

## The new endurance runner: specialist for pivoting applications and pulsating loads

Up to 10MPa, up to three times more  
wear-resistant than iglidur® J

### iglidur® J3



#### When to use it?

- When optimising wear resistance compared to iglidur® J
- When very low coefficient of friction in dry operation is required
- When high wear resistance at low loads is required
- When low moisture absorption is fundamental
- When good liquid media resistance is required



#### When not to use?

- When a wear-resistant plain bearing for linear motion is required  
*iglidur® J*
- When continuous operating temperatures are higher than +90°C  
*iglidur® J260*
- When radial surface pressure is higher than 45MPa  
*iglidur® W300*

# Bearing technology | Plain bearings | iglidur® J3



Ø 2.0 - 50.0mm

Also available as:



Bar stock, round bar: Page 639



Bar stock, plate: Page 651



Tribo-tape liner: Page 657



Piston rings: Page 662



Two hole flange bearing: Page 581



Moulded special parts: Page 602



Spherical balls: Page 783

## The new endurance runner: specialist for pivoting applications and pulsating loads: Up to 10MPa, up to three times more wear-resistant than iglidur® J

iglidur® J3 is a material with improved wear resistance at low to medium loads and high speed. The service life is up to 300% longer than iglidur® J – the proven top endurance runner material.

- Low coefficient of friction
- High media resistance
- Low moisture absorption
- PTFE-free
- Lubrication-free
- Maintenance-free

### Typical application areas

- Automation
- Printing industry
- Beverage industry
- Glass industry
- Aerospace engineering

### Descriptive technical specifications

Wear resistance at +23°C	-	+	+
Wear resistance at +90°C	-	+	+
Wear resistance at +150°C	-	+	+
Low coefficient of friction	-	+	+
Low moisture absorption	-	+	+
Wear resistance under water	-	+	+
High media resistance	-	+	+
Resistant to edge pressures	-	+	+
Suitable for shock and impact loads	-	+	+
Resistant to dirt	-	+	+

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

Online service life calculation  
[www.igus.eu/iglidur-expert](http://www.igus.eu/iglidur-expert)

## Technical data

### General properties

Density	g/cm <sup>3</sup>	1.42	Testing method
Colour		yellow	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	1.3	
Coefficient of friction, dynamic, against steel	μ	0.06 - 0.20	
pv value, max. (dry)	MPa · m/s	0.50	

### Mechanical properties

Flexural modulus	MPa	2,700	DIN 53457
Flexural strength at +20°C	MPa	70	DIN 53452
Compressive strength	MPa	60	
Max. recommended surface pressure (+20°C)	MPa	45	
Shore D hardness		73	DIN 53505

### Physical and thermal properties

Max. application temperature long-term	°C	+90	
Max. application temperature short-term	°C	+120	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K <sup>-1</sup> · 10 <sup>-5</sup>	13	DIN 53752

### Electrical properties

Specific contact resistance	Ωcm	> 10 <sup>12</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>12</sup>	DIN 53482

Table 01: Material properties table

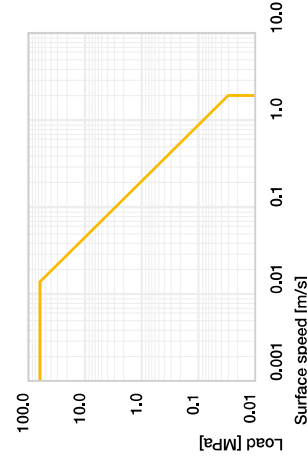


Diagram 01: Permissible pv values for iglidur® J3 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

### Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® J3 plain bearings is approximately 0.3% weight. The saturation limit in water is 1.3% weight. These values are so low that a moisture expansion need to be considered only in extreme cases.

### Vacuum

In vacuum, any present moisture is released as vapour. Use in vacuum is only possible with dehumidified iglidur® J3 bearings.

### Radiation resistance

Resistant to radiation up to an intensity of 1 · 10<sup>4</sup>Gy.

### UV resistance

iglidur® J3 plain bearings become discoloured when exposed to UV radiation. However, hardness, compressive strength and wear resistance of the material do not change.

Chemicals	Resistance
Alcohols	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 up to -
Strong acids	-
Diluted alkalines	+
Strong alkalines	+
	up to 0
	+ resistant
	0 conditionally resistant
	- not resistant

All information given at room temperature (+20°C)

Table 02: Chemical resistance

Chemical table, page 1542

# Bearing technology | Plain bearings | iglidur® J3

With respect to its general mechanical and thermal specifications, iglidur® J3 is directly comparable to our classic, iglidur® J.

## Mechanical properties

With increasing temperatures, the compressive strength of iglidur® J3 plain bearings decreases. Diagram 02 shows this inverse relationship. The maximum recommended surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

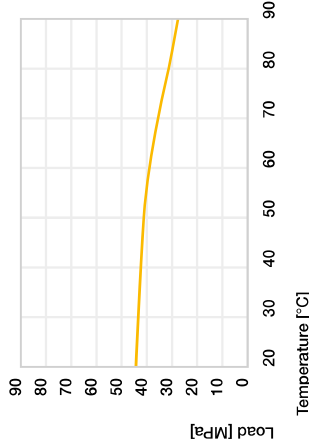


Diagram 02: Maximum recommended surface pressure as a function of temperature (45MPa at +20°C)

Diagram 03 shows the elastic deformation of iglidur® J3 at radial loads. At the maximum recommended surface pressure of 45MPa at room temperature the deformation is less than 6%. A possible deformation could be, among others, dependant on the duty cycle of the load.

Surface pressure, page 41

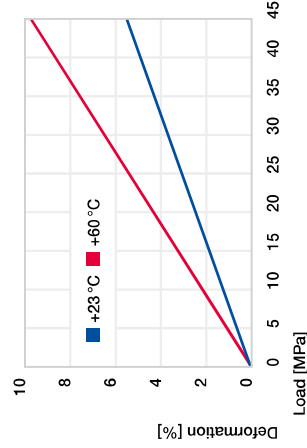


Diagram 03: Deformation under pressure and temperature

## Permissible surface speeds

igidur® J3 is also suitable for medium to high surface speeds. 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 level is rarely reached due to varying application conditions.

## Surface speed, page 44

	rotating	oscillating	linear
long-term	m/s 1.5	1.1	8.0
short-term	m/s 3.0	2.1	10.0

Table 03: Maximum surface speeds

## Temperature

The temperatures prevailing in the bearing system also have an influence on the wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +90°C. For temperatures over +60°C an additional securing is required.

## Application temperatures, page 49 Additional securing, page 49

## Friction and wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the surface speed and load (diagrams 04 and 05).

## Coefficient of friction and surfaces, page 47 Wear resistance, page 50

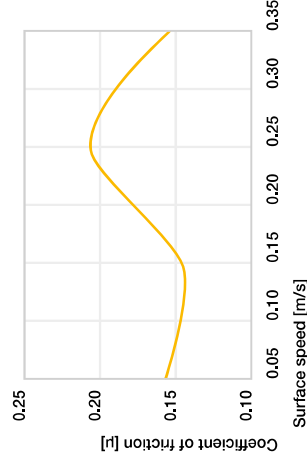


Diagram 04: Coefficient of friction as a function of the surface speed,  $p = 0.75\text{MPa}$

# Technical data

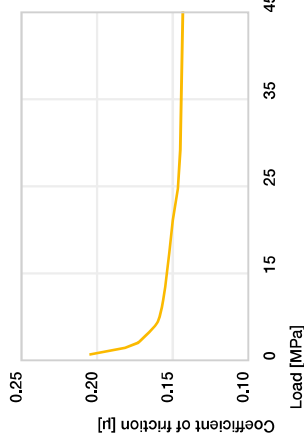


Diagram 05: Coefficient of friction as a function of the load,  $v = 0.01\text{m/s}$

## 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. For iglidur® J3 a ground surface with an average surface finish  $R_a = 0.1 - 0.3\mu\text{m}$  is recommended. The diagram 06 shows that iglidur® J3 can be combined with various shaft materials. Diagram 07 shows rotating and pivoting applications in comparison. With higher load, the wear increases more for rotating than for pivoting movements.

## Shaft materials, page 52

	Dry	Greases	Oil	Water
Coeff. of friction [μ]	0.06 - 0.20	0.09	0.04	0.04

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



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

## Installation tolerances

igidur® J3 plain bearings are standard bearings for shafts with h tolerance (recommended minimum h9). The bearings are designed for press-fit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 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.

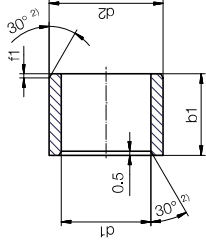
## Testing methods, page 57

Ø d1 [mm]	Housing		Plain bearing		Shaft	
	H7 [mm]	E10 [mm]	E10 [mm]	h9 [mm]	h9 [mm]	h9 [mm]
0 - 3	+0,000	+0,010	+0,014	+0,054	-0,025	+0,000
> 3 - 6	+0,000	+0,012	+0,020	+0,068	-0,030	+0,000
> 6 - 10	+0,000	+0,015	+0,025	+0,083	-0,036	+0,000
> 10 - 18	+0,000	+0,018	+0,032	+0,102	-0,043	+0,000
> 18 - 30	+0,000	+0,021	+0,040	+0,124	-0,052	+0,000
> 30 - 50	+0,000	+0,025	+0,050	+0,150	-0,062	+0,000
> 50 - 80	+0,000	+0,030	+0,060	+0,180	-0,074	+0,000
> 80 - 120	+0,000	+0,035	+0,072	+0,212	-0,087	+0,000
> 120 - 180	+0,000	+0,040	+0,085	+0,245	-0,100	+0,000

Table 05: Important tolerances for plain bearings according to ISO 9547-1 after press-fit

# Bearing technology | Plain bearings | iglidur® J3

Sleeve bearing (form S)



<sup>2)</sup> Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

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

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

**i** Order example: **J3SM-0304-05** - no minimum order quantity.

**J3** iglidur® material **S** Sleeve bearing **M** Metric **03** Inner Ø **d1** **04** Outer Ø **d2** **05** Total length **b1**

d1	d1 Tolerance <sup>3)</sup>	d2	b1	h13	Part No.
[mm]	[mm]	[mm]	[mm]	[mm]	
3.0	+0.014	4.5	5.0	J3SM-0304-05	
4.0	+0.054	5.5	4.0	J3SM-0405-04	
4.0		5.5	6.0	J3SM-0405-06	
5.0	+0.020	7.0	5.0	J3SM-0507-05	
5.0	+0.068	7.0	10.0	J3SM-0507-10	
6.0		8.0	6.0	J3SM-0608-06	
6.0		8.0	8.0	J3SM-0608-08	
6.0		8.0	10.0	J3SM-0608-10	
8.0		10.0	8.0	J3SM-0810-08	
8.0		10.0	10.0	J3SM-0810-10	
8.0		10.0	12.0	J3SM-0810-12	
10.0	+0.025	12.0	8.0	J3SM-1012-08	
10.0	+0.083	12.0	10.0	J3SM-1012-10	
10.0		12.0	12.0	J3SM-1012-12	
10.0		12.0	15.0	J3SM-1012-15	
10.0		12.0	20.0	J3SM-1012-20	
12.0		14.0	10.0	J3SM-1214-10	
12.0		14.0	12.0	J3SM-1214-12	
12.0		14.0	15.0	J3SM-1214-15	
12.0		14.0	20.0	J3SM-1214-20	
13.0		15.0	10.0	J3SM-1315-10	
13.0	+0.032	15.0	20.0	J3SM-1315-20	
14.0	+0.102	16.0	15.0	J3SM-1416-15	
14.0		16.0	20.0	J3SM-1416-20	
14.0		16.0	25.0	J3SM-1416-25	
15.0		17.0	15.0	J3SM-1517-15	
15.0		17.0	20.0	J3SM-1517-20	
15.0		17.0	25.0	J3SM-1517-25	
30.0		34.0	20.0	J3SM-3034-20	

<sup>3)</sup> After press-fit. Testing methods page 57

# Product range

d1	d1 Tolerance <sup>3)</sup>	d2	b1	h13	Part No.
[mm]	[mm]	[mm]	[mm]	[mm]	
30.0	+0.040	34.0	25.0	J3SM-3034-25	
30.0		34.0	30.0	J3SM-3034-30	
30.0	+0.124	34.0	40.0	J3SM-3034-40	
32.0		36.0	20.0	J3SM-3236-20	
32.0		36.0	30.0	J3SM-3236-30	
32.0		36.0	40.0	J3SM-3236-40	
35.0	+0.050	39.0	20.0	J3SM-3539-20	
35.0		39.0	30.0	J3SM-3539-30	
35.0	+0.150	39.0	40.0	J3SM-3539-40	
35.0		39.0	50.0	J3SM-3539-50	
40.0		44.0	20.0	J3SM-4044-20	
40.0		44.0	30.0	J3SM-4044-30	

<sup>3)</sup> After press-fit. Testing methods page 57

d1	d1 Tolerance <sup>3)</sup>	d2	b1	h13	Part No.
[mm]	[mm]	[mm]	[mm]	[mm]	
40.0		44.0	40.0	J3SM-4044-40	
40.0		44.0	50.0	J3SM-4044-50	
45.0		50.0	20.0	J3SM-4550-20	
45.0		50.0	30.0	J3SM-4550-30	
45.0	+0.050	50.0	40.0	J3SM-4550-40	
45.0	+0.150	50.0	50.0	J3SM-4550-50	
50.0		55.0	20.0	J3SM-5055-20	
50.0		55.0	30.0	J3SM-5055-30	
50.0		55.0	40.0	J3SM-5055-40	
50.0		55.0	50.0	J3SM-5055-50	
50.0		55.0	60.0	J3SM-5055-60	



**Available from stock**

Detailed information about delivery time online.

[www.igus.eu/24](http://www.igus.eu/24)



**Online ordering**

including delivery times, prices, online tools

[www.igus.eu/J3](http://www.igus.eu/J3)



**Ordering note**

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

**Discount scaling**

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

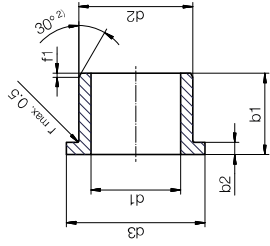
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

## Bearing technology | Plain bearings | iglidur® J3

Flange bearing (form F)



<sup>2)</sup> Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

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

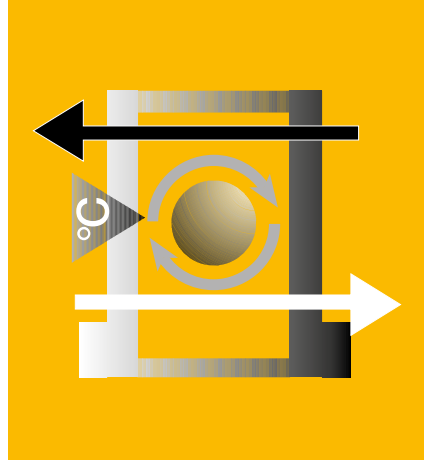
**i** Dimensions according to ISO 3547-1 and special dimensions

**i** Order example: **J3FM-02030505-05** - no minimum order quantity.

**J3** iglidur® material **F** Flange bearing **M** Metric **03** Inner Ø d1 **04** Outer Ø d2 **05** Total length b1

d1	d2	d3	b1	b2	Part No.
Tolerance <sup>3)</sup>					
[mm]	[mm]	[mm]	h13	h14	
2.0	+0.014	3.5	5.0	5.0	0.75 <b>J3FM-02030505-05</b>
3.0	+0.054	4.5	7.5	5.0	0.75 <b>J3FM-0304-05</b>
5.0	7.0	11.0	5.0	1.00	<b>J3FM-0507-05</b>
6.0	+0.020	8.0	12.0	4.0	1.00 <b>J3FM-0608-04</b>
6.0	+0.068	8.0	12.0	6.0	1.00 <b>J3FM-0608-06</b>
6.0	8.0	12.0	8.0	1.00	<b>J3FM-0608-08</b>
8.0	10.0	15.0	5.5	1.00	<b>J3FM-0810-05</b>
8.0	10.0	15.0	7.5	1.00	<b>J3FM-0810-07</b>
8.0	10.0	15.0	9.5	1.00	<b>J3FM-0810-09</b>
8.0	+0.025	10.0	15.0	10.0	1.00 <b>J3FM-0810-10</b>
10.0	+0.083	12.0	18.0	7.0	1.00 <b>J3FM-1012-07</b>
10.0	12.0	18.0	9.0	1.00	<b>J3FM-1012-09</b>
10.0	12.0	18.0	10.0	1.00	<b>J3FM-1012-10</b>
10.0	12.0	18.0	12.0	1.00	<b>J3FM-1012-12</b>
10.0	12.0	18.0	17.0	1.00	<b>J3FM-1012-17</b>
12.0	14.0	20.0	7.0	1.00	<b>J3FM-1214-07</b>
12.0	14.0	20.0	9.0	1.00	<b>J3FM-1214-09</b>
12.0	14.0	20.0	12.0	1.00	<b>J3FM-1214-12</b>
12.0	+0.032	14.0	20.0	17.0	1.00 <b>J3FM-1214-17</b>
14.0	+0.102	16.0	22.0	12.0	1.00 <b>J3FM-1416-12</b>
14.0	16.0	22.0	17.0	1.00	<b>J3FM-1416-17</b>
15.0	17.0	23.0	9.0	1.00	<b>J3FM-1517-09</b>

<sup>3)</sup> After press-fit. Testing methods page 57



# Endurance runner with high dimensional stability at high temperatures and loads

Can be used with many kinds of shafts and loads

## iglidur® J350



**When to use it?**

- When a wear-resistant bearing for rotational movement at medium and high loads is required
- When a cost-effective plain bearing for high temperatures is required
- When press-fit up to +150°C is necessary
- When high wear resistance is required at high loads
- When the bearing is exposed to shock loading



**When not to use?**

- When continuous operating temperatures are higher than +180°C
- **iglidur® X**
- When the lowest friction is required
- **iglidur® J**
- When a cost-effective plain bearing with low friction is required
- **iglidur® D, iglidur® R**
- For high rotational speeds
- **iglidur® J**