

High temperature endurance runner

Extreme wear and media resistance
up to +250°C

iglidur® C500



When to use it?

- When an extremely media-resistant plain bearing with high flexibility is required
- When a wear-resistant and media-resistant plain bearing is required



When not to use?

- When an FDA-compliant high-temperature plain bearing is required
iglidur® A500
- When a media-resistant, high-temperature plain bearing with the largest possible range of dimensions is required
iglidur® X

Bearing technology | Plain bearing | iglidur® C500



Ø
6.0 – 40.0mm



Also available as:



Bar stock, round bar
Page 680



Bar stock, plate
Page 683



tribo-tape liner
Page 691



Piston rings
Page 581



Two hole flange bearings
Page 603



Moulded special parts
Page 624



iglobal® spherical balls
Page 841

High temperature endurance runner Extreme wear and media resistance up to +250°C

iglidur® C500 can be used up to +250°C and is extremely media-resistant (even in cleaning processes using hydrogen peroxide). It is also wear-resistant and has low coefficient of friction. Also suitable for various special designs. The colour represents extreme environmental conditions.

- High temperature resistance
- Resistant to water vapour
- Low coefficient of friction
- Lubrication-free
- High wear resistance
- High media resistance
- Maintenance-free

Typical application areas

- Plant construction
- Valves
- Chemical industry
- Process technology

Descriptive technical specifications				
Wear resistance at +23°C	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Wear resistance at +90°C	-	<div style="width: 90%; height: 10px; background-color: #008080;"></div>		+
Wear resistance at +150°C	-	<div style="width: 80%; height: 10px; background-color: #008080;"></div>		+
Low coefficient of friction	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Low moisture absorption	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Wear resistance under water	-	<div style="width: 95%; height: 10px; background-color: #008080;"></div>		+
High media resistance	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Resistant to edge pressures	-	<div style="width: 90%; height: 10px; background-color: #008080;"></div>		+
Suitable for shock and impact loads	-	<div style="width: 80%; height: 10px; background-color: #008080;"></div>		+
Resistant to dirt	-	<div style="width: 70%; height: 10px; background-color: #008080;"></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	1.37	
Colour		magenta	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	0.5	
Coefficient of friction, dynamic, against steel	μ	0.07 – 0.19	
pv value, max. (dry)	MPa · m/s	0.70	
Mechanical properties			
Flexural modulus	MPa	3,300	DIN 53457
Flexural strength at +20°C	MPa	100	DIN 53452
Compressive strength	MPa	110	
Max. recommended surface pressure (+20°C)	MPa	80	
Shore D hardness		80	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+250	
Max. application temperature short-term	°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 contact resistance	Ωcm	> 10 ¹⁴	DIN IEC 93
Surface resistance	Ω	> 10 ¹³	DIN 53482

Table 01: Material properties

iglidur® C500 is a member of the family of extremely media and temperature-resistant iglidur® materials X, X6 and A500. This material is characterised by improved wear resistance and increased design freedom.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® C500 plain bearings is below 0.3% weight. The saturation limit in water is also below 0.5% weight.

Vacuum

In vacuum, any present moisture is released as vapour. The use in vacuum is generally possible.

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 up to a radiation intensity of 3 · 10²Gy.

Resistance to weathering

iglidur® C500 plain bearings are resistant to weathering. The material properties are slightly affected. Discoloration occurs.

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 20MPa. 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® C500 at radial loads. At the maximum recommended surface pressure of 80MPa the deformation is less than 4.5%.

Surface pressure, page 41



-100°C up to +250°C



80MPa



V-0



RoHS



ISO 35474



RoHS



ISO 35474

Permissible surface speeds

The maximum recommended surface 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 03 are valid only with minimum pressure loads and are often not attained in practice.

Surface speed, page 44

Temperature

iglidur® C500 belongs to the most temperature-resistant iglidur® materials. As in the case of all thermoplastics, the compression strength of iglidur® C500 decreases when temperatures rise. The temperatures prevailing in the bearing system also have an influence on the wear. The wear rises with increasing temperatures. For temperatures over +130°C an additional securing is required.

Application temperatures, page 49

Additional securing, page 49

Friction and wear

The coefficient of friction and wear in iglidur® C500 are more favourable than in the other high temperature materials iglidur® X and A500. The coefficient of friction increases moderately as the sliding speed increases. The coefficient of friction initially drops rapidly to less than 0.1 under loads of up to approximately 20MPa, and then only marginally increases as loads continue to increase. 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. Ideal are ground surfaces with an average surface finish of 0.6 – 0.8µm.

Coefficient of friction and surfaces, page 50

Wear resistance, page 50

Shaft materials

Diagram 06 shows the test results of iglidur® C500 plain bearings running against various shaft materials. Using the example of a rotating motion at 1MPa and a speed of 0.3m/s, it becomes apparent that iglidur® C500 has consistent wear characteristics across a variety of shaft types. This wear rate spikes in combination with free cutting steel, and, notably so, reduces in combination with HC aluminium. The wear under rotational loads is higher, specifically with increasing radial loads as compared to pivoting movements (diagram 07).

Shaft materials, page 52

Installation tolerances

iglidur® C500 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 F10 tolerances.

Testing methods, page 57

Chemicals	Resistance
Alcohols	+
Diluted acids	+
Diluted alkalines	+
Fuels	+
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	+
Strong alkalines	+

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

Table 02: Chemical resistance

Chemical table, page 1636

	Rotating	Oscillating	linear
long-term	m/s 0.9	0.7	2.4
short-term	m/s 1.1	1.0	2.8

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.07 – 0.19	0.09	0.04	0.04

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

Ø d1 [mm]	Housing		Plain bearing		Shaft	
	H7 [mm]	F10 [mm]	F10 [mm]	h9 [mm]	h9 [mm]	h9 [mm]
0 – 3	+0.000 +0.010	+0.006 +0.046	-0.025 +0.000			
> 3 – 6	+0.000 +0.012	+0.010 +0.058	-0.030 +0.000			
> 6 – 10	+0.000 +0.015	+0.013 +0.071	-0.036 +0.000			
> 10 – 18	+0.000 +0.018	+0.016 +0.086	-0.043 +0.000			
> 18 – 30	+0.000 +0.021	+0.020 +0.104	-0.052 +0.000			
> 30 – 50	+0.000 +0.025	+0.025 +0.125	-0.062 +0.000			
> 50 – 80	+0.000 +0.030	+0.030 +0.150	-0.074 +0.000			
> 80 – 120	+0.000 +0.035	+0.036 +0.176	-0.087 +0.000			
> 120 – 180	+0.000 +0.040	+0.043 +0.203	+0.000 +0.100			

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

Technical data

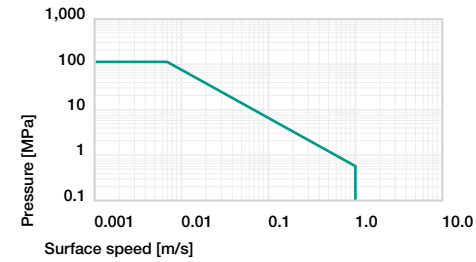


Diagram 01: Permissible pv values for iglidur® C500 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

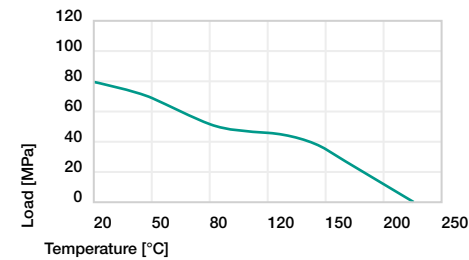


Diagram 02: Maximum recommended surface pressure as a function of temperature (80MPa at +20°C)

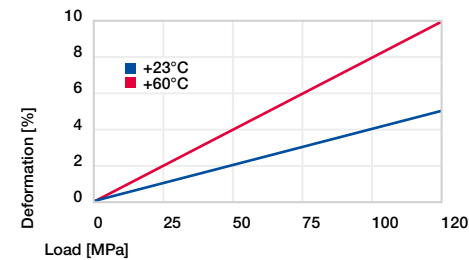


Diagram 03: Deformation under pressure and temperature

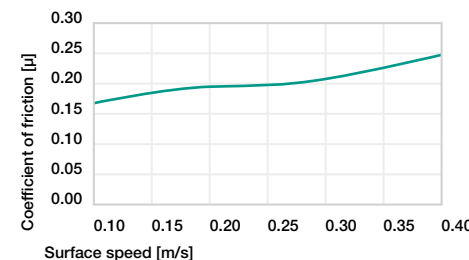


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1MPa

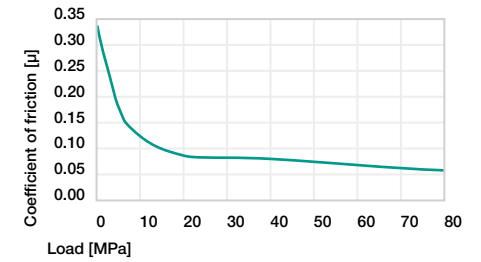


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

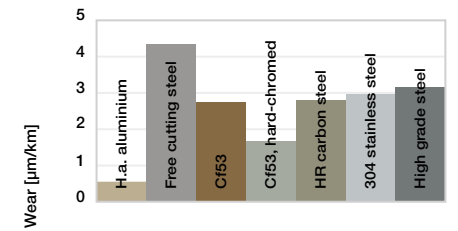


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

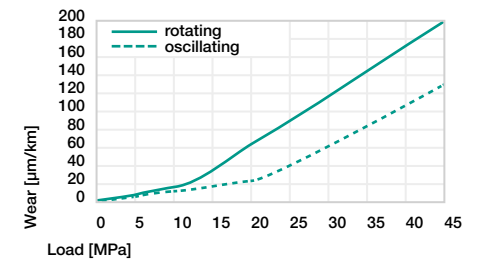
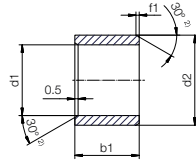


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

Bearing technology | Plain bearing | iglidur® C500

Sleeve bearing (form S)



²⁾ Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1–6	Ø 6–12	Ø 12–30	Ø > 30
f1 [mm]	0.3	0.5	0.8	1.2



Dimensions according to ISO 3547-1 and special dimensions



Order example: **C500SM-0608-06** – no minimum order quantity.

C500 iglidur® material **S** Sleeve bearing **M** Metric **06** Inner Ø d1 **08** Outer Ø d2 **06** Total length b1

d1	d1	d2	b1	Part No.
[mm]	Tolerance ³⁾	[mm]	h13 [mm]	
6.0	+0.010 +0.058	8.0	6.0	C500SM-0608-06
8.0	+0.013 +0.071	10.0	10.0	C500SM-0810-10
10.0		12.0	10.0	C500SM-1012-10
12.0		14.0	12.0	C500SM-1214-12
16.0	+0.016 +0.086	18.0	15.0	C500SM-1618-15
20.0	+0.020 +0.104	23.0	20.0	C500SM-2023-20
40.0	+0.025 +0.125	44.0	30.0	C500SM-4044-30

³⁾ After press-fit. *Testing methods, page 57*



Available from stock

Detailed information about delivery time online.

www.igus.eu/24



Online ordering

Including delivery times, prices, online tools

www.igus.eu/C500



Ordering note

Our prices are scaled according to order quantities, current prices can be found online.

Discount scaling		
1 – 9	50 – 99	500 – 999
10 – 24	100 – 199	1,000 – 2,499
25 – 49	200 – 499	2,500 – 4,999

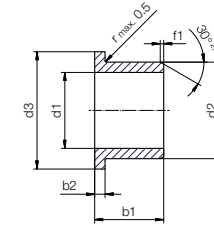
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

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Flange bearing (form F)



²⁾ Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 6–12	Ø 12–30
f1 [mm]	0.5	0.8



Dimensions according to ISO 3547-1 and special dimensions



Order example: **C500FM-0608-06** – no minimum order quantity.

C500 iglidur® material **F** Flange bearing **M** Metric **06** Inner Ø d1 **08** Outer Ø d2 **06** Total length b1

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾ [mm]	h13 [mm]	h13 [mm]	
6.0	+0.010 +0.058	8.0	12.0	6.0	1.00	C500FM-0608-06
8.0	+0.013 +0.071	10.0	15.0	10.0	1.00	C500FM-0810-10
10.0		12.0	18.0	10.0	1.00	C500FM-1012-10
12.0		14.0	20.0	12.0	1.00	C500FM-1214-12
16.0	+0.016 +0.086	18.0	24.0	17.0	1.00	C500FM-1618-17
20.0	+0.020 +0.104	23.0	30.0	21.5	1.50	C500FM-2023-21

³⁾ After press-fit. *Testing methods, page 57*



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