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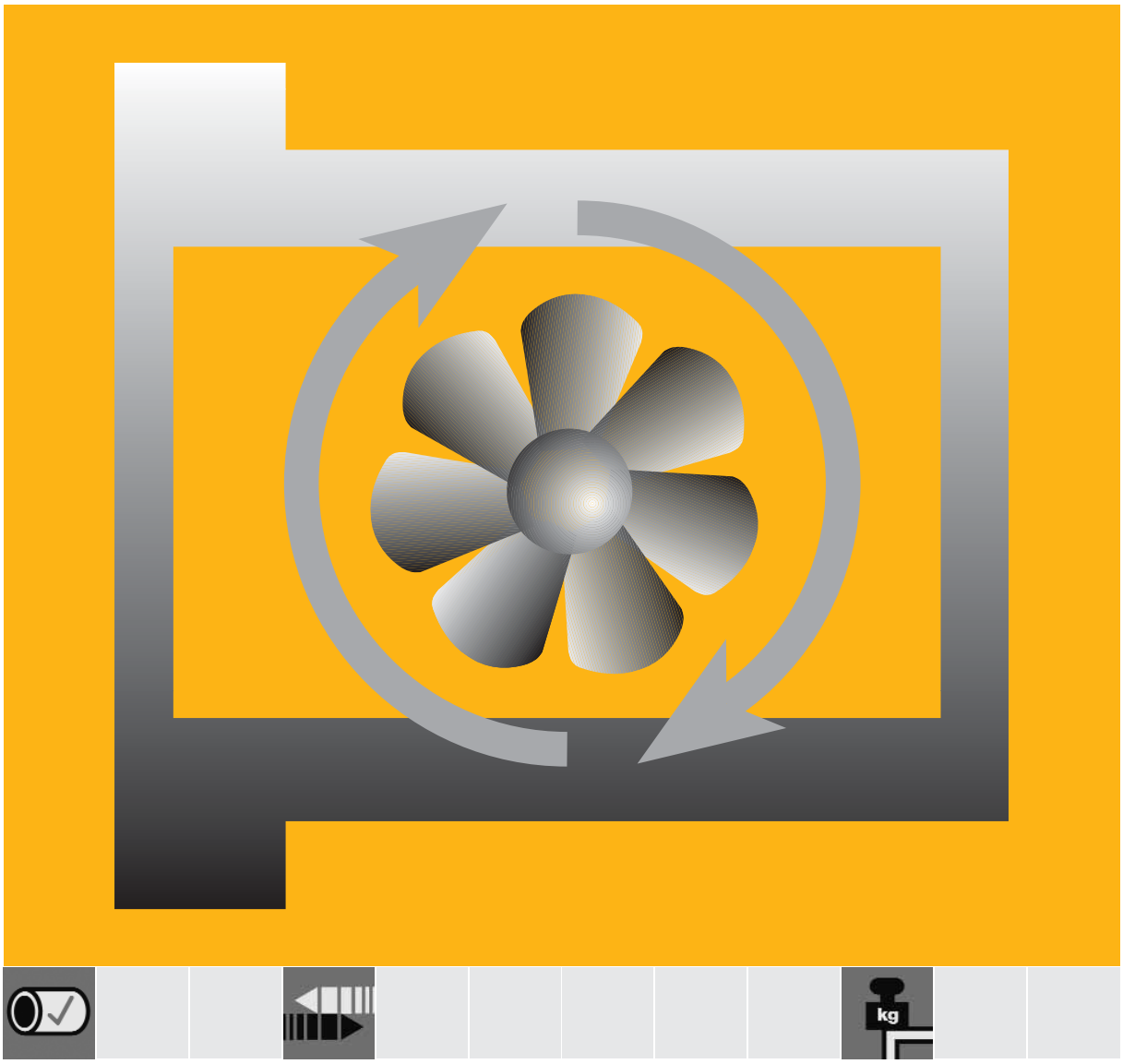


iglidur® L250 – For Fast Rotations

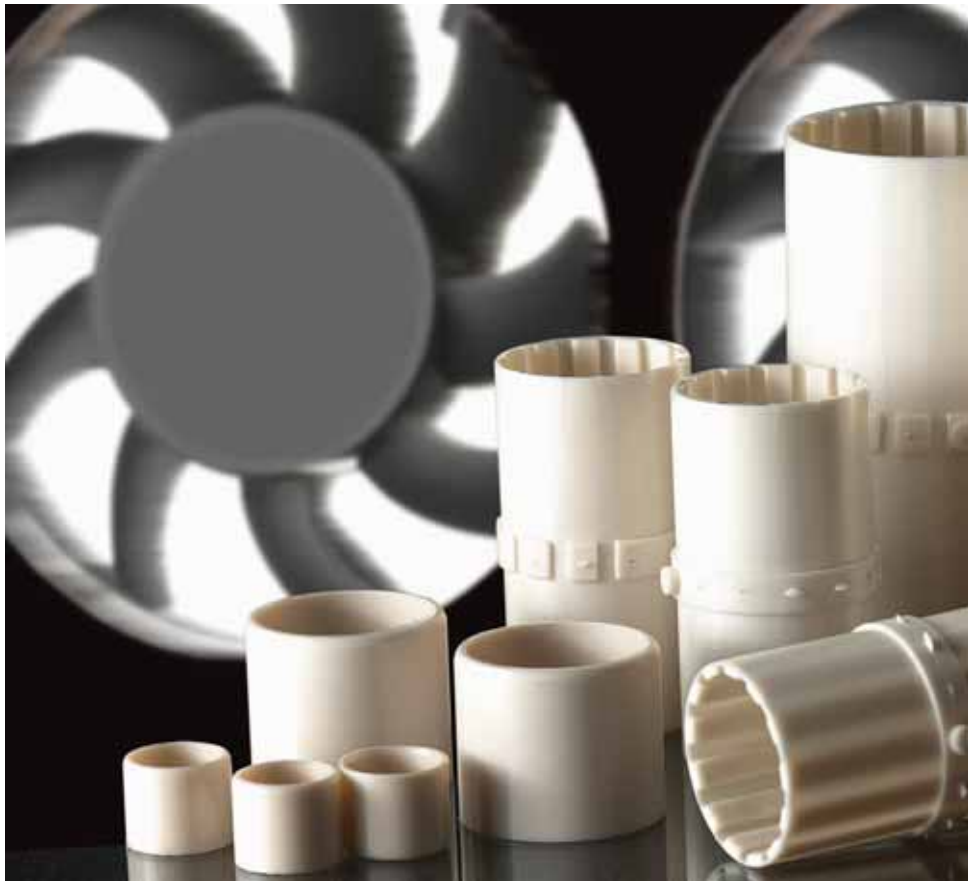
Recommended for rotating applications

Very low coefficients of friction

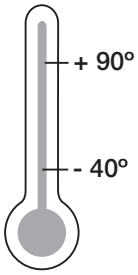
Excellent wear resistance

iglidur® L250 | **For Fast Rotations**

iglidur® L250 bearings have been developed for high speed rotation applications with low radial forces. Especially for fan- and motor-bearings extreme wear resistance is required.



2 styles
> 10 dimensions
Ø 6–20 mm



Price index

For Fast Rotations

When to use iglidur® L250 plain bearings:

- For rotating applications at high speed
- If highest service life is required
- Low load applications
- If low noise level is required
- Very low coefficients of friction
- Excellent wear resistance
- Maintenance-free

When not to use iglidur® L250 plain bearings:

- If high pressures can occur
  ▶ iglidur® Q (chapter 18), W300 (chapter 5)
- If electrical conductivity is required
  ▶ iglidur® F (chapter 11), H (chapter 12), X (chapter 6)
- When a cost-effective universal bearing is required
  ▶ iglidur® G (chapter 2), J (chapter 3)

iglidur® L250

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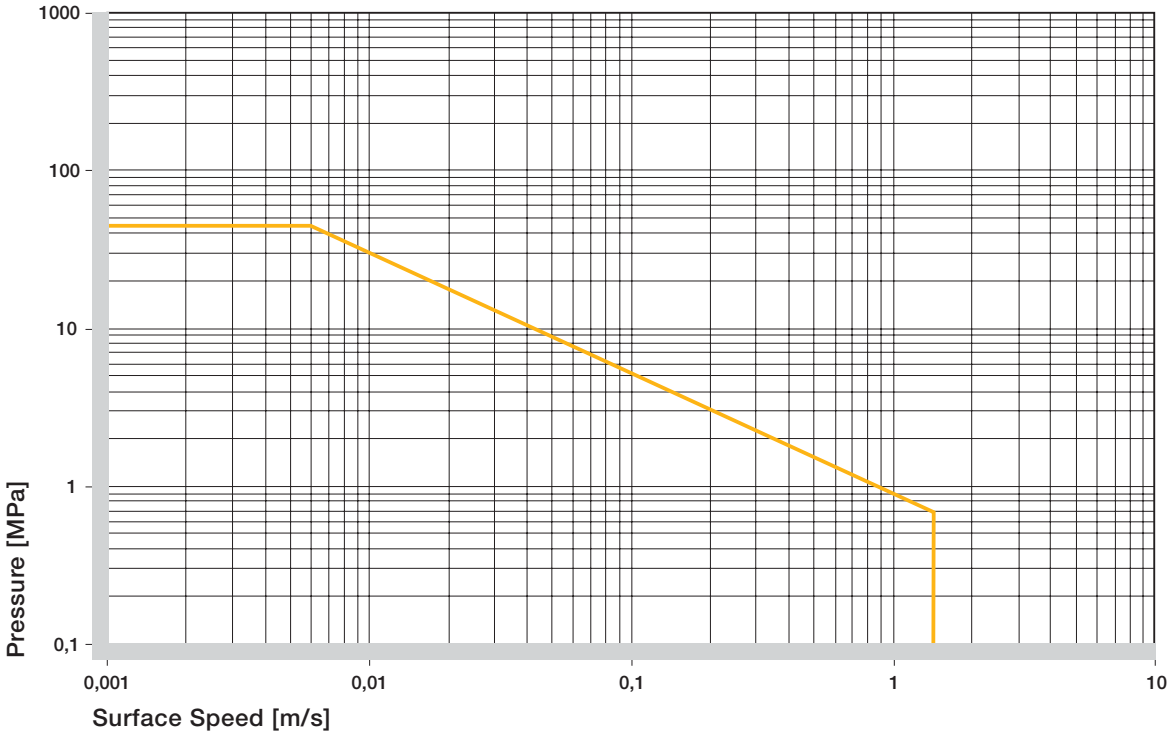
Material Table

General properties	Unit	iglidur® L250	Testing method
Density	g/cm³	1,50	
Colour		Beige	
Max. moisture absorption at 23°C/50% r. F.	% weight	0,7	DIN 53495
Max. water absorption	% weight	3,9	
Coefficient of friction, dynamic against steel	µ	0,08-0,19	
p x v value, max. (dry)	MPa x m/s	0,4	
Mechanical properties			
Modulus of elasticity	MPa	1.950	DIN 53457
Tensile strength at 20 °C	MPa	67	DIN 53452
Compressive strength	MPa	47	
Max. recommended surface pressure (20 °C)	MPa	45	
Shore-D hardness		68	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	90	
Max. short term application temperature	°C	180	
Max. ambient temperature, short term[1)]	°C	200	
Min. application temperature	°C	-40	
Thermal conductivity	W/m x K	0,24	ASTM C 177
Coefficient of thermal expansion (at 23°C)	$K^{-1} \times 10^{-5}$	10	DIN 53752
Elektrical properties			
Specific volume resistance	Ωcm	$> 10^{10}$	DIN IEC 93
Surface resistance	Ω	$> 10^{11}$	DIN 53482

[1)] Without additional load; no sliding movement; relaxation possible

Table 16.1: Material Data



Graph 16.1: Permissible p x v values for iglidur® L250 with a wall thickness of 1 mm running dry against a steel shaft at 20°C, mounted in a steel housing

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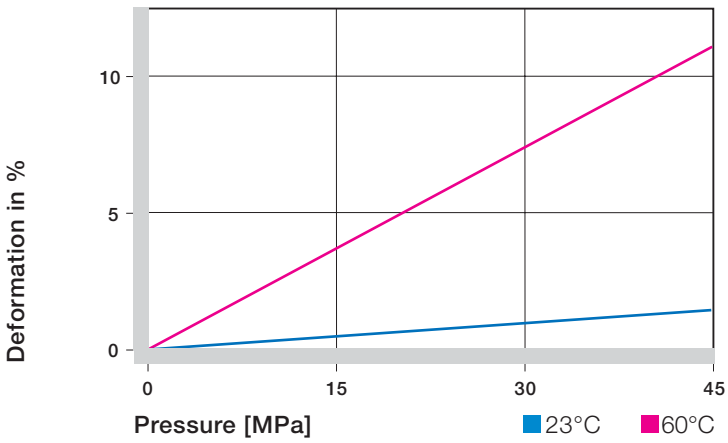
iglidur® L250 | Technical data



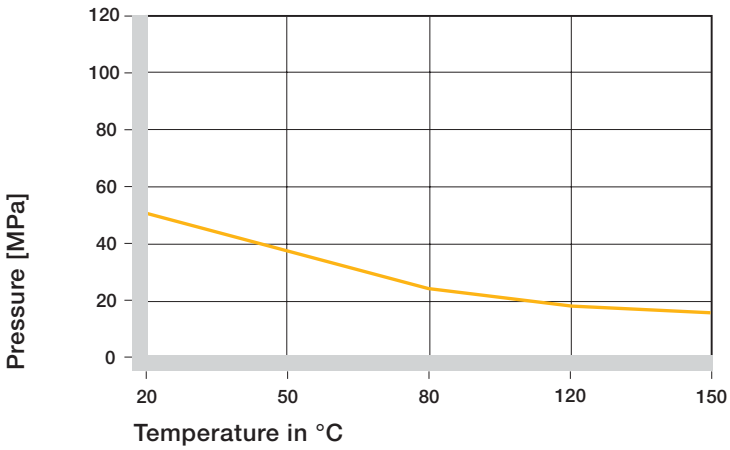
Graph 16.2: Deformation under pressure and temperature

m/s	Rotating	Oscillating	Linear
Continuous	1	0,7	2
Short term	1,5	1,1	3

Table 16.2: Maximum surface speeds

iglidur® L250	Application Temperature
Minimum	- 40 °C
Max. long term	+ 90 °C
Max. short term	+ 180 °C

Table 16.3: Temperature limits of iglidur® L250



Graph 16.3: Recommended maximum surface pressure of iglidur® L250 as a function of temperature

iglidur® L250 is a plain bearing material for high surface speeds, and excellent coefficients of friction. The iglidur® L250 material performs epsecially well at low loads. Fans, low powered, fast running sensors, or magnetic technology, are industry sectors where these advantages are required.

Surface Pressure

Picture 16.3 shows the permissible bearing pressure against temperature. With 45 MPa the recommended maximum surface pressure is even higher than the abrasion result suggest. It can be seen from wear results that the wear rate increases greatly when the pressure exceeds 20 MPa in rotation, and with oscillating movements this is seen from a pressure of 10 MPa.

Graph 16.2
▶ Surface Pressure, page 1.18

Permissible Surface Speeds

iglidur® L250 was developed for high surface speeds at low loads. When using polymer plain bearings, the wear values can be reached by exceeding physical limits defined by the thermal properties of the material, and also by the application giving a large sliding distance generated by high surface speeds. It is exactly in this situation that the strengths of iglidur® L250 can be seen. The wear rate is extremely low, which makes this material ideal for long sliding distances. The maximum speeds are given in table 16.2.

▶ Surface Speed, page 1.20
▶ p x v value, page 1.22

Temperatures

iglidur® L250 plain bearings can be used for a short period of time up to temperatures of 170°C. At temperatures over 60 °C, the bearing should be mechanically fixed in the bore. Higher temperatures may result in a loss of the pressfit of the plain bearings, causing them to move within the bore.

Graphs 16.3 and 16.9
▶ Application Temperatures, page 1.23

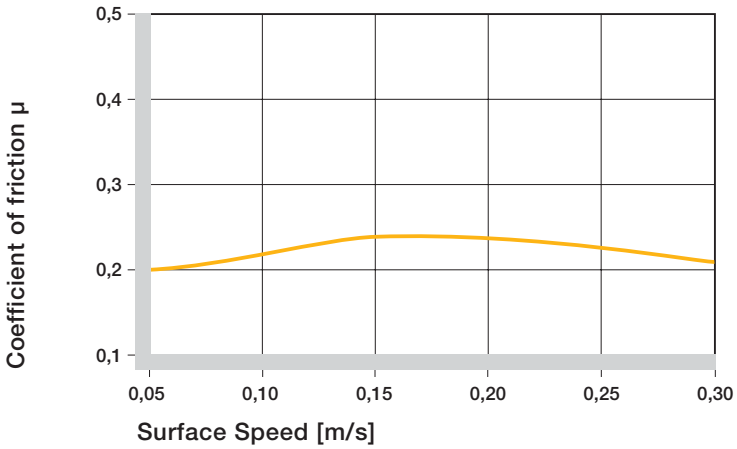
Friction and Wear

Low coefficients of friction are a big influence on the excellent characteristics of iglidur® L250 plain bearings.
By means of the best combination (against 303 stainless steel shafts), coefficients of friction of 0.14 are already attained at low loads. Coefficients of friction below 0.1 have already been measured for values below 10 MPa. In order to convey the excellent wear values to the application, loads in excess of 5 MPa should be avoided.

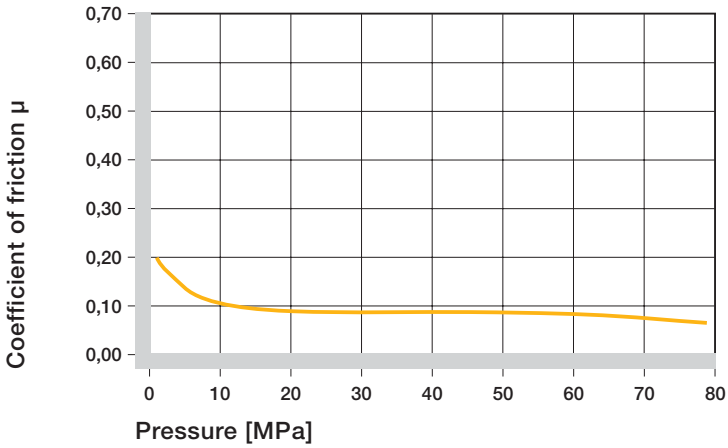
Graphs 16.4 to 16.6
▶ Coefficients of Friction and Surfaces, page 1.25
▶ Wear Resistance, page 1.26

iglidur® L250	Dry	Grease	Oil	Water
C.o.f. µ	0,08 - 0,2	0,09	0,04	0,04

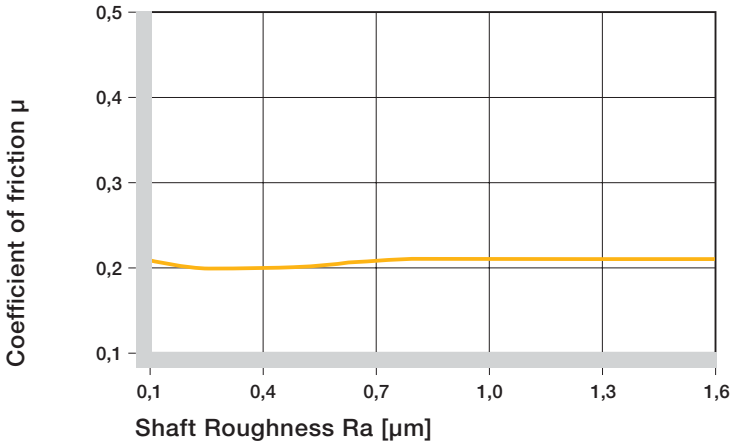
Table 16.4: Coefficient of friction of iglidur® L250 against steel (Ra = 1 µm, 50 HRC)



Graph 16.4: Coefficients of friction of iglidur® L250 as a function of the running speed; p = 0.75 MPa



Graph 16.5: Coefficients of friction of iglidur® L250 as a function of the pressure, v = 0.01 m/s



Graph 16.6: Coefficients of friction of iglidur® L250 as a function of the shaft surface (Cf53 hardened and ground steel)

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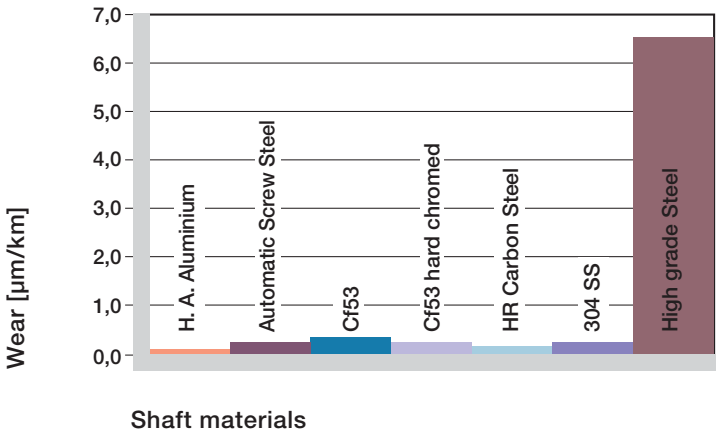
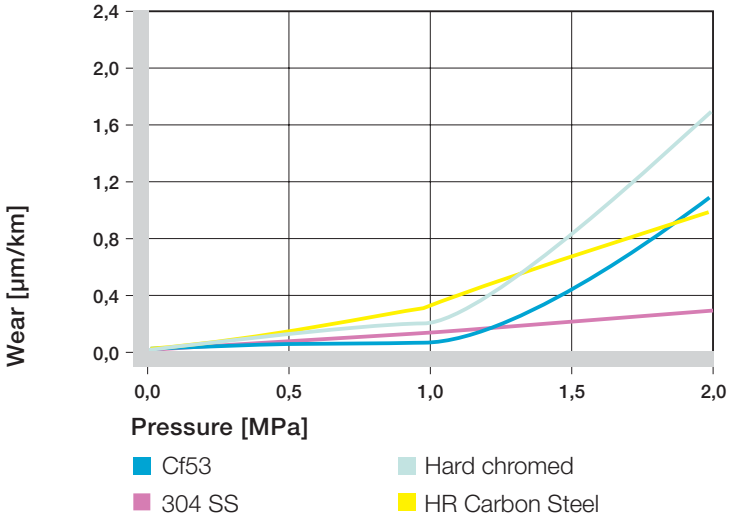
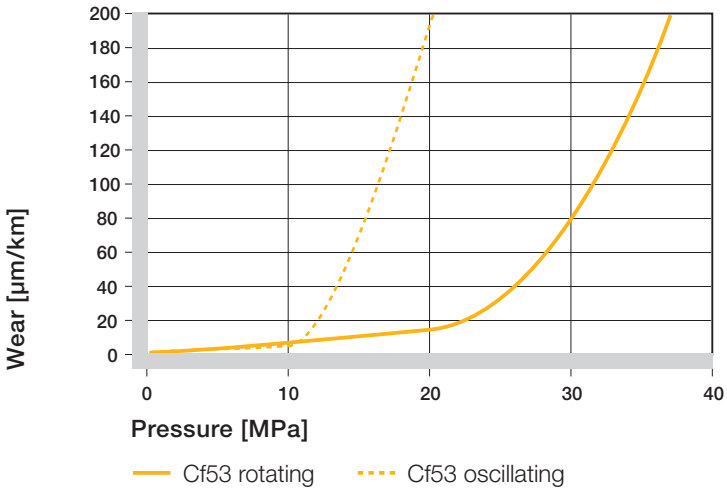
iglidur® L250 | Technical data



Graph 16.7: Wear of iglidur® L250, rotating applications with different shaft materials, p = 0.75 MPa, v = 0.5 m/s



Graph 16.8: Wear of iglidur® L250 with different shaft materials in rotational applications



Graph 16.9: Wear for rotating and oscilllating applications as a function of the pressure (Cf53 hardened and ground steel)

Shaft Materials

As can be seen in graph 16.7, a variety of shafts can be used at low loads and low rotation. Furthermore, the good coefficients of friction are maintained across a wide range of recommeded shaft roughness values (see graph 16.6).
With regard to loads greater than 1 MPa, the shaft material selection becomes more important.

Graphs 16.8 to 16.10
▶ Shaft Materials, page 1.28

Installation Tolerances

iglidur® L250 plain bearings are standard bearings for shafts with h Tolerances (h9 is at least recommended). 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 of the bearings is automatically adjusted to an E10 tolerance.

▶ Testing Methods, page 1.32/1.33

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. With regard to applications where the smallest bearing clearances are concerned, please take the moisture absorption into consideration.

Graph 16.10
▶ Chemical Table, page 70.1

Radiation Resistance

Plain bearings of iglidur® L250 are resistant to radiation up to a radiation intensity of 3 x 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

The plain bearings are electrically insulating.

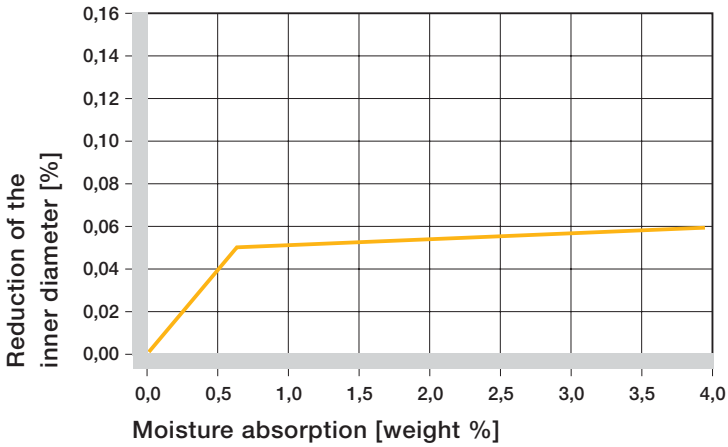
Diameter d1 [mm]	Shaft h9 [mm]	iglidur® L250 E10 [mm]
up to 3	0 - 0,025	+0,014 + 0,054
> 3 to 6	0 - 0,030	+0,020 + 0,068
> 6 to 10	0 - 0,036	+0,025 + 0,083
> 10 to 18	0 - 0,043	+0,032 + 0,102
> 18 to 30	0 - 0,052	+0,040 + 0,124
> 30 to 50	0 - 0,062	+0,050 + 0,150

Table 16.5: Essential tolerances for iglidur® L250 plain bearings according to ISO 3547-1 after pressfit

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

Table 16.6: Chemical resistance of iglidur® L250 – detailed list, page 70.1

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



Graph 16.10: Effect of moisture absorption on iglidur®L250 plain bearings

iglidur® L250	
Specific volume resistance	> 10^{10} Ωcm
Surface resistance	> 10^{11} Ω

Table 16.7: Electrical properties of iglidur® L250

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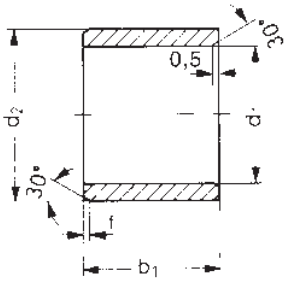
iglidur® L250 | Sleeve Bearing | mm



Data in mm

Structure – part no.

L250 S M-0608-06

- b1
- d2
- d1
- Metric
- Type
- Material

Chamfer in relation to the d1

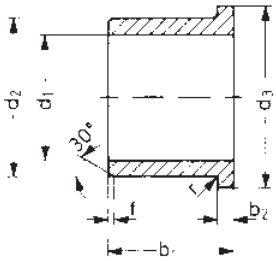
d1 [mm]:	Ø 1–6	Ø 6–12	Ø 12–30	Ø > 30
f [mm]:	0,3	0,5	0,8	1,2

Dimensions according to ISO 3547-1
and special dimensions

Part Number	d1	d1 Tolerance*	d2	b1 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	+0,023 +0,102	14,0	12,0
L250SM-1618-15	16,0	+0,023 +0,102	18,0	15,0
L250SM-2023-20	20,0	+0,040 +0,124	23,0	20,0

*after pressfit. Testing methods ▶ page 1.32/1.33

iglidur® L250 | Flange Bearing | mm



r = max. 0,5 mm

Data in mm

Structure – part no.

L250 F M-0608-06

- b1
- d2
- d1
- Metric
- Type
- Material

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 according to ISO 3547-1
and special dimensions

Part Number	d1	d1 Tolerance*	d2	d3 d13	b1 h13	b2 -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 1.32/1.33

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