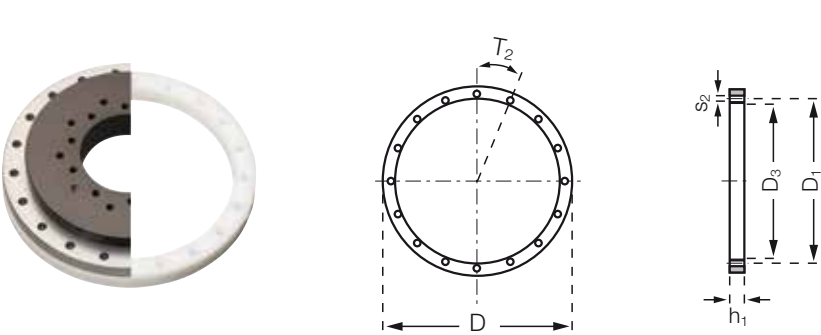
Spacing rings made of anodized aluminum



Dimensions [mm]

| Part number               | D   | D1  | T2         | S2  | D3  | h1 |
|---------------------------|-----|-----|------------|-----|-----|----|
| PRT-01-20-DR <b>New!</b>  | 80  | 70  | 6 x 60°    | 4.5 | 62  | 10 |
| PRT-01-30-DR              | 100 | 91  | 8 x 45°    | 4.5 | 84  | 11 |
| PRT-01-60-DR              | 160 | 145 | 20 x 18°   | 5.5 | 132 | 13 |
| PRT-01-100-DR             | 185 | 170 | 16 x 22.5° | 5.5 | 162 | 13 |
| PRT-01-150-DR             | 250 | 235 | 16 x 22.5° | 5.5 | 222 | 13 |
| PRT-01-200-DR             | 300 | 285 | 16 x 22.5° | 7.0 | 276 | 13 |
| PRT-01-300-DR <b>New!</b> | 450 | 430 | 16 x 22.5° | 9.0 | 412 | 15 |

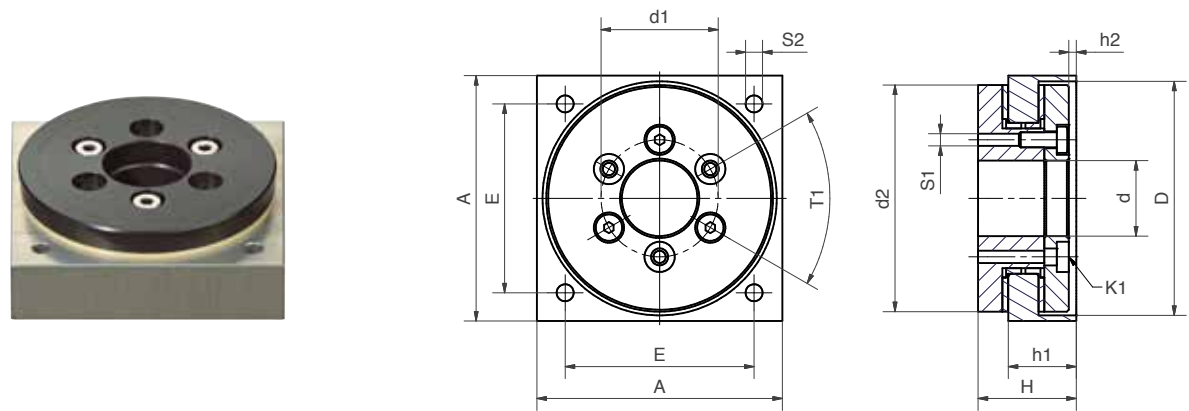
Spacing rings made of polymer



Dimensions [mm]

| Part number                   | D   | D1  | T2         | S2  | D3  | h1 |
|-------------------------------|-----|-----|------------|-----|-----|----|
| PRT-01-20-DR-POM              | 80  | 70  | 6 x 60°    | 4.5 | 62  | 10 |
| PRT-01-30-DR-POM              | 100 | 91  | 8 x 45°    | 4.5 | 84  | 11 |
| PRT-01-60-DR-POM              | 160 | 145 | 20 x 18°   | 5.5 | 132 | 13 |
| PRT-01-100-DR-POM             | 185 | 170 | 16 x 22.5° | 5.5 | 162 | 13 |
| PRT-01-200-DR-POM <b>New!</b> | 300 | 285 | 16 x 22.5° | 7.0 | 276 | 13 |

Square flange for direct assembly

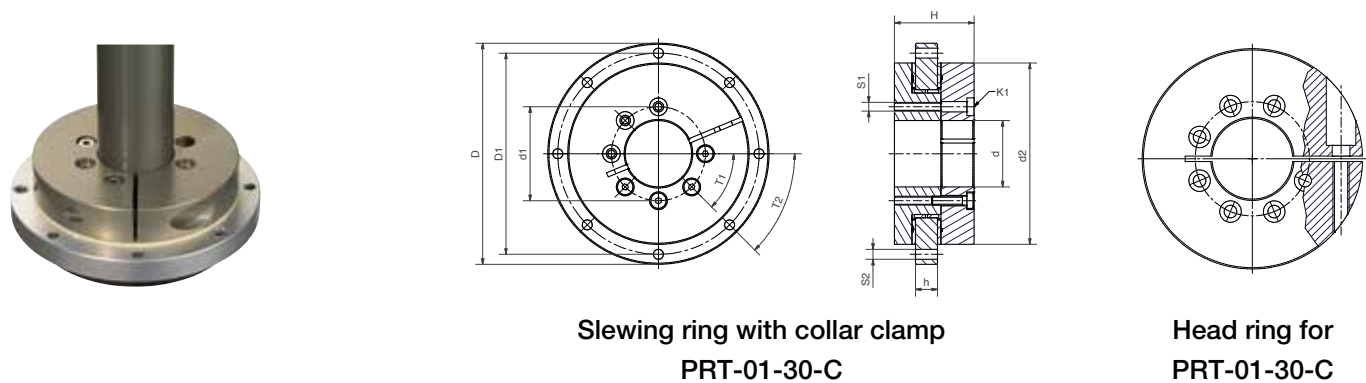


- No through-bore necessary
- No separate distance ring
- Fix with only 4 screws

Dimensions [mm]

| Part number  | d    | d1 | d2   | D  | A  | E  | H  | h1 | h2 | S1 | S2  | K1<br>for screw |
|--------------|------|----|------|----|----|----|----|----|----|----|-----|-----------------|
| PRT-01-20-SQ | 20   | 31 | 60   | 62 | 65 | 50 | 26 | 18 | 2  | M4 | 4.5 | DIN 7984 M4     |
| PRT-01-30-SQ | New! | 30 | 42.5 | 82 | 84 | 85 | 21 | 10 | 2  | M4 | 4.5 | DIN 7984 M4     |

Slewing ring with collar clamp



The slewing ring PRT-01-30 a collar ring including clamp function for 30h7 tolerance shafts.

- For simple handling designs
- Quick and easy assembly
- Max. torque moment: 5 Nm

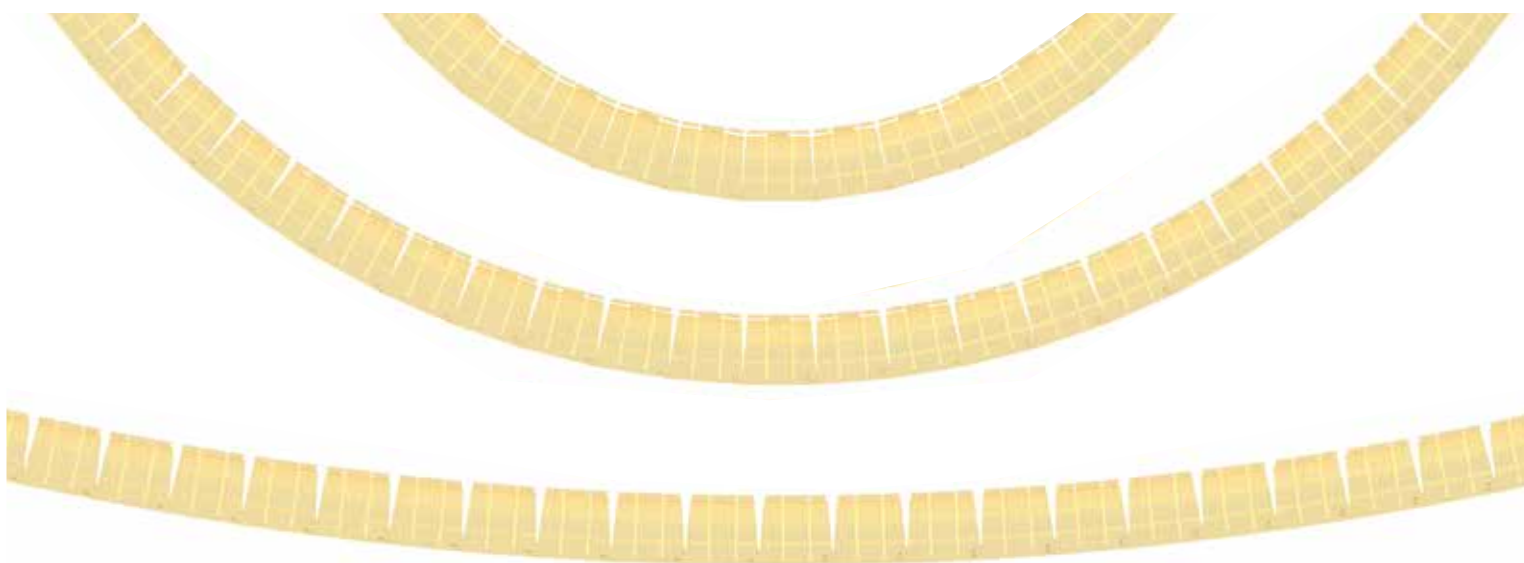
Dimensions [mm]

| Part number | D   | D1 | d1   | d  | d2 | H  | h  | T1     | T2     | S1 | S2  | K1<br>for screw |
|-------------|-----|----|------|----|----|----|----|--------|--------|----|-----|-----------------|
| PRT-01-30-C | 100 | 91 | 42.5 | 30 | 82 | 36 | 10 | 8 x 45 | 8 x 45 | M4 | 4.5 | DIN 7984 M4     |

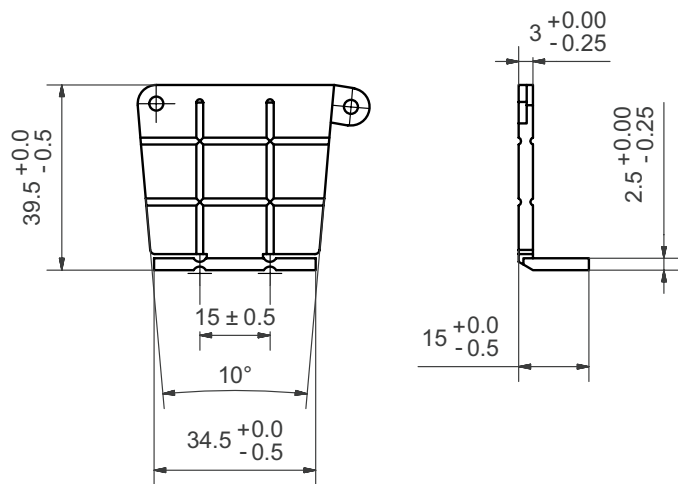
New in this catalog!

Customise your own slewing ring systems

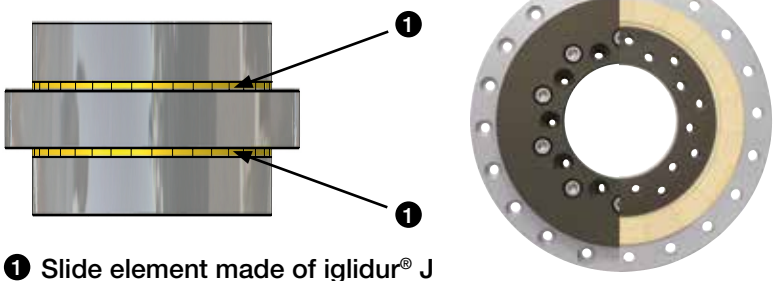
Using the versatile iglidur® PRT universal slide elements, large slewing ring systems can be tailored to the Type 01. Depending on the number of elements, slewing ring systems with internal diameters of 0.5 to 5 m are possible. We would be glad to assist you during the design stage.



- Universal sliding element, made from the proven iglidur® J ► **page 109**
- Slewing ring bearings possible from 0.5 up to 5 metres
  - low wear
  - sturdy, resistant to dirt
  - corrosion-free and resistant to liquids
  - lubrication- and maintenance-free



Basic construction of type 01:



1 Slide element made of iglidur® J



Loads up to 10 tons with 1 m inner diameter

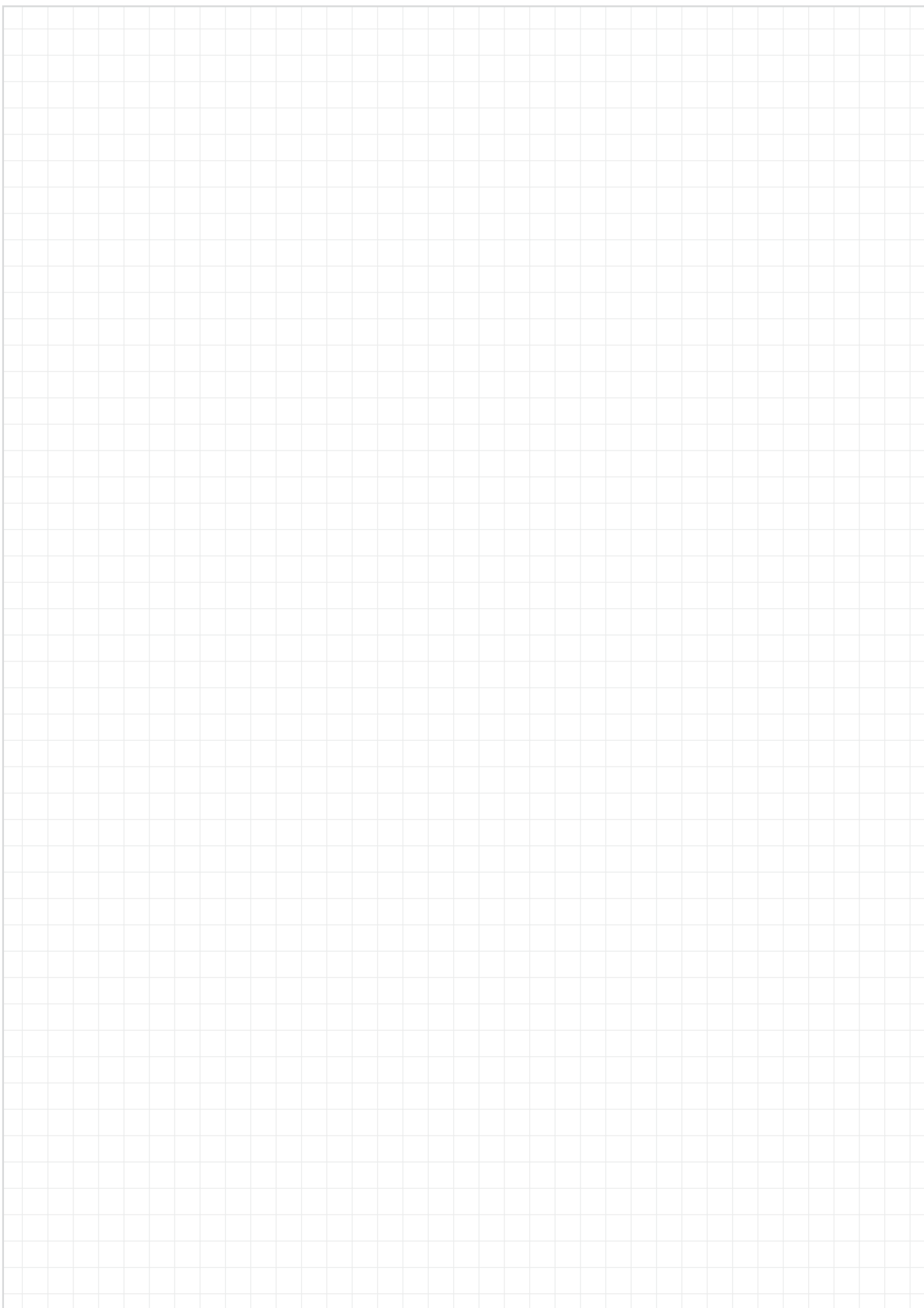
 **Order key JRS-500S/45S**

 **delivery from stock time**

 **prices price list online**  
[www.igus.co.uk/en/prt](http://www.igus.co.uk/en/prt)

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 **prices price list online**  
[www.igus.co.uk/en/prt](http://www.igus.co.uk/en/prt)



## iglidur® Flange Bearings



Standard range from stock

Very good wear resistance

Maintenance-free

Materials: iglidur® G, iglidur® A180, iglidur® J and iglidur® X

Light weight

**Maintenance-free.** With this design it is possible to use iglidur® high performance plain bearings in locations where recommended housing bore tolerances are not possible.



Very good  
wear resistance

Maintenance-free

Material: iglidur® G,  
iglidur® A180,  
iglidur® J and iglidur® X

Light weight



## When to use it?

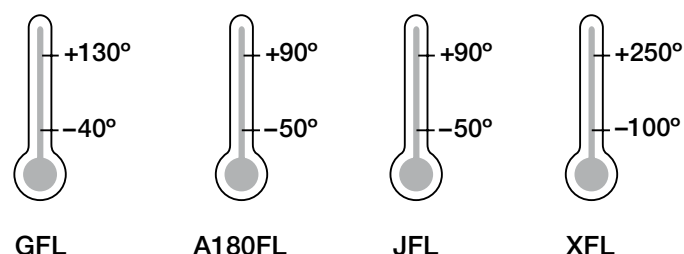
- When a screw flanged bearing is required
- When a clip bearing solution is not satisfactory
- When there is a housing with very wide tolerances
- When the tight fit of a press-fit bearing is not sufficient as axial securing



## When not to use it?

- When an additional angular compensation is required  
▶ igubal® Flange bearings, page 777
- When a screw connection is not possible  
▶ iglidur® Clip bearings, page 625
- When a large guide length is necessary  
▶ iglidur® G, page 81

## Temperature



## Product range

1 style  
Ø 10–35 mm  
more dimensions  
on request

## General Properties

With this design it is possible to use iglidur® high performance plain bearings in locations where the recommended housing bore tolerances are not possible.

Due to the design of the bearing, high loads are possible although there is a minimal precision requirement of the housing. iglidur® maintenance-free flange bearings are made of iglidur® G, iglidur® J, iglidur® X or iglidur® A180. In this way, all the advantages of the iglidur® high performance polymers can be used, e.g. universal bearings, bearings with high wear-resistance or high temperature-resistance (up to +250 °C) or FDA-compliance.

## Installation

Depending on the requirements, different mounting types can be considered. For low radial loads, it is sufficient to mount iglidur® flange bearings on one surface simply with two bolts. For higher radial loads, it is advisable to support the iglidur® flange bearing in a bore on the reinforced side facing the direction of the load. For this bore, large tolerances are permitted, since it serves only as additional support for the iglidur® flange bearing. In order to achieve higher radial loads in the bearings, the iglidur® flange bearing can be pressfit into a recommended housing bore with H7 tolerances. The additional bolts ensure the fit of the bearing in the housing.

For the fitting of the iglidur® maintenance-free flange bearing, no special materials or tools are necessary.



## Material data for available materials:

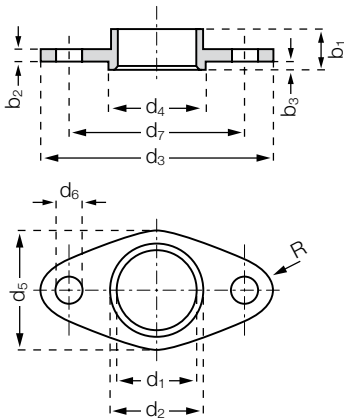
- iglidur® G ▶ page 81
- iglidur® A180 ▶ page 411
- iglidur® J ▶ page 109
- iglidur® X ▶ page 173



The installation of iglidur® flange bearing: simple and secure



Flange bearings



Order key

GFL-10



Inner diameter d1  
Flange Bearings  
Material

Dimensions [mm]

| Part number | d1 | d1-Tolerance* | d2** | d3 | d4 | d5 | d6  | d7 | b1 | b2 | b3 | R<br>(±0.2) |
|-------------|----|---------------|------|----|----|----|-----|----|----|----|----|-------------|
| GFL-10      | 10 | +0.025 +0.083 | 12   | 30 | 14 | 15 | 4.5 | 22 | 6  | 2  | 1  | 4           |
| GFL-12      | 12 | +0.032 +0.102 | 14   | 36 | 16 | 18 | 4.5 | 26 | 6  | 2  | 1  | 4.5         |
| GFL-14      | 14 | +0.032 +0.102 | 16   | 42 | 18 | 21 | 5.5 | 30 | 6  | 2  | 1  | 5           |
| GFL-16      | 16 | +0.032 +0.102 | 18   | 48 | 20 | 24 | 5.5 | 34 | 6  | 2  | 1  | 5.5         |
| GFL-18      | 18 | +0.032 +0.102 | 20   | 54 | 22 | 27 | 6.5 | 39 | 6  | 2  | 1  | 7           |
| GFL-20      | 20 | +0.040 +0.124 | 23   | 60 | 26 | 30 | 6.5 | 44 | 10 | 3  | 2  | 7           |
| GFL-25      | 25 | +0.040 +0.124 | 28   | 75 | 30 | 35 | 6.5 | 55 | 10 | 3  | 2  | 8.5         |
| GFL-30      | 30 | +0.040 +0.124 | 34   | 90 | 36 | 40 | 8.5 | 66 | 10 | 3  | 2  | 10          |
| GFL-35      | 35 | +0.050 +0.150 | 39   | 95 | 41 | 55 | 8.5 | 77 | 10 | 3  | 2  | 12          |
| A180FL-10   | 10 | +0.025 +0.083 | 12   | 30 | 14 | 15 | 4.5 | 22 | 6  | 2  | 1  | 4           |
| A180FL-12   | 12 | +0.032 +0.102 | 14   | 36 | 16 | 18 | 4.5 | 26 | 6  | 2  | 1  | 4.5         |
| A180FL-16   | 16 | +0.032 +0.102 | 18   | 48 | 20 | 24 | 5.5 | 34 | 6  | 2  | 1  | 5.5         |
| A180FL-20   | 20 | +0.040 +0.124 | 23   | 60 | 26 | 30 | 6.5 | 44 | 10 | 3  | 2  | 7           |
| A180FL-25   | 25 | +0.040 +0.124 | 28   | 75 | 30 | 35 | 6.5 | 55 | 10 | 3  | 2  | 8.5         |
| A180FL-30   | 30 | +0.040 +0.124 | 34   | 90 | 36 | 40 | 8.5 | 66 | 10 | 3  | 2  | 10          |
| A180FL-35   | 35 | +0.050 +0.150 | 39   | 95 | 41 | 55 | 8.5 | 77 | 10 | 3  | 2  | 12          |
| JFL-10      | 10 | +0.025 +0.083 | 12   | 30 | 14 | 15 | 4.5 | 22 | 6  | 2  | 1  | 4           |
| JFL-12      | 12 | +0.032 +0.102 | 14   | 36 | 16 | 18 | 4.5 | 26 | 6  | 2  | 1  | 4.5         |
| JFL-14      | 14 | +0.032 +0.102 | 16   | 42 | 18 | 21 | 5.5 | 30 | 6  | 2  | 1  | 5           |
| JFL-16      | 16 | +0.032 +0.102 | 18   | 48 | 20 | 24 | 5.5 | 34 | 6  | 2  | 1  | 5.5         |
| JFL-20      | 20 | +0.040 +0.124 | 23   | 60 | 26 | 30 | 6.5 | 44 | 10 | 3  | 2  | 7           |
| JFL-25      | 25 | +0.040 +0.124 | 28   | 75 | 30 | 35 | 6.5 | 55 | 10 | 3  | 2  | 8.5         |
| JFL-30      | 30 | +0.040 +0.124 | 34   | 90 | 36 | 40 | 8.5 | 66 | 10 | 3  | 2  | 10          |
| JFL-35      | 35 | +0.050 +0.150 | 39   | 95 | 41 | 55 | 8.5 | 77 | 10 | 3  | 2  | 12          |
| XFL-10      | 10 | +0.013 +0.071 | 12   | 30 | 14 | 15 | 4.5 | 22 | 6  | 2  | 1  | 4           |
| XFL-12      | 12 | +0.016 +0.086 | 14   | 36 | 16 | 18 | 4.5 | 26 | 6  | 2  | 1  | 4.5         |
| XFL-14      | 14 | +0.016 +0.086 | 16   | 42 | 18 | 21 | 5.5 | 30 | 6  | 2  | 1  | 5           |
| XFL-16      | 16 | +0.016 +0.086 | 18   | 48 | 20 | 24 | 5.5 | 34 | 6  | 2  | 1  | 5.5         |
| XFL-20      | 20 | +0.020 +0.104 | 23   | 60 | 26 | 30 | 6.5 | 44 | 10 | 3  | 2  | 7           |
| XFL-25      | 25 | +0.020 +0.104 | 28   | 75 | 30 | 35 | 6.5 | 55 | 10 | 3  | 2  | 8.5         |
| XFL-30      | 30 | +0.020 +0.104 | 34   | 90 | 36 | 40 | 8.5 | 66 | 10 | 3  | 2  | 10          |
| XFL-35      | 35 | +0.025 +0.125 | 39   | 95 | 41 | 55 | 8.5 | 77 | 10 | 3  | 2  | 12          |

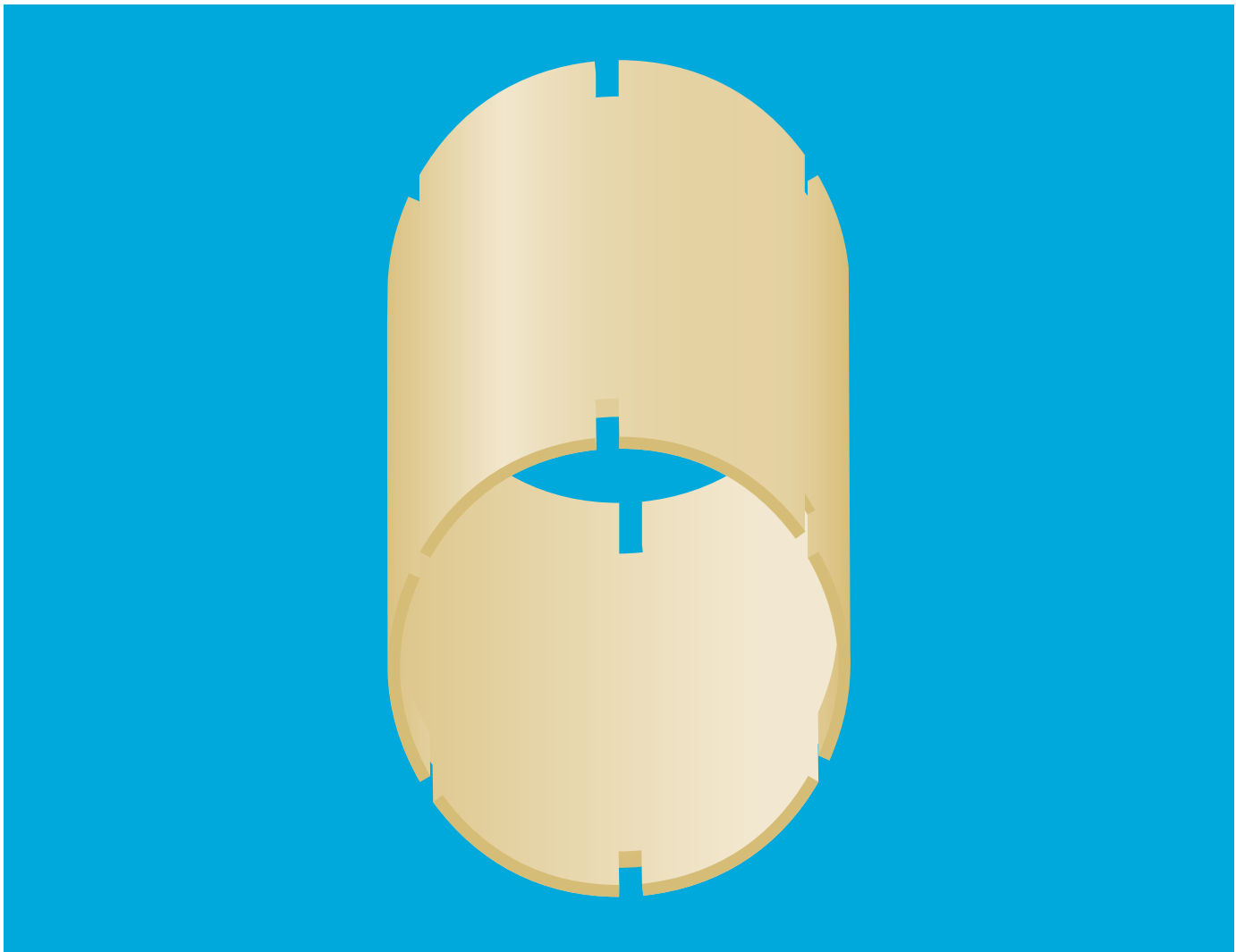
\* after pressfit. Testing methods ► page 75 \*\* Pressfit in H7 tolerance housing bore



delivery from stock  
time



prices price list online  
www.igus.co.uk/iglidur-flange



## iglidur® JVSM/JVFM – Zero Clearance and Pre-Tensioned Bearings



Standard range from stock

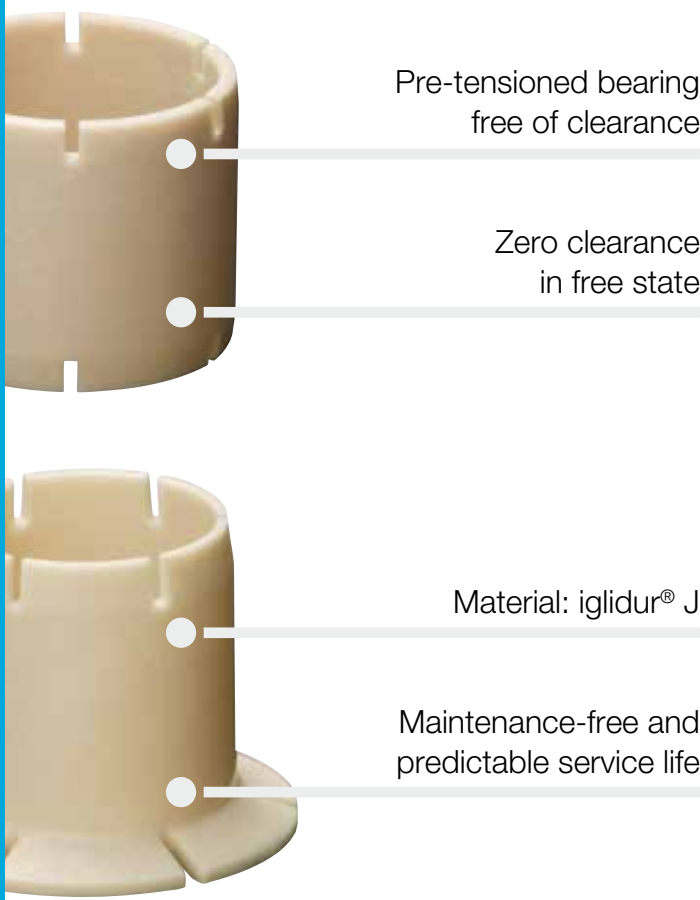
Radial and axial pretension of bearings

Zero clearance in free state

Material: iglidur® J

Maintenance-free and predictable service life

**Zero-clearance and pre-tensioned bearings.** iglidur® JVSM and JVFM bearings are clearance-free in unloaded condition due to the axial and/or radial pretension. The iglidur® J material possesses extremely low coefficients of friction in dry operation and a very low stick-slip effect. Ideal for “anti-vibration mounting” of pedal box bearings, etc.



**When to use it?**

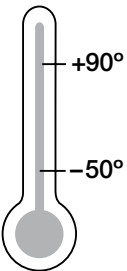
- When a radial and/or axial pretension of bearings is required
- When a rattle-free bearing in the unloaded state is required
- When you want a zero clearance feel



**When not to use it?**

- When a bearing solution with reduced clearance is needed  
► please contact us
- When the pretension has to withstand high radial forces
- When total zero clearance feature is required at high loads

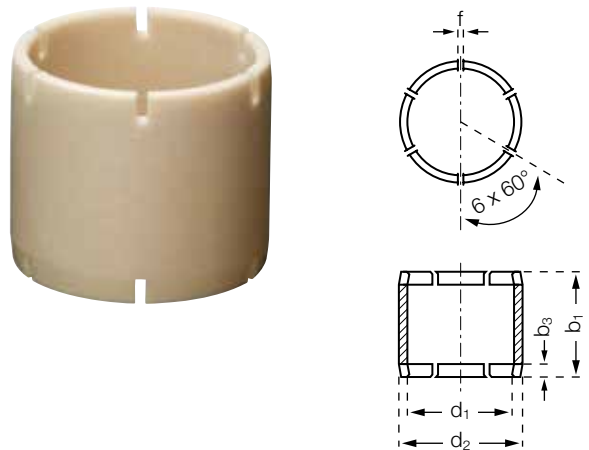
**Temperature**



**Product range**

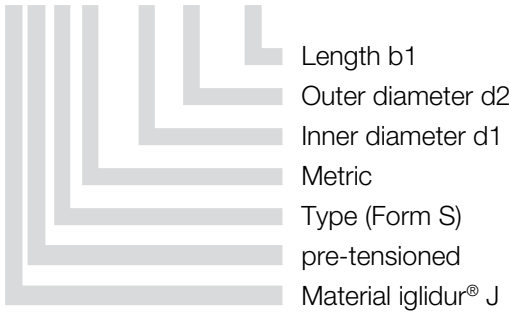
2 types  
Ø 6–20 mm  
more dimensions on request

**Sleeve Bearing**



**Order key**

**JVSM-0608-06**



**Material:**  
iglidur® J ► page 109

**Dimensions [mm]**

| Part number  | d1   | d1-Tolerance*<br>E10 | d2   | b1<br>h13 | b3  |
|--------------|------|----------------------|------|-----------|-----|
| JVSM-0608-06 | 6.0  | +0.020 +0.068        | 8.0  | 6.0       | 2.0 |
| JVSM-0810-08 | 8.0  | +0.025 +0.083        | 10.0 | 8.0       | 2.0 |
| JVSM-1012-10 | 10.0 | +0.025 +0.083        | 12.0 | 10.0      | 2.0 |
| JVSM-1214-12 | 12.0 | +0.032 +0.102        | 14.0 | 12.0      | 2.0 |
| JVSM-1416-14 | 14.0 | +0.032 +0.102        | 16.0 | 14.0      | 2.0 |
| JVSM-1517-15 | 15.0 | +0.032 +0.102        | 17.0 | 15.0      | 2.5 |
| JVSM-1820-18 | 18.0 | +0.032 +0.102        | 20.0 | 18.0      | 2.5 |
| JVSM-2023-20 | 20.0 | +0.040 +0.124        | 23.0 | 20.0      | 2.5 |

\*d1 – Measured after pressfit in housing bore. d2 H7 within the measurement plane

**Dimensions [Inch]**

| Part number  | d1  | d1*    |        | d2    | b1<br>h13 | b1-Tolerance |
|--------------|-----|--------|--------|-------|-----------|--------------|
|              |     | max.   | min.   |       |           |              |
| JVSI-0608-06 | 3/8 | .3773  | .3750  | 1/2   | 3/8       | 0.075        |
| JVSI-0810-08 | 1/2 | .5040  | .5013  | 5/8   | 1/2       | 0.075        |
| JVSI-1012-10 | 5/8 | .6297  | .6270  | 3/4   | 5/8       | 0.075        |
| JVSI-1214-12 | 3/4 | .7541  | .7505  | 1 1/8 | 3/4       | 0.075        |
| JVSI-1618-16 | 1   | 1.0041 | 1.0007 | 28.58 | 1         | 0.100        |

\*d1 – Measured after pressfit in housing bore. d2 H7 within the measurement plane

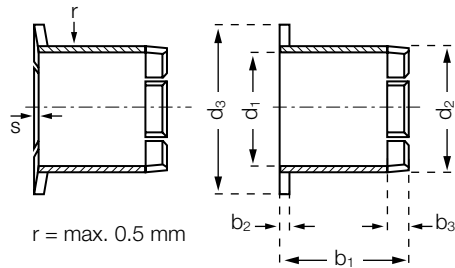


**delivery** from stock  
**time**



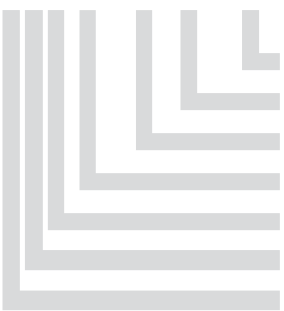
**prices** price list online  
www.igus.co.uk/en/jvsm

Flange Bearing



Order key

JVFM-0810-10



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form F)  
pre-tensioned  
Material iglidur® J

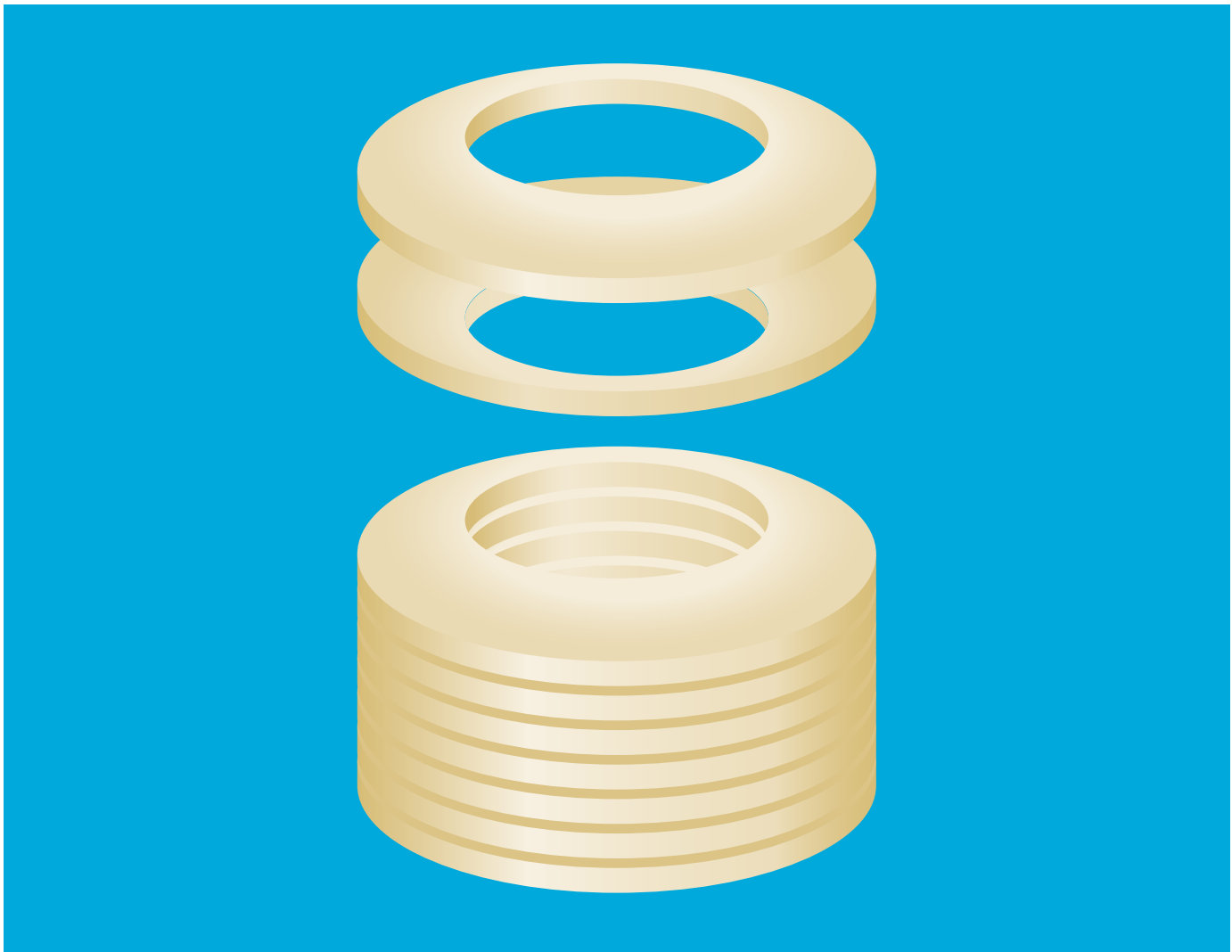


Material:  
iglidur® J ► page 109

Dimensions [mm]

| Part number  | d1   | d1-Tolerance*<br>E10 | d2   | d3   | b1<br>h13 | b2  | b3  | s<br>±0.1 |
|--------------|------|----------------------|------|------|-----------|-----|-----|-----------|
| JVFM-0810-10 | 8.0  | +0.025 +0.083        | 10.0 | 15.0 | 10.0      | 1.0 | 2.0 | 0.44      |
| JVFM-1012-10 | 10.0 | +0.025 +0.083        | 12.0 | 18.0 | 10.0      | 1.0 | 2.0 | 0.53      |
| JVFM-1214-12 | 12.0 | +0.032 +0.102        | 14.0 | 20.0 | 12.0      | 1.0 | 2.0 | 0.53      |
| JVFM-1416-12 | 14.0 | +0.032 +0.102        | 16.0 | 22.0 | 12.0      | 1.0 | 2.0 | 0.53      |
| JVFM-1517-15 | 15.0 | +0.032 +0.102        | 17.0 | 23.0 | 15.0      | 1.0 | 2.5 | 0.53      |
| JVFM-1820-18 | 18.0 | +0.032 +0.102        | 20.0 | 26.0 | 18.0      | 1.0 | 2.5 | 0.53      |
| JVFM-2023-20 | 20.0 | +0.040 +0.124        | 23.0 | 30.0 | 20.0      | 1.5 | 2.5 | 0.62      |

\*d1 – Measured after pressfit in housing bore. d2 H7 within the measurement plane



polysorb – Polymer Disc Springs

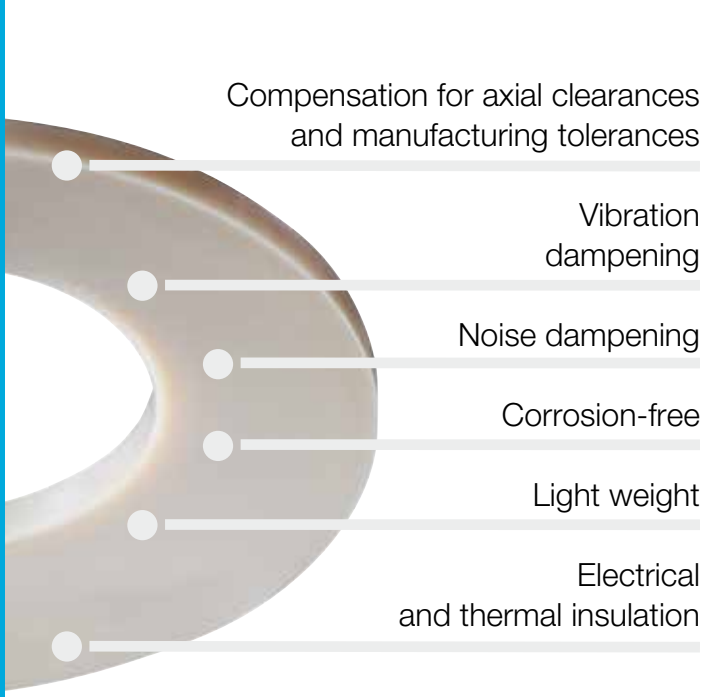


- Standard range from stock
- Compensation for axial clearances and manufacturing tolerances
- Vibration dampening
- Noise dampening
- Corrosion-free
- Light weight
- Electrical and thermal insulation

delivery from stock  
time

prices price list online  
[www.igus.co.uk/en/jvfm](http://www.igus.co.uk/en/jvfm)

**Polymer disc springs.** Spring washers are discs that can be axially loaded, which are concave in the axial direction. polysorb disc springs require less space than other spring types, and are especially suitable for designs that do not require a high spring length.



**When to use it?**

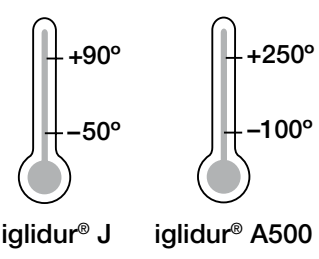
- Application requires disc spring characteristics which are only possible in metal at a considerable expense (slotted design)
- Compensation of axial clearances and manufacturing tolerances
- Vibration dampening
- Noise reduction
- Non-magnetic
- Electrical and thermal insulation



**When not to use it?**

- When constant spring forces are necessary over wide temperature ranges
- When high spring forces are required

**Temperature**

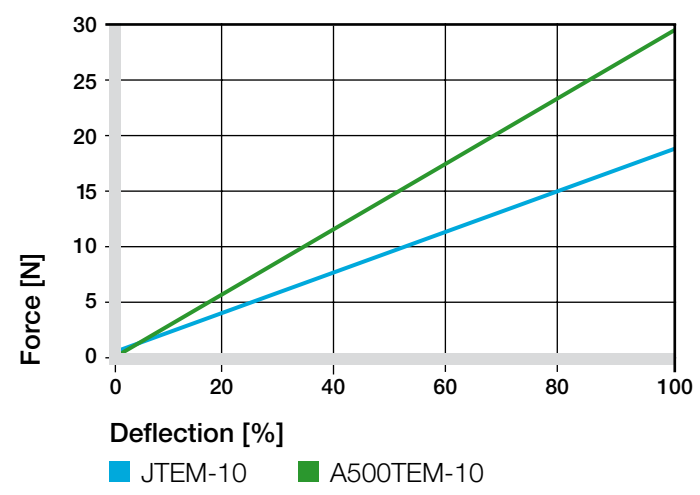


**Product range**

1 style, 2 materials  
Ø 5–20 mm  
more dimensions  
on request

**General properties**

Disc springs that are alternately stacked increase the spring length proportionally to the amount of springs. The total spring force is as large as the force of one single disc spring. In order to increase the force, the disc springs can be parallel stacked to form a spring packet.



**Diagram 01: Spring force as a function of percental deflection measured with size 10**

The force-deformation curves of polysorb disc springs are approximately linear.

**Additional Properties**

**Chemical Resistance**

polysorb disc springs are resistant to a variety of chemicals. iglidur® A500 has a higher resistance than iglidur® J.

| Medium                          | Resistance |               |
|---------------------------------|------------|---------------|
|                                 | iglidur® J | iglidur® A500 |
| Alcohol                         | +          | +             |
| Hydrocarbons                    | +          | +             |
| Greases, oils without additives | +          | +             |
| Fuels                           | +          | +             |
| Diluted acids                   | 0 to –     | +             |
| Strong acids                    | –          | +             |
| Diluted alkalines               | +          | +             |
| Strong alkalines                | + to 0     | +             |

+ resistant 0 conditionally resistant – not resistant  
All data given at room temperature [+20 °C]  
Table 01: Chemical resistance

**Moisture Absorption**

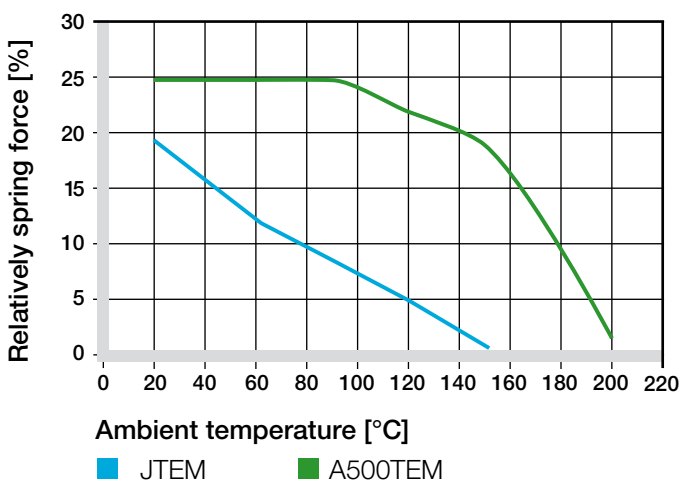
The low moisture absorption permits the use in wet or moist environments. polysorb disc springs absorb moisture and in the process the mechanical properties change. However, in the worst application case – a long term use in water – polysorb disc springs still have a high spring force.

| iglidur® | Standard environment<br>20 °C/50 % r.h. | saturated in water |
|----------|-----------------------------------------|--------------------|
| J        | 18                                      | 15                 |
| A500     | 24                                      | 23                 |

**Table 02: Spring force [N] as a function of the absorbed moisture**

**Increased Temperatures**

Increased temperatures reduce the rigidity of polymers. polysorb disc springs made of iglidur® J (JTEM-10) still have a maximum spring force of 8 N at the maximum permissible temperature of +90 °C. The spring force against ambient temperature is shown in diagram 03.

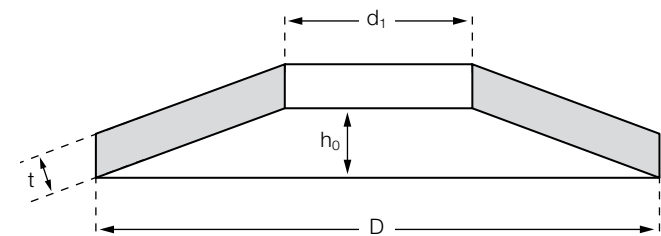


**Diagram 02: Effect of ambient temperature on the spring force**

**Material:**  
iglidur® J ► page 109  
iglidur® A500 ► page 457



Polymer disc springs



Dimensions based on DIN 2093



Order key

□ TEM-05



Inner diameter d1  
Metric  
"Elastic spring"  
Thrust washer style  
Material\* iglidur® J  
or A500



Material:

iglidur® J ► page 109

iglidur® A500 ► page 457

Dimensions [mm]

| Part number | D    | d1   | t    | h <sub>0</sub> | Standard values: spring lengths and forces |                                       |
|-------------|------|------|------|----------------|--------------------------------------------|---------------------------------------|
|             |      |      |      |                | F <sub>1,0</sub> iglidur® J<br>[N]         | F <sub>1,0</sub> iglidur® A500<br>[N] |
| □ TEM-05*   | 10.0 | 5.2  | 0.5  | 0.25           | 5                                          | 7                                     |
| □ TEM-06*   | 12.5 | 6.2  | 0.7  | 0.30           | 10                                         | 14                                    |
| □ TEM-08*   | 16.0 | 8.2  | 0.9  | 0.35           | 15                                         | 18                                    |
| □ TEM-10*   | 20.0 | 10.2 | 1.1  | 0.45           | 18                                         | 24                                    |
| □ TEM-12*   | 25.0 | 12.2 | 1.5  | 0.55           | 40                                         | 55                                    |
| □ TEM-16*   | 31.5 | 16.3 | 1.75 | 0.70           | 70                                         | 80                                    |
| □ TEM-20*   | 40.0 | 20.4 | 2.25 | 0.90           | 130                                        | 140                                   |

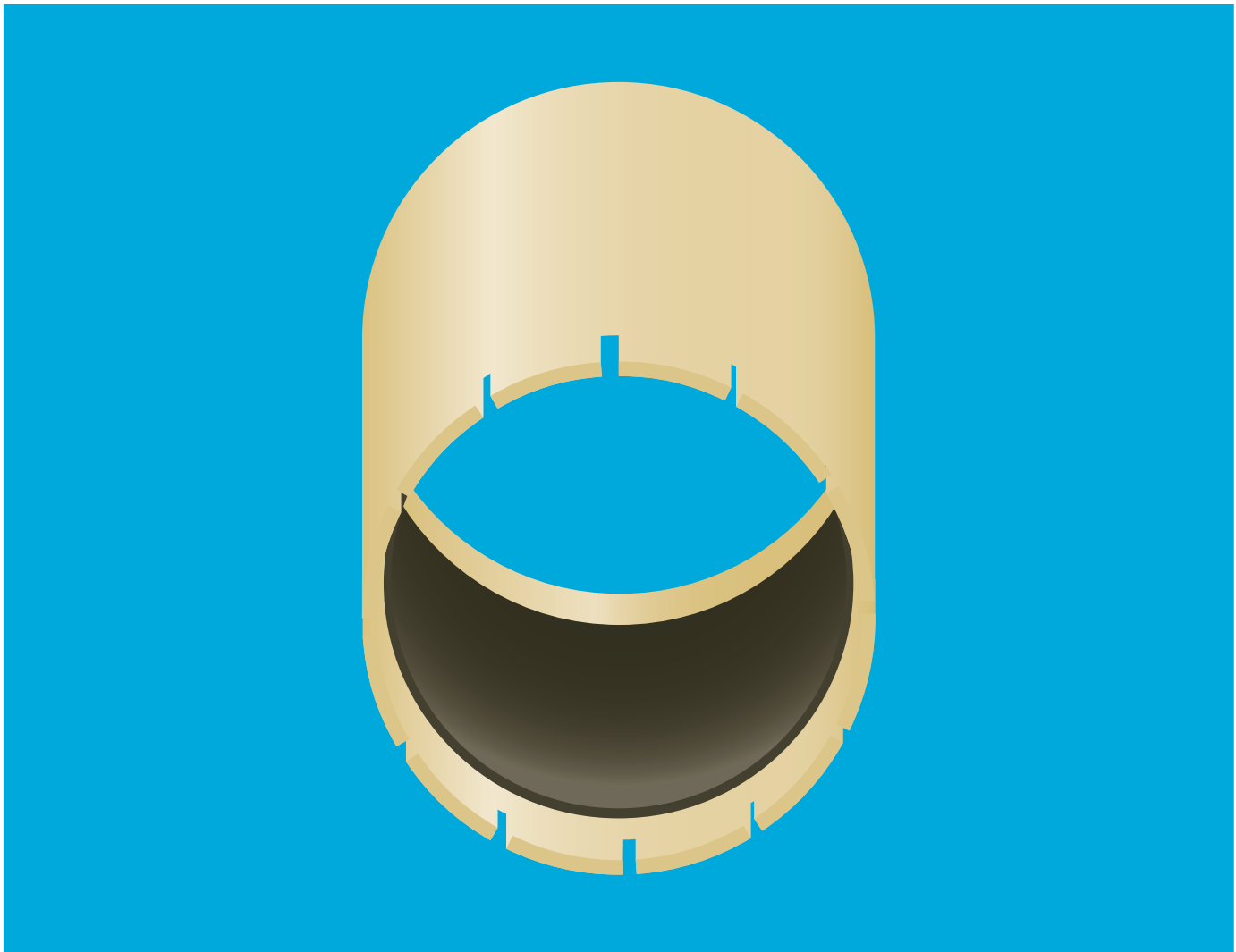
The standard values for the spring lengths and forces are rounded mean values.

\* Material: iglidur® J, JTEM, Standard

iglidur® A500, A500TEM, high temperature and chemical resistance

Symbols and Units:

- F = Force
- D = Outside diameter [mm]
- d1 = Inside diameter [mm]
- t = Plate thickness [mm]
- h<sub>0</sub> = Maximum spring displacement [mm]
- F<sub>1,0</sub> = Spring force 100 % displacement [N]



iglidur® PEP – For all shaft surfaces  
and materials



Standard range from stock

Can be used with any shaft material

Very cost-effective

Easy to fit

Low coefficient of friction



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/polysorb

**For all shaft surfaces and materials.** In standard plain bearing solutions, the shaft has a critical part to play, as important as the bearing itself. With the iglidur® PEP bearings, igus® is forging new trail with this enclosed and maintenance-free plain bearing design.



Can be used  
with any shaft material

Very cost-effective

Easy to fit

Low coefficient of friction



#### When to use it?

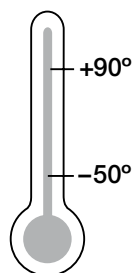
- Cost-effective polymer bearing system
- Independent of the shaft material and of the shaft surface
- Protection of expensive and sensitive shafts



#### When not to use it?

- For high surface speeds
  - ▶ iglidur® J, page 109
- At high loads
  - ▶ iglidur® G, page 81
  - ▶ iglidur® Q, page 541
- For high temperatures
  - ▶ iglidur® V400, page 317
  - ▶ iglidur® X, page 173
  - ▶ iglidur® Z, page 327
- When low clearance bearings are required
  - ▶ iglidur® P, page 195
  - ▶ iglidur® X, page 173

#### Temperature



#### Product range

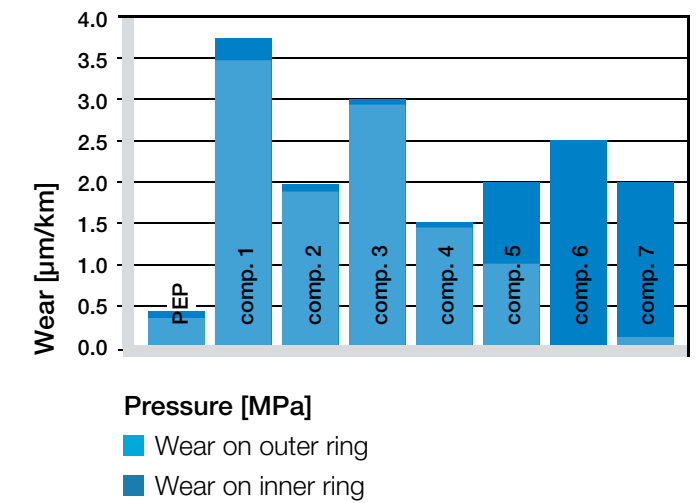
1 type  
Ø 6–20 mm  
more dimensions  
on request

#### General Properties

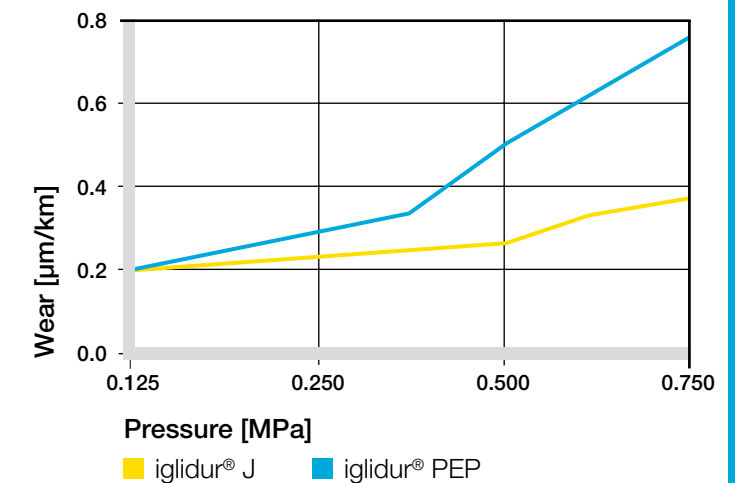
Maintenance-free plain bearings are generally described as being able to slide on the shaft without any additional coating and/or lubrication. It is evident that shaft materials are as important as the bearing itself. igus® is forging a new path with a plain bearing that is self-contained and maintenance-free. iglidur® PEP is an innovative design for lubricant-free polymer plain bearing systems with an inner and outer ring. The special feature; the sliding surface is the inner ring, and for the first, time shaft materials and shaft surfaces are not a concern. Even threads, rust and scratches do not affect the performance or reliability. With the control over the sliding surface and through considerable testing, the long term behaviour of the bearing system can be predicted precisely. Similar to ball bearings, the inner ring turns with the shaft in the polymer PEP plain bearing. Relative movements of the shaft with respect to the bearing are eliminated. This protects the shaft surface from wear and saves costs. An additional benefit; even the most sensitive or unusual materials can be used as the rotating shaft with this new polymer plain bearing. Due to the bearing materials used, the PEP polymer bearing is totally corrosion-free.

#### Wear Resistance

The wear resistance of PEP is of significant interest. For loads up to 5 N/mm² the test results are compelling. Here PEP polymer bearings obtain values that are comparable to most wear resistant metal-backed bearing systems. This is a very positive result, when you consider the reduced costs compared with the required shaft surface finish which is demanded by traditional bearings. The consistently low coefficient of friction is also an advantage to the user. Since the running surfaces are fixed, the tribological data can be calculated. The coefficients of friction of the PEP bearings are no longer based on the shaft materials or surface properties. If necessary, the coefficients of friction can be reduced further with a small amount of lubricant.



**Diagram 01: Wear experiments of different material combinations, p = 0.75 MPa, v = 0.3 m/s**

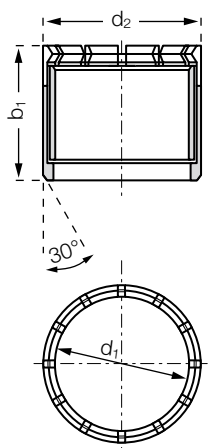


**Diagram 02: Wear of iglidur® PEP bearings as a function of the pressure, v = 0.3 m/s**

#### Fitting

The installation of the PEP plain bearing could not be easier or faster. The bearings are manufactured to be press fitted into a recommended housing bore of H7 tolerance. Then, the shaft is inserted and fits tightly onto the inner ring. The inner bearing is clipped into the outer ring. This design makes it possible to pull the shaft out without removing the inner ring.

Sleeve Bearing



Order key

PEPSM-0610-10



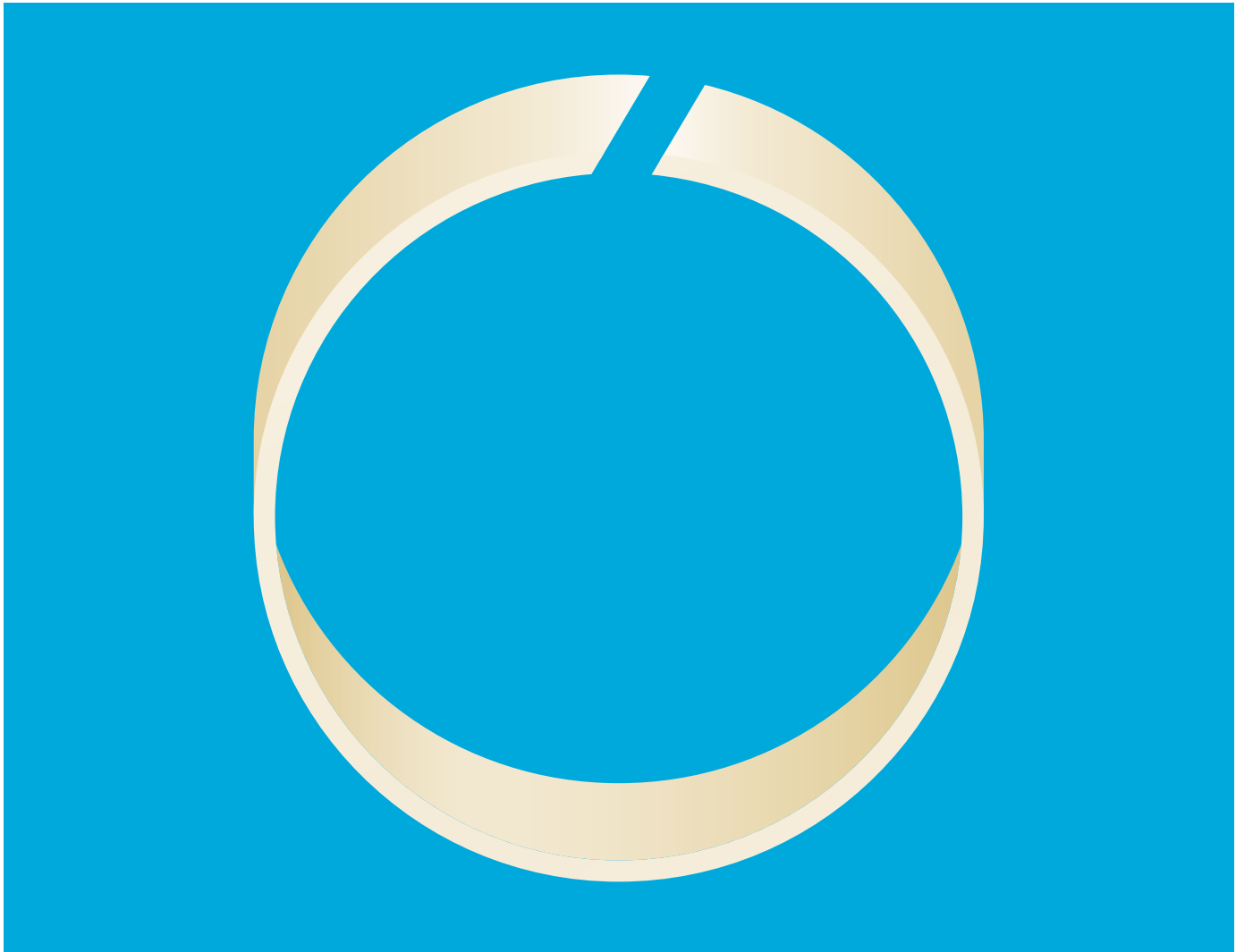
Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® PEP

Dimensions [mm]

| Part number   | d1 | d2 | b1 |
|---------------|----|----|----|
| PEPSM-0610-10 | 6  | 10 | 10 |
| PEPSM-0812-12 | 8  | 12 | 12 |
| PEPSM-1014-12 | 10 | 14 | 12 |
| PEPSM-1216-15 | 12 | 16 | 15 |
| PEPSM-1620-20 | 16 | 20 | 20 |
| PEPSM-2023-20 | 20 | 23 | 20 |

Dimensions [Inch]

| Part number   | d1  | d2    | b1  |
|---------------|-----|-------|-----|
| PEPSI-0406-06 | 1/4 | 3/8   | 3/8 |
| PEPSI-0608-08 | 3/8 | 1/2   | 1/2 |
| PEPSI-0810-08 | 1/2 | 5/8   | 1/2 |
| PEPSI-1012-12 | 5/8 | 3/4   | 3/4 |
| PEPSI-1214-12 | 3/4 | 7/8   | 3/4 |
| PEPSI-1618-16 | 1   | 1 1/8 | 1   |



iglidur® Piston Rings



- Standard range from stock
- Easy installation
- Economic
- More wear-resistant than PTFE-strips
- High load capacity
- Wide dimensional range

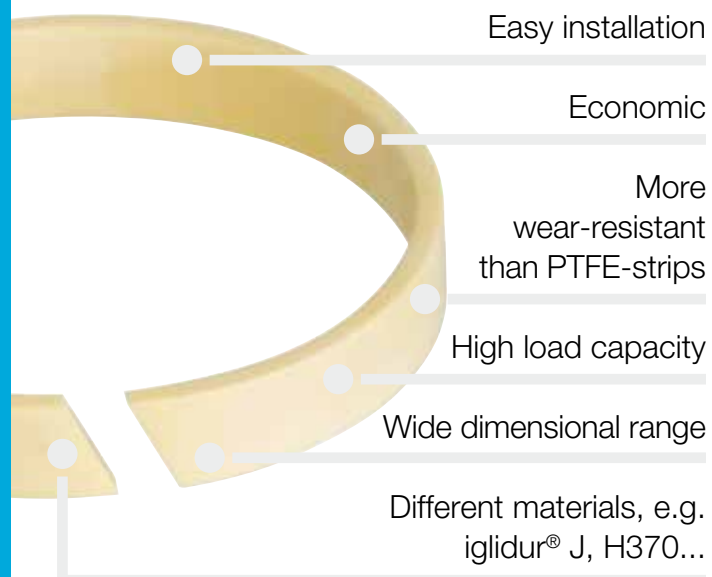


delivery from stock  
time



prices price list online  
www.igus.co.uk/en/pep

**Custom-made: choose the material and the dimensions.** Why complicate things when it can be done simply? It can actually be very easy: Replace complex stamped PTFE tapes with a single clip-on guide ring, for example in cylinders, control valves and fittings. We offer iglidur® piston rings made of any iglidur® material for a wide range of applications.



## When to use it?

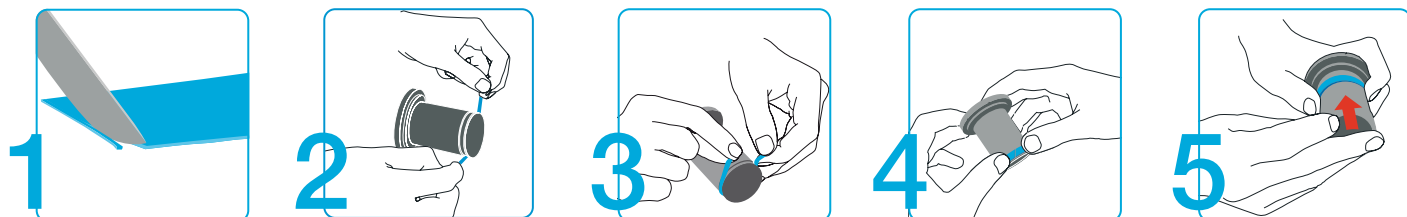
- When piston rings with excellent wear properties are required
- When simple assembly is of great importance
- When high edge loads occur
- When tailor-made solutions based on iglidur® materials are required



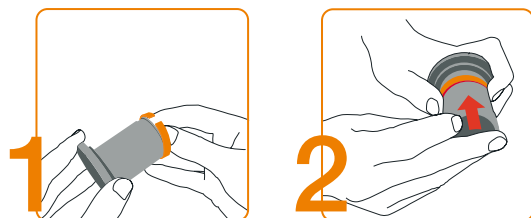
## When not to use it?

- When the piston rings should also act as a seal
- When different diameters should be covered by one part

## Traditional method:



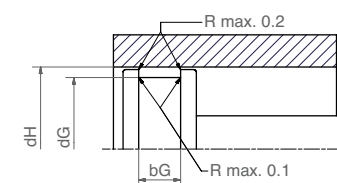
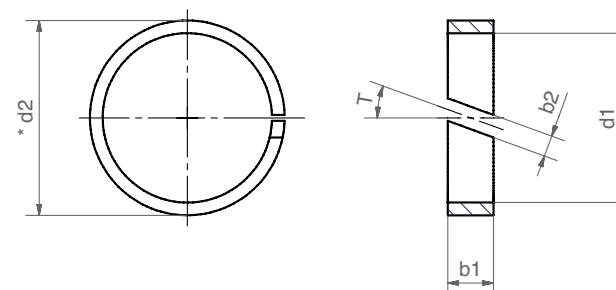
## New: with iglidur®:



## Product range

Ø 10–70 mm  
more dimensions on request

**i** In addition to mechanical processing of existing iglidur® bearings to piston rings, we also develop custom-made, piston ring solutions for your volume requirements. Please contact us. We will support you with your design and create an appropriate proposal.



## Installation recommendation for piston

| Dimensions [mm] | dG (h-tolerate) | dH (h-tolerate) | bG           |
|-----------------|-----------------|-----------------|--------------|
| Nominal size    | dG = d1         | dH = d2         | bG = b1 +0.2 |

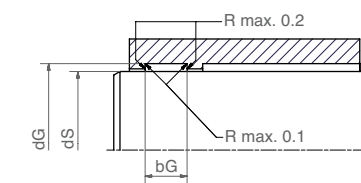
## Dimensions [mm] – iglidur® J piston rings, from stock

| Part number               | d1 | d2 | b1 h13      | b2 ±0.5 | T [°] |
|---------------------------|----|----|-------------|---------|-------|
| JPRM-1012-054             | 10 | 12 | 5.4         | 2.5     | 20    |
| JPRM-1214-054             | 12 | 14 | 5.4         | 2.5     | 20    |
| JPRM-1416-054             | 14 | 16 | 5.4         | 2.5     | 20    |
| JPRM-1618-054             | 16 | 18 | 5.4         | 2.5     | 20    |
| JPRM-1722-054 <b>New!</b> | 17 | 22 | 5.4         | 2.5     | 25    |
| JPRM-2023-054             | 20 | 23 | 5.4         | 2.5     | 20    |
| JPRM-2528-054             | 25 | 28 | 5.4         | 2.5     | 20    |
| JPRM-2833-054 <b>New!</b> | 28 | 33 | 5.4         | 2.5     | 25    |
| JPRM-3034-054             | 30 | 34 | 5.4         | 2.5     | 20    |
| JPRM-3539-054             | 35 | 39 | 5.4         | 2.5     | 20    |
| JPRM-3540-054 <b>New!</b> | 35 | 40 | 5.4         | 2.5     | 25    |
| JPRM-4044-054             | 40 | 44 | 5.4         | 2.5     | 20    |
| JPRM-4550-054             | 45 | 50 | 5.4         | 2.5     | 20    |
| JPRM-5055-054             | 50 | 55 | 5.4         | 2.5     | 20    |
| JPRM-5863-095 <b>New!</b> | 58 | 63 | 9.5 (-0.22) | 2.5     | 25    |
| JPRM-6065-054             | 60 | 65 | 5.4         | 2.5     | 20    |
| JPRM-7075-054             | 70 | 75 | 5.4         | 2.5     | 20    |



## Order key

### □PRM-d1d2-b1



## Installation recommendation for housing

| Dimensions [mm] | dS (h-tolerate) | dG (h-tolerate) | bG           |
|-----------------|-----------------|-----------------|--------------|
| Nominal size    | dS = d1         | dG = d2         | bG = b1 +0.2 |

## Custom-made piston rings

Piston rings in your required material and dimensions in max. 10 days from the entire iglidur® bearings catalog program – economically injection molded and processed to your required dimensions.

Preferable iglidur® materials:

- iglidur® J: universal ► page 109
- iglidur® A180: FDA conform ► page 411
- iglidur® J350: > +90 °C ► page 257
- iglidur® X: chemicals, temperatures ► page 173

Choose your material and diameter from the igus® bearing catalog, tell us your required length and order.

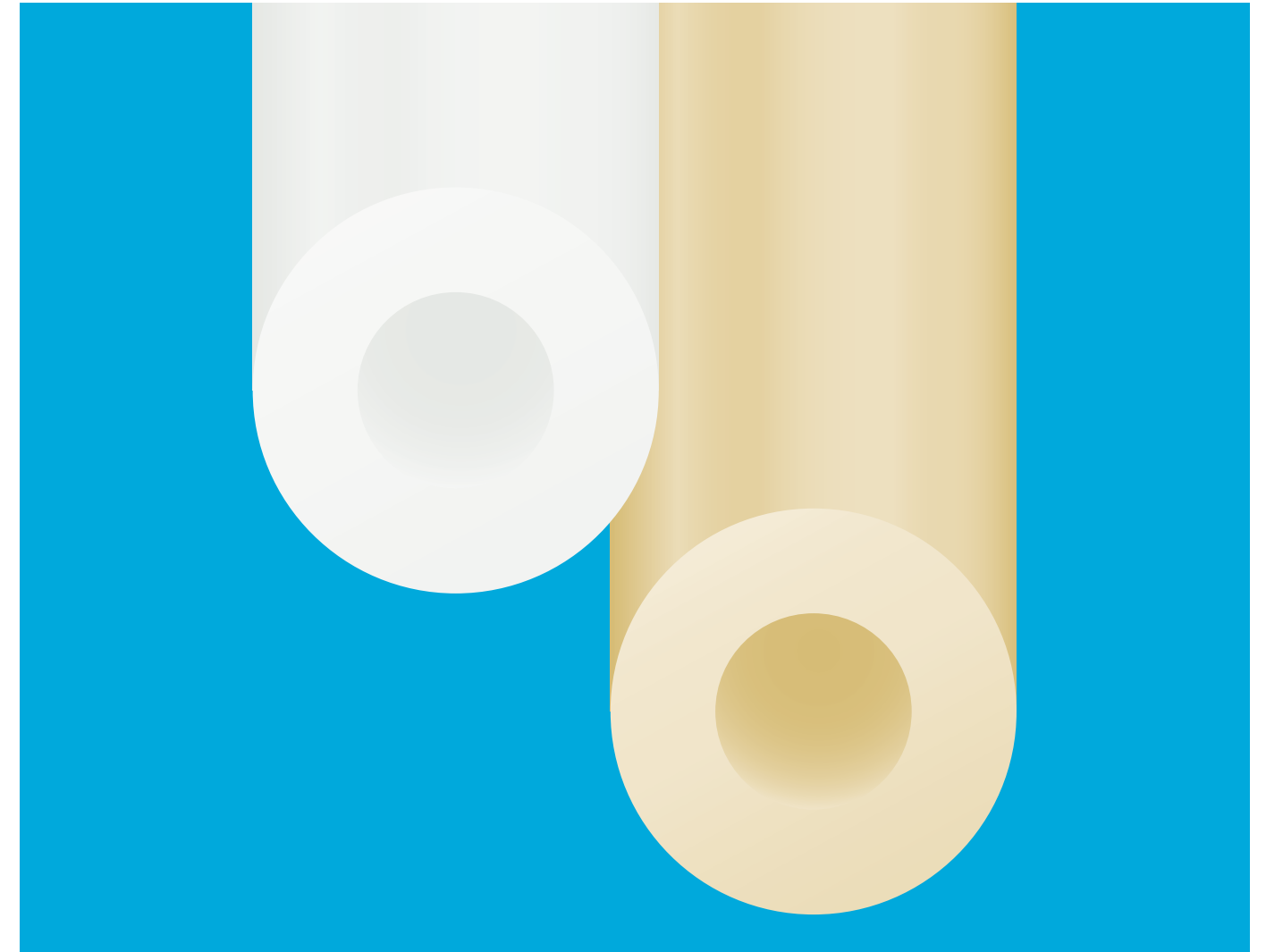


**delivery** from stock  
**time**



**prices** price list online  
[www.igus.co.uk/en/pistonring](http://www.igus.co.uk/en/pistonring)





## iglidur® Knife edge rollers



Standard range from stock

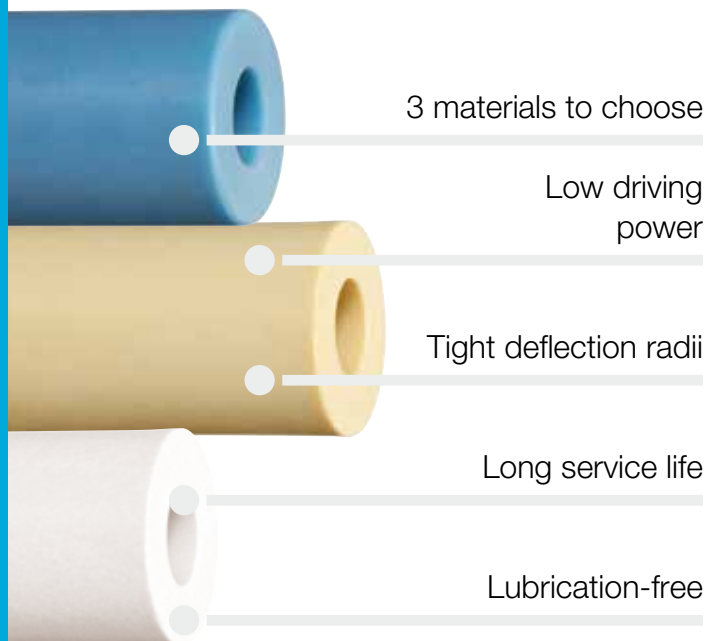
Low driving power

Small running diameters

Long service life of the belt

Cost-effective

**Precise and lubricant-free.** igus® has developed its own knife-edge conveyor rollers to implement conveyor technology applications. The first standard product range has three iglidur® materials available: the universal iglidur® P210 and the FDA compliant iglidur® A180 (up to 90 °C) and iglidur® A350 (up to 180 °C). The iglidur® solution is characterised by tight radii and low essential driving power.



## When to use it?

- When a maintenance free guiding of conveyors belt is required
- When a tight and precise guiding is required
- When a cost-effective and economical solution is required



## When not to use it?

- When highs speeds occur
- When high forces are applied on the bets
- When a static knife edge is required



## Material

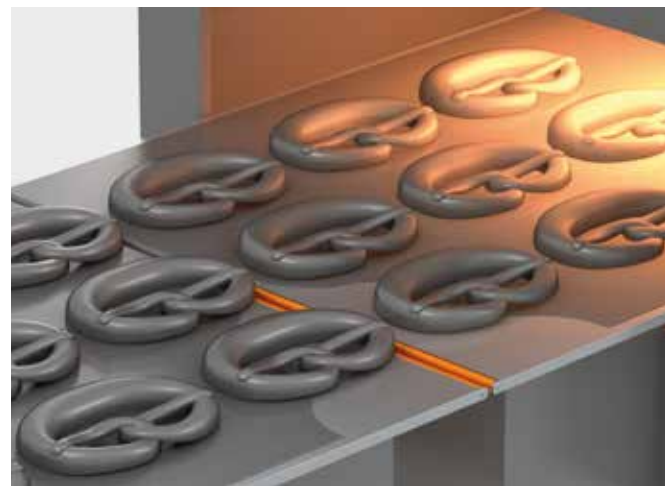
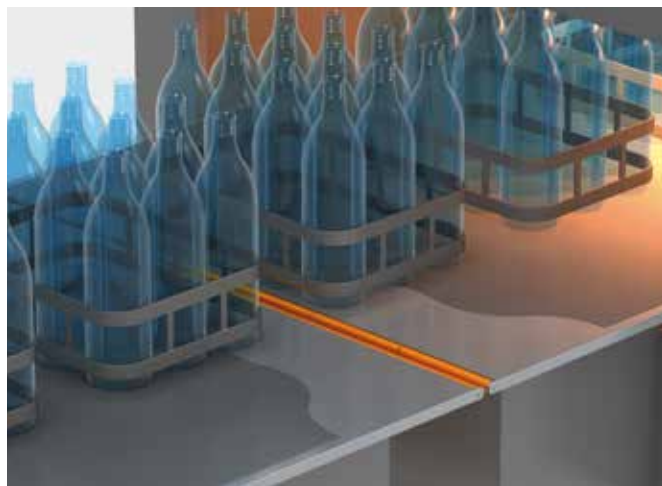
iglidur® A180 ► page 411

iglidur® A350 ► page 447

iglidur® P210 ► page 207

## Product range

3 materials  
Ø 9–20 mm  
more dimensions on request



**delivery** from stock  
**time**

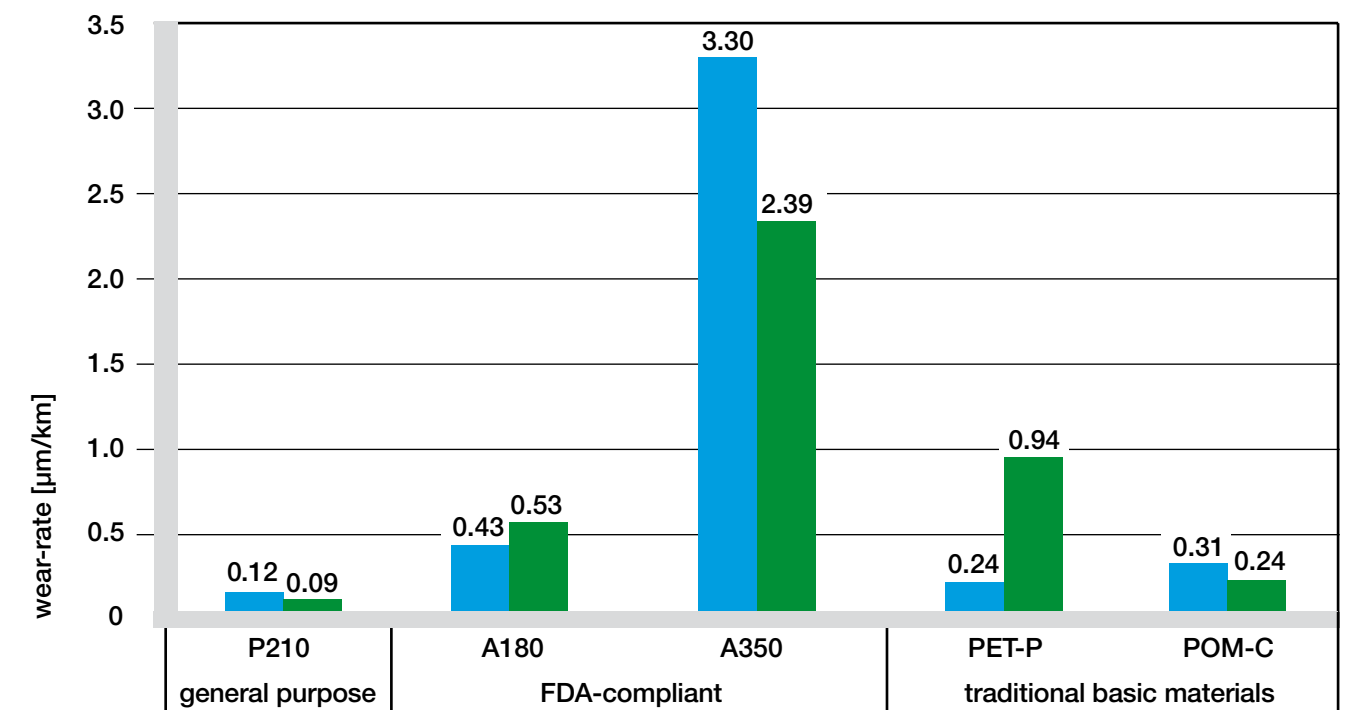


**prices** price list online  
[www.igus.co.uk/knifeedge](http://www.igus.co.uk/knifeedge)

## Material properties table

| General properties                                     | Unit                               | iglidur® P210      | iglidur® A180      | iglidur® A350      | Testing method |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|--------------------|----------------|
| Density                                                | g/cm³                              | 1.40               | 1.46               | 1.42               |                |
| Colour                                                 |                                    | yellow             | white              | blue               |                |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                | 0.2                | 0.6                | DIN 53495      |
| Max. water absorption                                  | % weight                           | 0.5                | 1.3                | 1.9                |                |
| Coefficient of sliding friction, dynamic against steel | μ                                  | 0.07–0.19          | 0.05–0.23          | 0.1–0.2            |                |
| pv value, max. (dry)                                   | MPa · m/s                          | 0.4                | 0.31               | 0.4                |                |
| Mechanical properties                                  |                                    |                    |                    |                    |                |
| Modulus of elasticity                                  | MPa                                | 2,500              | 2,300              | 2,000              | DIN 53457      |
| Tensile strength at +20 °C                             | MPa                                | 70                 | 88                 | 110                | DIN 53452      |
| Compressive strength                                   | MPa                                | 50                 | 78                 | 78                 |                |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 50                 | 28                 | 60                 |                |
| Shore D hardness                                       |                                    | 75                 | 76                 | 76                 | DIN 53505      |
| Physical and thermal properties                        |                                    |                    |                    |                    |                |
| Max. long term application temperature                 | °C                                 | +100               | +90                | +180               |                |
| Max. short term application temperature                | °C                                 | +160               | +110               | +210               |                |
| Min. application temperature                           | °C                                 | –40                | –50                | –100               |                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | 0.25               | 0.24               | ASTM C 177     |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 8                  | 11                 | 8                  | DIN 53752      |
| Electrical properties                                  |                                    |                    |                    |                    |                |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | > 10 <sup>12</sup> | > 10 <sup>11</sup> | DIN IEC 93     |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | > 10 <sup>11</sup> | > 10 <sup>11</sup> | DIN 53482      |

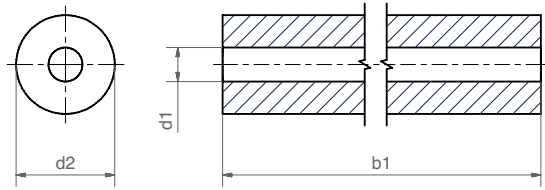
Table 01: Material properties table



high-grade steel | 1.4301



silver-steel | 1.2210



Order key

A180RLM-0309-50



Knife edge rollers – Material iglidur® A180 – FDA-compliant, up to 90 °C

| Part number     |      | d1 +0.1 [mm] | d2 ±0.1 [mm] | b1 -0.3 [mm] |
|-----------------|------|--------------|--------------|--------------|
| A180RLM-0309-50 | New! | 3.1          | 9.0          | 50.0         |
| A180RLM-0409-50 | New! | 4.1          | 9.0          | 50.0         |
| A180RLM-0511-70 | New! | 5.1          | 11.0         | 70.0         |
| A180RLM-0514-70 | New! | 5.1          | 14.0         | 70.0         |
| A180RLM-0612-70 | New! | 6.1          | 12.0         | 70.0         |
| A180RLM-0614-70 | New! | 6.1          | 14.0         | 70.0         |
| A180RLM-0812-70 | New! | 8.1          | 12.0         | 70.0         |
| A180RLM-0814-70 | New! | 8.1          | 14.0         | 70.0         |
| A180RLM-0818-70 | New! | 8.1          | 18.0         | 70.0         |
| A180RLM-1020-70 | New! | 10.1         | 20.0         | 70.0         |

Knife edge rollers – Material iglidur® A350 – FDA-compliant, up to 180 °C

| Part number     |      | d1 +0.1 [mm] | d2 ±0.1 [mm] | b1 -0.3 [mm] |
|-----------------|------|--------------|--------------|--------------|
| A350RLM-0309-50 | New! | 3.1          | 9.0          | 50.0         |
| A350RLM-0614-70 | New! | 6.1          | 14.0         | 70.0         |
| A350RLM-0818-70 | New! | 8.1          | 18.0         | 70.0         |

Knife edge rollers – Material iglidur® P210 – universal, up to 100 °C

| Part number     |      | d1 +0.1 [mm] | d2 ±0.1 [mm] | b1 -0.3 [mm] |
|-----------------|------|--------------|--------------|--------------|
| P210RLM-0309-50 | New! | 3.1          | 9.0          | 50.0         |
| P210RLM-0409-50 | New! | 4.1          | 9.0          | 50.0         |
| P210RLM-0511-70 | New! | 5.1          | 11.0         | 70.0         |
| P210RLM-0514-70 | New! | 5.1          | 14.0         | 70.0         |
| P210RLM-0612-70 | New! | 6.1          | 12.0         | 70.0         |
| P210RLM-0614-70 | New! | 6.1          | 14.0         | 70.0         |
| P210RLM-0812-70 | New! | 8.1          | 12.0         | 70.0         |
| P210RLM-0814-70 | New! | 8.1          | 14.0         | 70.0         |
| P210RLM-0818-70 | New! | 8.1          | 18.0         | 70.0         |
| P210RLM-1020-70 | New! | 10.1         | 20.0         | 70.0         |



## iglidur® Polymer Bearing with Lip Seal



Polymer bearing with integrated radial shaft seal

Seals against the rotating shaft

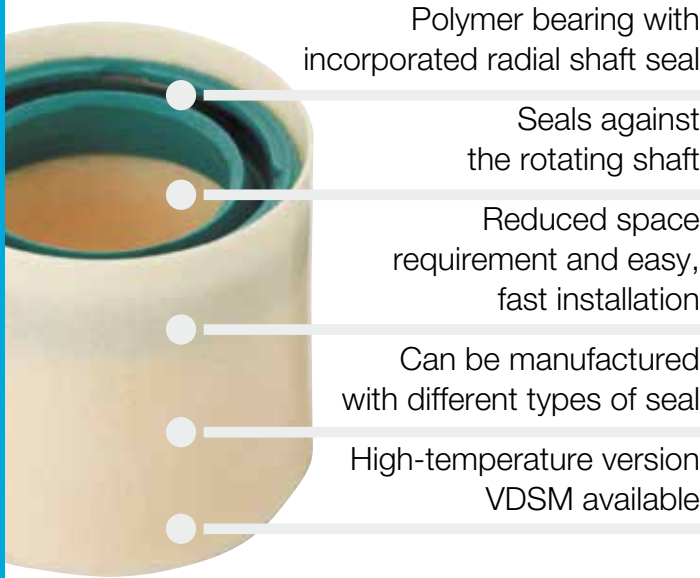
Reduced space requirement and easy, fast installation

Can be manufactured with different types of seal

High-temperature version VDSM available

# iglidur® Polymer Bearing with Lip Seal

**Incorporated radial shaft seal.** Easy and quick to fit polymer plain bearing made of iglidur® J (JDSM) or iglidur® V400 (VDSM) with an integrated rotary lip seal, which protects against dust, dirt, and all unpressurized liquids.



Polymer bearing with incorporated radial shaft seal

Seals against the rotating shaft

Reduced space requirement and easy, fast installation

Can be manufactured with different types of seal

High-temperature version VDSM available



### When to use it?

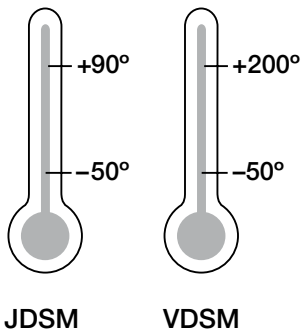
- When the penetration of dirt and water spray should be prevented
- When only a small installation space is available in the axial direction
- When an existing seal should be integrated in a plain bearing



### When not to use it?

- When pressurized media should be sealed
- When a permanent tensioned seal is required

### Temperature



JDSM

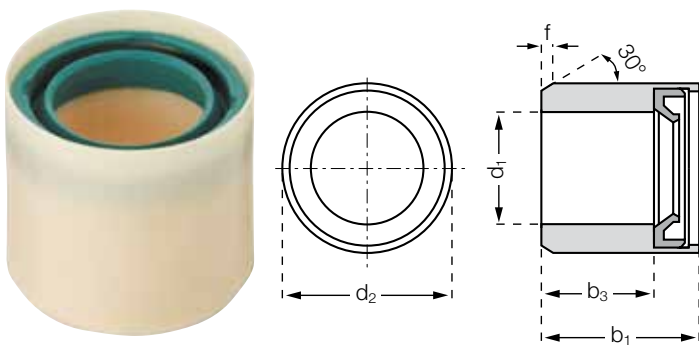
VDSM

### Product range

1 type  
2 materials  
Ø 10 mm  
other dimensions on request

# iglidur® Polymer Bearing with Lip Seal | Product Range

## Polymer bearing with lip seal



### Order key

□DSM-1015-14

- Height b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Polymer Bearing with lip seal, Form S
- Seal
- Material iglidur® J/V400



### Material:

iglidur® J ► page 109

iglidur® V400 ► page 317

### Dimensions [mm]

| Part number  | d1<br>E11 | d1-Tolerance* | d2<br>Ø | b1<br>h13 | b3 | f |
|--------------|-----------|---------------|---------|-----------|----|---|
| JDSM-1015-14 | 10        | +0.025 +0.135 | 15      | 14        | 10 | 1 |
| VDSM-1015-14 | 10        | +0.025 +0.135 | 15      | 14        | 10 | 1 |

\* after pressfit. Testing methods ► page 75



Please contact us if you want to combine your seal with an iglidur® bearing.

We will support you with the design, will check the integration and create an appropriate proposal.



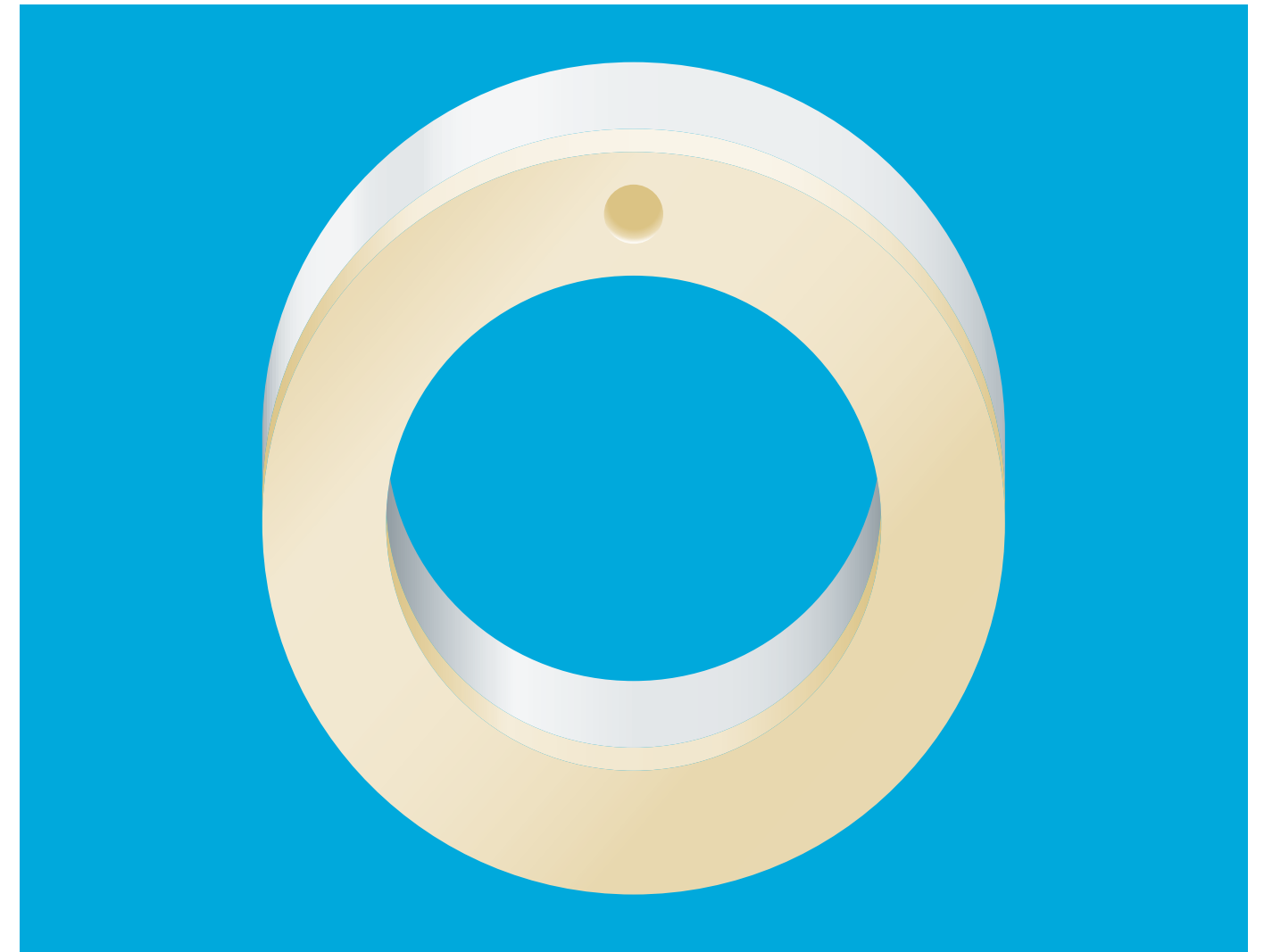
**delivery** from stock  
**time**



**prices** price list online  
www.igus.co.uk/en/jdsm





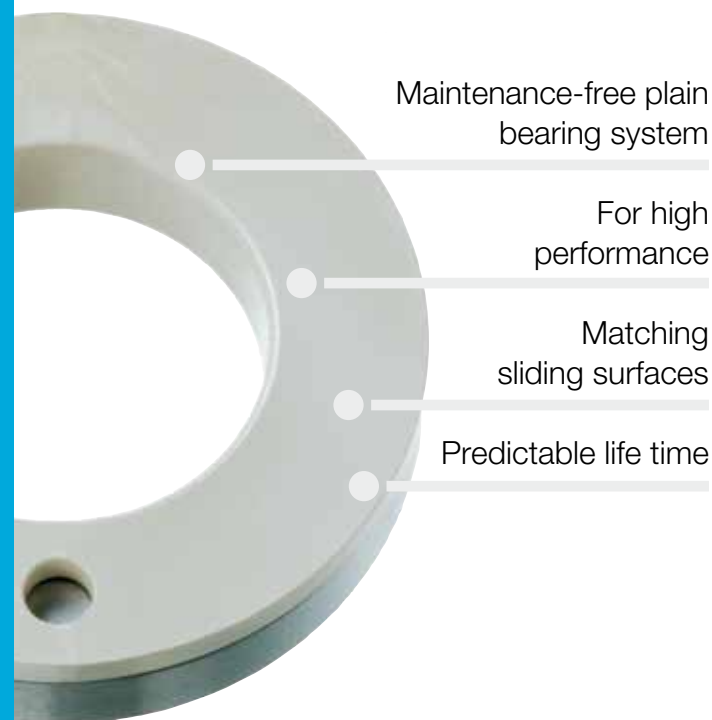


## iglidur® axial bearings – matching sliding surfaces



maintenance-free plain bearing system  
for high performance  
matching sliding surfaces  
predictable service life

**Matching sliding surfaces.** iglidur® axial bearings JATM/VATM consist of an anodized aluminum ring combined with an iglidur® bearing ring. This combination of materials offers in low friction values and high wear resistance – without lubrication.



## When to use it?

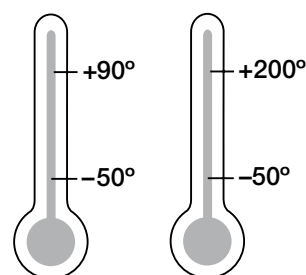
- When an axial bearing system with defined tribological characteristics is required
- For extremely high wear resistance
- When a very low coefficient of friction is required



## When not to use it?

- When an additional angular compensation is required  
► igubal® Axial bearing, page 811
- When only a small installation space is available  
► iglidur® J, Thrust Washer, page 122
- For occasional use only  
► iglidur® G, Thrust Washer, page 100

## Temperature



JATM

VATM

## Product range

1 type  
2 materials  
Ø 20 mm  
more dimensions on request

## Calculated friction value of thrust bearing JATM

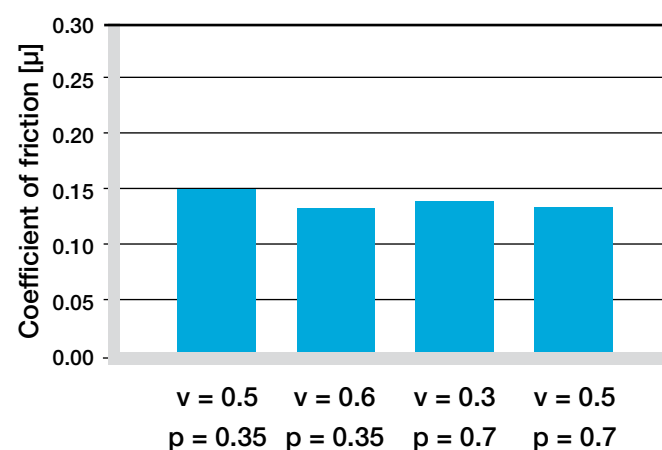


Diagram 02: In a test, the friction values of the bearing systems were calculated at different speeds (v) and pressures (p) – (v in m/s, p in MPa)

## The calculated rates of wear rates of thrust bearing JATM

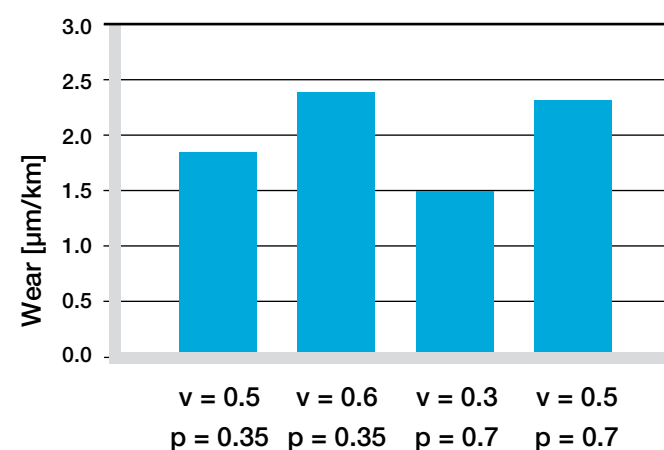
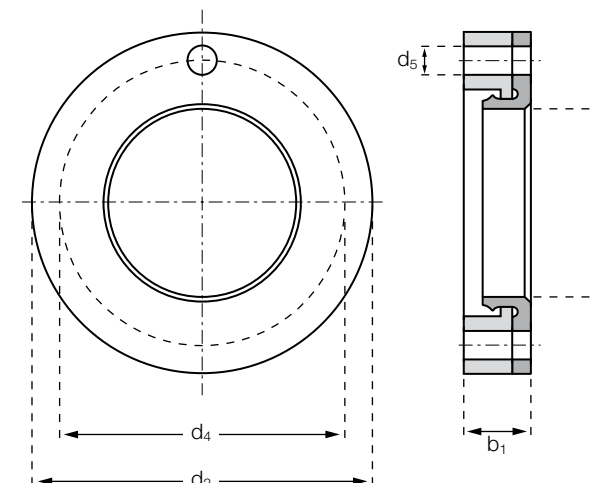
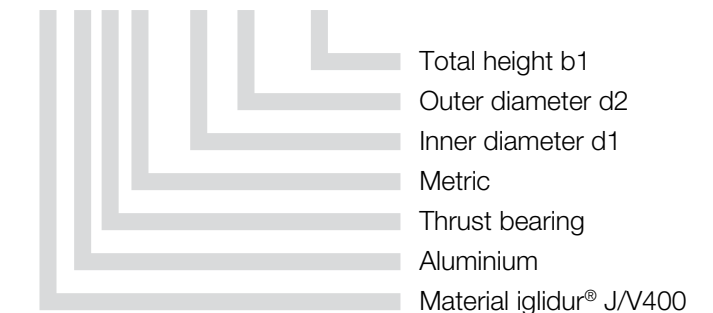


Diagram 01: The diagram shows the effect of pressure (p in MPa) and speed (v in m/s) on the thrust bearing wear



## Order key

□ ATM-2036-070



## Material:

iglidur® J ► page 109  
iglidur® V400 ► page 317

## Example designs [mm]

| Part number   | d1 | d2 | b1 | d4 | d5 |
|---------------|----|----|----|----|----|
| JATM-2036-070 | 20 | 36 | 7  | 30 | 3  |
| VATM-2036-070 | 20 | 36 | 7  | 30 | 3  |



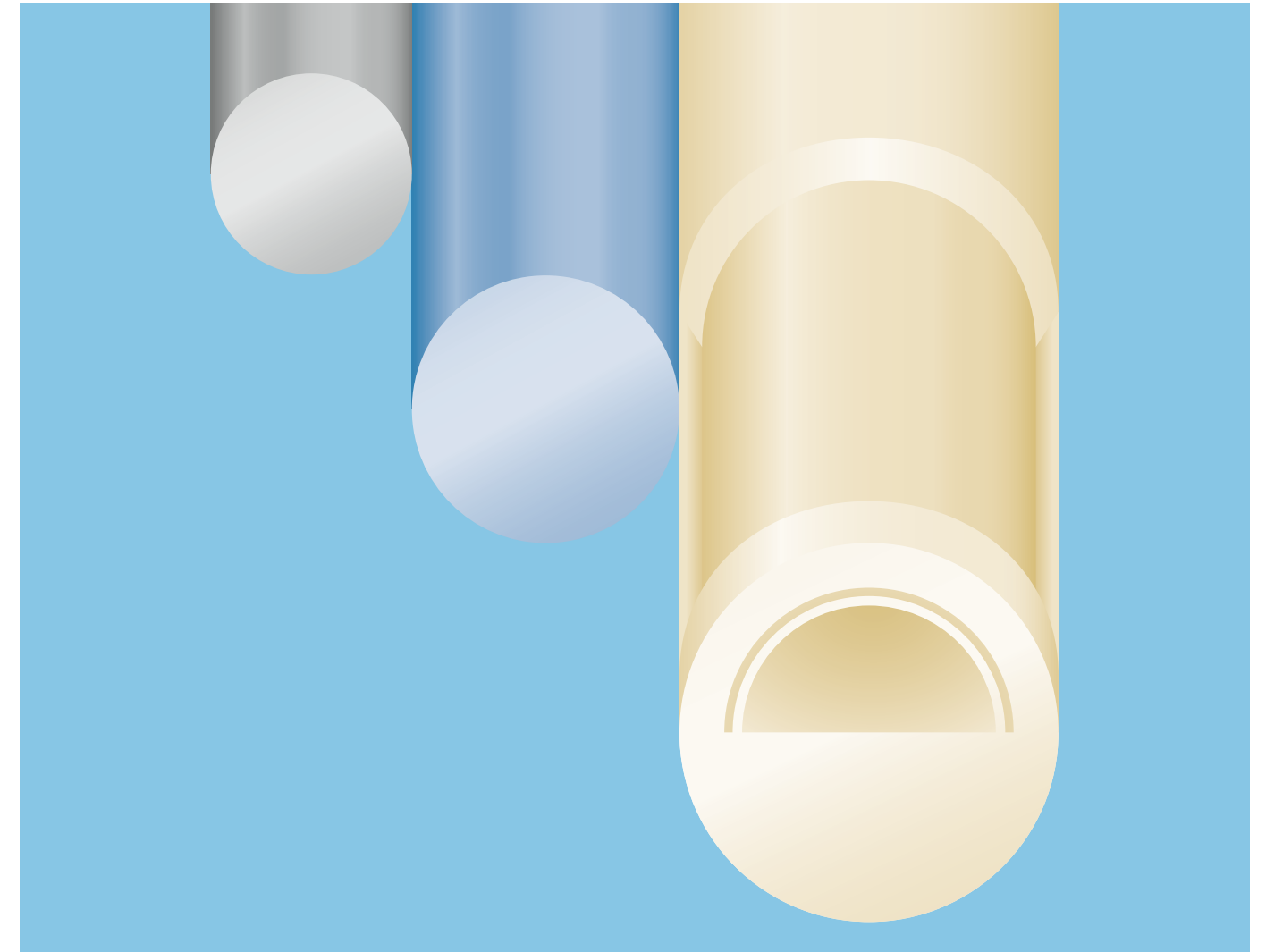
Please contact us if you need a custom-made iglidur® axial bearing for your application. We will help you with the design and create an appropriate proposal.



delivery from stock  
time



prices price list online  
www.igus.co.uk/en/jatm



## iglidur® Bar stock



Standard range from stock

iglidur® materials as round material

iglidur® J as plate material

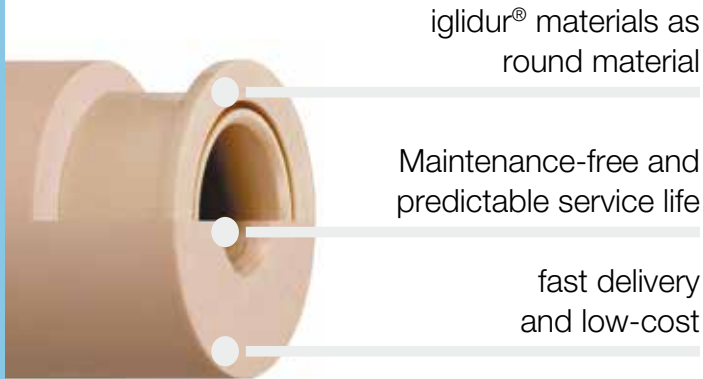
Maintenance-free and predictable service life

Fast delivery and low-cost

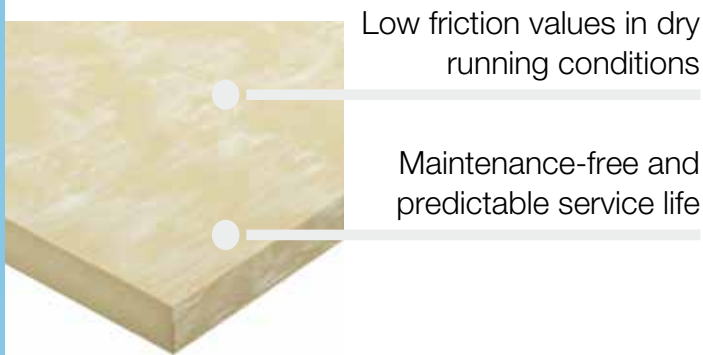
**Machined special parts from iglidur® materials: very fast manufacturing with speedicut.** speedicut uses the range of iglidur® bar stock materials, and machines parts to a customer's design really fast. speedicut uses a 3D model to produce a simple and fast quotation, and parts can then be delivered within days.

Select the material, the dimensions and the design. iglidur® for design freedom – as bar stock or as plate material. Ideal for prototypes, test samples and low volumes.

### iglidur®-bar stock



### iglidur®-Plates



### Product range

9 materials  
Bar stock: Ø 10–100 mm  
Plate thickness:: ↑ 2–25 mm  
more dimensions on request

igus® increases constantly the amount of available materials for bar stock.  
Please check the latest situation online  
► [www.igus.co.uk/barstock](http://www.igus.co.uk/barstock)



#### When to use it?

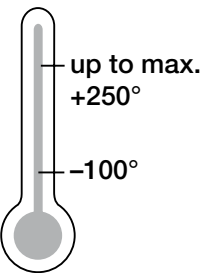
- If the required size is not in iglidur® catalog range
- If you need a bar stock with low wear rates and coefficient of friction
- If you need only a small amount of special parts
- If you need to make a prototype using igus® bearings



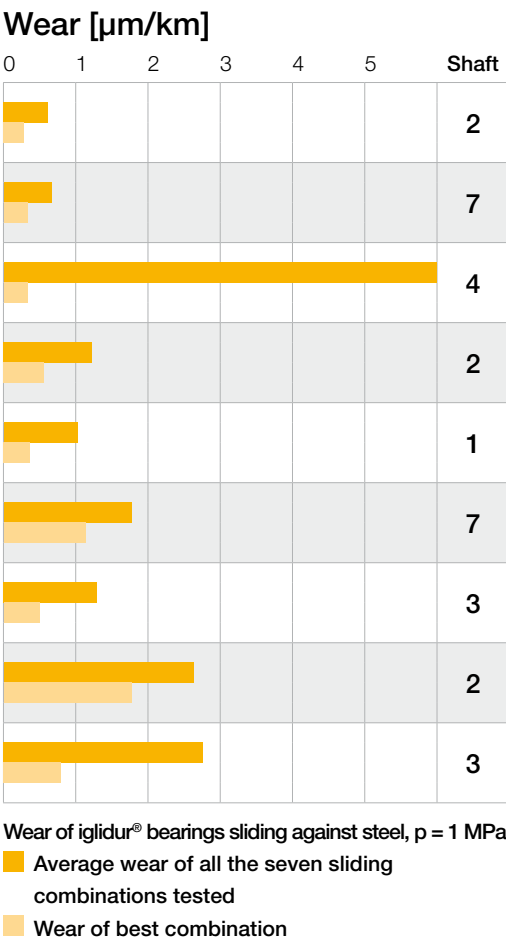
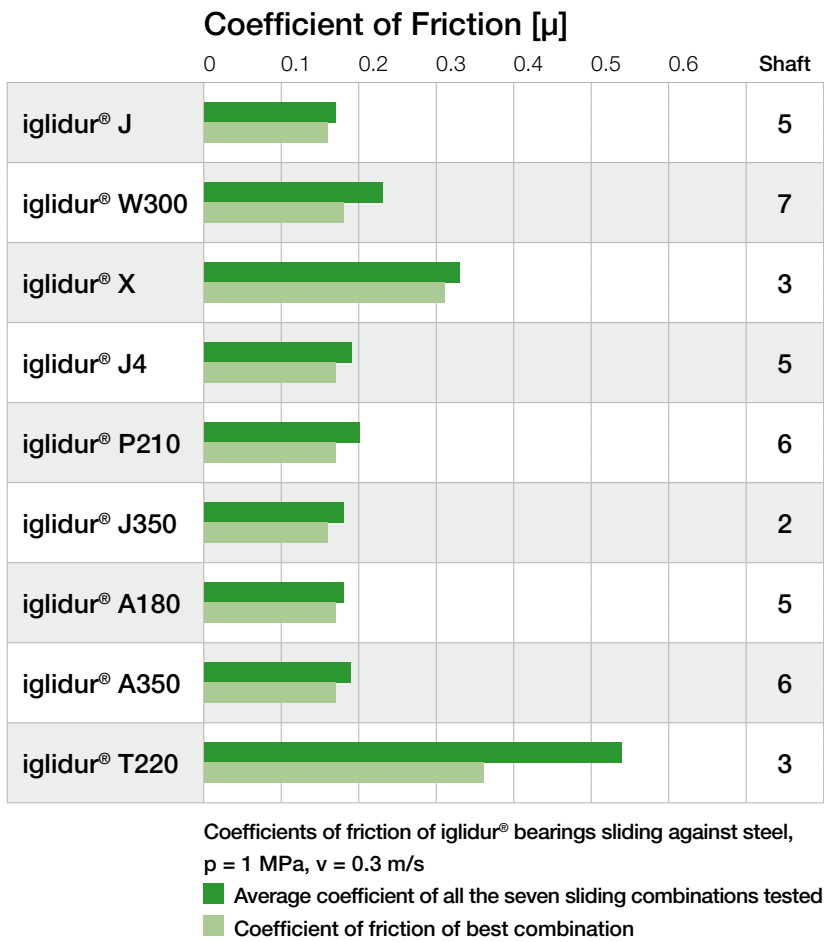
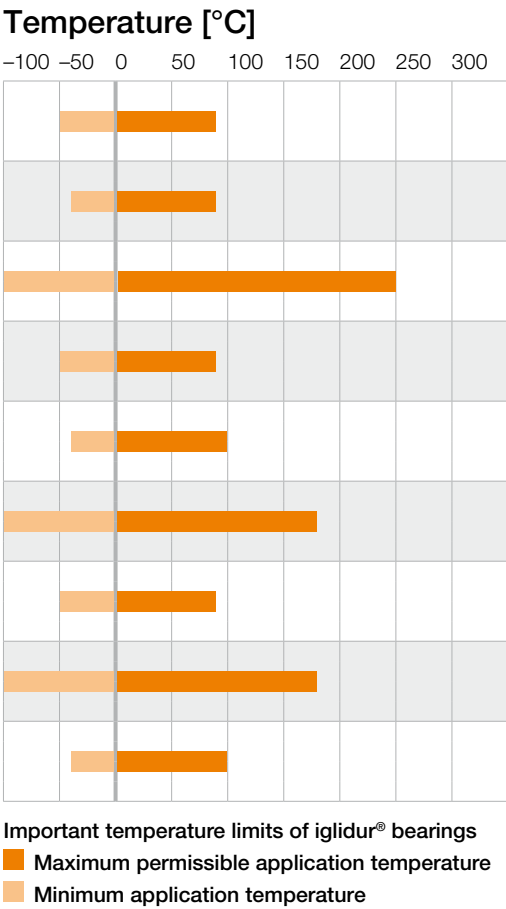
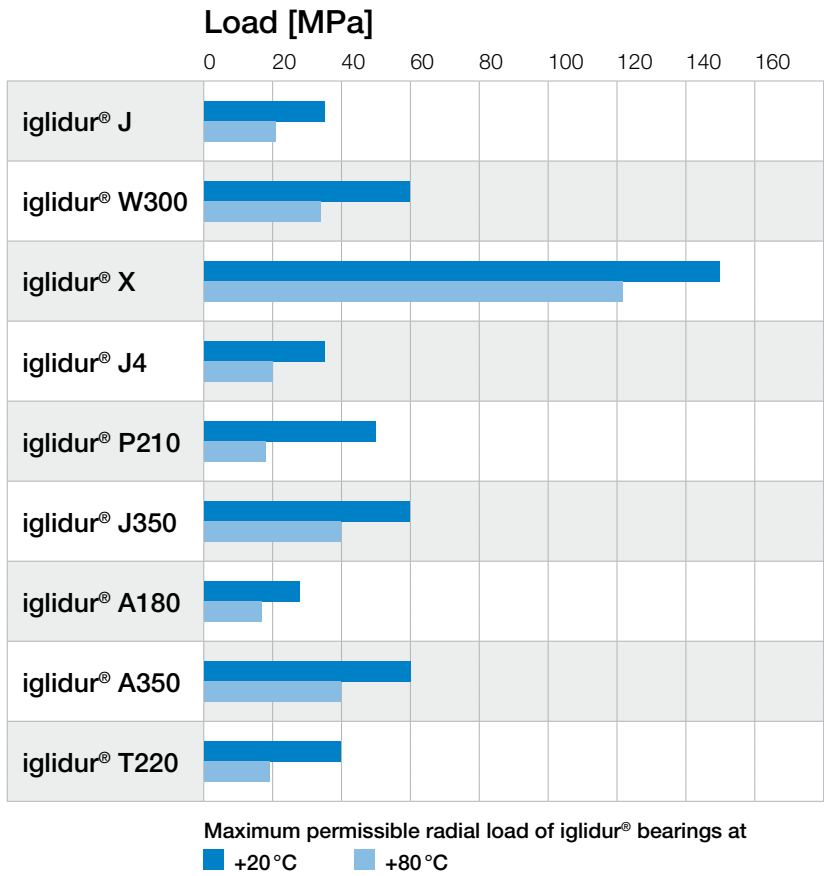
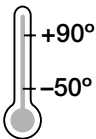
#### When not to use it?

- If an iglidur® standard catalog bearing is available
- If you need an iglidur® plain bearings with special dimensions in high quantity  
► Please ask us
- If you need a bar stock without any tribological properties

### Temperature (depending on material)



Standard:  
iglidur® J



Shaft material:  
1 = Cf53  
2 = Cf53, hard chromed  
3 = Aluminium, hc  
4 = Automatic screw steel  
5 = HR carbon steel  
6 = 304 SS  
7 = High grade steel



## Bestseller – our most sold iglidur® materials

| Material properties table                              |                                    |                    |                    |                   |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|-------------------|
| General properties                                     | Unit                               | iglidur®<br>J      | iglidur®<br>W300   | iglidur®<br>X     |
| Density                                                | g/cm³                              | 1.49               | 1.24               | 1.44              |
| Colour                                                 |                                    | yellow             | yellow             | black             |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                | 1.3                | 0.1               |
| Max. water absorption                                  | % weight                           | 1.3                | 6.5                | 0.5               |
| Coefficient of sliding friction. dynamic against steel | μ                                  | 0.06–0.18          | 0.08–0.23          | 0.09–0.27         |
| pv value. max. (dry)                                   | MPa · m/s                          | 0.34               | 0.23               | 1.32              |
| Mechanical properties                                  |                                    |                    |                    |                   |
| Modulus of elasticity                                  | MPa                                | 2,400              | 3,500              | 8,100             |
| Tensile strength at +20 °C                             | MPa                                | 73                 | 125                | 170               |
| Compressive strength                                   | MPa                                | 60                 | 61                 | 100               |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 35                 | 60                 | 150               |
| Shore D hardness                                       |                                    | 74                 | 77                 | 85                |
| Physical and thermal properties                        |                                    |                    |                    |                   |
| Max. long term application temperature                 | °C                                 | +90                | +90                | +250              |
| Max. short term application temperature                | °C                                 | +120               | +180               | +315              |
| Min. application temperature                           | °C                                 | −50                | −40                | −100              |
| Thermal conductivity                                   | W/m · K                            | 0.25               | 0.24               | 0.6               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>−1</sup> · 10 <sup>−5</sup> | 10                 | 9                  | 5                 |
| Electrical properties                                  |                                    |                    |                    |                   |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | > 10 <sup>13</sup> | < 10 <sup>5</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | > 10 <sup>12</sup> | < 10 <sup>3</sup> |

### Dimensions [mm]

| Part number                                                                                                                                            | Dimensions [mm] |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
|                                                                                                                                                        | Ø               | Lengths       |
|  iglidur® J – General purpose, good wear-resistance and low friction |                 |               |
| SFRJ-1000                                                                                                                                              | 10              | 100 to 1,000* |
| SFRJ-2000                                                                                                                                              | 20              | 100 to 1,000* |
| SFRJ-3000                                                                                                                                              | 30              | 100 to 1,000* |
| SFRJ-4000                                                                                                                                              | 40              | 100 to 1,000* |
| SFRJ-5000                                                                                                                                              | 50              | 100 to 1,000* |
| SFRJ-6000                                                                                                                                              | 60              | 100 to 1,000* |
| SFRJ-6500 <b>New!</b>                                                                                                                                  | 65              | 100 to 1,000* |
| SFRJ-8000                                                                                                                                              | 80              | 100 to 1,000* |
| SFRJ-10000                                                                                                                                             | 100             | 100 to 1,000* |

\* length in mm from 100 to 1,000 graduated  
in 100 mm steps

| Part number                                                                                                                                   |      | Dimensions [mm] |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|---------------|
|                                                                                                                                               |      | Ø               | Lengths       |
|  iglidur® W300 – Material for high load requirements       |      |                 |               |
| SFRW-3000                                                                                                                                     |      | 30              | 100 to 1,000* |
| SFRW-4000                                                                                                                                     | New! | 40              | 100 to 1,000* |
| SFRW-5000                                                                                                                                     | New! | 50              | 100 to 1,000* |
| SFRW-6000                                                                                                                                     |      | 60              | 100 to 1,000* |
| SFRW-6500                                                                                                                                     | New! | 65              | 100 to 1,000* |
| SFRW-8000                                                                                                                                     | New! | 80              | 100 to 1,000* |
|  iglidur® X – chemical-resistant high-temperature material |      |                 |               |
| SFRX-2000                                                                                                                                     | Neu! | 20              | 100 to 1,000* |
| SFRX-3000                                                                                                                                     |      | 30              | 100 to 1,000* |

 **delivery** from stock  
time

 **prices** price list online  
[www.igus.co.uk/barstock](http://www.igus.co.uk/barstock)

## Allrounder – iglidur® materials for many application sectors

| Material properties table                              |                                    |                    |                    |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|
| General properties                                     | Unit                               | iglidur® J4        | iglidur® P210      |
| Density                                                | g/cm³                              | 1.48               | 1.40               |
| Colour                                                 |                                    | grey               | yellow             |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                | 0.3                |
| Max. water absorption                                  | % weight                           | 1.3                | 0.5                |
| Coefficient of sliding friction. dynamic against steel | μ                                  | 0.06–0.20          | 0.07–0.19          |
| pv value. max. (dry)                                   | MPa · m/s                          | 0.3                | 0.4                |
| Mechanical properties                                  |                                    |                    |                    |
| Modulus of elasticity                                  | MPa                                | 2,350              | 2,500              |
| Tensile strength at +20 °C                             | MPa                                | 70                 | 70                 |
| Compressive strength                                   | MPa                                | 55                 | 50                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 35                 | 50                 |
| Shore D hardness                                       |                                    | 74                 | 75                 |
| Physical and thermal properties                        |                                    |                    |                    |
| Max. long term application temperature                 | °C                                 | +90                | +100               |
| Max. short term application temperature                | °C                                 | +120               | +160               |
| Min. application temperature                           | °C                                 | –50                | –40                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | 0.25               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 10                 | 8                  |
| Electrical properties                                  |                                    |                    |                    |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> | > 10 <sup>12</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>12</sup> | > 10 <sup>11</sup> |

### Dimensions [mm]

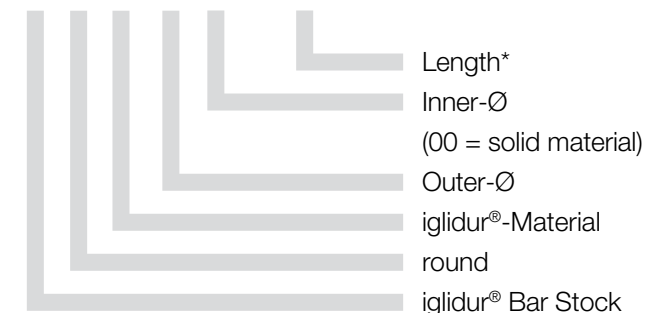
| Part number                                                                                                                                        | Dimensions [mm] |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
|                                                                                                                                                    | Ø               | Lengths       |
|  <b>iglidur® J4 – wear resistant and cost-effective</b>       |                 |               |
| SFRJ4-2000                                                                                                                                         | 20              | 100 to 1,000* |
| SFRJ4-3000                                                                                                                                         | 30              | 100 to 1,000* |
| SFRJ4-4000                                                                                                                                         | 40              | 100 to 1,000* |
| SFRJ4-5000                                                                                                                                         | 50              | 100 to 1,000* |
| SFRJ4-6000                                                                                                                                         | 60              | 100 to 1,000* |
|  <b>iglidur® P210 – Material for high speeds at low loads</b> |                 |               |
| SFRP210-3000                                                                                                                                       | 30              | 100 to 1,000* |
| SFRP210-4000                                                                                                                                       | 40              | 100 to 1,000* |
| SFRP210-5000                                                                                                                                       | 50              | 100 to 1,000* |
| SFRP210-6000                                                                                                                                       | 60              | 100 to 1,000* |

\* length in mm from 100 to 1,000 graduated  
in 100 mm steps

 **delivery** from stock  
time


**Order key**

**SFRJ4-2000-500**



 **prices** price list online  
[www.igus.co.uk/barstock](http://www.igus.co.uk/barstock)

For long service life – our most sold iglidur® materials

| Material properties table                              |                                    |                    |
|--------------------------------------------------------|------------------------------------|--------------------|
| General properties                                     | Unit                               | iglidur® J350      |
| Density                                                | g/cm³                              | 1.44               |
| Colour                                                 |                                    | yellow             |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.3                |
| Max. water absorption                                  | % weight                           | 1.6                |
| Coefficient of sliding friction. dynamic against steel | μ                                  | 0.10–0.20          |
| pv value. max. (dry)                                   | MPa · m/s                          | 0.45               |
| Mechanical properties                                  |                                    |                    |
| Modulus of elasticity                                  | MPa                                | 2,000              |
| Tensile strength at +20 °C                             | MPa                                | 55                 |
| Compressive strength                                   | MPa                                | 60                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 60                 |
| Shore D hardness                                       |                                    | 80                 |
| Physical and thermal properties                        |                                    |                    |
| Max. long term application temperature                 | °C                                 | +180               |
| Max. short term application temperature                | °C                                 | +220               |
| Min. application temperature                           | °C                                 | –100               |
| Thermal conductivity                                   | W/m · K                            | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 7                  |
| Electrical properties                                  |                                    |                    |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>13</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>10</sup> |

Dimensions [mm]

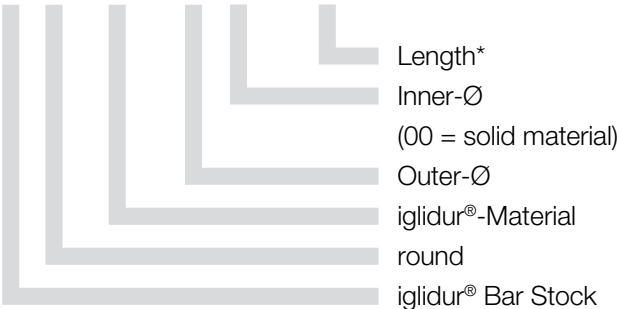
| Part number                                                                                                                  | Dimensions [mm] |               |
|------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
|                                                                                                                              | Ø               | Lengths       |
|  iglidur® J350 – high-temperature material |                 |               |
| SFRJ350-2000 <b>New!</b>                                                                                                     | 20              | 100 to 1,000* |
| SFRJ350-3000                                                                                                                 | 30              | 100 to 1,000* |
| SFRJ350-4000                                                                                                                 | 40              | 100 to 1,000* |
| SFRJ350-5000                                                                                                                 | 50              | 100 to 1,000* |
| SFRJ350-6000                                                                                                                 | 60              | 100 to 1,000* |

\* length in mm from 100 to 1,000 graduated in 100 mm steps



Order key

SFRJ350-2000-500



delivery from stock  
time



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Specialists for industrial solutions

| Material properties table                              |                                    | Food industry      |                    | Tobacco            |
|--------------------------------------------------------|------------------------------------|--------------------|--------------------|--------------------|
| General properties                                     | Unit                               | iglidur® A180      | iglidur® A350      | iglidur® T220      |
| Density                                                | g/cm³                              | 1.46               | 1.42               | 1.28               |
| Colour                                                 |                                    | white              | blue               | white              |
| Max. moisture absorption at +23 °C/50 % r.h.           | % weight                           | 0.2                | 0.6                | 0.3                |
| Max. water absorption                                  | % weight                           | 1.3                | 1.9                | 0.5                |
| Coefficient of sliding friction. dynamic against steel | μ                                  | 0.05–0.23          | 0.10–0.20          | 0.20–0.32          |
| pv value. max. (dry)                                   | MPa · m/s                          | 0.31               | 0.40               | 0.28               |
| Mechanical properties                                  |                                    |                    |                    |                    |
| Modulus of elasticity                                  | MPa                                | 2,300              | 2,000              | 1,800              |
| Tensile strength at +20 °C                             | MPa                                | 88                 | 110                | 65                 |
| Compressive strength                                   | MPa                                | 78                 | 78                 | 55                 |
| Max. recommended surface pressure (+20 °C)             | MPa                                | 28                 | 60                 | 40                 |
| Shore D hardness                                       |                                    | 76                 | 76                 | 76                 |
| Physical and thermal properties                        |                                    |                    |                    |                    |
| Max. long term application temperature                 | °C                                 | +90                | +180               | +100               |
| Max. short term application temperature                | °C                                 | +110               | +210               | +160               |
| Min. application temperature                           | °C                                 | –50                | –100               | –40                |
| Thermal conductivity                                   | W/m · K                            | 0.25               | 0.24               | 0.24               |
| Coefficient of thermal expansion (at +23 °C)           | K <sup>-1</sup> · 10 <sup>-5</sup> | 11                 | 8                  | 11                 |
| Electrical properties                                  |                                    |                    |                    |                    |
| Specific volume resistance                             | Ωcm                                | > 10 <sup>12</sup> | > 10 <sup>11</sup> | > 10 <sup>10</sup> |
| Surface resistance                                     | Ω                                  | > 10 <sup>11</sup> | > 10 <sup>11</sup> | > 10 <sup>10</sup> |

Dimensions [mm]

| Part number                                                                                                                                                         | Dimensions [mm] |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
|                                                                                                                                                                     | Ø               | Lengths       |
|  iglidur® A180 – General purpose for medical and food industry (FDA compliant) |                 |               |
| SFRA180-1000                                                                                                                                                        | 10              | 100 to 1,000* |
| SFRA180-2000                                                                                                                                                        | 20              | 100 to 1,000* |
| SFRA180-3000                                                                                                                                                        | 30              | 100 to 1,000* |
| SFRA180-4000                                                                                                                                                        | 40              | 100 to 1,000* |
| SFRA180-5000                                                                                                                                                        | 50              | 100 to 1,000* |
| SFRA180-6000                                                                                                                                                        | 60              | 100 to 1,000* |
| SFRA180-8000                                                                                                                                                        | 80              | 100 to 1,000* |
| SFRA180-10000                                                                                                                                                       | 100             | 100 to 1,000* |

\* length in mm from 100 to 1,000 graduated in 100 mm steps

| Part number                                                                                                                                                                   | Dimensions [mm] |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
|                                                                                                                                                                               | Ø               | Lengths       |
|  iglidur® A350 – High-temperature material for medical and food industry (FDA compliant) |                 |               |
| SFRA350-2000 <b>New!</b>                                                                                                                                                      | 20              | 100 to 1,000* |
| SFRA350-3000                                                                                                                                                                  | 30              | 100 to 1,000* |
| SFRA350-4000                                                                                                                                                                  | 40              | 100 to 1,000* |
| SFRA350-5000                                                                                                                                                                  | 50              | 100 to 1,000* |
| SFRA350-6000                                                                                                                                                                  | 60              | 100 to 1,000* |
|  iglidur® T220 – Material for tobacco applications                                       |                 |               |
| SFRT220-3000                                                                                                                                                                  | 30              | 100 to 1,000* |
| SFRT220-4000                                                                                                                                                                  | 40              | 100 to 1,000* |
| SFRT220-5000                                                                                                                                                                  | 50              | 100 to 1,000* |
| SFRT220-6000                                                                                                                                                                  | 60              | 100 to 1,000* |



delivery from stock  
time



prices price list online  
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Order key

**SFPJ-02-1000-500**



Width in mm  
Length in mm  
Plate thickness  
iglidur®-Material  
Plate material  
iglidur® Bar Stock

Dimensions [mm]

| Part number       |      | Material thickness | Tolerance     | Dimensions  |
|-------------------|------|--------------------|---------------|-------------|
| SFPJ-02-1000-1000 | New! | 2                  | +0.000 +0.200 | 1,000x1,000 |
| SFPJ-02-1000-500  | New! | 2                  | +0.000 +0.200 | 1,000x500   |
| SFPJ-02-500-500   | New! | 2                  | +0.000 +0.200 | 500x500     |
| SFPJ-02-500-240   | New! | 2                  | +0.000 +0.200 | 500x240     |
| SFPJ-04-1000-1000 | New! | 4                  | +0.000 +0.250 | 1,000x1,000 |
| SFPJ-04-1000-500  | New! | 4                  | +0.000 +0.250 | 1,000x500   |
| SFPJ-04-500-500   | New! | 4                  | +0.000 +0.250 | 500x500     |
| SFPJ-04-500-240   | New! | 4                  | +0.000 +0.250 | 500x240     |
| SFPJ-06-1000-1000 | New! | 6                  | +0.000 +0.300 | 1,000x1,000 |
| SFPJ-06-1000-500  | New! | 6                  | +0.000 +0.300 | 1,000x500   |
| SFPJ-06-500-500   | New! | 6                  | +0.000 +0.300 | 500x500     |
| SFPJ-06-500-240   | New! | 6                  | +0.000 +0.300 | 500x240     |
| SFPJ-10-1000-610  | New! | 10                 | +0.200 +0.900 | 1,000x610   |
| SFPJ-10-500-610   | New! | 10                 | +0.200 +0.900 | 500x610     |
| SFPJ-10-500-300   | New! | 10                 | +0.200 +0.900 | 500x300     |
| SFPJ-15-1000-610  | New! | 15                 | +0.300 +1.500 | 1,000x610   |
| SFPJ-15-500-610   | New! | 15                 | +0.300 +1.500 | 500x610     |
| SFPJ-15-500-300   | New! | 15                 | +0.300 +1.500 | 500x300     |
| SFPJ-20-1000-610  | New! | 20                 | +0.300 +1.500 | 1,000x610   |
| SFPJ-20-500-610   | New! | 20                 | +0.300 +1.500 | 500x610     |
| SFPJ-20-500-300   | New! | 20                 | +0.300 +1.500 | 500x300     |
| SFPJ-25-1000-610  | New! | 25                 | +0.300 +1.500 | 1,000x610   |
| SFPJ-25-500-610   | New! | 25                 | +0.300 +1.500 | 500x610     |
| SFPJ-25-500-300   | New! | 25                 | +0.300 +1.500 | 500x300     |



delivery from stock  
time



prices price list online  
www.igus.co.uk/iglidur-plates

**iglidur® Bar stock | Online-Tools**

**Find & compare semi-finished products**

iglidur® materials as semi-finished products for design freedom. This material finder helps you find the right iglidur® material for your project with a few clicks!

Select the requirements for the bearing ❶, and then enter the surface pressure and the temperature parameters ❷.

The results are displayed below in conjunction with your selection ❸.

► [www.igus.co.uk/barstock-finder](http://www.igus.co.uk/barstock-finder)

**Calculate lifetime of semi-finished products**

Quick calculation of the service life of your iglidur® semi-finished product.

In the first step, enter the product details ❶ and then enter page for page the details relevant for your application of the iglidur® material ❷. Instantly you will be given the service life of your product under the operating conditions you have specified.

The results are displayed as service life in hours ❸.

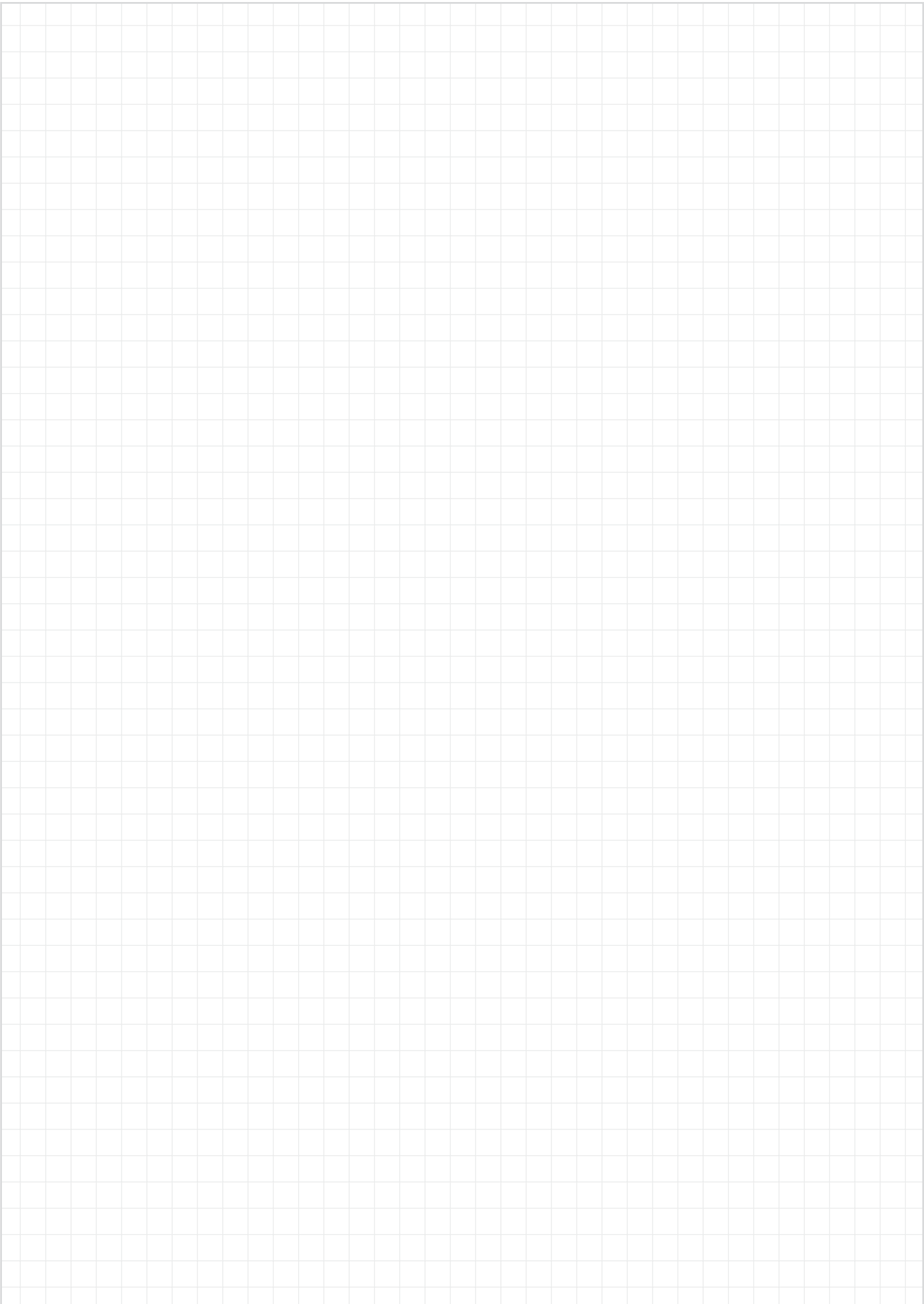
► [www.igus.co.uk/barstock-expert](http://www.igus.co.uk/barstock-expert)

**Configure required dimensions**

Quickly configure your required bearing and determine its price.

Select the desired bearing type ❶ and then enter the dimensions ❷ and the material selection ❸ of the bearing, then select the tolerance of the mounting hole ❹.

Enter the quantity and you immediately see the price online ❺. If the “on request” is shown, please enter your personal details and send us a request. We will contact you shortly.



speedigus – customised special parts



- save costs
- technical benifits for products and machines
- Maintenance-free igus® tribo-plastics
- fast delivery and cost-effective



**What is speedigus?** At igus, we have the aim of helping our customers reduce costs while bringing technical benefits to their products and Machines. We call this "plastics for longer life." Sometimes our customers require custom parts or services, and for many years this has been an important part of the igus® support. Now, with speedigus, we combine custom parts with speed, Using the benefits of igus® tribo-plastics.

Customised speedigus parts can be made in three ways:

**speedimold**

This is where a 3D model from the customer is used to produce a fast aluminum injection mould tool, allowing real igus® parts to be manufactured very quickly. The leadtime for this service varies from 24 hours to a maximum of three weeks.



**speedimold**  
Custom iglidur® parts manufactured by injection moulding.



**delivery time**  
1–15 days

**speedicut**

This is where the igus® bar stock is used to machine a custom part to a 2D drawing or 3D model. The leadtime for this service Varies from 3 days to a maximum of three weeks.



**speedicut**  
Custom iglidur® parts machined from bar stock.



**delivery time**  
3–15 days

**speedifit**

This is where an igus® part is fitted into a custom housing or unit, and the whole assembly is supplied as one part. The leadtime for this service varies from Five days to three weeks.



**speedifit**  
igidur® parts fitted into a custom assembly.



**delivery time**  
5–15 days

Our promise for all speedigus-options: On-time delivery and response to all inquiries within 24 hours.

**How does speedigus work?**

- 1 You tell us about your desired special design: what kind of material, special requirements, etc., And send us your 3D model via email
- 2 You get a quote; pay attention to your lead time and send us your order
- 3 The tool for your individual speedigus part is produced or the speedifit- and speedicut-parts will produce directly in our manufacturing and assembly centre
- 4 The required speedimold-parts are injection molded from your chosen iglidur® material (only speedimold service)
- 5 Now you can install and use your parts.

Choose your speedigus material

Your requirements

☐ Maximum service life in dry operation

☐ Low coefficients of friction

☐ Dirt resistant

☐ High resistance to chemicals

☐ Vibration dampening

☐ Good in misalignment

☐ Low moisture absorption

☐ Underwater application

☐ FDA compatible Foodstuff

☐ Cost effective

☐ E-Chain® components

max. static surface pressure (23°C)

0 MPa

Upper long-term application temperature

25 °C

Lower application temperature

0 °C

igidur G

igidur J

igidur M20

igidur W30

igidur X

igidur A180

igidur G

igidur J2

igidur G

Speediquote

Tell us what material you would like your part made in, and upload a 3D model (preferably a STEP file).

Quantity required:

3D model of your part

Here you can upload data with a total volume of 10 MB.

File 1:

Durchsuchen...

File 2:

Durchsuchen...

File 3:

Durchsuchen...

File 4:

Durchsuchen...

File 5:

Durchsuchen...

speedifit Request

Choose your speedifit material

Material:

☐ Part branding

☐ Anodising

Tell us any details which we need to know about your bearing assembly, and upload your drawings below.

Quantity:

Assembly and component drawings

Here you can upload data with a total volume of 10 MB.

File 1:

Keine Datei ausgewählt

File 2:

Keine Datei ausgewählt

File 3:

Keine Datei ausgewählt

File 4:

Keine Datei ausgewählt

File 5:

Keine Datei ausgewählt

