



Runs up to six times longer than iglidur® X –  
**iglidur® X6**  
► From page 247

For soft shafts, up to +200 °C –  
**iglidur® V400**  
► From page 255

For high dynamic loads, wear resistant –  
**iglidur® Z**  
► From page 263

For hot liquids –  
**iglidur® UW500**  
► From page 273

## High temperatures

Here you will find high-temperature specialists for continuous operating temperatures up to +250 °C (exception: iglidur® V400 with +200 °C).


In the meantime, the iglidur® X6 surpasses the standard iglidur® X here in many rotating and pivoting applications.



iglidur® Z has also been long established as standard with extremely low wear rates under high loads and/or temperatures.


iglidur® V400 is characterised as a problem solver in many special cases, and iglidur® UW500 is the specialist for hot liquids.


- Lubrication and maintenance free
- Low weight
- Good price / performance ratio
- Predictable service life

 Online product finder  
► [www.igus.eu/iglidur-finder](http://www.igus.eu/iglidur-finder)

 max. +250 °C  
min. -100 °C

 4 materials  
Ø 3–120 mm 

 Inch dimensions available  
► From page 1183

 Available from stock  
Detailed information about delivery time online.

## High temperatures



Long operating times, high stresses: iglidur® bearings are used in the straightening machine for various adjustment functions.



iglidur® bearings led to significant reduction of costs.



iglidur® thrust washers are in use in this high-speed thermal shakers for standard specimen containers in the laboratory.



The hinge elements and cam rollers of the ramps are inserted with two iglidur® Z plain bearings. The stainless steel axles which connect the fixed hinge parts with the moving ones run through these.

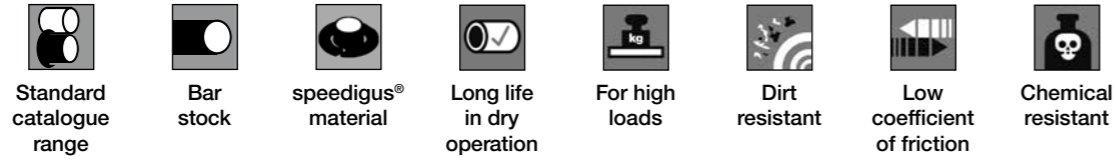


Efficient hardening with ultraviolet radiation: The used iglidur® bearings are chemically resistant and are also resistant to the temperatures of +120 °C generated here.

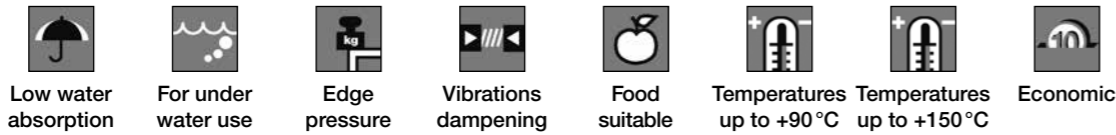


Lubrication free iglidur® bearings in a filling system for milk are resistant to disinfectants and high temperatures.

High temperatures

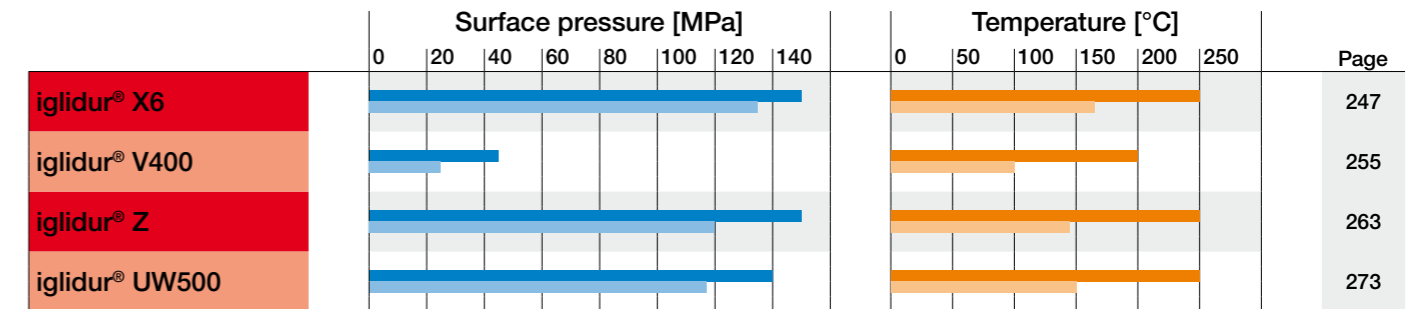


	Standard catalogue range	Bar stock	speedigus material	Long life in dry operation	For high loads	Dirt resistant	Low coefficient of friction	Chemical resistant
iglidur® X6	●			●	●		●	●
iglidur® V400	●			●			●	●
iglidur® Z	●			●	●		●	●
iglidur® UW500								●



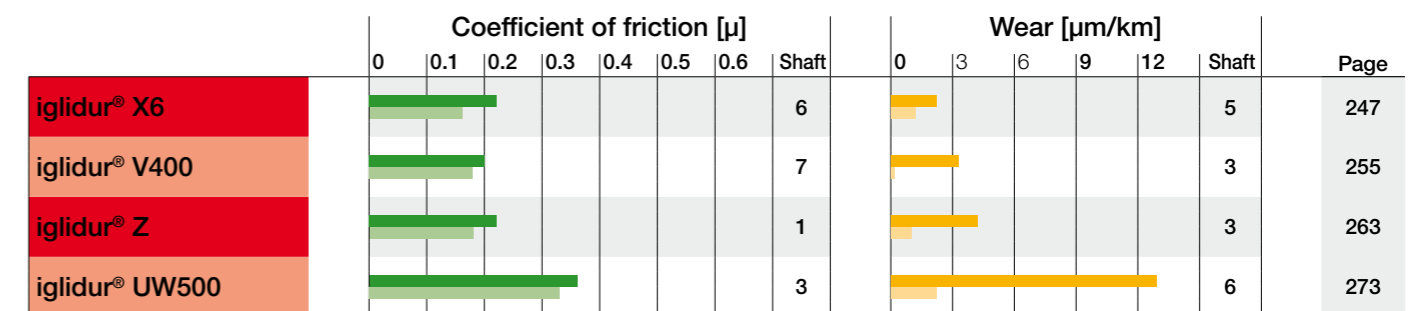
	Low water absorption	For under water use	Edge pressure	Vibrations dampening	Food suitable	Temperatures up to +90°C	Temperatures up to +150°C	Economic
iglidur® X6	●					●	●	
iglidur® V400	●		●			●	●	
iglidur® Z	●		●			●	●	
iglidur® UW500	●	●				●	●	

High temperatures



Maximum permissible surface pressure 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

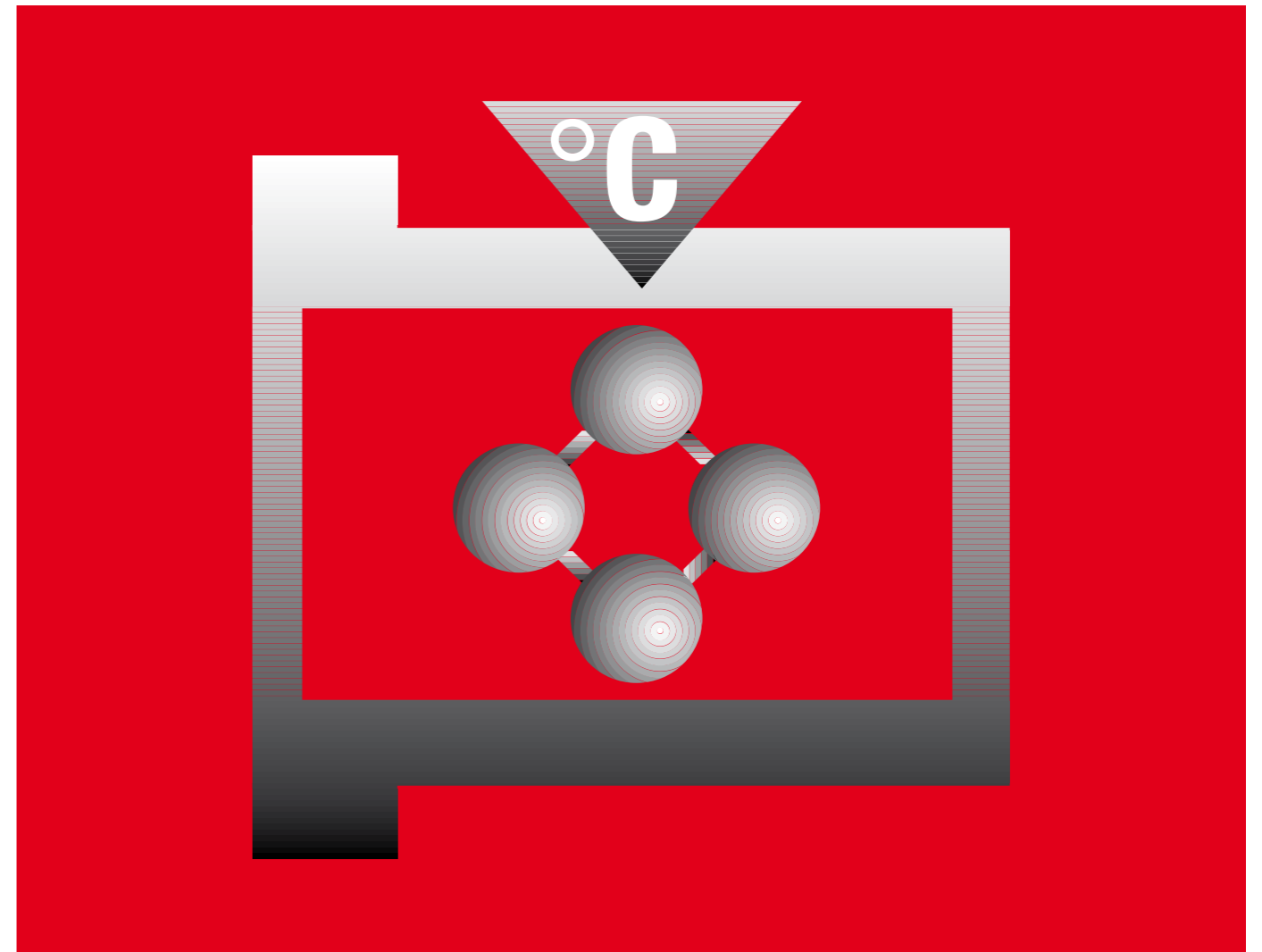


Coefficients of friction of iglidur® bearings against steel rotating, p = 1 MPa, v = 0.3 m/s  
 ■ Average of all the seven sliding combinations tested  
 ■ Coefficient of friction of best combination

Wear of iglidur® bearings against steel rotating, p = 1 MPa  
 ■ Average of all the seven sliding combinations tested  
 ■ Wear of best combination

**i Shaft material:**

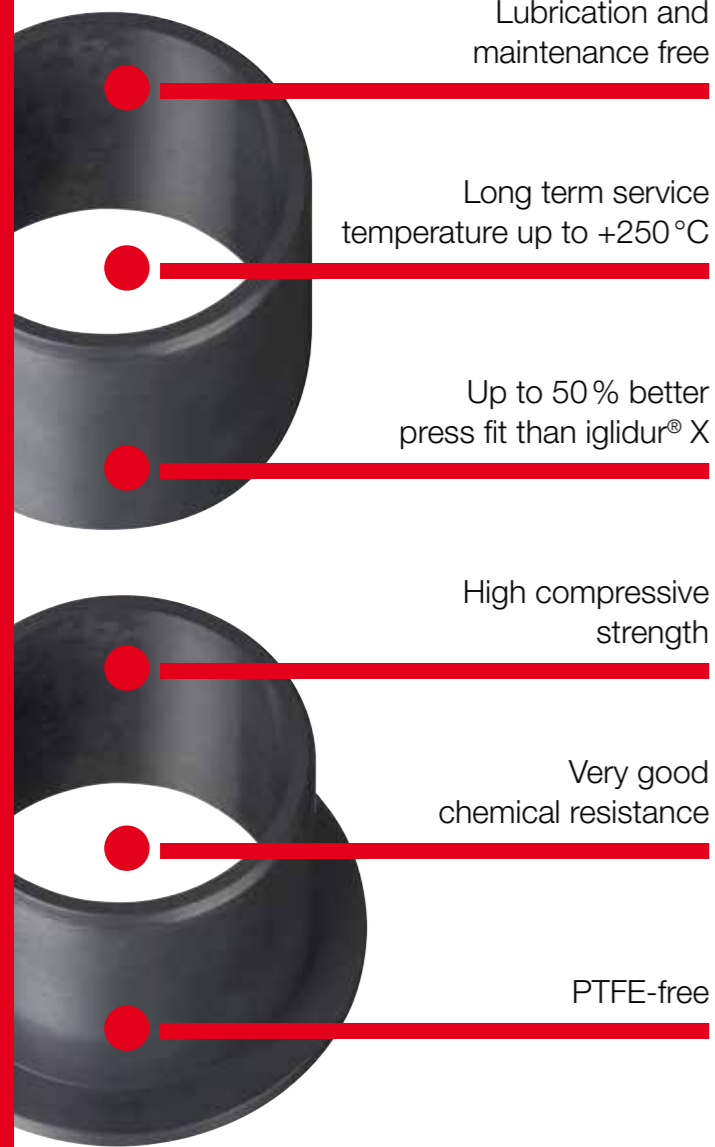
1 = Cf53	3 = Alu. hc	5 = St37	7 = X90
2 = Cf53, hard chromed	4 = Free-cutting steel	6 = V2A	



## Runs up to six times longer than iglidur® X – iglidur® X6

- Long term service temperature up to +250 °C
- Up to 50 % better press fit than iglidur® X
- High compressive strength
- Excellent chemical resistance
- PTFE-free
- Lubrication and maintenance free
- Standard range from stock





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 83
- If you need a bearing for underwater use
  - ▶ iglidur® UW500, page 273
  - ▶ iglidur® H370, page 299
- When a wear-resistant high temperature bearing for linear movements is needed
  - ▶ iglidur® Z, page 263



**Available from stock**

Detailed information about delivery time online.



**max. +250 °C**  
**min. -100 °C**



**Block pricing online**

No minimum order value. From batch size 1



**Ø 3–40 mm**

more dimensions on request



**Typical application areas**

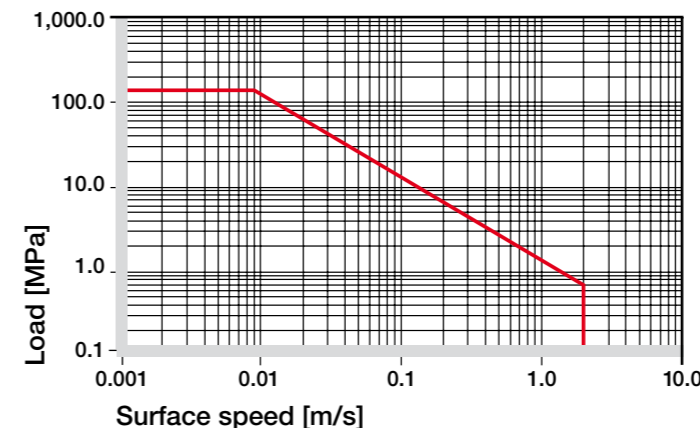
- Glass industry ● Food industry ● Fluid technology ● Textile technology ● Machine building etc.

**Material properties table**

General properties	Unit	iglidur® X6	Testing method
Density	g/cm³	1.53	
Colour		dark blue	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
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	DIN 53457
Tensile strength at +20 °C	MPa	290	DIN 53452
Compressive strength	MPa	190	
Max. recommended surface pressure (+20 °C)	MPa	150	
Shore-D hardness		89	DIN 53505
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	0.55	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K <sup>-1</sup> · 10 <sup>-5</sup>	1.1	DIN 53752
Electrical properties <sup>5)</sup>			
Specific volume resistance	Ωcm	< 10 <sup>5</sup>	DIN IEC 93
Surface resistance	Ω	< 10 <sup>3</sup>	DIN 53482

**Table 01: Material properties table**

<sup>5)</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® X6 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing**

**Moisture absorption**

The moisture absorption of iglidur® X6 plain bearings is approximately 0.1 % in ambient conditions. The saturation limit submerged in water is 0.5 %. These values are so low that a moisture expansion need to be considered only in extreme cases.

▶ Diagram, [www.igus.eu/x6-moisture](http://www.igus.eu/x6-moisture)

**Vacuum**

In vacuum environment iglidur® X6 plain bearings can be used virtually without restrictions.

**Radiation resistance**

Resistant to radiation up to an intensity of 2 · 10<sup>5</sup> Gy.

**UV resistance**

iglidur® X6 plain bearings are partially resistant to UV radiation.

Medium	Resistance
Alcohols	+
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 02: Chemical resistance**

▶ Chemical table, page 1226

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. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

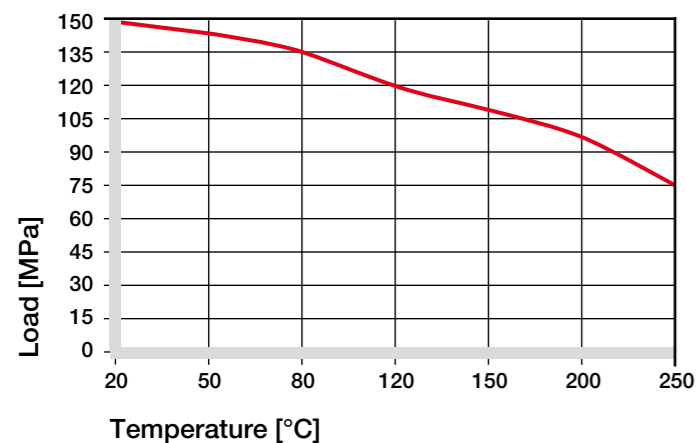


Diagram 02: Recommended maximum surface pressure of as a function of temperature (150 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® X6 at radial load. At the recommended maximum surface pressure of 100 MPa the deformation is less than 2%. A possible deformation could be, among others, dependant on the duty cycle of the load.

► Surface pressure, page 63

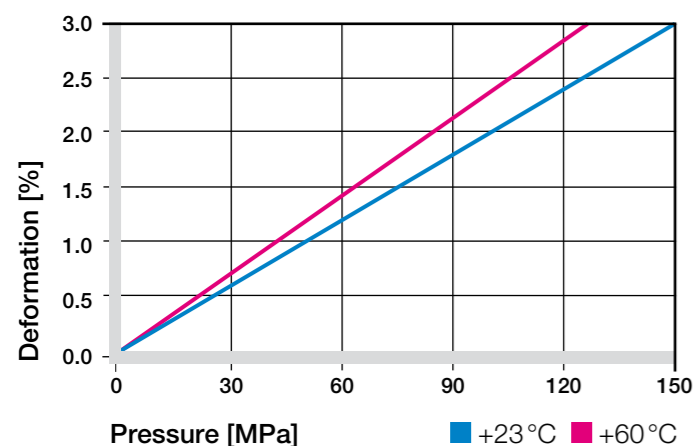


Diagram 03: Deformation under pressure and temperature

### Permissible surface speeds

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 03: Maximum surface speeds

### 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. iglidur® X6 bearings require additional axial securing only above +165 °C.

► Application temperatures, page 66

► Additional securing, page 67

### 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

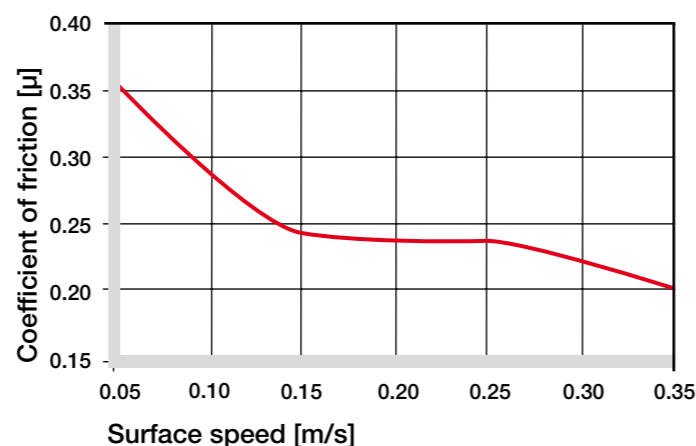


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

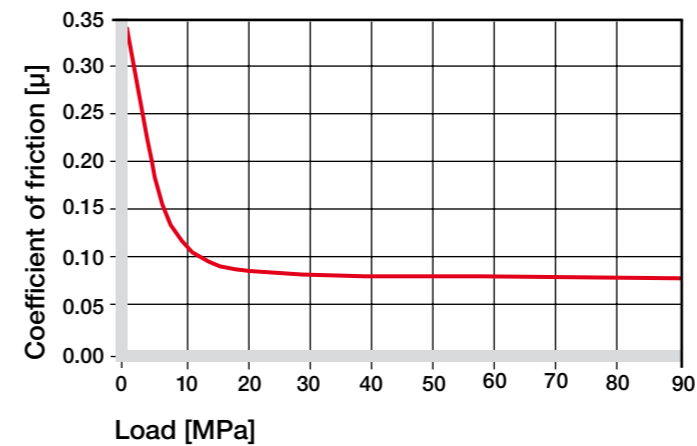


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### 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. The best case for iglidur® X6 is a ground surface with an average roughness Ra = 0.4–0.7  $\mu\text{m}$ . Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® X6. 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 (diagram 07). If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft materials, page 71

iglidur® X6	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 (Ra = 1  $\mu\text{m}$ , 50 HRC)

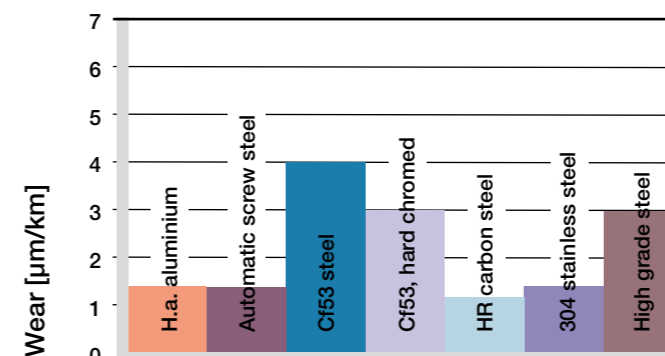


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

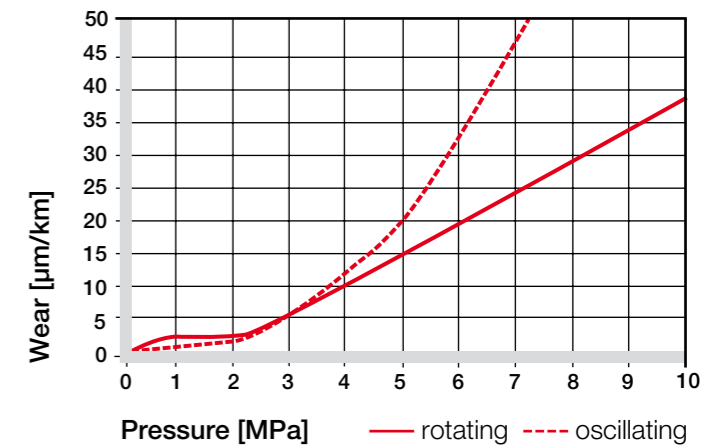


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

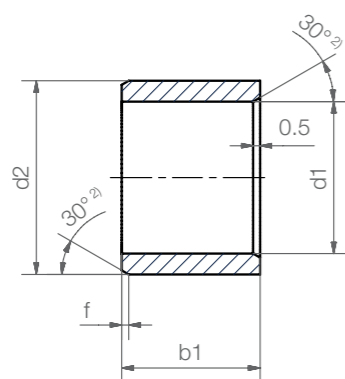
### Installation tolerances

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 d1 [mm]	Shaft h9 [mm]	iglidur® X6 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



## Order key

Type	Dimensions
<b>X6 S M-0304-03</b>	
iglidur® material	
Form S	
Metric	
Inner-Ø d1 [mm]	
Outer-Ø d2 [mm]	
Length b1 [mm]	



Dimensions according to ISO 3547-1 and special dimensions

<sup>2)</sup> thickness < 1 mm, chamfer = 20°

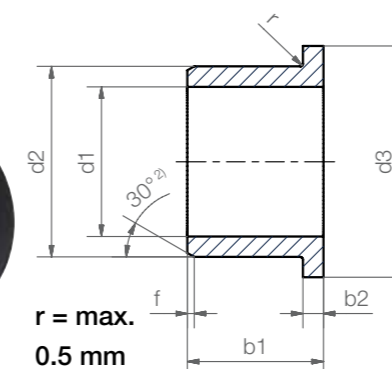
Chamfer in relation to the d1

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]

d1	d1-Tolerance <sup>3)</sup>	d2	b1 h13	Part No.
3.0	+0.010 +0.058	4.5	3.0	<b>X6SM-0304-03</b>
5.0	+0.010 +0.058	7.0	5.0	<b>X6SM-0507-05</b>
6.0	+0.010 +0.058	8.0	6.0	<b>X6SM-0608-06</b>
8.0	+0.013 +0.071	10.0	10.0	<b>X6SM-0810-10</b>
10.0	+0.013 +0.071	12.0	10.0	<b>X6SM-1012-10</b>
12.0	+0.016 +0.086	14.0	12.0	<b>X6SM-1214-12</b>
16.0	+0.016 +0.086	18.0	15.0	<b>X6SM-1618-15</b>
20.0	+0.020 +0.104	23.0	20.0	<b>X6SM-2023-20</b>
25.0	+0.020 +0.104	28.0	30.0	<b>X6SM-2528-30</b>
30.0	+0.020 +0.104	34.0	30.0	<b>X6SM-3034-30</b>
35.0	+0.025 +0.125	39.0	40.0	<b>X6SM-3539-40</b>
40.0	+0.025 +0.125	44.0	40.0	<b>X6SM-4044-40</b>
50.0	+0.025 +0.125	55.0	40.0	<b>X6SM-5055-40</b>

<sup>3)</sup> after pressfit. Testing methods ► Page 75



## Order key

Type	Dimensions
<b>X6 F M-0304-05</b>	
iglidur® material	
Form F	
Metric	
Inner-Ø d1 [mm]	
Outer-Ø d2 [mm]	
Length b1 [mm]	



Dimensions according to ISO 3547-1 and special dimensions

<sup>2)</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]

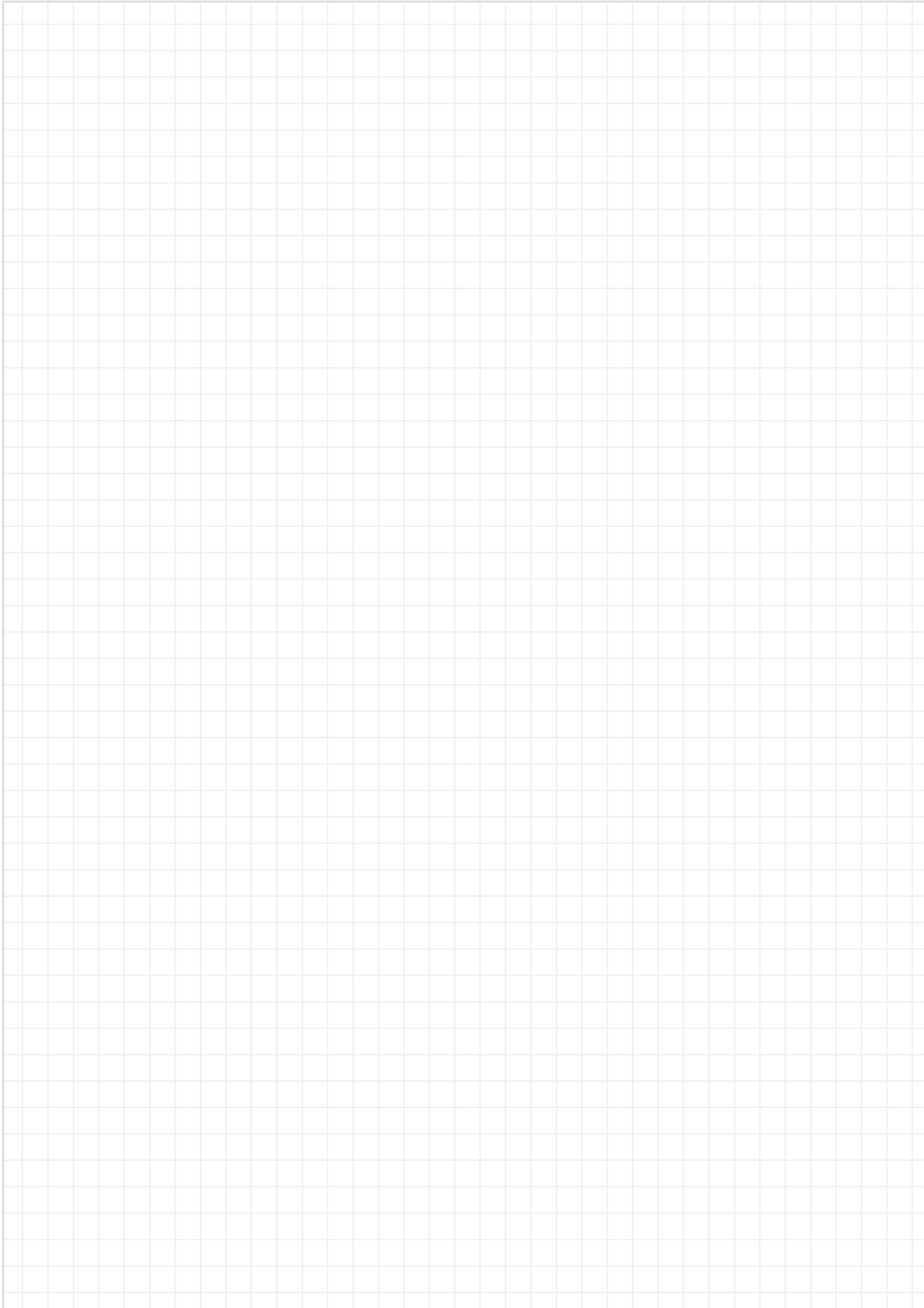
d1	d1-Tolerance <sup>3)</sup>	d2	d3 d13	b1 h13	b2 -0.14	Part No.
3.0	+0.010 +0.058	4.5	7.5	5.0	0.75	<b>X6FM-0304-05</b>
5.0	+0.010 +0.058	7.0	11.0	5.0	1.0	<b>X6FM-0507-05</b>
6.0	+0.010 +0.058	8.0	12.0	6.0	1.0	<b>X6FM-0608-06</b>
8.0	+0.013 +0.071	10.0	15.0	10.0	1.0	<b>X6FM-0810-10</b>
10.0	+0.013 +0.071	12.0	18.0	10.0	1.0	<b>X6FM-1012-10</b>
10.0	+0.013 +0.071	12.0	18.0	25.0	1.0	<b>X6FM-1012-25</b>
12.0	+0.016 +0.086	14.0	20.0	12.0	1.0	<b>X6FM-1214-12</b>
16.0	+0.016 +0.086	18.0	24.0	12.0	1.0	<b>X6FM-1618-12</b>
16.0	+0.016 +0.086	18.0	24.0	17.0	1.0	<b>X6FM-1618-17</b>
20.0	+0.020 +0.104	23.0	30.0	21.5	1.5	<b>X6FM-2023-21</b>
25.0	+0.020 +0.104	28.0	35.0	21.5	1.5	<b>X6FM-2528-21</b>
30.0	+0.020 +0.104	34.0	42.0	40.0	2.0	<b>X6FM-3034-40</b>
35.0	+0.025 +0.125	39.0	47.0	26.0	2.0	<b>X6FM-3539-26</b>
40.0	+0.025 +0.125	44.0	52.0	40.0	2.0	<b>X6FM-4044-40</b>

<sup>3)</sup> 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.



**For soft shafts, up to +200 °C –  
iglidur® V400**

- Excellent wear resistance with soft shaft materials and for temperatures up to +200 °C
- Good chemical resistance
- High elasticity
- Lubrication and maintenance free
- Standard range from stock



High wear resistance

Excellent wear resistance with soft shaft materials and for temperatures up to +200 °C

Good resistance to chemicals

High elasticity

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
- When the highest wear resistance at temperatures above +100 °C is required
- 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 121
- For applications at normal temperatures
  - ▶ iglidur® G, page 83
  - ▶ iglidur® J, page 99
  - ▶ iglidur® W300, page 121
- When a cost-effective universal bearing is required
  - ▶ iglidur® G, page 83



Available from stock

Detailed information about delivery time online.



max. +200 °C

min. -50 °C



Block pricing online

No minimum order value. From batch size 1



Ø 6–20 mm

more dimensions on request



Typical application areas

● Plant construction ● Automotive ● Automation ● Aerospace engineering ● Mechatronics, etc.

Material properties table

General properties	Unit	iglidur® V400	Testing method
Density	g/cm <sup>3</sup>	1.51	
Colour		white	
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	0.15–0.20	
pv value, max. (dry)	MPa · m/s	0.50	
Mechanical properties			
Modulus of elasticity	MPa	4,500	DIN 53457
Tensile strength at +20 °C	MPa	95	DIN 53452
Compressive strength	MPa	47	
Max. recommended surface pressure (+20 °C)	MPa	45	
Shore-D hardness		74	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+200	
Max. short term application temperature	°C	+240	
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>	3	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

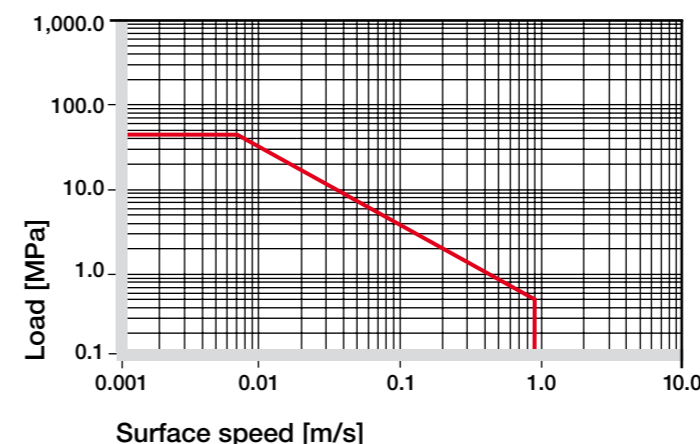


Diagram 01: Permissible pv values for iglidur® V400 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® V400 plain bearings is only 0.2 % after saturation in water.

▶ Diagram, [www.igus.eu/v400-moisture](http://www.igus.eu/v400-moisture)

Vacuum

In a vacuum, iglidur® V400 plain bearings can only be used to a limited degree. Outgassing takes place.

Radiation resistance

iglidur® V400 bearings are resistant to a radiation intensity of 2 · 10<sup>4</sup> Gy. Higher radiation affects their mechanical characteristics.

UV resistance

iglidur® V400 plain bearings are resistant to UV radiation to a large extent.

Medium	Resistance
Alcohols	+
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 02: Chemical resistance

▶ Chemical table, page 1226



iglidur® V400 bearings are not suitable for high pressures or static high loads. However they are characterised 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 inverse relationship. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

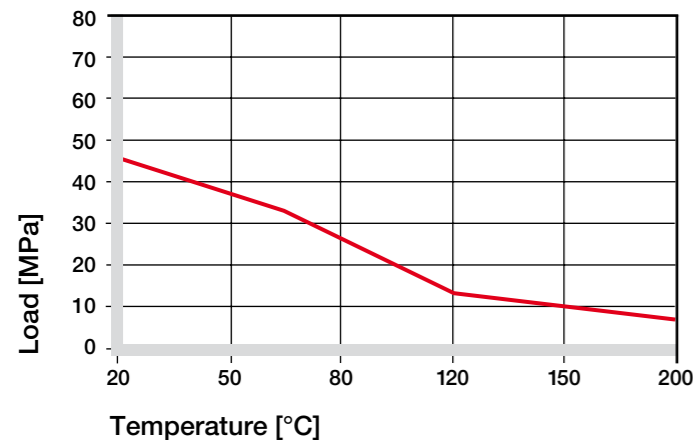


Diagram 02: Recommended maximum surface pressure of as a function of temperature (45 MPa at +20 °C)

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

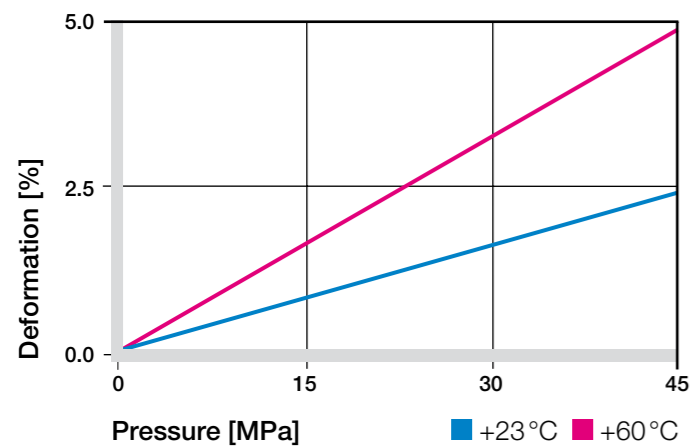


Diagram 03: Deformation under pressure and temperature

### 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 03: Maximum surface speeds

### Temperatures

The long-term maximum permissible application temperature is +200 °C, for temperatures over +100 °C an additional securing is required. 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 shows this relationship.

### ► Application temperatures, page 66

### ► Additional securing, page 67

### Friction and wear

The coefficient of friction is dependent on the bearing's stressing capacity (diagrams 04 and 05). 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

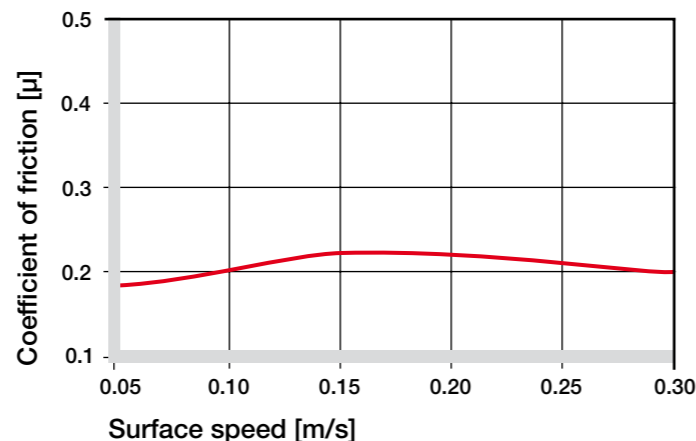


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

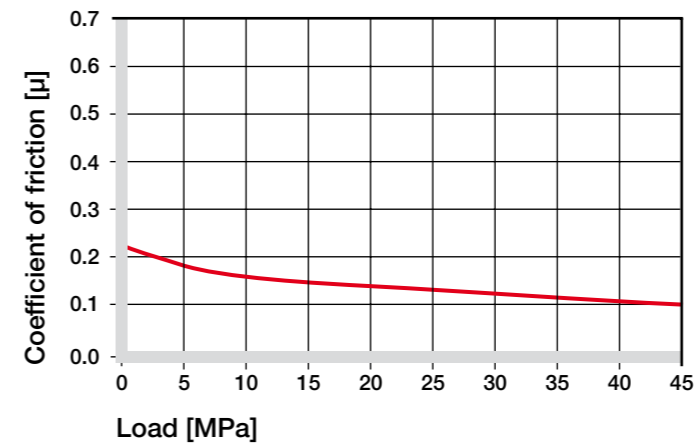


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### 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 06. With regard to wear, iglidur® V400 is more suitable for rotating applications rather than oscillating applications (diagram 07).

### ► Shaft materials, page 71

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)

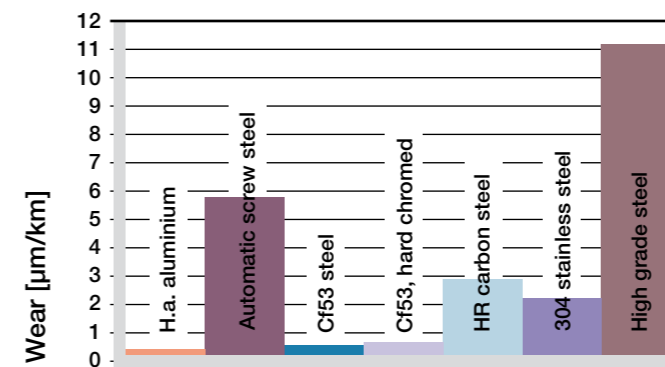


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

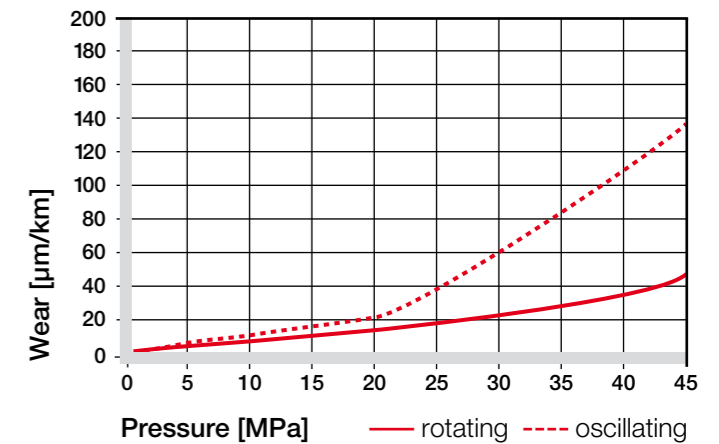


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

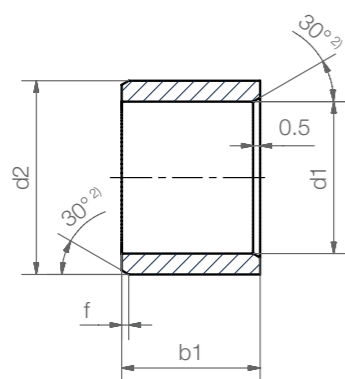
### Installation tolerances

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



Order key

Type	Dimensions
<b>V S M</b>	<b>-0608-06</b>
iglidur® material	
Form S	
Metric	
Inner-Ø d1 [mm]	
Outer-Ø d2 [mm]	
Length b1 [mm]	



Dimensions according to ISO 3547-1 and special dimensions

<sup>2)</sup> thickness < 1 mm, chamfer = 20°

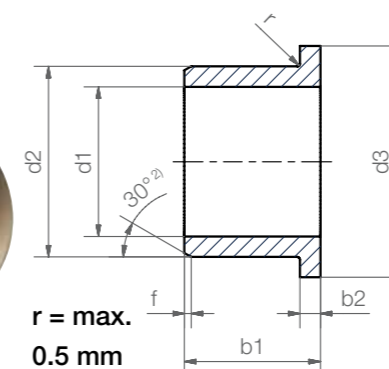
Chamfer in relation to the d1

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]

d1	d1-Tolerance <sup>3)</sup>	d2	b1 h13	Part No.
6.0	+0.010 +0.058	8.0	6.0	<b>VSM-0608-06</b>
8.0	+0.013 +0.071	10.0	10.0	<b>VSM-0810-10</b>
10.0	+0.013 +0.071	12.0	10.0	<b>VSM-1012-10</b>
12.0	+0.016 +0.086	14.0	12.0	<b>VSM-1214-12</b>
16.0	+0.016 +0.086	18.0	15.0	<b>VSM-1618-15</b>
20.0	+0.020 +0.104	23.0	20.0	<b>VSM-2023-20</b>

<sup>3)</sup> after pressfit. Testing methods ► Page 75



Order key

Type	Dimensions
<b>V F M</b>	<b>-0608-06</b>
iglidur® material	
Form F	
Metric	
Inner-Ø d1 [mm]	
Outer-Ø d2 [mm]	
Length b1 [mm]	



Dimensions according to ISO 3547-1 and special dimensions

<sup>2)</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]

d1	d1-Tolerance <sup>3)</sup>	d2	d3 d13	b1 h13	b2 -0.14	Part No.
6.0	+0.010 +0.058	8.0	12.0	6.0	1.0	<b>VFM-0608-06</b>
8.0	+0.013 +0.071	10.0	15.0	10.0	1.0	<b>VFM-0810-10</b>
10.0	+0.013 +0.071	12.0	18.0	10.0	1.0	<b>VFM-1012-10</b>
12.0	+0.016 +0.086	14.0	20.0	12.0	1.0	<b>VFM-1214-12</b>
16.0	+0.016 +0.086	18.0	24.0	17.0	1.0	<b>VFM-1618-17</b>
18.0	+0.020 +0.104	20.0	26.0	20.0	1.0	<b>VFM-1820-20</b>
20.0	+0.020 +0.104	23.0	30.0	21.5	1.5	<b>VFM-2023-21</b>

<sup>3)</sup> after pressfit. Testing methods ► Page 75



## Don't find your size?

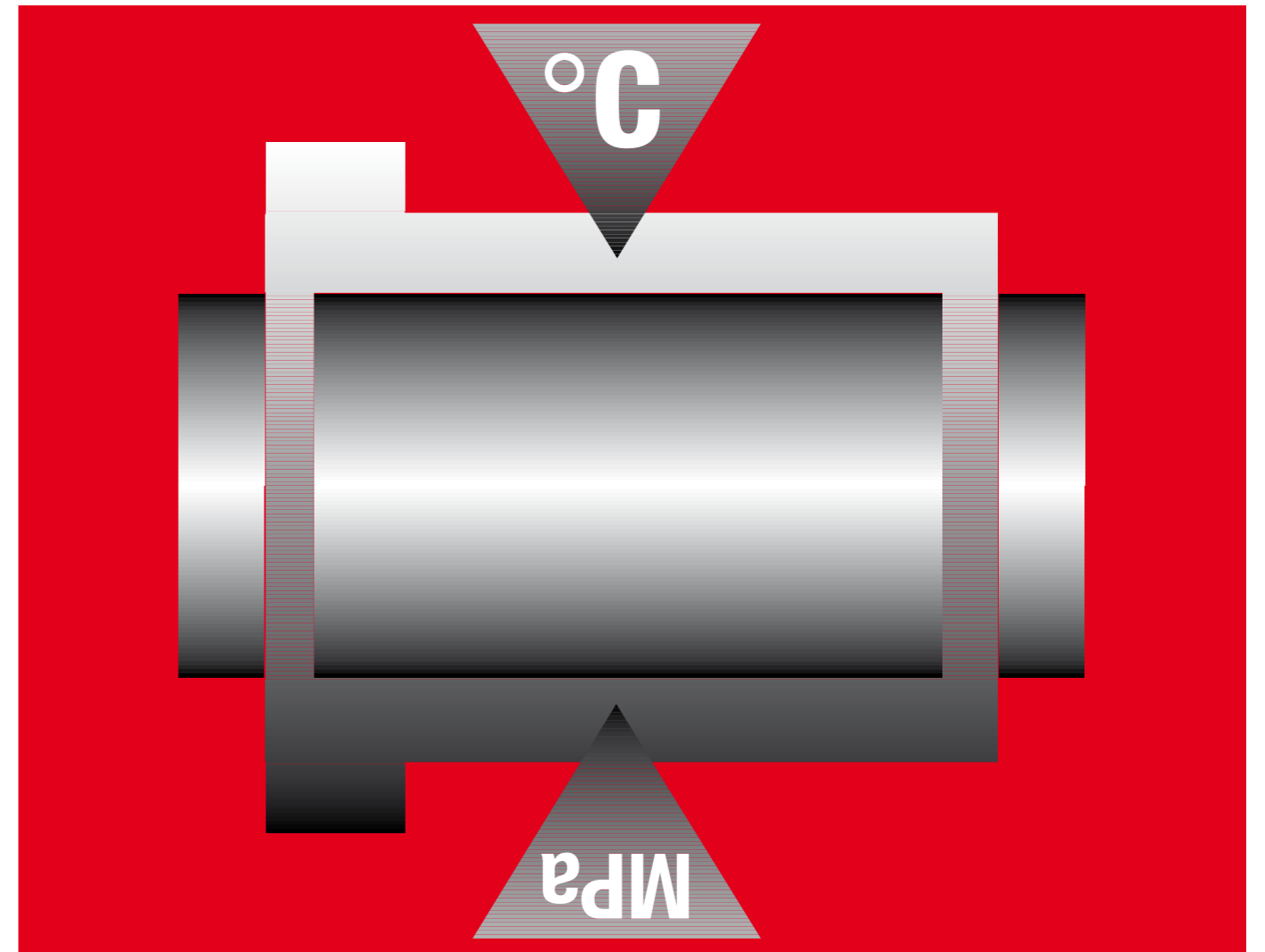
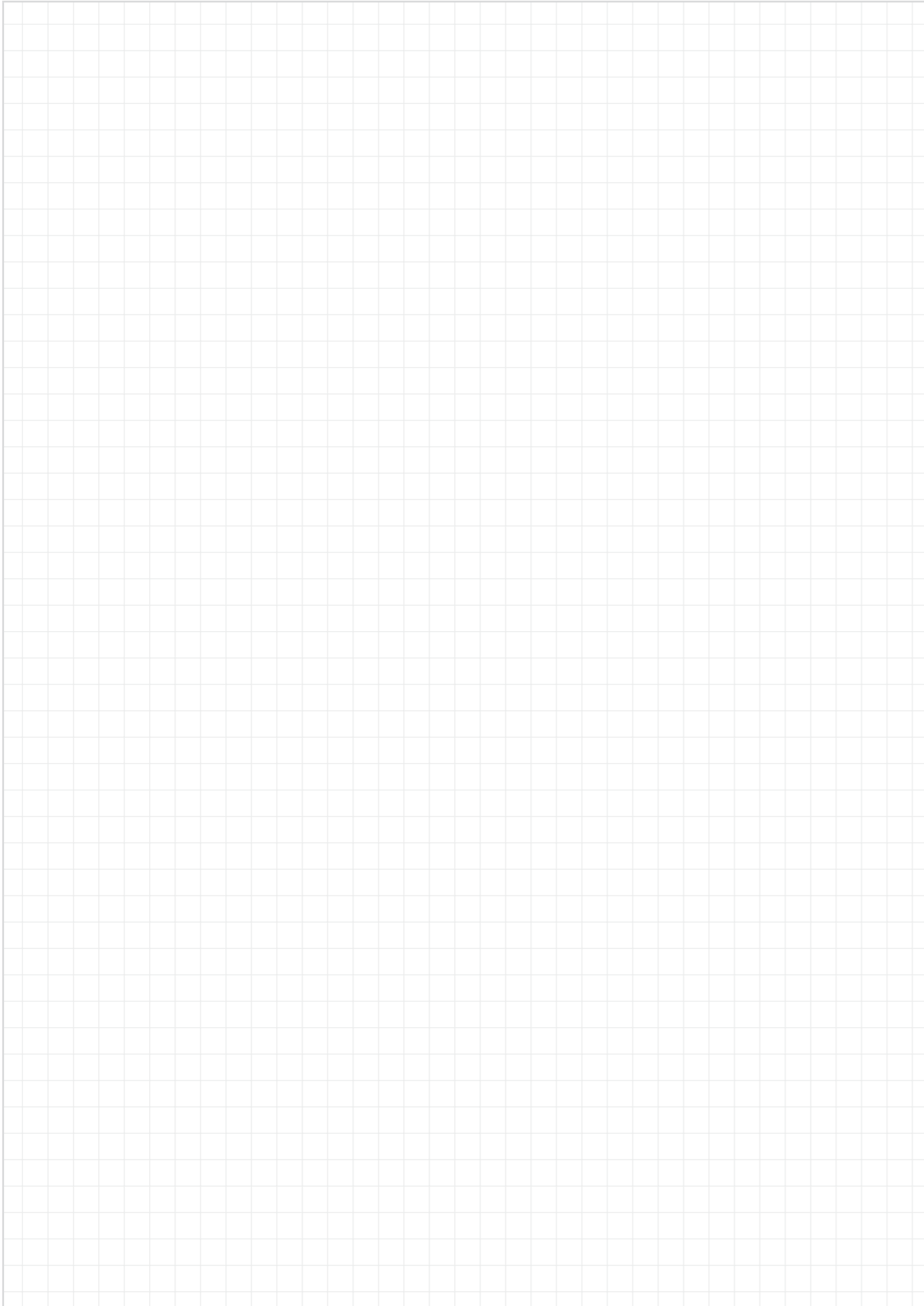
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



## Even more dimensions from stock

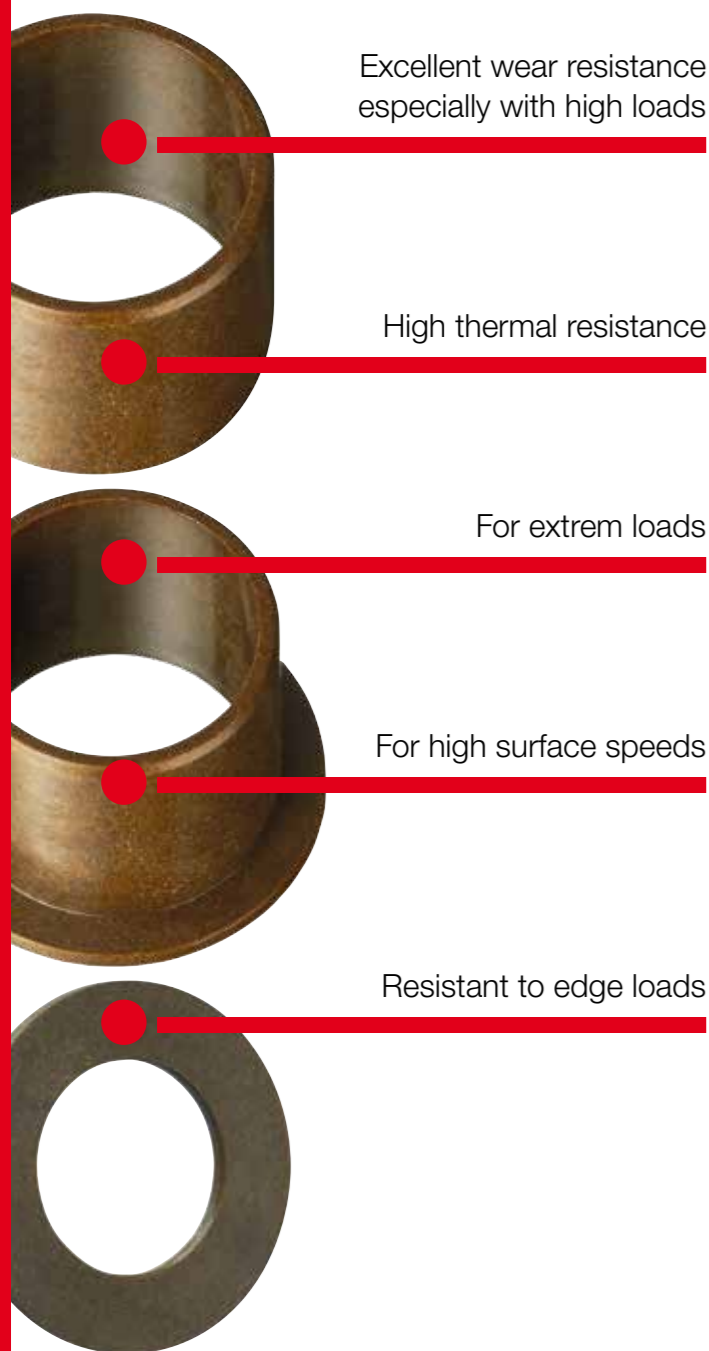
More than 300 dimensions are now available. Search online for your required bearing.

► [www.igus.eu/iglidur-specialbearings](http://www.igus.eu/iglidur-specialbearings)



## For high dynamic loads, wear resistant – iglidur® Z

- Excellent wear resistance especially with high loads
- High thermal resistance
- For extrem loads
- For high surface speeds
- Resistant to edge loads
- Lubrication and maintenance free
- Standard range from stock



Extremely high compressive strength coupled with high elasticity enables iglidur<sup>®</sup> 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.



**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<sup>®</sup> P, page 149
- When a cost-effective general purpose bearing is required
  - ▶ iglidur<sup>®</sup> G, page 83
- When electrically conductive bearings are needed
  - ▶ iglidur<sup>®</sup> F, page 429
  - ▶ iglidur<sup>®</sup> H, page 283
  - ▶ iglidur<sup>®</sup> H370, page 299



**Available from stock**

Detailed information about delivery time online.



**max. +250 °C**  
**min. -100 °C**



**Block pricing online**

No minimum order value. From batch size 1



**Ø 4–120 mm**  
more dimensions  
on request



**Inch dimensions available**  
▶ **From page 1183**



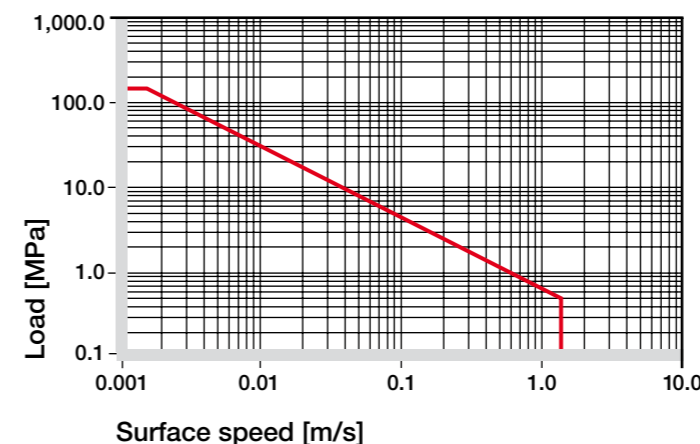
**Typical application areas**

- Construction machinery
- Machine building
- Textile technology
- Aerospace engineering
- Glass industry etc.

**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 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing**

**Moisture absorption**

The moisture absorption of iglidur<sup>®</sup> Z plain bearings is approximately 0.3% in ambient conditions. The saturation limit in water is 1.1%.

▶ **Diagram, [www.igus.eu/z-moisture](http://www.igus.eu/z-moisture)**

**Vacuum**

In vacuum, moisture is released as a vapour. Only dehumidified bearings made from iglidur<sup>®</sup> Z are suitable for vacuum.

**Radiation resistance**

Plain bearings made from iglidur<sup>®</sup> Z are resistant to radiation up to an intensity of 1 · 10<sup>5</sup> Gy.

**UV resistance**

Exposed to UV radiation, iglidur<sup>®</sup> Z bearings lose approximately 50% of their tribological properties (wear resistance).

Medium	Resistance
Alcohols	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 °C]**

**Table 02: Chemical resistance**

▶ **Chemical table, page 1226**



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. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

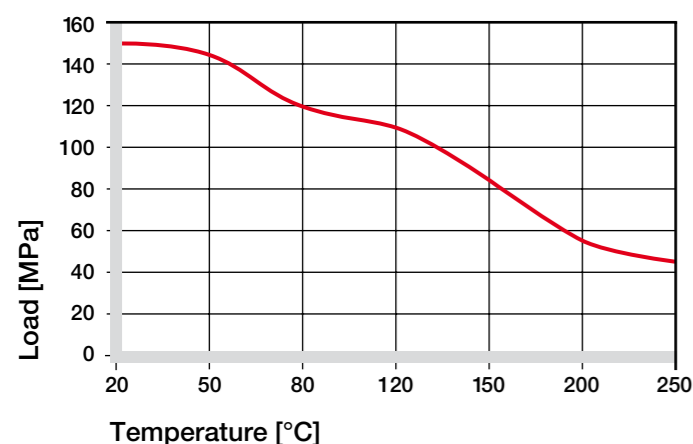


Diagram 02: Recommended maximum surface pressure of as a function of temperature (150 MPa at +20 °C)

iglidur<sup>®</sup> Z is suitable for both medium and – due to its high heat resistance – high speeds. 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 about 5.5 % at room temperature.

► Surface pressure, page 63

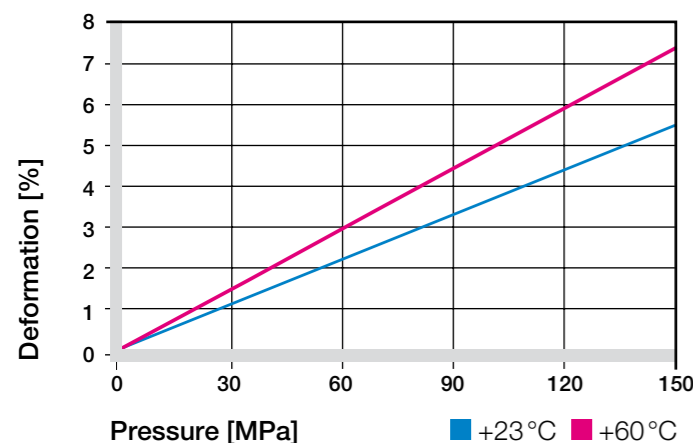


Diagram 03: Deformation under pressure and temperature

### 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 03 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 03: Maximum surface speeds

### Temperatures

The maximum permissible short term temperature is +310 °C. The ambient temperatures in the bearing system also have an effect on the bearing wear. The wear rate rises with increasing temperatures. At high temperatures iglidur<sup>®</sup> Z is also the most wear resistant material when running dry. At temperatures over +145 °C an additional securing is required.

- Application temperatures, page 66
- Additional securing, page 67

### Friction and wear

The coefficient of friction declines just as the wear resistance with increasing load (diagrams 04 and 05).

- Coefficients of friction and surfaces, page 68
- Wear resistance, page 69

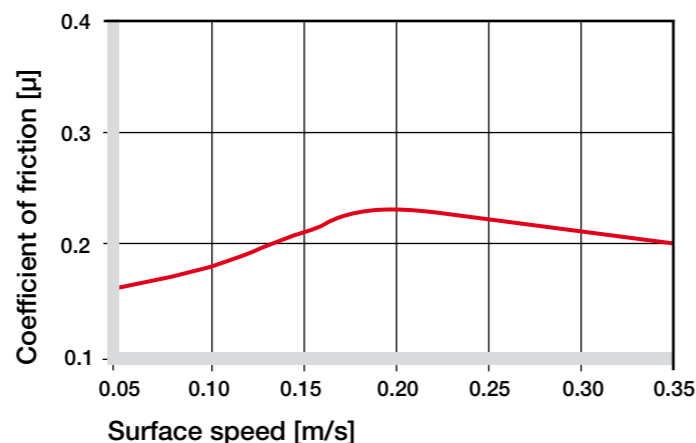


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

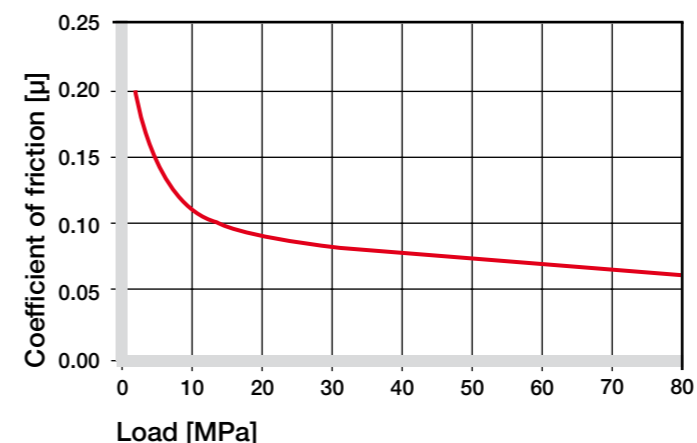


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### Shaft materials

Diagram 06 shows wear rates in the lower load range, which are very similar to those of other wear-resistant iglidur<sup>®</sup> materials. However, in the upper load range iglidur<sup>®</sup> 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<sup>®</sup> 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

iglidur <sup>®</sup> Z	Dry	Greases	Oil	Water
C.o.f. μ	0.06–0.14	0.09	0.04	0.04

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

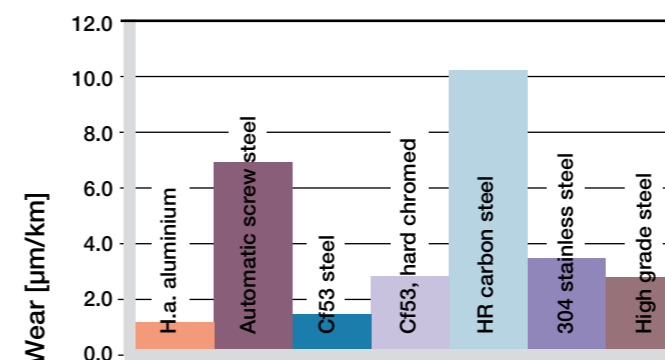


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

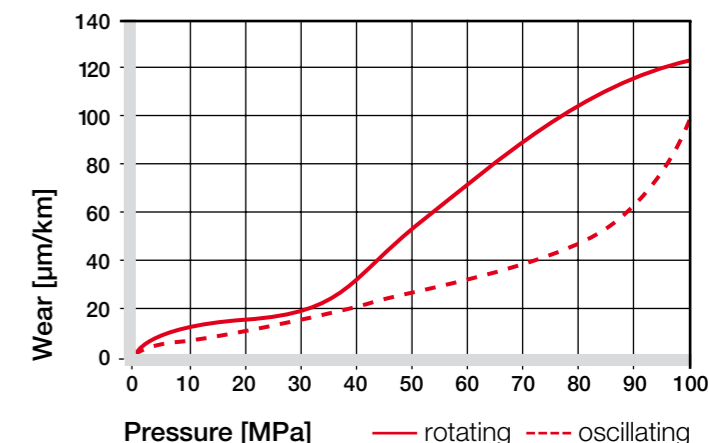


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

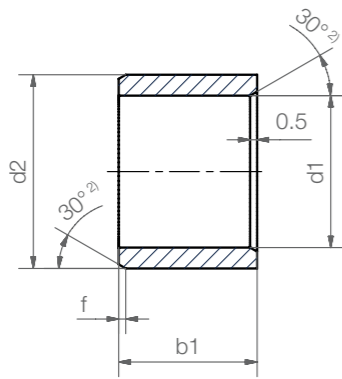
### Installation tolerances

iglidur<sup>®</sup> 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 <sup>®</sup> 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	0–0.087	+0.036 +0.176	0 +0.035

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



## Order key

Type	Dimensions
<b>Z S M</b>	<b>-04 05-04</b>
iglidur® material	
Form S	
Metric	
Inner-Ø d1 [mm]	
Outer-Ø d2 [mm]	
Length b1 [mm]	



Dimensions according to ISO 3547-1 and special dimensions

<sup>2)</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]

d1	d1-Tolerance <sup>3)</sup>	d2	b1	Part No.
			h13	
4.0		5.5	4.0	ZSM-0405-04
4.0		5.0	6.0	ZSM-0405-06
4.0		5.0	8.0	ZSM-0405-08
5.0	+0.010	7.0	5.0	ZSM-0507-05
5.0	+0.058	7.0	9.0	ZSM-0507-09
6.0		8.0	6.0	ZSM-0608-06
6.0		8.0	8.0	ZSM-0608-08
6.0		8.0	12.0	ZSM-0608-12
6.0		10.0	6.0	ZSM-0610-06
8.0		10.0	6.0	ZSM-0810-06
8.0		10.0	8.0	ZSM-0810-08
8.0	+0.013	10.0	10.0	ZSM-0810-10
10.0	+0.071	12.0	8.0	ZSM-1012-08
10.0		12.0	10.0	ZSM-1012-10
10.0		12.0	12.0	ZSM-1012-12
12.0		14.0	8.0	ZSM-1214-08
12.0		14.0	15.0	ZSM-1214-15
14.0		16.0	20.0	ZSM-1416-20
15.0		17.0	15.0	ZSM-1517-15
15.0	+0.016	17.0	20.0	ZSM-1517-20
15.0	+0.086	17.0	22.0	ZSM-1517-22
16.0		18.0	12.0	ZSM-1618-12
16.0		18.0	15.0	ZSM-1618-15
18.0		20.0	20.0	ZSM-1820-20
18.0		20.0	24.0	ZSM-1820-24
20.0	+0.020	23.0	10.0	ZSM-2023-10
20.0	+0.104	23.0	15.0	ZSM-2023-15
20.0		23.0	20.0	ZSM-2023-20

d1	d1-Tolerance <sup>3)</sup>	d2	b1	Part No.
			h13	
20.0		23.0	30.0	ZSM-2023-30
20.0		23.0	35.0	ZSM-2023-35
22.0		24.0	30.0	ZSM-2224-30
22.0		25.0	20.0	ZSM-2225-20
25.0		28.0	15.0	ZSM-2528-15
25.0		28.0	20.0	ZSM-2528-20
25.0	+0.020	28.0	30.0	ZSM-2528-30
25.0	+0.104	28.0	48.0	ZSM-2528-48
25.0		30.0	20.0	ZSM-2530-20
26.0		30.0	34.0	ZSM-2630-34
28.0		34.0	29.0	ZSM-2834-29
30.0		34.0	20.0	ZSM-3034-20
30.0		34.0	30.0	ZSM-3034-30
30.0		34.0	40.0	ZSM-3034-40
32.0		35.0	44.0	ZSM-3235-44
35.0		39.0	20.0	ZSM-3539-20
40.0		44.0	15.0	ZSM-4044-15
40.0	+0.025	44.0	40.0	ZSM-4044-40
40.0	+0.125	44.0	47.0	ZSM-4044-47
45.0		50.0	40.0	ZSM-4550-40
50.0		55.0	50.0	ZSM-5055-50
50.0		55.0	60.0	ZSM-5055-60
55.0		60.0	60.0	ZSM-5560-60
60.0		65.0	60.0	ZSM-6065-60
70.0	+0.030	75.0	70.0	ZSM-7075-70
80.0	+0.150	85.0	60.0	ZSM-8085-60
80.0		85.0	80.0	ZSM-8085-80
85.0	+0.036 +0.176	90.0	60.0	ZSM-8590-60

<sup>3)</sup> after pressfit. Testing methods ► Page 75

## Dimensions [mm]

d1	d1-Tolerance <sup>3)</sup>	d2	b1	Part No.
			h13	
85.0	+0.036	90.0	100.0	ZSM-8590-100
95.0	+0.176	100.0	60.0	ZSM-95100-60
100.0	+0.072 +0.212	105.0	100.0	ZSM-100105-100
120.0	+0.043 +0.203	125.0	100.0	ZSM-120125-100

<sup>3)</sup> after pressfit. Testing methods ► Page 75



## Don't find your size?

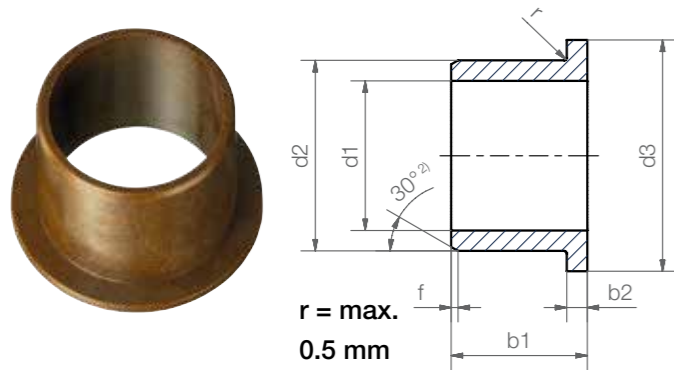
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



## Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

► [www.igus.eu/iglidur-specialbearings](http://www.igus.eu/iglidur-specialbearings)



<sup>2)</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]

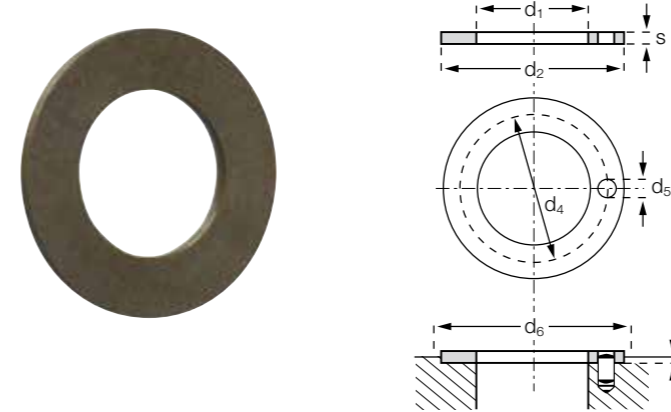
d1	d1- Tolerance <sup>3)</sup>	d2	d3	b1	b2	Part No.
4.0		5.5	9.5	4.0	0.75	ZFM-0405-04
5.0	+0.010	7.0	11.0	5.0	1.0	ZFM-0507-05
6.0	+0.058	8.0	12.0	8.0	1.0	ZFM-0608-08
8.0		10.0	15.0	5.5	1.0	ZFM-0810-055
8.0		10.0	15.0	9.0	1.0	ZFM-0810-09
9.0		11.0	17.0	20.0	0.5	ZFM-091117-20
10.0	+0.013	12.0	18.0	5.0	1.0	ZFM-1012-05
10.0	+0.071	12.0	18.0	9.0	1.0	ZFM-1012-09
10.0		12.0	18.0	15.0	1.0	ZFM-1012-15
10.0		13.0	15.0	5.5	1.5	ZFM-101315-05
12.0		14.0	20.0	9.0	1.0	ZFM-1214-09
12.0		14.0	20.0	12.0	1.0	ZFM-1214-12
12.0		14.0	20.0	20.0	1.0	ZFM-1214-20
14.0		16.0	22.0	17.0	1.0	ZFM-1416-17
15.0	+0.016	17.0	23.0	11.0	1.0	ZFM-1517-11
15.0	+0.086	17.0	23.0	15.0	1.0	ZFM-1517-15
15.0		17.0	23.0	23.0	1.0	ZFM-151723-23
16.0		18.0	24.0	12.0	1.0	ZFM-1618-12
18.0		20.0	26.0	4.0	1.0	ZFM-1820-04
18.0		20.0	26.0	17.0	1.0	ZFM-1820-17
20.0	+0.020	22.0	30.0	21.0	1.0	ZFM-2022-21
20.0	+0.104	23.0	30.0	11.5	1.5	ZFM-2023-11

<sup>3)</sup> 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.eu/iglidur-specialbearings](http://www.igus.eu/iglidur-specialbearings)



**i** Dimensions according to ISO 3547-1 and special dimensions

### Dimensions [mm]

d1	d2	s	d4	d5	h	d6	Part No.
+0.25	-0.25	-0.05	-0.12	+0.375	+0.2	+0.12	
			+0.12	+0.125	-0.2		
14.0	30.0	1.5	25+/-0.20	2+0.10	1.0	30.0	ZTM-1430-015
15.0	27.0	1.5	<sup>4)</sup>	<sup>4)</sup>	1.0	27.0	ZTM-1527-015
15.0	35.0	1.5	<sup>4)</sup>	<sup>4)</sup>	1.0	35.0	ZTM-1535-015
15.0	40.0	1.5	<sup>4)</sup>	<sup>4)</sup>	1.0	35.0	ZTM-1540-015
16.0	23.0	1.5	<sup>4)</sup>	<sup>4)</sup>	1.0	23.0	ZTM-1623-015
20.0	36.0	1.5	28.0	3.0	1.0	36.0	ZTM-2036-015
22.0	38.0	1.5	30.0	3.0	1.0	38.0	ZTM-2238-015
22.0	50.0	0.5	30.0	3.0	1.0	38.0	ZTM-2250-005
22.0	50.0	1.5	30.0	3.0	1.0	38.0	ZTM-2250-015
28.0	38.0	1.5	<sup>4)</sup>	<sup>4)</sup>	1.0	38.0	ZTM-2838-015
32.0	54.0	1.5	43.0	4.0	1.0	54.0	ZTM-3254-015
62.0	90.0	2.0	<sup>4)</sup>	<sup>4)</sup>	1.5	90.0	ZTM-6290-020

<sup>4)</sup> Design without fixing bore

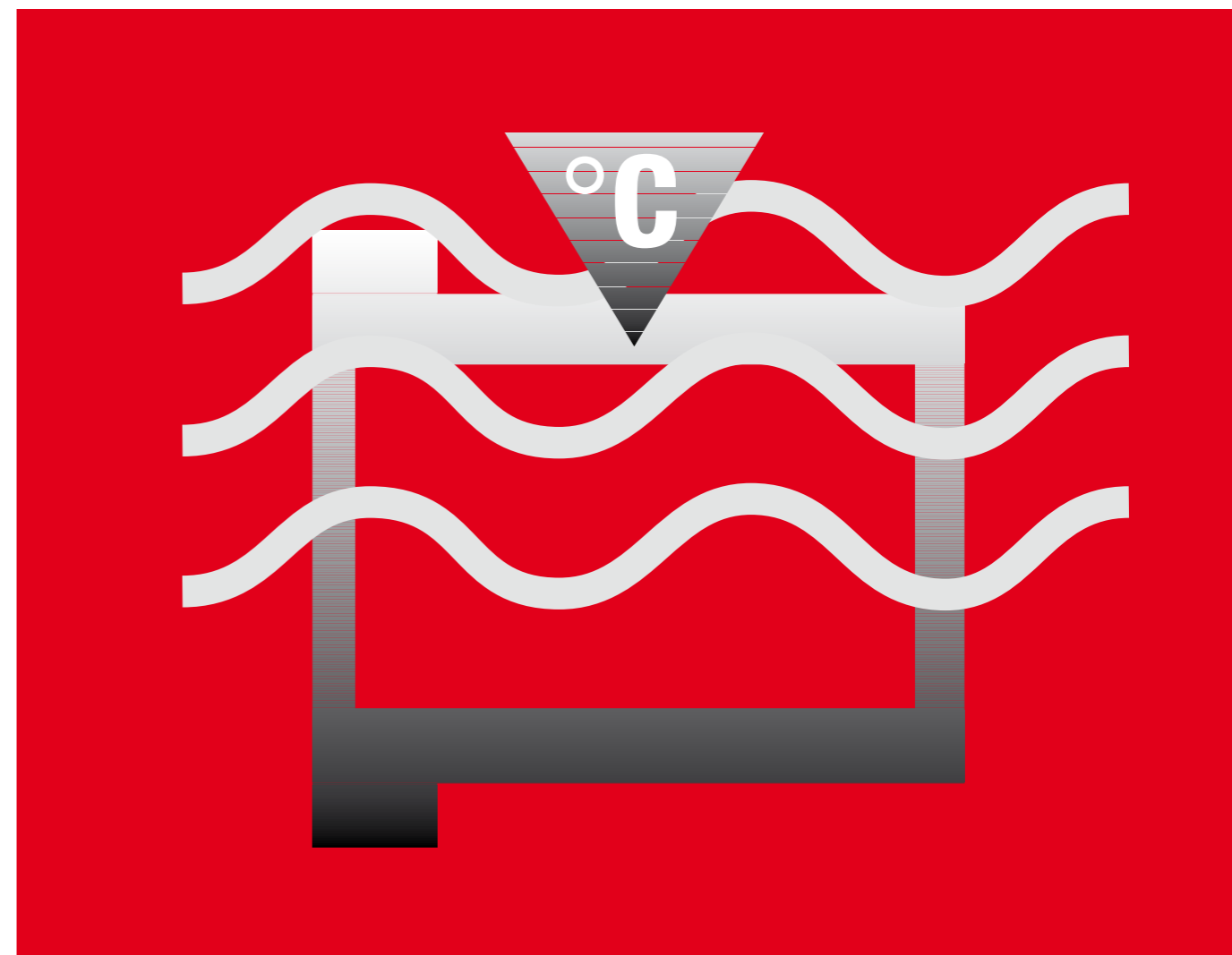
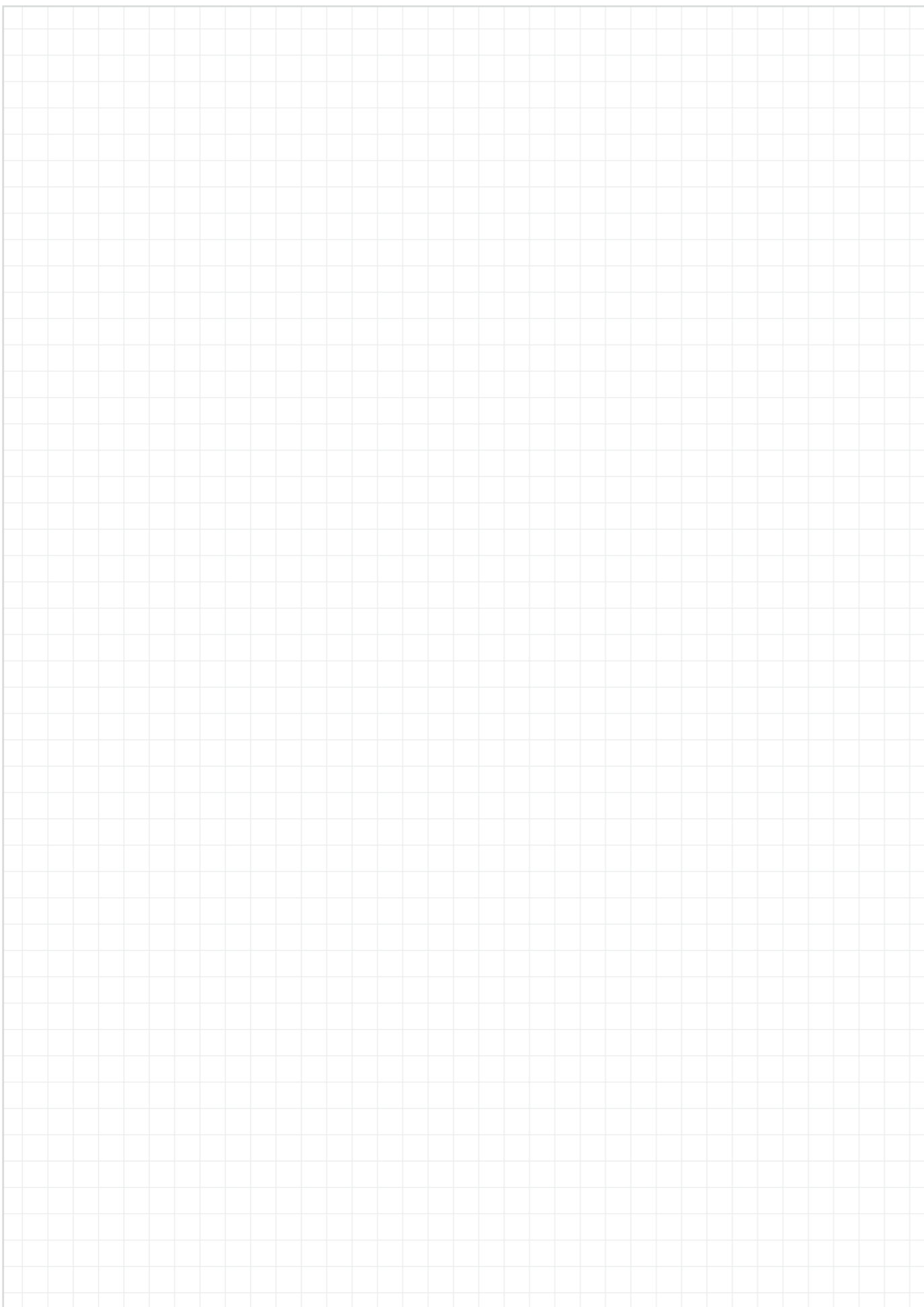
### **i** Don't find your size?

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.

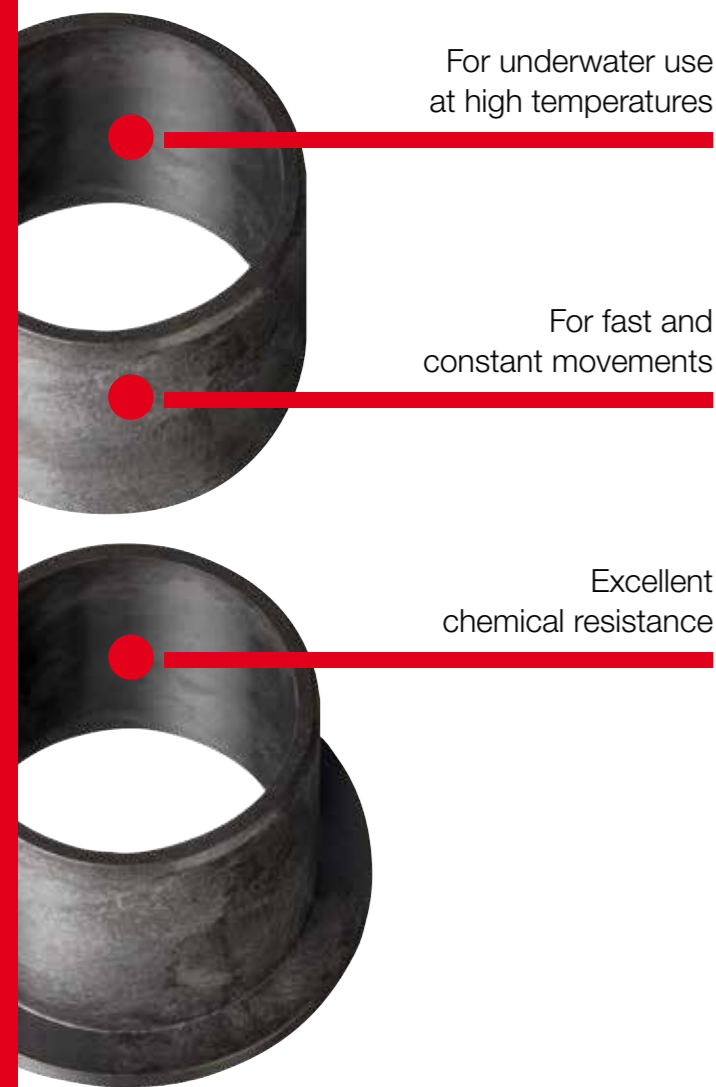
► [www.igus.eu/iglidur-specialbearings](http://www.igus.eu/iglidur-specialbearings)



## For hot liquids – iglidur® UW500

- For underwater use at high temperatures
- For fast and constant movements
- Lubrication and maintenance free





For underwater use at high temperatures

For fast and constant movements

Excellent chemical resistance

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 453
- When a cost-efficient underwater bearing is required for rare operations  
▶ iglidur® H, page 283
- When a cost-effective universal bearing is required  
▶ iglidur® G, page 83



### Available on request

Detailed information about delivery time online.



max. +250 °C  
min. -100 °C



### Order-related



Order-related



### Typical application areas

- Plant engineering
- Pumps
- Chemical industry

## Material properties table

General properties	Unit	iglidur® UW500	Testing method
Density	g/cm <sup>3</sup>	1.49	
Colour		black	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
Max. water absorption <sup>6)</sup>	% weight	0.5	
Coefficient of sliding friction, dynamic against steel	μ	0.20–0.36	
pv value, max. (dry)	MPa · m/s	0.35	
Mechanical properties			
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
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	0.60	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K <sup>-1</sup> · 10 <sup>-5</sup>	4	DIN 53752
Electrical properties <sup>5)</sup>			
Specific volume resistance	Ωcm	< 10 <sup>9</sup>	DIN IEC 93
Surface resistance	Ω	< 10 <sup>9</sup>	DIN 53482

<sup>5)</sup> The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact components.

<sup>6)</sup> 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

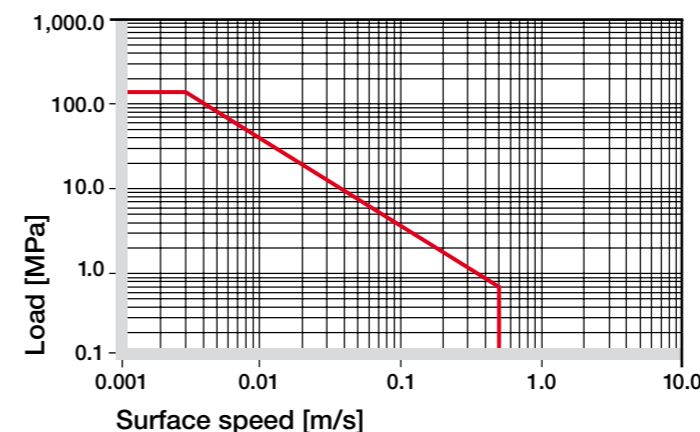


Diagram 01: Permissible pv values for iglidur® UW500 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

### Moisture absorption

The moisture absorption of iglidur® UW500 plain bearings in ambient conditions is below 0.1 % by weight. The maximum moisture absorption is 0.5 % by weight. iglidur® UW500 plain bearings can be used for underwater applications.

▶ Diagram, [www.igus.eu/uw500-moisture](http://www.igus.eu/uw500-moisture)

### Vacuum

Also in vacuum, iglidur® UW500 plain bearings can be used almost without restrictions.

Medium	Resistance
Alcohols	+
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 02: Chemical resistance

▶ Chemical table, page 1226

**Radiation resistance**

Plain bearings of iglidur® UW500 are resistant up to a radiation intensity of 1 · 10<sup>5</sup> Gy. They resist to hard gamma radiation (1,000 Mrad) and alpha or beta radiation (10,000 Mrad).

**UV resistance**

iglidur® UW500 bearings are permanently resistant to UV radiation.

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 sectors. 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. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

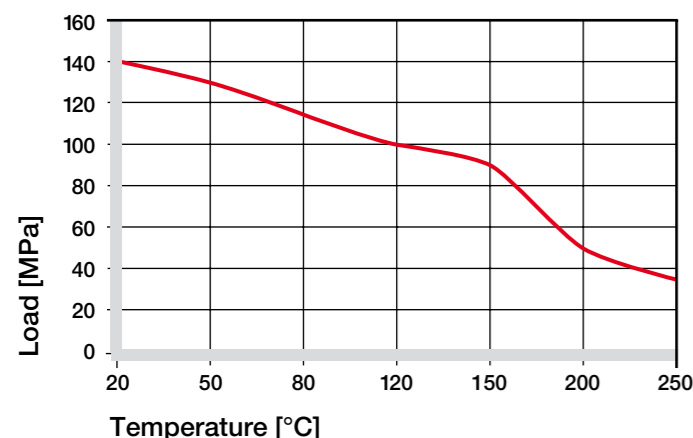


Diagram 02: Recommended maximum surface pressure of as a function of temperature (140 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® UW500 bearings at radial load.

► Surface pressure, page 63

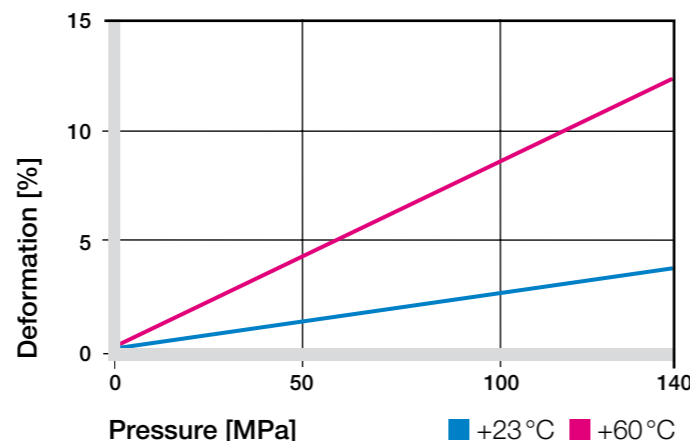


Diagram 03: Deformation under pressure and temperature

**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 1.5 m/s can be achieved.

► Surface speed, page 65

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	2
Short term	1.5	1.1	3

Table 03: Maximum surface speeds

**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. At temperatures over +150 °C an additional securing is required.

► Application temperatures, page 66

► Additional securing, page 67

**Friction and wear**

Diagrams 04 and 05 show the coefficient of friction of iglidur® UW500 bearings as function of speed and pressure. Friction and wear also depend to a high degree on the shaft surface. 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

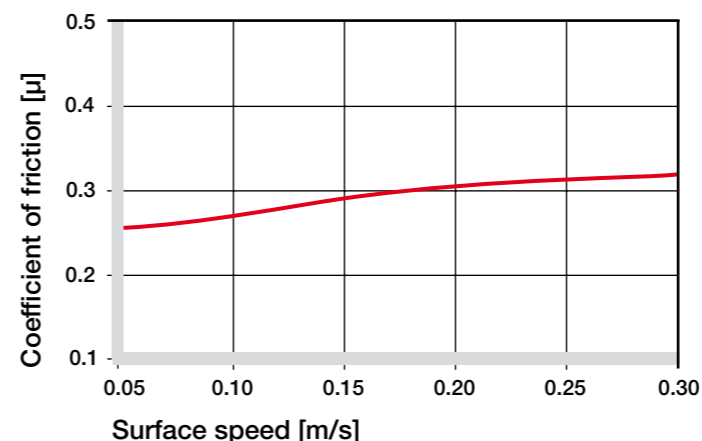


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

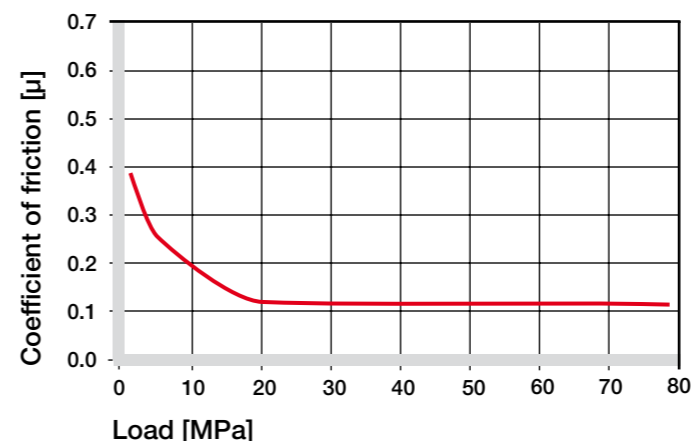


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

**Shaft materials**

Diagram 06 displays a summary of the results of tests with different shaft materials conducted with bearings made from iglidur® UW500.

► Shaft materials, page 71

iglidur® UW500	Dry	Greases	Oil	Water
C. o. f. μ	0.2–0.36	0.09	0.04	0.04

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

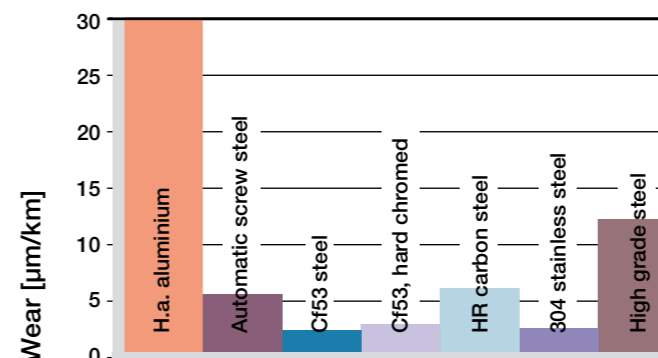


Diagram 07: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

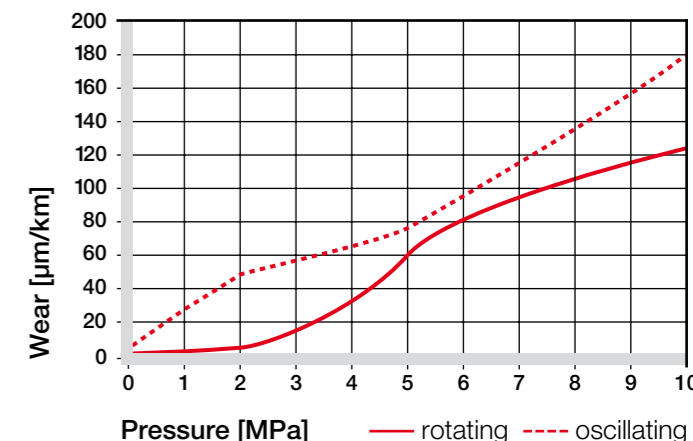


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

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

**Product range**

iglidur® UW500 plain bearings are manufactured to special order.