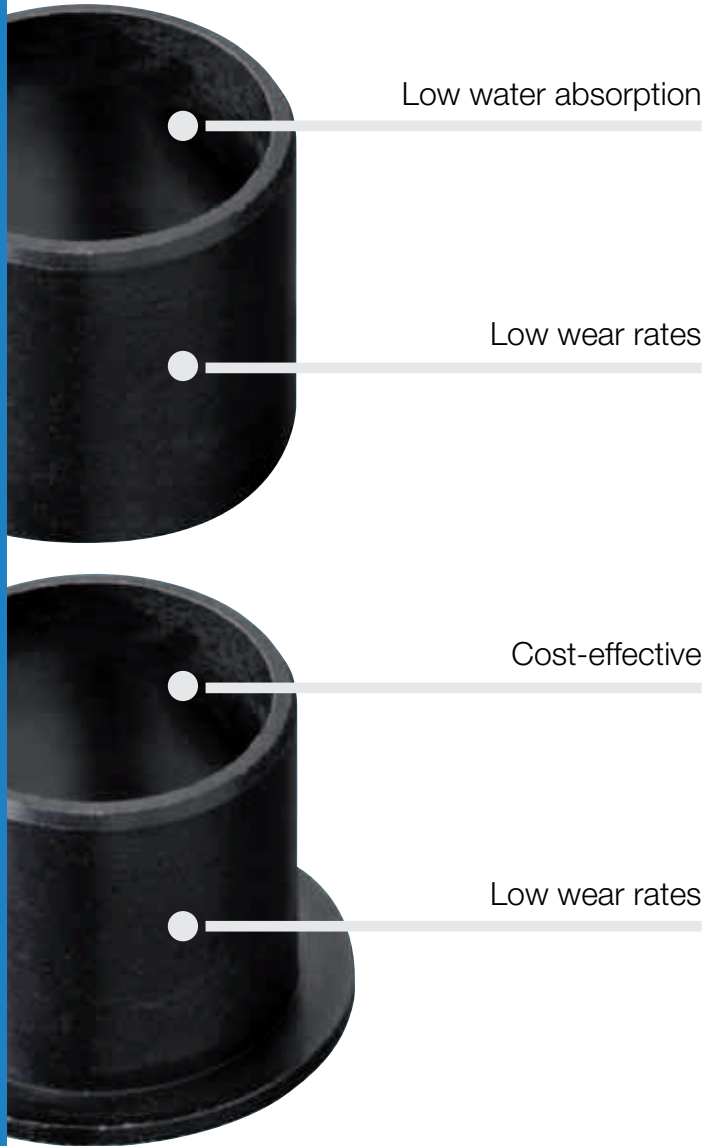


# iglidur® P

**Versatile, waterproof.** With the iglidur® P plain bearing, the user has a cost-effective, maintenance-free plain bearing. Compared to iglidur® G plain bearings made of iglidur® P are better suited to rotating movements and high loads, as well as being effectively waterproof.



### When to use it?

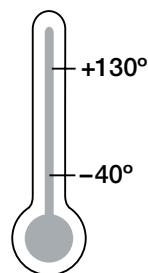
- When very low water absorption is needed
- When a cost-effective bearing for high pressure loads is desired
- For rotating movements under high loads
- When high precision in high humidity and moderately high temperatures are needed



### When not to use it?

- When the maximum application temperature is above +120°C  
▶ **iglidur® K, page 175**
- When mechanical reaming of the wall surface is necessary  
▶ **iglidur® M250, page 107**
- When the highest wear resistance is needed  
▶ **iglidur® W300, page 131**

### Temperature



### Product range

2 types  
Ø 3–95 mm  
more dimensions  
on request



# iglidur® P | Application Examples



## Typical sectors of industry and application areas

- Solar technology ● Sports and leisure
- Machine Building ● Doors and gates
- Railway industry etc.

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

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



► [www.igus.eu/boat-cranes](http://www.igus.eu/boat-cranes)



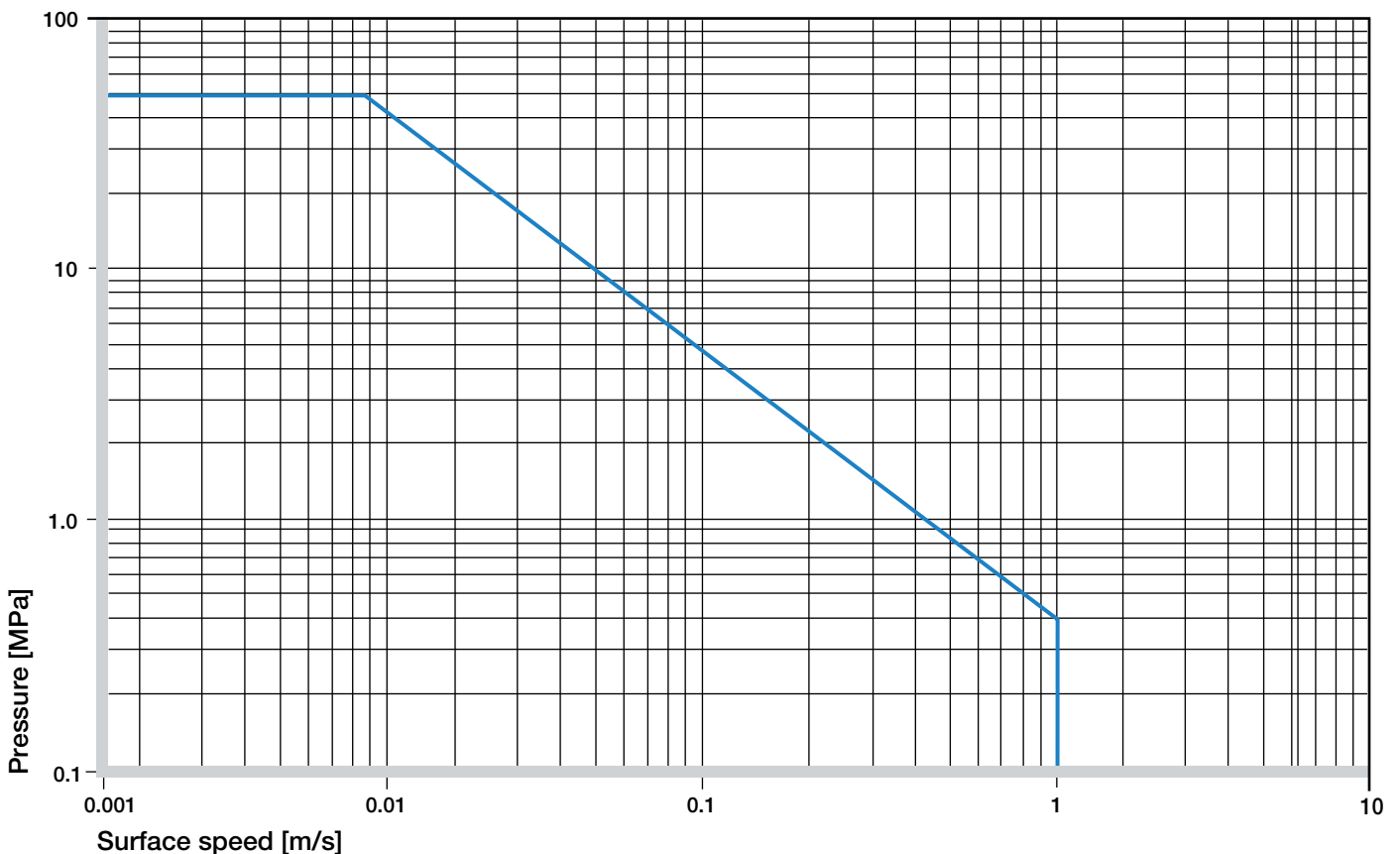
► [www.igus.eu/helicopter-loadsystem](http://www.igus.eu/helicopter-loadsystem)



► [www.igus.eu/road-sweeper](http://www.igus.eu/road-sweeper)

Material data			
General properties	Unit	iglidur® P	Testing method
Density	g/cm <sup>3</sup>	1.58	
Colour		black	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	0.4	
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.21	
pv value, max. (dry)	MPa · m/s	0,39	
Mechanical properties			
Modulus of elasticity	MPa	5,300	DIN 53457
Tensile strength at +20 °C	MPa	120	DIN 53452
Compressive strength	MPa	66	
Max. recommended surface pressure (+20 °C)	MPa	50	
Shore D hardness		75	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+130	
Max. short term application temperature	°C	+200	
Min. application temperature	°C	-40	
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>	4	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 <sup>13</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>12</sup>	DIN 53482

Table 01: Material data

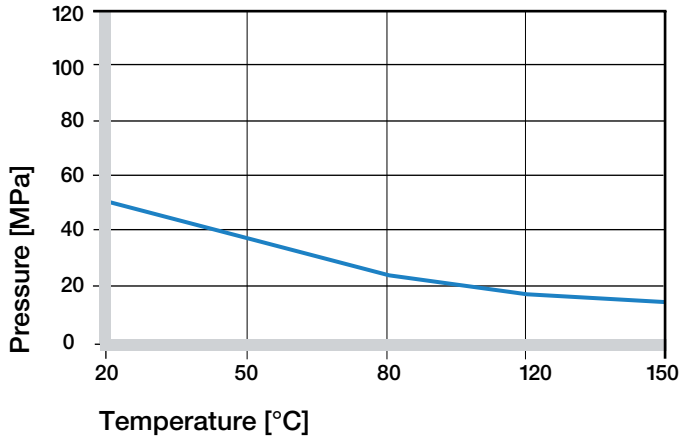


Graph 01: Permissible pv values for iglidur® P with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

# iglidur® P | Technical Data

## Mechanical Properties

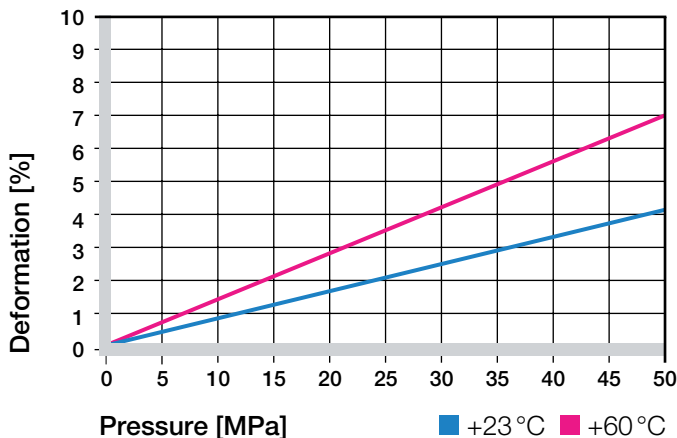
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® P plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +130 °C the permissible surface pressure is almost 15 MPa.



**Graph 02: Recommended maximum surface pressure as a function of temperature (50 MPa at +20 °C)**

With the iglidur® P plain bearing, the user has a cost-effective, maintenance-free plain bearing. Compared to iglidur® G, plain bearings made of iglidur® P are better suited for rotating movements and high loads. Graph 03 shows the elastic deformation of iglidur® P for radial loads. At the recommended maximum surface pressure of 50 MPa the deformation is less than 3%.

### ► Surface Pressure, page 43



**Graph 03: Deformation under pressure and temperature**

## Permissible Surface Speeds

Plain bearings made of iglidur® P are maintenance-free plain bearings, which were developed for low to average surface speeds. The maximum values given in table 02 can only be achieved at a very low surface pressure. The maximum speed given is the speed at which an increase up to the continuous use temperature occurs due to friction.

### ► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	2	1.4	4

**Table 02: Maximum running speed**

## Temperatures

Even at its highest long term application temperature of +120 °C, iglidur® P does not quite reach the values of iglidur® G. The ambient temperatures in the bearing system also have an effect on the bearing wear. With increasing temperatures, the wear increases.

### ► Application Temperatures, page 46

iglidur® P	Application temperature
Minimum	-40 °C
Max. long term	+130 °C
Max. short term	+200 °C
Add. securing is required from	+90 °C

**Table 03: Temperature limits**

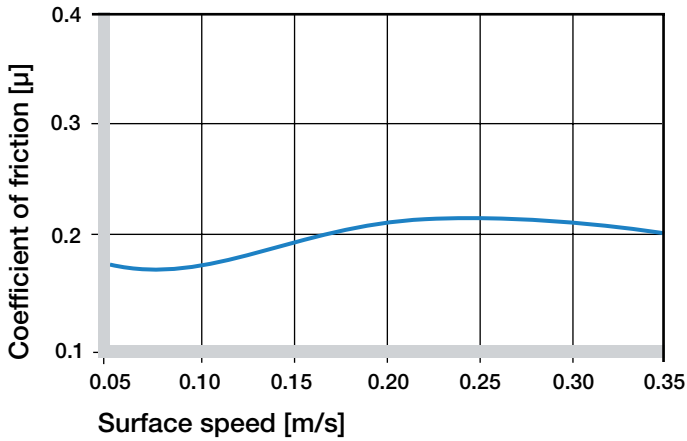
## Friction and Wear

Just as the wear resistance, the coefficient of friction changes greatly with increasing load. With regard to iglidur® P, the coefficient of friction increases slightly when the speed increases (Graph 04). Graph 05 shows how the coefficient of friction drops when the load increases. Starting at approximately 6 MPa, the coefficient of friction is already below 0.1.

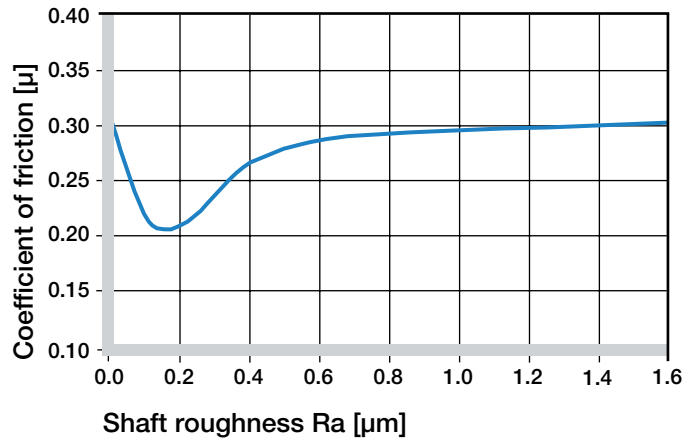
iglidur® P plain bearings obtain a minimum coefficient of friction on shafts with a roughness Ra from 0.1 to 0.2 µm. Both smoother and rougher shaft finishes cause the friction to clearly increase.

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

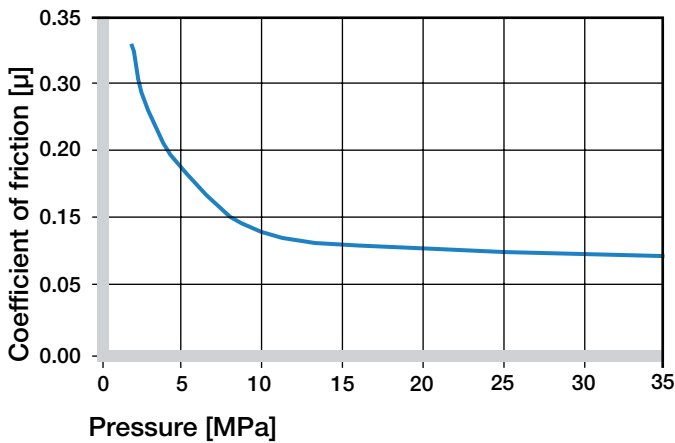
### ► Wear Resistance, page 49



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



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

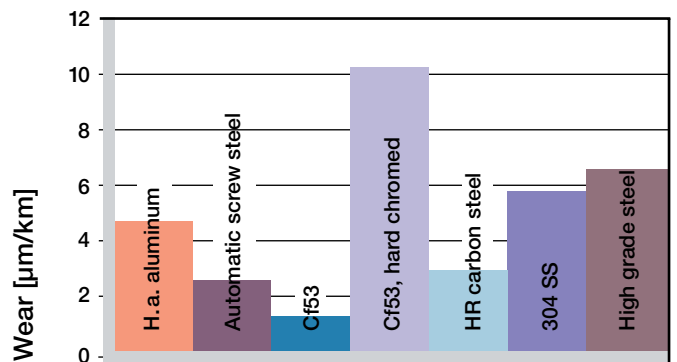


Graph 05: Coefficient of friction as a function of the pressure,  $v = 0,01 \text{ m/s}$

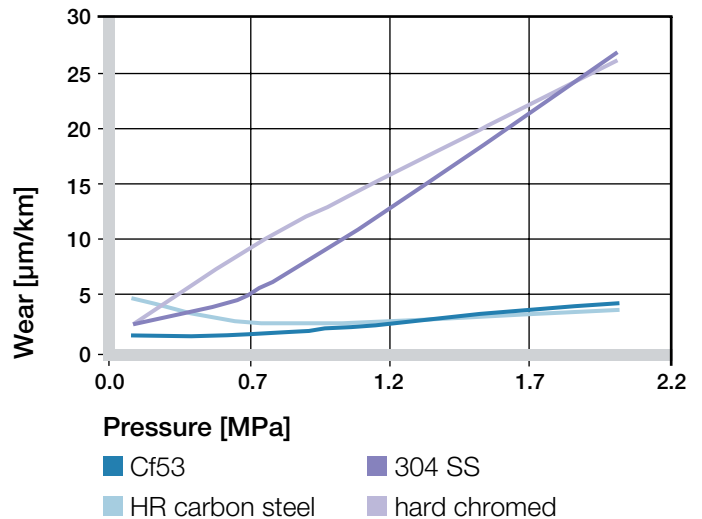
### Shaft Materials

Graphs 06 to 10 show results of testing different shaft materials with plain bearings made of iglidur® P. For rotating movements, the wear of iglidur® P with Cold Rolled Steel and HR Carbon Steel shafts is very low. On the other hand, the bearings on 304 Stainless Steel shafts as well as hard-chromed shafts result in higher wear than other shaft materials even in the low load range. For example at a load of 2 MPa, Cold Rolled Steel is six times better than 304 Stainless Steel. For oscillating movements without loads wear rates are lower than for most rotating movements. For this purpose, the Cold Rolled Steel and hard chromed shafts prove to be the best sliding partners. Also, the 304 Stainless Steel shafts that have poor results for rotation are very good in oscillating operation.

► Shaft Materials, [page 51](#)

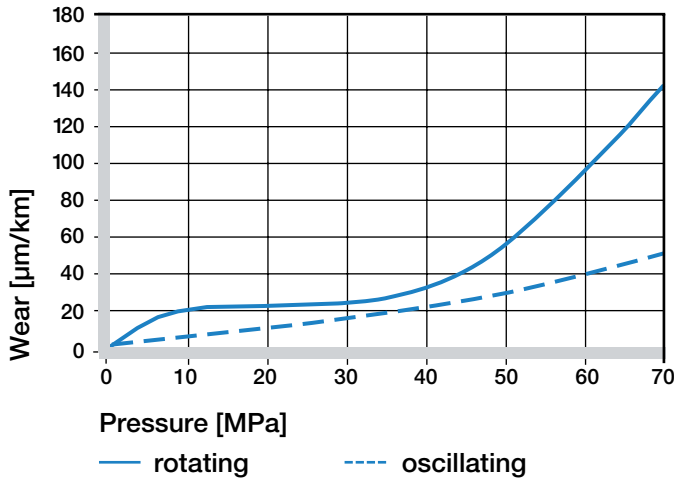


Graph 07: Wear, rotating with different shaft materials, pressure  $p = 0.75 \text{ MPa}$ ,  $v = 0.5 \text{ m/s}$

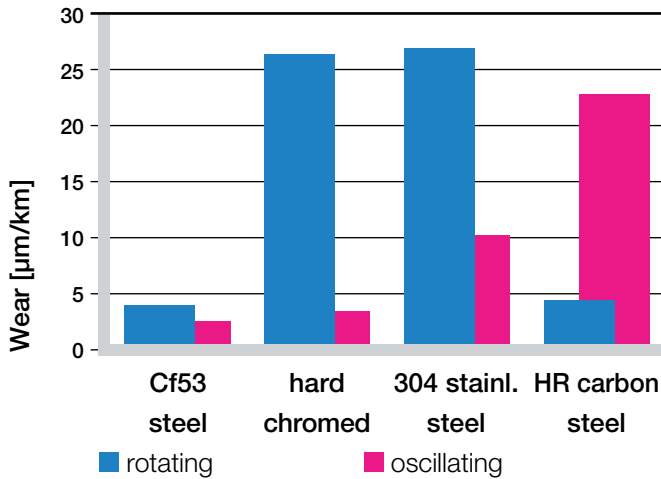


Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure

# iglidur® P | Technical Data



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



Graph 10: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® P	Dry	Greases	Oil	Water
C. o. f. $\mu$	0,06–0,21	0.09	0.04	0.04

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

## Additional Properties

### Chemical Resistance

iglidur® P plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® P is not attacked by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	-
Greases, oils without additives	+
Fuels	+
Diluted acids	0
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

Plain bearings made of iglidur® P have limited use under radioactive radiation. They are resistant to radiation up to an intensity of  $5 \cdot 10^2$  Gy.

### UV Resistance

iglidur® P plain bearings are partially UV resistant.

### Vacuum

In a vacuum environment, existing moisture in iglidur® P plain bearings is released as a vapour. Use in vacuum can be limited.

### Electrical Properties

iglidur® P plain bearings are electrically insulating.

Volume resistance	> $10^{13}$ Ωcm
Surface resistance	> $10^{12}$ ΩΩ



## Moisture Absorption

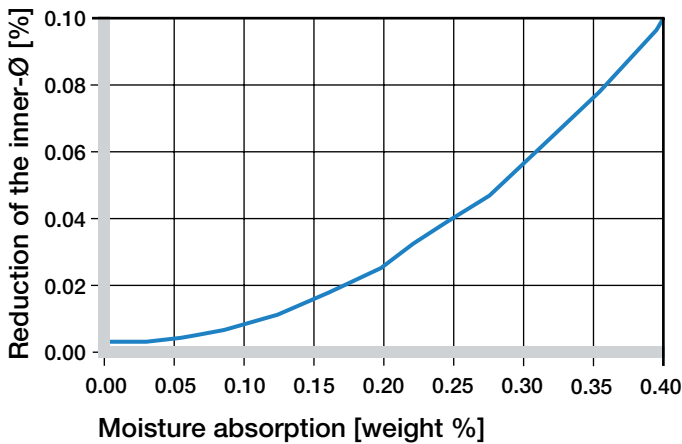
The moisture absorption of iglidur® P plain bearings is approximately 0.2% in standard atmosphere. The saturation limit in water is 0.4%. This low moisture absorption is well below the values of iglidur® G.

### Maximum moisture absorption

At +23 °C/50 % r.h. 0.2 % weight

Max. moisture absorption 0.4 % weight

Table 06: Moisture absorption



Graph 11: Effect of moisture absorption on plain bearings

## Installation Tolerances

iglidur® P plain bearings are meant to be oversized before being pressfit. 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 is adjusted to meet the specified tolerances.

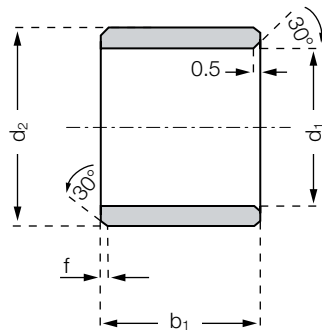
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® P 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® P | Product Range

## Sleeve bearing



### Order key

## PSM-0304-03



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
PSM-0304-03	3.0	+0.014 +0.054	4.5	3.0
PSM-0405-04	4.0	+0.020 +0.068	5.5	4.0
PSM-0507-05	5.0	+0.020 +0.068	7.0	5.0
PSM-0608-06	6.0	+0.020 +0.068	8.0	6.0
PSM-0810-08	8.0	+0.025 +0.083	10.0	8.0
PSM-0810-11	8.0	+0.025 +0.083	10.0	11.5
PSM-0810-12	8.0	+0.025 +0.083	10.0	12.0
PSM-1012-10	10.0	+0.025 +0.083	12.0	10.0
PSM-1214-15	12.0	+0.032 +0.102	14.0	15.0
PSM-1214-25	12.0	+0.032 +0.102	14.0	25.0
PSM-1517-15	15.0	+0.032 +0.102	17.0	15.0
PSM-1618-20	16.0	+0.032 +0.102	18.0	20.0
PSM-1618-42	16.0	+0.032 +0.102	18.0	42.0
PSM-1820-15	18.0	+0.032 +0.102	20.0	15.0
PSM-1820-20	18.0	+0.032 +0.102	20.0	20.0
PSM-1820-33	18.0	+0.032 +0.102	20.0	33.0
PSM-2022-22	20.0	+0.040 +0.124	22.0	22.0
PSM-2022-30	20.0	+0.040 +0.124	22.0	30.0
PSM-2022-51	20.0	+0.040 +0.124	22.0	51.0
PSM-2023-15	20.0	+0.040 +0.124	23.0	15.0
PSM-2023-25	20.0	+0.040 +0.124	23.0	25.0
PSM-2023-30	20.0	+0.040 +0.124	23.0	30.0
PSM-2325-37	23.0	+0.040 +0.124	25.0	37.0

Part number	d1	d1-Tolerance*	d2	b1 h13
PSM-2224-45	22.0	+0.040 +0.124	24.0	45.0
PSM-2225-15	22.0	+0.040 +0.124	25.0	15.0
PSM-2225-45	22.0	+0.040 +0.124	25.0	45.0
PSM-2528-30	25.0	+0.040 +0.124	28.0	30.0
PSM-2528-35	25.0	+0.040 +0.124	28.0	35.0
PSM-2630-25	26.0	+0.040 +0.124	30.0	25.0
PSM-2832-20	28.0	+0.040 +0.124	32.0	20.0
PSM-2832-25	28.0	+0.040 +0.124	32.0	25.0
PSM-3034-20	30.0	+0.040 +0.124	34.0	20.0
PSM-3034-30	30.0	+0.040 +0.124	34.0	30.0
PSM-3034-40	30.0	+0.040 +0.124	34.0	40.0
PSM-3034-45	30.0	+0.040 +0.124	34.0	45.0
PSM-3539-40	35.0	+0.050 +0.150	39.0	40.0
PSM-4044-50	40.0	+0.050 +0.150	44.0	50.0
PSM-4044-58	40.0	+0.050 +0.150	44.0	58.0
PSM-5055-40	50.0	+0.050 +0.150	55.0	40.0
PSM-6065-50	60.0	+0.060 +0.180	65.0	50.0
PSM-6065-60	60.0	+0.060 +0.180	65.0	60.0
PSM-6570-50	65.0	+0.060 +0.180	70.0	50.0
PSM-7580-80	75.0	+0.060 +0.180	80.0	80.0
PSM-9095-100	90.0	+0.072 +0.212	95.0	100.0
PSM-95100-100	95.0	+0.072 +0.212	100.0	100.0

\* after pressfit. Testing methods ► page 55



delivery available  
time from stock



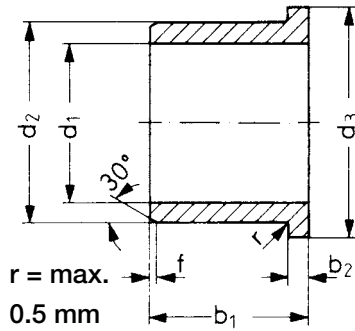
prices price list online  
www.igus.eu/eu/p



order part number  
example PSM-0304-03



## Flange bearing



### Order key

## PFM-0405-04



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

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 d13	b1 h13	b2 -0.14
PFM-0405-04	4.0	+0.020 +0.068	5.5	9.5	4.0	0.75
PFM-0507-05	5.0	+0.020 +0.068	7.0	11.0	5.0	1.0
PFM-0608-04	6.0	+0.020 +0.068	8.0	12.0	4.0	1.0
PFM-0810-075	8.0	+0.025 +0.083	10.0	15.0	7.5	1.0
PFM-0810-10	8.0	+0.025 +0.083	10.0	15.0	10.0	1.0
PFM-0810-15	8.0	+0.025 +0.083	10.0	15.0	15.0	1.0
PFM-081012-10	8.0	+0.025 +0.083	10.0	12.0	10.0	1.0
PFM-1012-17	10.0	+0.025 +0.083	12.0	18.0	17.0	1.0
PFM-1214-09	12.0	+0.032 +0.102	17.0	20.0	9.0	1.0
PFM-1214-10	12.0	+0.032 +0.102	14.0	20.0	10.0	1.0
PFM-1214-15	12.0	+0.032 +0.102	14.0	20.0	15.0	1.0
PFM-121418-08	12.0	+0.032 +0.102	14.0	18.0	8.0	1.0
PFM-121420-10	12.0	+0.032 +0.102	14.0	20.0	10.0	1.0
PFM-1416-04	14.0	+0.032 +0.102	16.0	22.0	4.0	1.0
PFM-1416-08	14.0	+0.032 +0.102	16.0	22.0	8.0	1.0
PFM-1416-12	14.0	+0.032 +0.102	16.0	22.0	12.0	1.0
PFM-141624-25	14.0	+0.032 +0.102	16.0	24.0	25.0	1.0
PFM-1517-22	15.0	+0.032 +0.102	17.0	23.0	22.0	1.0
PFM-151824-32	15.0	+0.032 +0.102	18.0	24.0	32.0	1.5
PFM-1618-12	16.0	+0.032 +0.102	18.0	24.0	12.0	1.0
PFM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
PFM-161824-40	16.0	+0.032 +0.102	18.0	24.0	40.0	1.0
PFM-1719-25	17.0	+0.032 +0.102	19.0	25.0	25.0	1.0
PFM-1820-17	18.0	+0.032 +0.102	20.0	26.0	17.0	1.0
PFM-2023-16	20.0	+0.040 +0.124	23.0	30.0	16.5	1.5

\* after pressfit. Testing methods ► page 55



**delivery** available  
**time** from stock



**prices** price list online  
[www.igus.eu/eu/p](http://www.igus.eu/eu/p)



**order** part number  
**example** PFM-0405-04



Flange bearing

## Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
PFM-202328-15	20.0	+0.040 +0.124	23.0	28.0	15.0	1.5
PFM-2023-30	20.0	+0.040 +0.124	23.0	30.0	30.0	1.5
PFM-2427-22	24.0	+0.040 +0.124	27.0	32.0	22.0	1.5
PFM-2528-21	25.0	+0.040 +0.124	28.0	35.0	21.5	1.5
PFM-3034-16	30.0	+0.040 +0.124	34.0	42.0	16.0	2.0
PFM-3034-37	30.0	+0.040 +0.124	34.0	42.0	37.0	2.0
PFM-3539-26	35.0	+0.050 +0.150	39.0	47.0	26.0	2.0
PFM-4044-30	40.0	+0.050 +0.150	44.0	52.0	30.0	2.0
PFM-4044-40	40.0	+0.050 +0.150	44.0	52.0	40.0	2.0
PFM-5055-50	50.0	+0.050 +0.150	55.0	63.0	50.0	2.0
PFM-6065-40	60.0	+0.060 +0.180	65.00	73.0	40.0	2.0
PFM-6065-50	60.0	+0.060 +0.180	65.0	73.0	50.0	2.0
PFM-7075-50	70.0	+0.060 +0.180	75.0	83.0	50.0	2.0
PFM-8085-100	80.0	+0.060 +0.180	85.0	93.0	100.0	2.5

\* after pressfit. Testing methods ► page 55

# My Sketches

