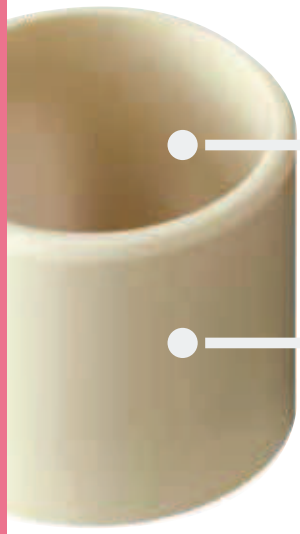
PFOA-free – iglidur® J2

- Standard range from stock
- Good mechanical properties, robust
- Cost-effective
- Good resistance to media
- Lubricant- and maintenance-free

New in this catalog!

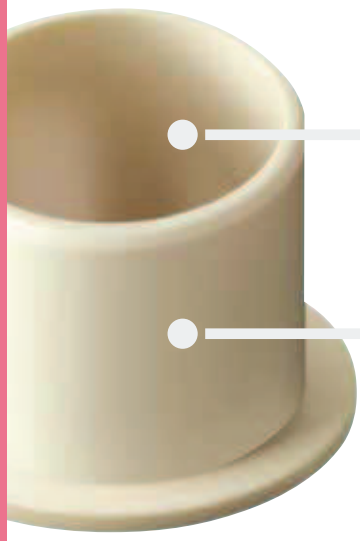
iglidur® J2

Environmentally friendly. The growing demand for PFOA-free iglidur® materials* is met by igus® with an ongoing review of all iglidur® materials – the list of already PFOA-free iglidur® materials is thus getting continuously longer – and a new iglidur® material: iglidur® J2.



Good mechanical properties, robust

Cost-effective



Good resistance to media

Lubricant- and maintenance-free

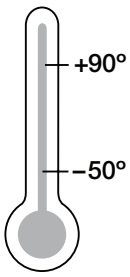
When to use it?

- When low moisture absorption and good chemical resistance is required for primarily static load
- When a low-priced bearing is required for use in a wet environment with low PxV values
- When there is a basic lubrication of the bearing

When not to use?

- When a highly wear-resistant bearing is required for continuous operation in dry running
  ▶ iglidur® J3, page 247
- When low moisture absorption and media resistance play a minor role
  ▶ iglidur® M250, page 127
- When a resistance to high temperatures and chemicals is required
  ▶ iglidur® X, page 173

Temperature



Product range

2 types
Ø 6–20 mm
more dimensions
on request

*iglidur® material recipes without PFOA

iglidur® J2 | Technical Data

Material properties table			
General properties	**Unit**	**iglidur® J2**	**Testing method**
Density	**g/cm³**	1.44	
Colour		light yellow	
Max. moisture absorption at +23 °C/50 % r.h.	**% weight**	0.2	DIN 53495
Max. water absorption	**% weight**	1.3	
Coefficient of sliding friction, dynamic against steel	**μ**	0.11–0.27	
pv value, max. (dry)	**MPa · m/s**	0.23	
Mechanical properties			
Modulus of elasticity	**MPa**	3,605	DIN 53457
Tensile strength at +20 °C	**MPa**	101	DIN 53452
Compressive strength	**MPa**	77	
Max. recommended surface pressure (+20 °C)	**MPa**	46	
Shore D hardness		n.b.	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)	**$K^{-1} \cdot 10^{-5}$**	7	DIN 53752
Electrical properties			
Specific volume resistance	**Ωcm**	> 10^{13}	DIN IEC 93
Surface resistance	**Ω**	> 10^{12}	DIN 53482

Table 01: Material properties table

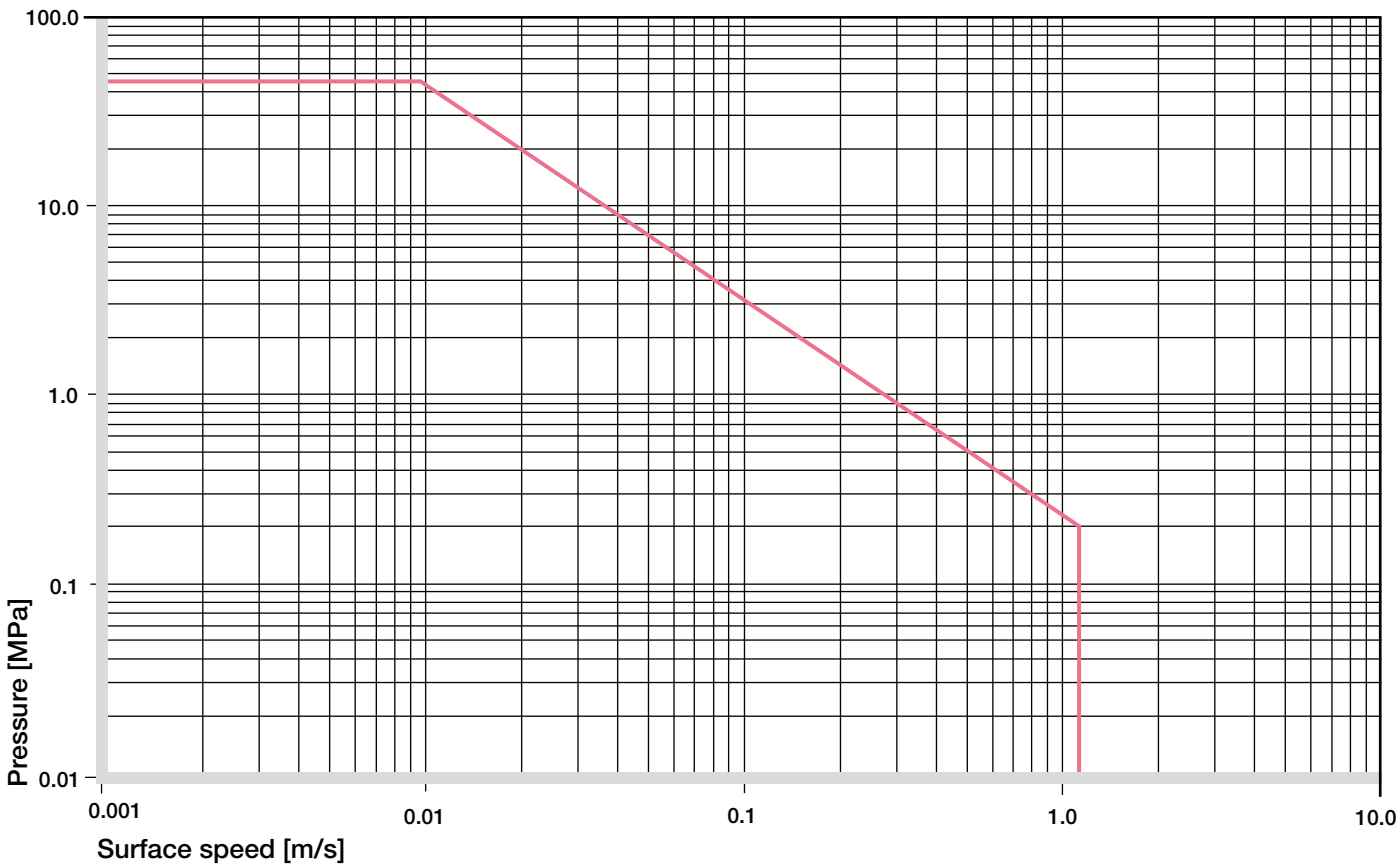


Diagram 01: Permissible pv values for iglidur® J2 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® J2 | Technical Data

iglidur® J2 is directly comparable with our classic iglidur® J in terms of the general chemical and thermal properties. Thereby the iglidur® J2 is superior to iglidur® J with respect to the mechanical properties, such as maximum recommended surface pressure. However, one has to cut back on the wear resistance in dry running.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® J2 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90° C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

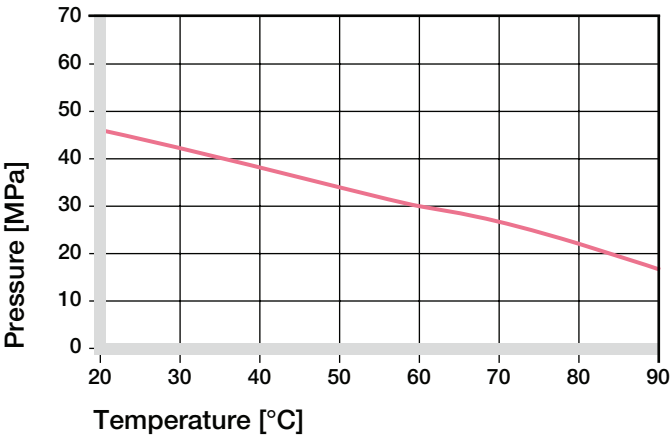


Diagram 02: Recommended maximum surface pressure as a function of temperature (46 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® J2 at radial loads. At the maximum recommended surface pressure of 46 MPa at room temperature, the deformation is less than 3 %. A possible deformation could be, among others, dependent on the duty cycle of the load.

▶ Surface Pressure, **page 63**

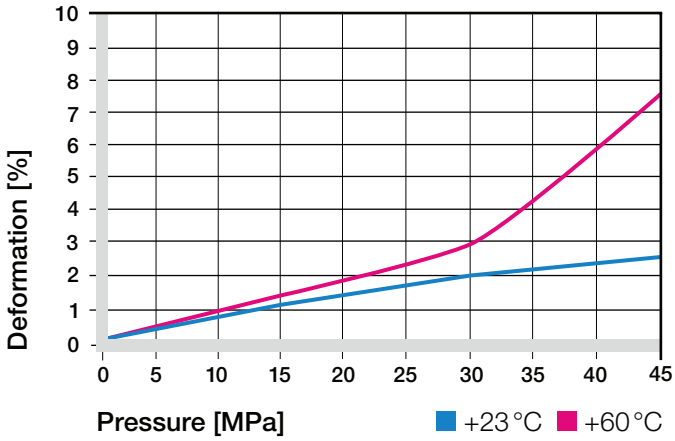


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J2 is mainly suitable for low speeds in dry running, but the specified values shown in table 02 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	0.8	0.7	3
Short term	1.9	1.1	5

Table 02: Maximum running speed

Temperatures

iglidur® J2 plain bearings can be used at temperatures from –50 °C up to +90 °C. The short term maximum temperature is +110 °C. The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +90 °C.

▶ Application Temperatures, **page 66**

iglidur® J2	Application temperature
Minimum	–50 °C
Max. long term	+90 °C
Max. short term	+110 °C
Add. securing is required from	+60 °C

Table 03: Temperature limits

Friction and Wear

Coefficient of friction and wear resistance are dependent on the application parameters. The coefficient of friction reaches the optimum at a gliding speed of 0.4 m/s and decreases remarkably strongly with increasing load, especially up to 10 MPa. The influence of the surface finish of the shaft is also more pronounced than in other iglidur® materials (Diagram 06).

▶ Coefficients of Friction and Surfaces, **page 68**
▶ Wear Resistance, **page 69**

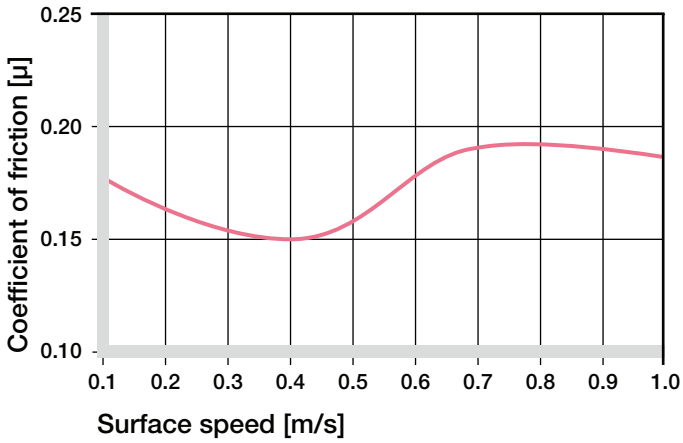


Diagram 04: Coefficient of friction as a function of the running speed, p = 1.0 MPa

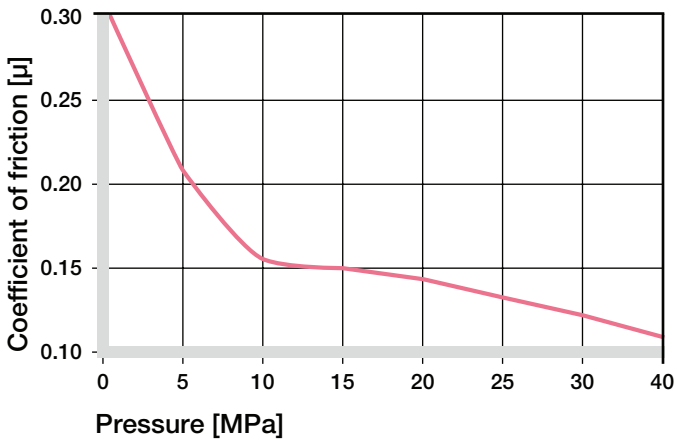


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

Friction and wear are also dependent, to a large extent, on the shaft material. Very smooth shafts increase both the coefficient of friction and the wear of the bearings.
Diagram 07 to 08 show a summary of the results of tests with different shaft materials. Diagram 07 shows that iglidur® J2 delivers good wear values especially with cutting steel in rotation at 1 MPa. In the dry run, the wear values are sometimes significantly higher on other shafts.
Unlike many other iglidur® materials, the wear rate in pivoting is slightly higher compared to the rate in rotation with otherwise identical parameters (Diagram 08).

▶ Shaft Materials, **page 71**

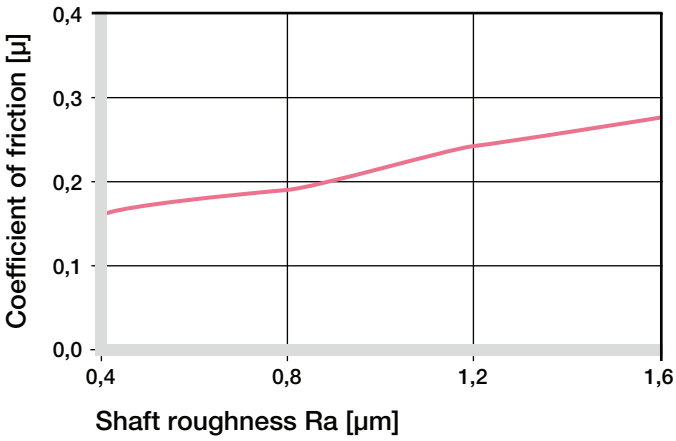


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

iglidur® J2 | Technical Data

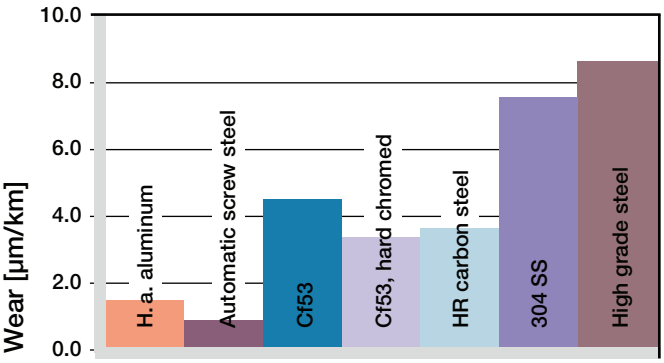


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

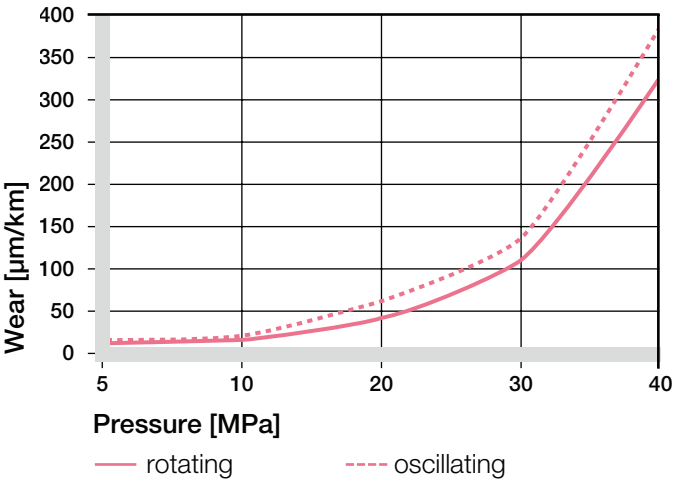


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® J2	Dry	Greases	Oil	Water
C. o. f. µ	0.11–0.27	0.08	0.07	0.04

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

Additional Properties

Chemical Resistance

iglidur® J2 plain bearings are resistant to diluted alkaline and very weak acids, as well as fuels and all types of lubricants. The low moisture absorption also permits use in wet or damp environments.
Plain bearings made of iglidur® J2 are resistant to common cleaning agents used in the food industry.

▶ Chemical Table, **page 1258**

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® J2 are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® J2 plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

Vacuum

In vacuum applications, any absorbed moisture content is degassed. For this reason only dehumidified iglidur® J2 bearings are suitable for use in a vacuum.

iglidur® J2 | Technical Data

Electrical Properties

iglidur® J2 plain bearings are electrically insulating.

Volume resistance	> 10^{13} Ωcm
Surface resistance	> 10^{12} Ω

Moisture Absorption

The moisture absorption of iglidur® J2 plain bearings is approximately 0.2 % in the standard atmosphere. The saturation limit submerged in water is 1.3 %. These values are so low that design changes due to absorption are only necessary in extreme cases.

Maximum moisture absorption	
At +23 °C/50 % r.h.	0.2 % weight
Max. water absorption	1.3 % weight

Table 06: Moisture absorption

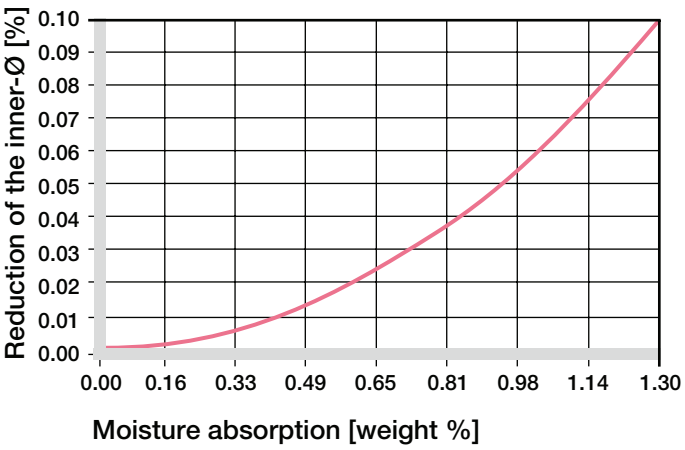


Diagram 09: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® J2 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 E10 tolerances. In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

▶ Testing Methods, **page 75**

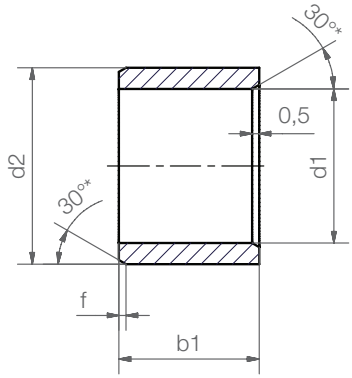
Diameter d1 [mm]	Shaft h9 [mm]	iglidur® J2 E10 [mm]	Housing H7 [mm]
up to 3	0–0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0–0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0–0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0–0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0–0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0–0.062	+0.050 +0.150	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

New in this catalog!

iglidur® J2 | Product Range

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

* 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

Order key

J2SM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® J2

Dimensions [mm]

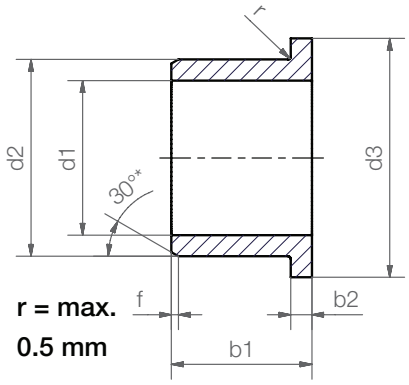
Part number		d1	d1-Tolerance*	d2	b1 h13
J2SM-0608-06	New!	6.0	+0.020 +0.068	8.0	6.0
J2SM-0810-10	New!	8.0	+0.025 +0.083	10.0	10.0
J2SM-1012-10	New!	10.0	+0.025 +0.083	12.0	10.0
J2SM-1214-12	New!	12.0	+0.032 +0.102	14.0	12.0
J2SM-1618-15	New!	16.0	+0.032 +0.102	18.0	15.0
J2SM-2023-20	New!	20.0	+0.040 +0.124	23.0	20.0
J2SM-2528-20	New!	25.0	+0.040 +0.124	28.0	20.0

* after pressfit. Testing methods ▶ page 75

delivery time from stock

prices price list online
www.igus.eu/eu/j2

Flange bearing



r = max. 0.5 mm

Dimensions according to ISO 3547-1 and special dimensions
* 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

Order key

J2FM-0608-06

- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® J2

Dimensions [mm]

Part number		d1	d1-Tolerance*	d2	d3	b1	b2
					d13	h13	–0.14
J2FM-0608-06	New!	6.0	+0.020 +0.068	8.0	12.0	6.0	1.0
J2FM-0810-10	New!	8.0	+0.025 +0.083	10.0	15.0	10.0	1.0
J2FM-1012-10	New!	10.0	+0.025 +0.083	12.0	18.0	10.0	1.0
J2FM-1214-12	New!	12.0	+0.032 +0.102	14.0	20.0	12.0	1.0
J2FM-1618-17	New!	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
J2FM-2023-21	New!	20.0	+0.040 +0.124	23.0	30.0	21.5	1.5

* 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

delivery time from stock

prices price list online
www.igus.eu/eu/j2