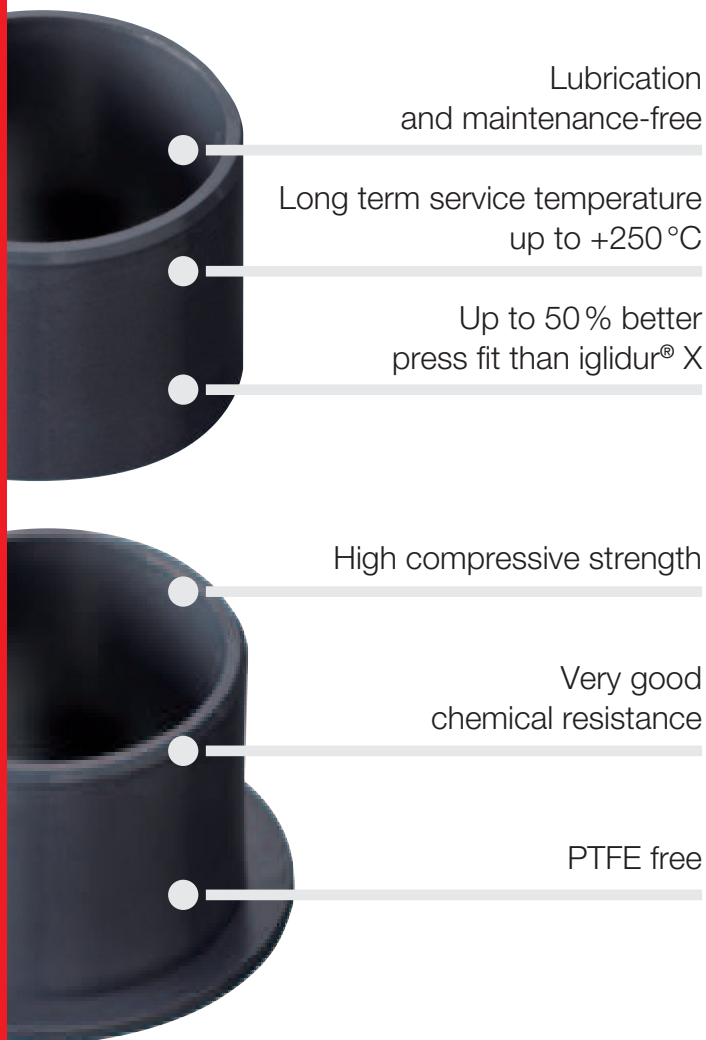


Runs up to six times longer than iglidur® X. Due to nano-technology, iglidur® X6 shows up to six times better performance than iglidur® X in many oscillating and rotating applications – even at temperatures over +100 °C.



When to use it?

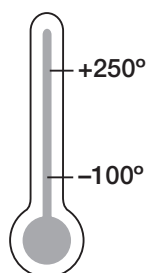
- If temperatures are higher than +150 °C
- When the wear performance of iglidur® X in oscillation and rotation is not sufficient.
- If the pressfit should be improved over iglidur® X
- If high media-resistance is required
- If you need a bearing which is free of PTFE



When not to use it?

- When you need a cost-effective universal bearing
 - ▶ **iglidur® G, page 61**
- If you need a bearing for underwater use
 - ▶ **iglidur® UW500, page 313**
 - ▶ **iglidur® H370, page 347**
- When a wear-resistant high temperature bearing for linear movements is needed.
 - ▶ **iglidur® Z, page 299**

Temperature



Product range

2 types
 Ø 3–40 mm
 more dimensions
 on request



iglidur® X6 | Application Examples



Typical sectors of industry and application areas

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

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

► www.igus.eu/eu/iglidur-applications



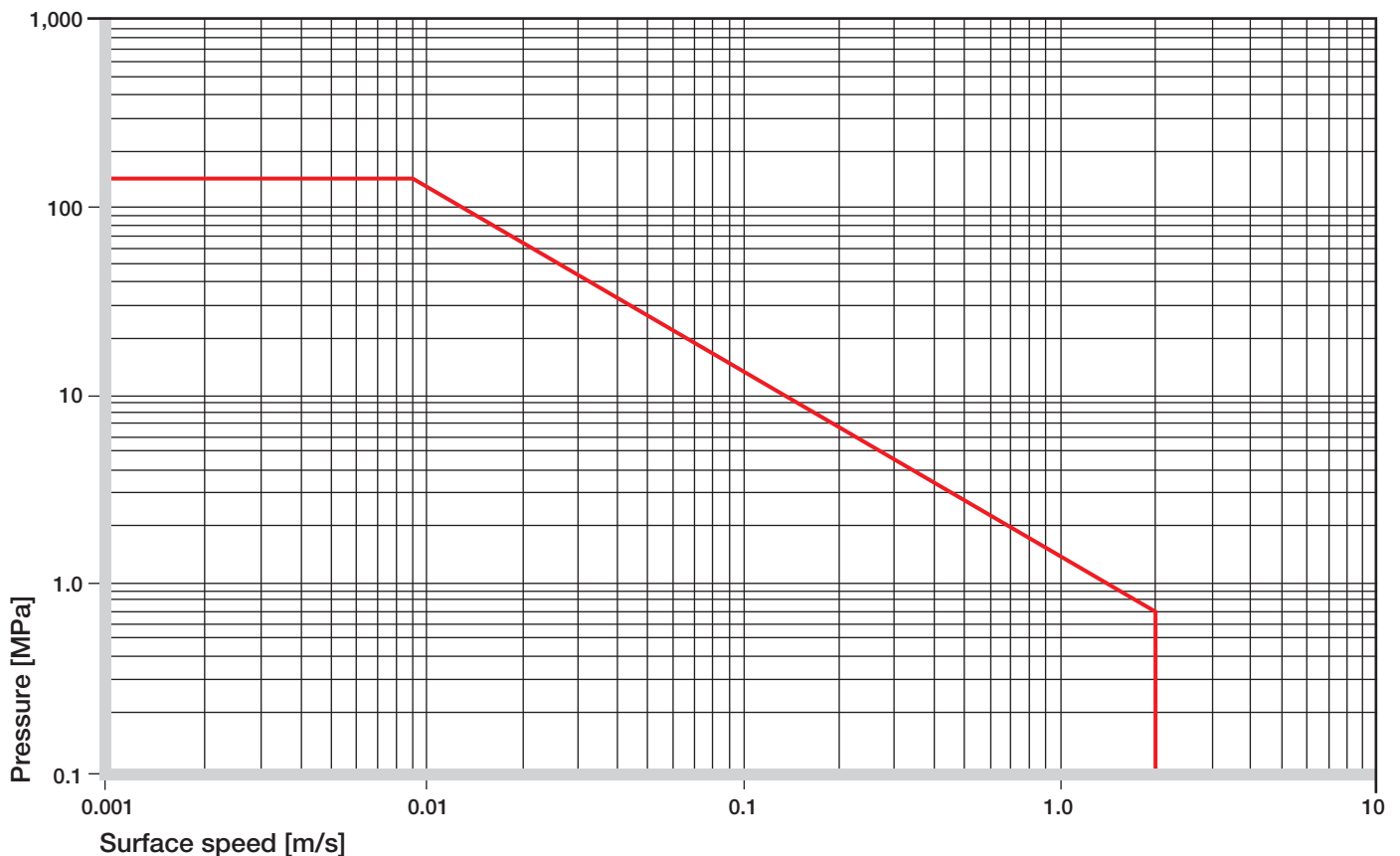
► www.igus.eu/pies



► www.igus.eu/baking-oven

Material data			
General properties	Unit	iglidur® X6	Testing method
Density	g/cm ³	1.53	
Colour		anthracite blue/grey	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
Max. moisture 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 ⁻¹ · 10 ⁻⁵	1	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	< 10 ⁵	DIN IEC 93
Surface resistance	Ω	< 10 ⁵	DIN 53482

Table 01: Material data

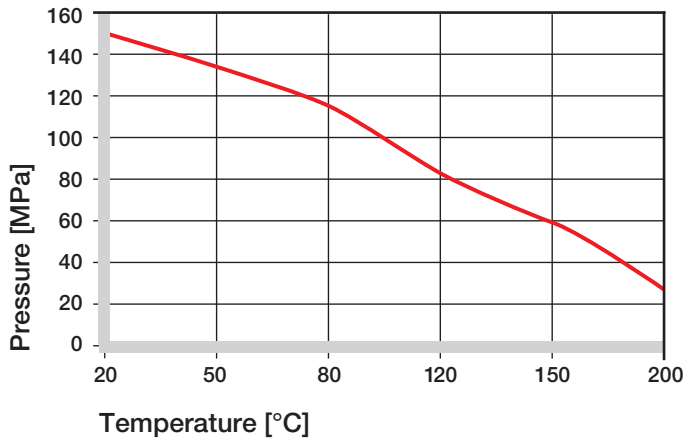


Graph 01: Permissible pv values for iglidur® X6 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® X6 | Technical Data

Mechanical Properties

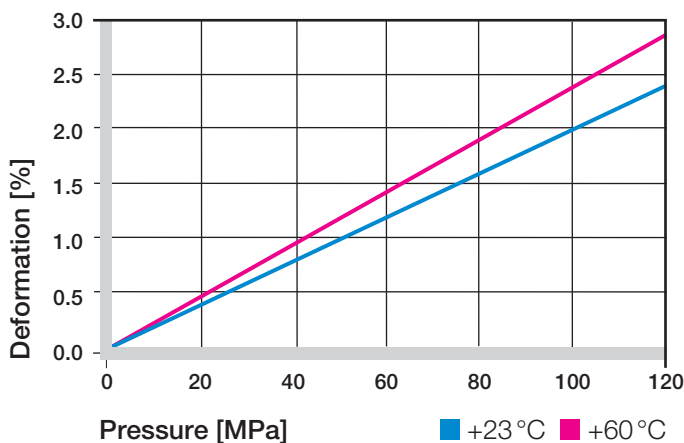
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® X6 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +250 °C the permissible surface pressure is almost 90 MPa.



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

Graph 03 shows the elastic deformation of iglidur® X6 during radial loading. At the recommended maximum surface pressure of 2 MPa the deformation is less than 100 %.

► Surface Pressure, page 43



Graph 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 45

m/s	Rotating	Oscillating	Linear
Continuous	1.5	1.1	5
Short Term	3.5	2.5	10

Table 02: Maximum running speed

Temperatures

The ambient temperatures greatly influence the wear performance of plastic bearings. The temperature resistance of iglidur® X6 is among the highest in the iglidur® range. In many tests it has shown a six times higher wear performance compared to the established high-temperature specialist iglidur® X. Also, the temperature induced relaxation of the bearing in the housing bore is much lower so that iglidur X6 required additional axial securing only above +165 °C.

► Application Temperatures, page 46

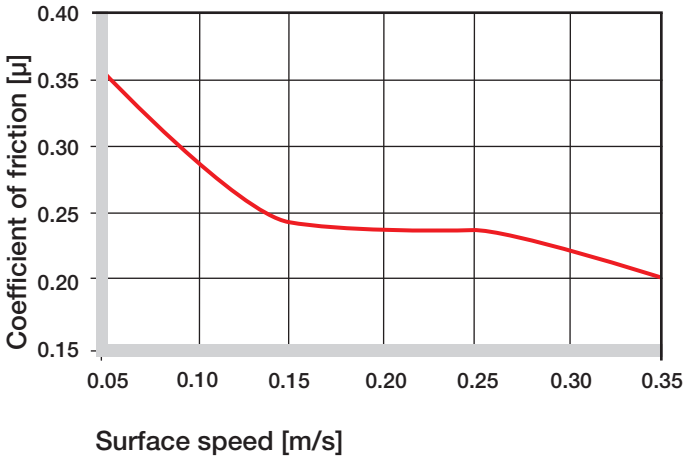
iglidur® X6	Application temperature
Minimum	-100 °C
Max. long term	+250 °C
Max. short term	+315 °C
Add. securing is required from	+165 °C

Table 03: Temperature limits

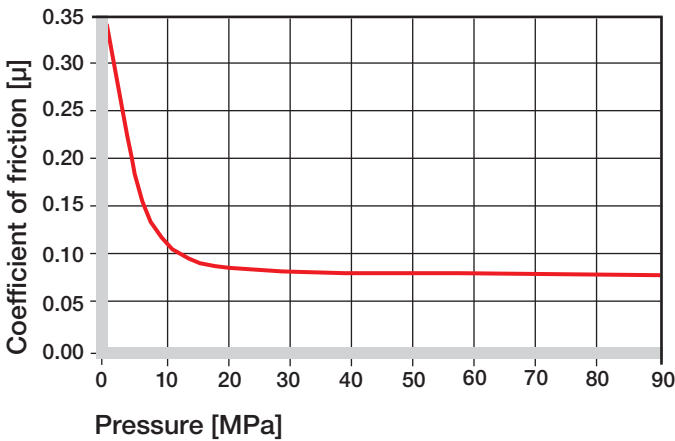
Friction and Wear

Similar to wear resistance, the coefficient of friction μ 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 (Graph. 04 and 05).

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



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



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

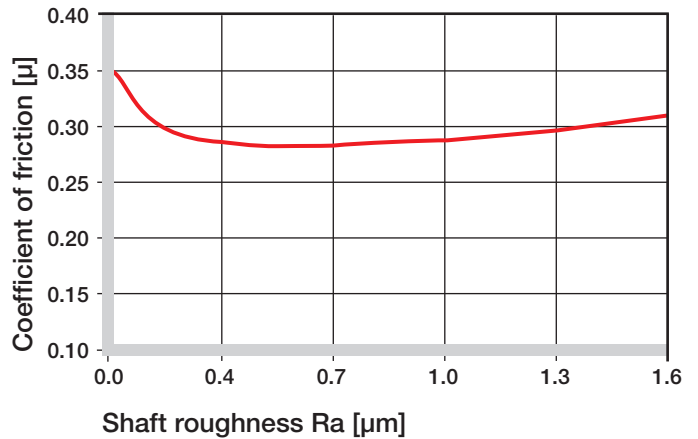
Shaft Materials

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 $Ra = 0.4\text{--}0.7 \mu\text{m}$ (Graph 06). Graphs 07 and 09 show results of testing different shaft materials with plain bearings made of iglidur® X6. In Graph 07 it shows that iglidur® X6 can be combined with various shaft materials.

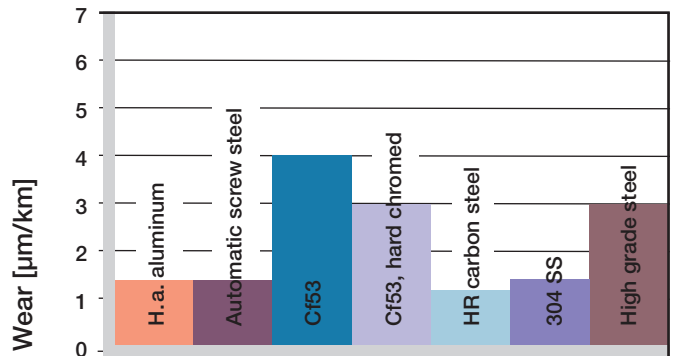
The best performance is achieved with the plain shaft materials free cutting steel and plain steel 1.0037. At higher loads, we recommend harder steel qualities. Non-hardened steel shafts can be worn by the bearing at pressures over 2 MPa.

The wear database shows that iglidur® X6 is more suitable for rotating than for oscillating applications. If the shaft material you plan on using is not shown in these test results, please contact us.

- ▶ Shaft Materials, **page 51**

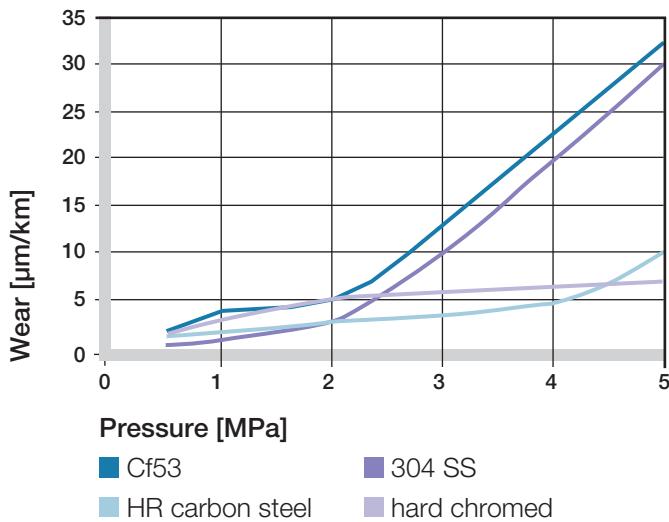


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

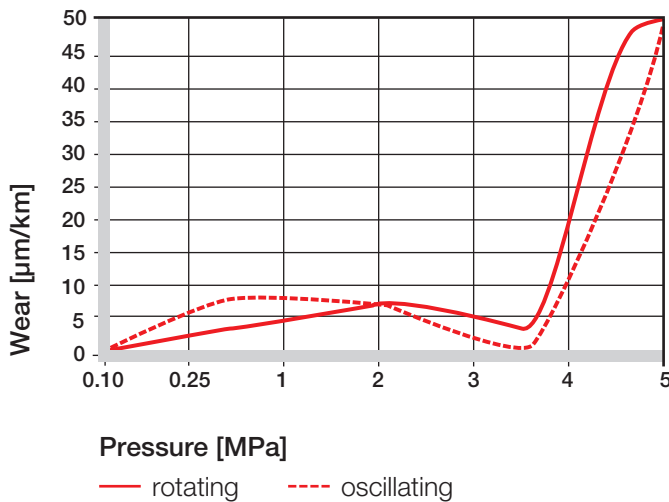


Graph 07: Wear, rotating with different shaft materials, pressure $p = 1$ MPa, $v = 0.3$ m/s

iglidur® X6 | Technical Data



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



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

iglidur® X6	Dry	Greases	Oil	Water
C. o. f. μ	0.08–0.15	0.09	0.04	0.04

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

Additional Properties

Chemical Resistance

iglidur® X6 bearings have almost universal chemical resistance. They are affected only by concentrated nitric acid and sulphuric acid. Due to the low water absorption, the material can be used in humid environment without problems. iglidur® X6 is resistant to most typical detergents used in the food and packaging industries.

► Chemical Table, page 974

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

+ resistant 0 conditionally resistant – not resistant

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

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of $2 \cdot 10^5$ Gy.

UV Resistance

Partly resistant against UV rays.

Vacuum

In a vacuum environment iglidur® X6 plain bearings can be used virtually without restrictions. Outgassing takes place to a very limited extent.

Electrical Properties

iglidur® X6 plain bearings are electrically insulating.

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

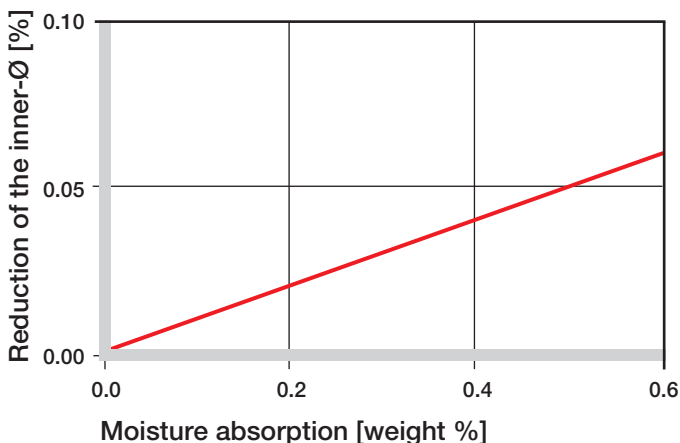
Moisture Absorption

The moisture absorption of iglidur® X6 plain bearings is approximately 0.1 % in the standard atmosphere. The saturation limit submerged in water is 0.5 %. These values are so low that the swelling only has to be considered in extreme applications.

Maximum moisture absorption

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

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

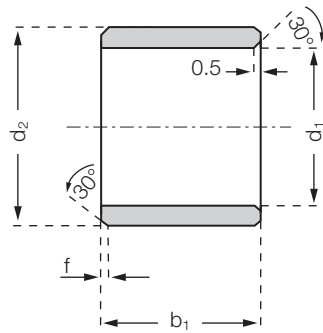
iglidur® X6 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

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

Sleeve bearing



Order key

X6SM-0304-03



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form S)

Material iglidur® X6

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

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

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

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	b1
X6SM-0304-03	3	+0.010 +0.058	4.5	3
X6SM-0507-05	5	+0.010 +0.058	7	5
X6SM-0608-06	6	+0.010 +0.058	8	6
X6SM-0810-10	8	+0.013 +0.071	10	10
X6SM-1012-10	10	+0.013 +0.071	12	10
X6SM-1214-12	12	+0.016 +0.086	14	12
X6SM-1618-15	16	+0.016 +0.086	18	15
X6SM-2023-20	20	+0.020 +0.104	23	20
X6SM-2528-30	25	+0.020 +0.104	28	30
X6SM-3034-30	30	+0.020 +0.104	34	30
X6SM-3539-40	35	+0.025 +0.125	39	40
X6SM-4044-40	40	+0.025 +0.125	44	40



delivery available
time from stock

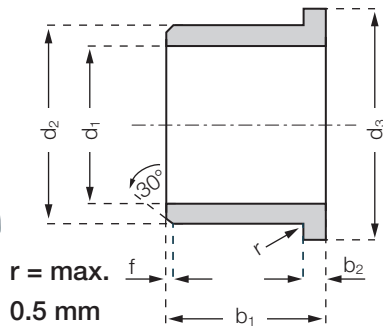


prices price list online
www.igus.eu/eu/x6



order part number
example X6SM-0304-03

Flange bearing



Order key

X6FM-0304-05



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® X6

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

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

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	d3	b1	b2
X6FM-0304-05	3	+0.010 +0.058	4.5	7.5	5	0.75
X6FM-0507-05	5	+0.010 +0.058	7	11	5	1
X6FM-0608-06	6	+0.010 +0.058	8	12	6	1
X6FM-0810-10	8	+0.013 +0.071	10	15	10	1
X6FM-1012-10	10	+0.013 +0.071	12	18	10	1
X6FM-1214-12	12	+0.016 +0.086	14	20	12	1
X6FM-1618-17	16	+0.016 +0.086	18	24	17	1
X6FM-2023-21	20	+0.020 +0.104	23	30	21.5	1.5
X6FM-2528-21	25	+0.020 +0.104	28	35	21.5	1.5
X6FM-3034-40	30	+0.020 +0.104	34	42	40	2
X6FM-3539-26	35	+0.025 +0.125	39	47	26	2
X6FM-4044-40	40	+0.025 +0.125	44	52	40	2

delivery time available from stock

prices price list online www.igus.eu/eu/x6

order part number example X6FM-0304-05