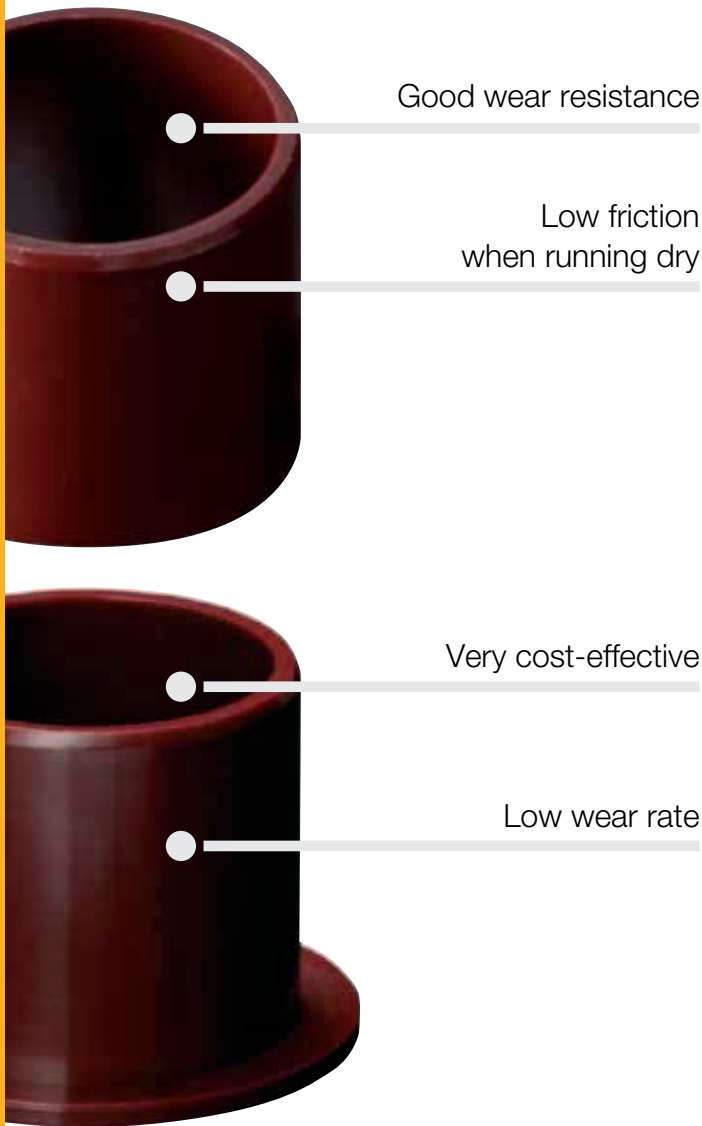


iglidur® R

Low-cost material, low wear. Low-cost-material with low coefficients of friction and good wear resistance at low to medium loads.



When to use it?

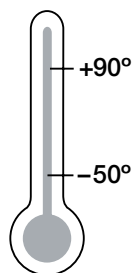
- If high wear resistance at low load is required
- If you are looking for a very cost-effective bearing
- If low friction at dry operation is required
- If edge loads occur
- If you are looking for low water absorption
- If PTFE and silicone are prohibited in the application



When not to use it?

- If high pressure occurs
 - ▶ iglidur® G, page 61
- If permanent temperatures exceed +90 °C
 - ▶ iglidur® G, page 61
 - ▶ iglidur® P, page 185
- If best wear resistance is required
 - ▶ iglidur® J, page 89

Temperature

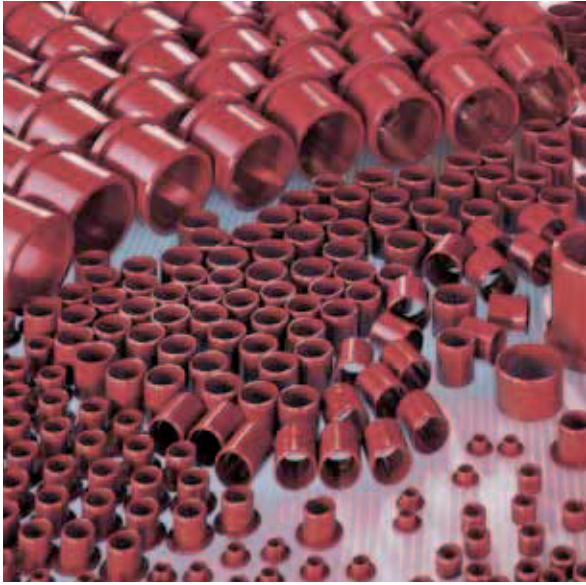


Product range

2 types
 Ø 6–20 mm
 more dimensions
 on request



iglidur® R | Application Examples



Typical sectors of industry and application areas

- Sports and leisure ● Model making
- Automotive ● Mechatronics
- Camera technology etc.

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

► www.igus.eu/eu/iglidur-applications



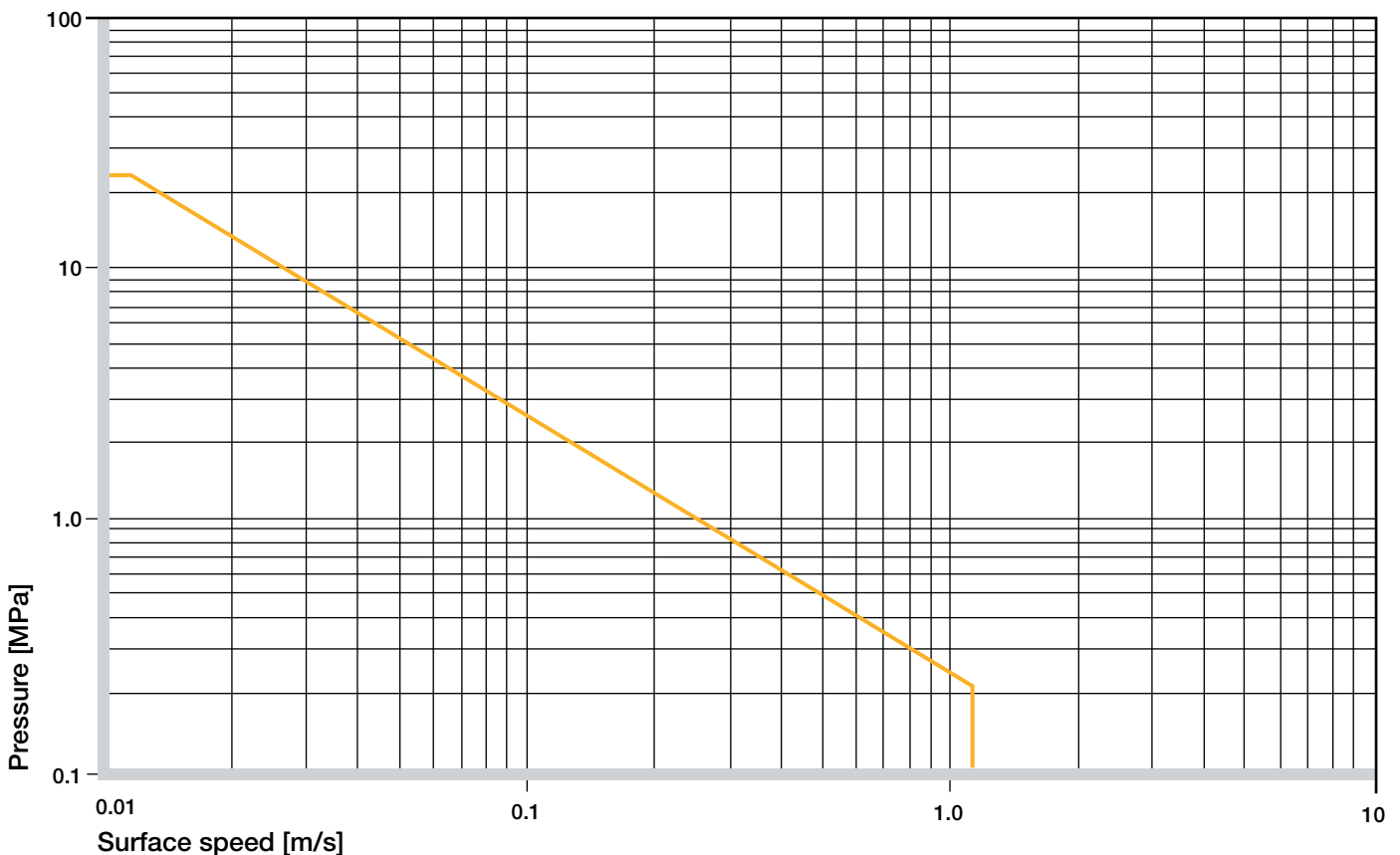
► www.igus.eu/rickshaw



► www.igus.eu/office-chair

Material data			
General properties	Unit	iglidur® R	Testing method
Density	g/cm ³	1.39	
Colour		dark red	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	1.1	
Coefficient of sliding friction, dynamic against steel	μ	0.09–0.25	
pv value, max. (dry)	MPa · m/s	0.27	
Mechanical properties			
Modulus of elasticity	MPa	1,950	DIN 53457
Tensile strength at +20 °C	MPa	70	DIN 53452
Compressive strength	MPa	68	
Max. recommended surface pressure (+20 °C)	MPa	23	
Shore D hardness		77	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+110	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	11	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material data

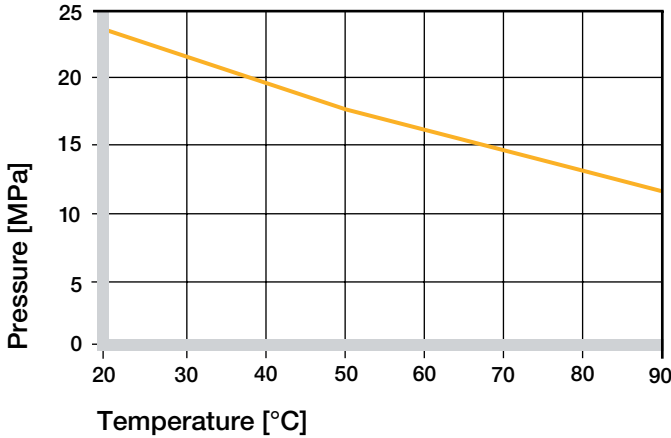


Graph 01: Permissible pv values for iglidur® R with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® R | Technical Data

Mechanical Properties

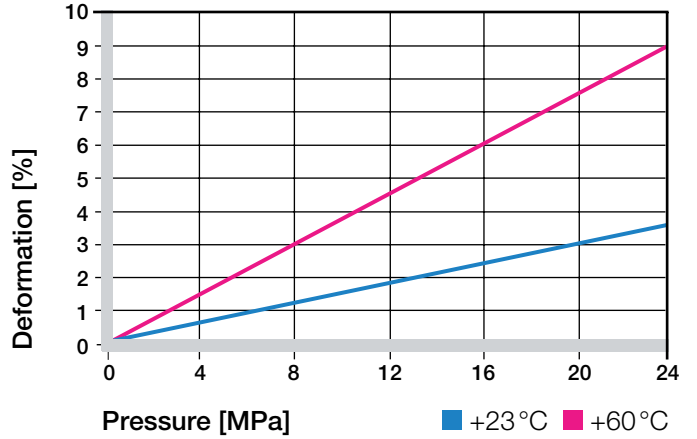
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® R plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90° C the permissible surface pressure is around 11 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (23 MPa at +20 °C)

The development of the iglidur® R as a bearing material focused on high performance and very low cost. Especially in the dry operation low coefficients of friction and wear were to be achieved. Bearings made of iglidur® R are selectively supported by a combination of solid lubricants. The PTFE- and silicon-free material achieves extremely low coefficients of friction in dry operation and runs largely free of stick-slip effects. iglidur® R plain bearings in the first place were developed for low to average radial loads – Graph 03 shows the elastic deformation of iglidur® R during radial loading. At the maximum permissible load of 23 MPa, the deformation is approximately 3%. Plastic deformation is not detectable up to this value. However, it is also dependent on the service time.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® R bearings are suitable for high surface speeds. Speeds of up to 10 m/s are permitted in linear motions! Here too the specified maximum values can be achieved only with minimum pressure loads. The specified values show the speed at which due to friction an increase in temperature up to the long-term permitted value can occur.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	3.5
Short term	1.2	1	5

Table 02: Maximum running speed

Temperatures

The short term maximum temperature is +110 °C, the long term maximum temperature is +90 °C. With increasing temperatures, the compressive strength of iglidur® R bearings decreases. Graph 02 clarifies this relationship. The ambient temperature in the application also has an impact on the wear of the bearing, an increase in temperature will result in an increase in wear.

► Application Temperatures, [page 46](#)

iglidur® R	Application temperature
minimum	-50 °C
Max. long term	+90 °C
Max. short term	+110 °C
Add. securing is required	+50 °C

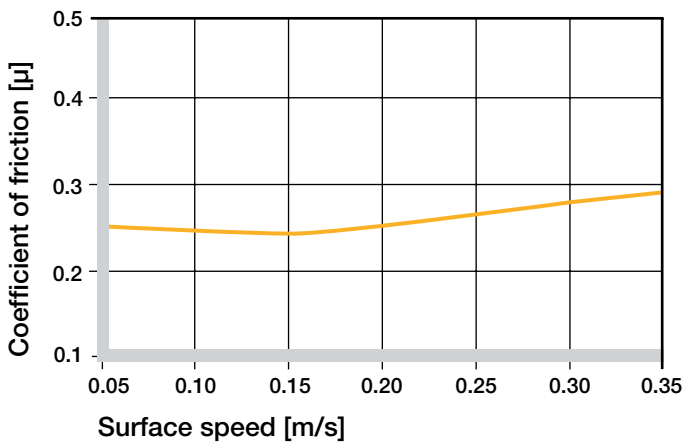
Table 03: Temperature limits

Friction and Wear

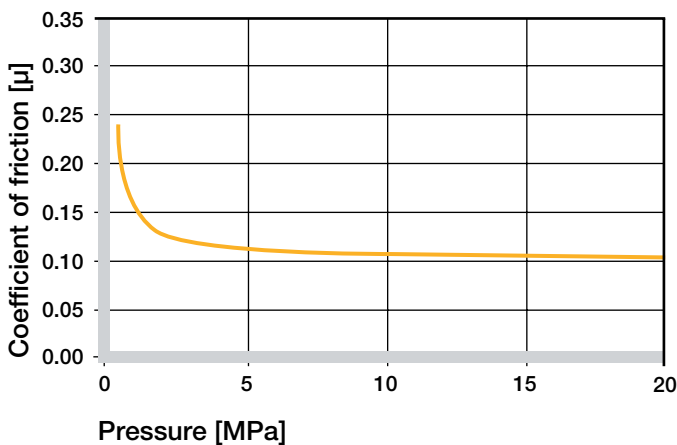
The coefficient of friction decreases like the wear resistance with increasing load. In contrast, a higher surface speed has less impact on the coefficient of friction of an iglidur® R bearing. iglidur® R is suitable for applications in which high pv values are given mainly through the high surface speed and not as much through the surface pressure. The coefficient of friction of iglidur® R plain bearings depends greatly on the shaft roughness.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



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



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

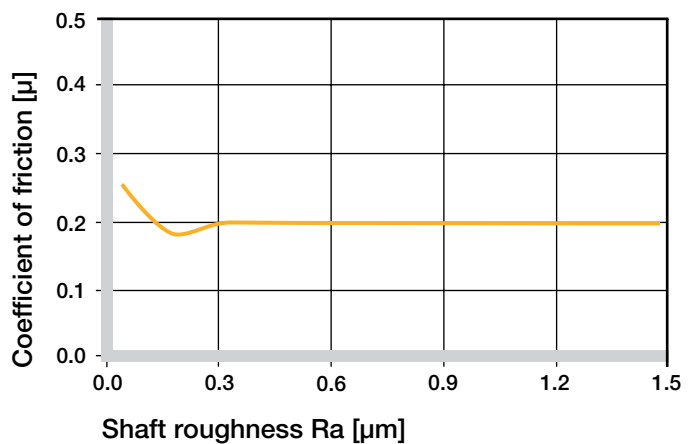
Shaft Materials

Graph 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® R. At 0.3 m/s and 1,0 MPa, the X90 shaft is the best material.

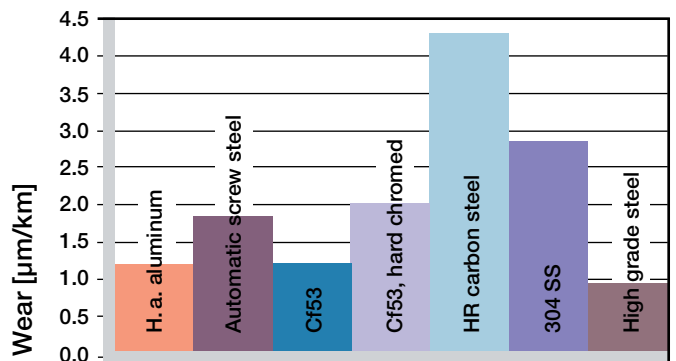
With increasing loads the iglidur® R bearings feature the best wear behavior with Cf53 and V2A shafts. In oscillating applications, the hard chromed shaft proves to be the ideal material.

If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft Materials, **page 51**

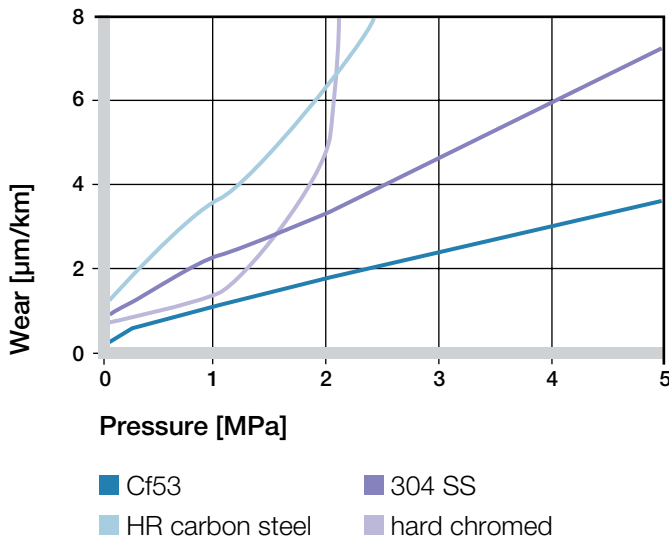


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

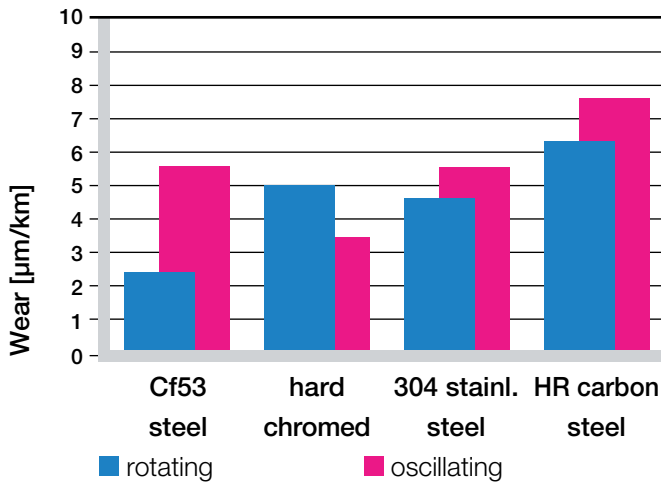


Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$

iglidur® R | Technical Data



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



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® R	Dry	Greases	Oil	Water
C. o. f. μ	0.09–0.25	0.09	0.04	0.04

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

Additional Properties

Chemical Resistance

iglidur® R bearings can be used in various environmental conditions and in contact with numerous chemicals. Table 05 gives an overview of the chemical resistance of iglidur® R bearings at room temperature.

► Chemical Table, page 974

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

+ resistant 0 conditionally resistant – not resistant

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

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® R are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® R plain bearings are resistant to UV radiation, but the tribological properties are reduced by permanent exposure.

Vacuum

In a vacuum environment, iglidur® R plain bearings release gases. It is only possible to use iglidur® R in a vacuum to a limited extent.

Electrical Properties

iglidur® R plain bearings are electrically insulating.

Volume resistance	> 10^{12} Ωcm
Surface resistance	> 10^{12} Ω 10

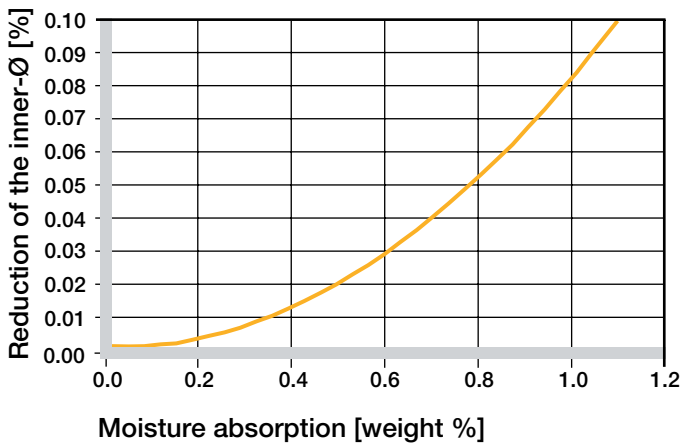
Moisture Absorption

The moisture absorption of iglidur® R plain bearings is approximately 0.2% in standard atmosphere. The saturation limit in water is 1%. This low moisture absorption allows for design in wet environments.

Maximum moisture absorption

At +23 °C/50 % r.h.	0.2 % weight
Max. moisture absorption	1.1 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® R 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.

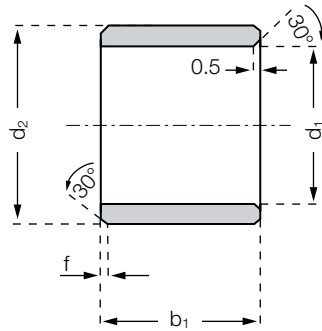
► Testing Methods, page 55

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

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

iglidur® R | Product Range

Sleeve bearing



Order key

RSM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material iglidur® R

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	d1-Tolerance*	d2	b1 h13
RSM-0608-06	6	+0.020 +0.068	8	6
RSM-0810-10	8	+0.025 +0.083	10	10
RSM-1012-05	10	+0.025 +0.083	12	5
RSM-1012-10	10	+0.025 +0.083	12	10
RSM-1012-15	10	+0.025 +0.083	12	15
RSM-1214-12	12	+0.032 +0.102	14	12
RSM-1416-15	14	+0.032 +0.102	16	15
RSM-1618-15	16	+0.032 +0.102	18	15
RSM-2023-15	20	+0.040 +0.124	23	15
RSM-2023-20	20	+0.040 +0.124	23	20
RSM-3034-25	30	+0.040 +0.124	34	25
RSM-3539-30	35	+0.050 +0.150	39	30

* after pressfit. Testing methods ► page 55



delivery available
time from stock

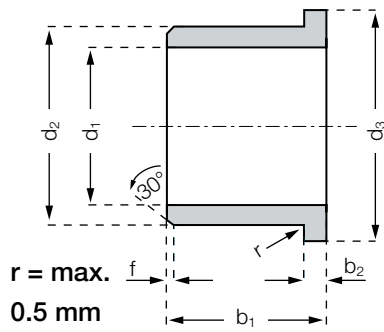


prices price list online
www.igus.eu/eu/r



order part number
example RSM-0608-06

Flange bearing



Order key

RFM-0608-06



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

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	d1-Tolerance*	d2	d3	b1 h13	b2
RFM-0608-06	6	+0.020 +0.068	8	12	6	1
RFM-0810-05	8	+0.025 +0.083	10	15	5	1
RFM-0810-10	8	+0.025 +0.083	10	15	10	1
RFM-1012-10	10	+0.025 +0.083	12	18	10	1
RFM-1012-18	10	+0.025 +0.083	12	18	18	1
RFM-1214-12	12	+0.032 +0.102	14	20	12	1
RFM-1416-17	14	+0.032 +0.102	16	22	17	1
RFM-1618-17	16	+0.032 +0.102	18	24	17	1
RFM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5

* after pressfit. Testing methods ► page 55



delivery available
time from stock



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



order part number
example RFM-0608-06