

Low-cost material for high-volume production

For applications with mainly static loads

igidur® GLW



When to use it?

- When an economical universal bearing for high volumes is required
- For high, primarily static loads
- For low to medium speeds



When not to use?

- When mechanical reaming of the bore is necessary
igidur® M250
- For primarily dynamic loads
igidur® G
- When the highest wear resistance is required
igidur® W300
- When continuous operating temperatures are higher than +130°C
igidur® K
- For underwater applications
igidur® H2

Bearing technology | Plain bearing | iglidur® GLW



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Also available as:



Bar stock, round bar
Page 673

Low-cost material for high-volume production For applications with mainly static loads

iglidur® GLW plain bearings are preferred in applications with static load, where only occasional movement takes place.

- Applications with static loads
- Cost-effective
- Resistant to dirt
- Resistant to vibrations
- Lubrication-free
- Maintenance-free



Bar stock, plate
Page 683

Typical application areas

- Automation
- Automotive
- Industrial handling



tribo-tape liner
Page 691



Piston rings
Page 581



Two hole flange bearings
Page 603



Moulded special parts
Page 624



igubal® spherical balls
Page 841

Descriptive technical specifications				
Wear resistance at +23°C	-	<div style="width: 25%; background-color: #0070C0;"></div>		+
Wear resistance at +90°C	-	<div style="width: 25%; background-color: #0070C0;"></div>		+
Wear resistance at +150°C	-	<div style="width: 10%; background-color: #0070C0;"></div>		+
Low coefficient of friction	-	<div style="width: 25%; background-color: #0070C0;"></div>		+
Low moisture absorption	-	<div style="width: 10%; background-color: #0070C0;"></div>		+
Wear resistance under water	-	<div style="width: 10%; background-color: #0070C0;"></div>		+
High media resistance	-	<div style="width: 40%; background-color: #0070C0;"></div>		+
Resistant to edge pressures	-	<div style="width: 40%; background-color: #0070C0;"></div>		+
Suitable for shock and impact loads	-	<div style="width: 50%; background-color: #0070C0;"></div>		+
Resistant to dirt	-	<div style="width: 40%; background-color: #0070C0;"></div>		+

Online product finder
www.igus.eu/iglidur-finder

Online service life calculation
www.igus.eu/iglidur-expert

Technical data

General properties			Testing method
Density	g/cm ³	1.36	
Colour		black	
Max. moisture absorption at +23°C and 50% r.h.	% weight	1.3	DIN 53495
Max. moisture absorption	% weight	5.5	
Coefficient of friction, dynamic, against steel	μ	0.10 – 0.24	
pv value, max. (dry)	MPa · m/s	0.30	
Mechanical properties			
Flexural modulus	MPa	7,700	DIN 53457
Flexural 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. application temperature long-term	°C	+100	
Max. application temperature short-term	°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 ⁻¹ · 10 ⁻⁵	17	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 ¹¹	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

Table 01: Material properties

With plain bearings made from iglidur® GLW, we can offer our customers an alternative to iglidur® G for high-volume production applications. Featuring similar mechanical properties 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 cost-effective alternative.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® GLW plain bearings is approximately 1.3% weight. The saturation limit in water is 5.5% weight. This must be taken into account for these types of applications.

Vacuum

In vacuum, any present moisture is released as vapour.

Radiation resistance

Plain bearings made from iglidur® GLW are resistant up to a radiation intensity of 3 · 10²Gy.

Resistance to weathering

iglidur® GLW plain bearings are resistant to weathering. The material properties are slightly affected. Discoloration occurs.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® GLW plain bearings decreases. Diagram 02 shows this inverse relationship. The maximum recommended surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

Diagram 03 shows the elastic deformation of iglidur® GLW at radial loads. At the maximum recommended surface pressure of 80MPa at room temperature the deformation is less than 3%. A plastic deformation can be negligible up to this value. It is however also dependent on the duty cycle of the load.

Surface pressure, page 41



-40°C up to +100°C



80MPa



HB



RoHS



ISO 35474



RoHS



ISO 35474

Permissible surface speeds

iglidur® GLW has been developed for low to medium surface speeds. During continuous operation, a maximum speed of 0.8m/s (rotating) or 2.5m/s (linear) is permissible. The maximum values shown in table 03 can only be achieved at low pressures. In practice, these values are rarely reached, due to the increasing temperatures approaching or exceeding the maximum permitted value.

Surface speed, page 44

Temperature

The ambient temperatures strongly influence the properties of plain bearings. Diagram 02 shows this inverse relationship. The wear rises with increasing temperatures. For temperatures over +80°C an additional securing is required.

Application temperatures, page 49

Additional securing, page 49

Friction and wear

Similar to wear resistance, the coefficient of friction μ also changes with the surface speed and load (diagrams 04 and 05).

Coefficient of friction and surfaces, page 47

Wear resistance, page 50

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® GLW a ground surface with an average surface finish $R_a = 0.1 - 0.2\mu\text{m}$ is recommended. Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® GLW. If the shaft material you plan on using is not shown in these test results, please contact us.

Shaft materials, page 52

Installation tolerances

iglidur® GLW plain bearings are standard bearings for shafts with h tolerance (recommended minimum h9). The bearings are designed for press-fit 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 57

Chemicals	Resistance
Alcohols	+ up to 0
Diluted acids	0 up to -
Diluted alkalines	+
Fuels	+
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	-
Strong alkalines	0

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

Table 02: Chemical resistance

Chemical table, page 1636

	Rotating	Oscillating	linear
long-term	m/s 0.8	0.6	2.5
short-term	m/s 1.0	0.7	3.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.10 - 0.24	0.09	0.04	0.04

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

$\varnothing d1$ [mm]	Housing		Plain bearing		Shaft	
	H7 [mm]	E10 [mm]	E10 [mm]	h9 [mm]	h9 [mm]	h9 [mm]
0 - 3	+0.000	+0.010	+0.014	+0.054	-0.025	+0.000
> 3 - 6	+0.000	+0.012	+0.020	+0.068	-0.030	+0.000
> 6 - 10	+0.000	+0.015	+0.025	+0.083	-0.036	+0.000
> 10 - 18	+0.000	+0.018	+0.032	+0.102	-0.043	+0.000
> 18 - 30	+0.000	+0.021	+0.040	+0.124	-0.052	+0.000
> 30 - 50	+0.000	+0.025	+0.050	+0.150	-0.062	+0.000
> 50 - 80	+0.000	+0.030	+0.060	+0.180	-0.074	+0.000
> 80 - 120	+0.000	+0.035	+0.072	+0.212	-0.087	+0.000
> 120 - 180	+0.000	+0.040	+0.085	+0.245	-0.100	+0.000

Table 05: Important tolerances for plain bearings according to ISO 3547-1 after press-fit

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

Technical data

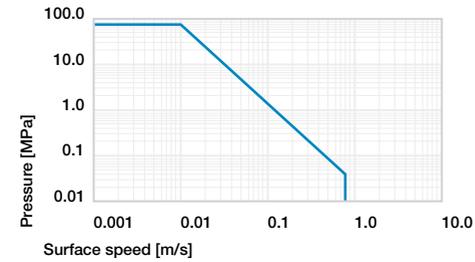


Diagram 01: Permissible pv values for iglidur® GLW plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

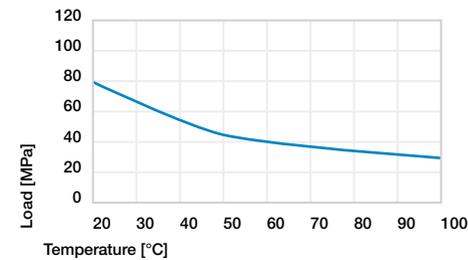


Diagram 02: Maximum recommended surface pressure as a function of temperature (80MPa at +20°C)

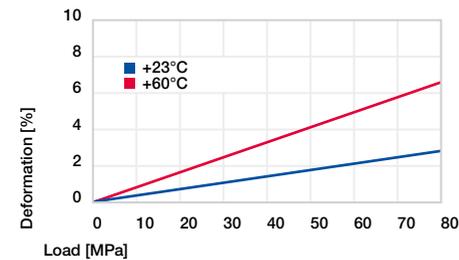


Diagram 03: Deformation under pressure and temperature

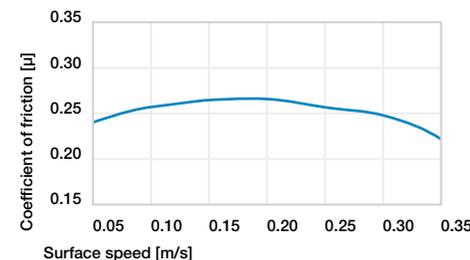


Diagram 04: Coefficient of friction as a function of the surface speed, $p = 0.75\text{MPa}$

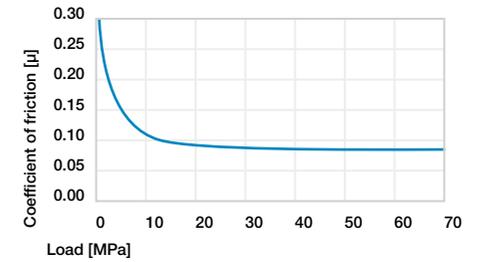


Diagram 05: Coefficient of friction as a function of the load, $v = 0.01\text{m/s}$

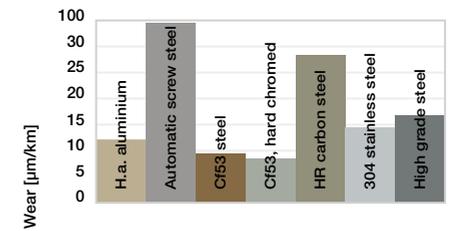


Diagram 06: Wear, rotating with different shaft materials, pressure, $p = 1\text{MPa}$, $v = 0.3\text{m/s}$