

## The cost-effective outdoor all-rounder

No moisture absorption even with high ambient humidity

### igidur® P



#### When to use it?

- When low moisture absorption is fundamental
- When a cost-effective plain bearing for high pressure loads is required
- When high precision in high humidity and moderately high temperatures are required



#### When not to use?

- When the maximum application temperature is above +120°C  
*igidur® K*
- When mechanical reaming of the bore is necessary  
*igidur® M250*
- When the highest wear resistance is required  
*igidur® W300*

# Bearing technology | Plain bearings | iglidur® P



Ø 3.0 – 95.0mm

Also available as:



Bar stock, round bar: Page 629



Bar stock, plate: Page 651



tribo-tape liner: Page 657



Piston rings: Page 662



Two hole flange bearing: Page 581



Modified special parts: Page 602



iglidur® spherical balls: Page 783

## The cost-effective outdoor all-rounder: No moisture absorption even with high ambient humidity

Due to thermal stability and low water absorption, the iglidur® P bearings are among the most dimensionally strong all-round bearings under varying environmental conditions. iglidur® P plain bearings are recommended for pivoting and rotational movements at average loads.

- Low moisture absorption
- High wear resistance
- Suitable for high loads
- Cost-effective
- Lubrication-free
- Standard range from stock
- Maintenance-free

### Typical application areas

- Solar technology
- Mechanical engineering
- Doors and gates
- Railway technology
- Sports and leisure

### 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>	1.58	Testing method
Colour		black	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	0.4	
Coefficient of friction, dynamic, against steel pv value, max. (dry)	μ	0.06 – 0.21	
<b>Mechanical properties</b>			
Flexural modulus	MPa	5,300	DIN 53457
Flexural 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. application temperature long-term	°C	+130
Max. application temperature short-term	°C	+200
Min. application temperature	°C	-40
Thermal conductivity	W/m · K	0.25
Coefficient of thermal expansion (at +23°C)	K <sup>-1</sup> · 10 <sup>-5</sup>	4
<b>Electrical properties</b>		
Specific contact resistance	Ωcm	> 10 <sup>13</sup>
Surface resistance	Ω	> 10 <sup>12</sup>

Table 01: Material properties table

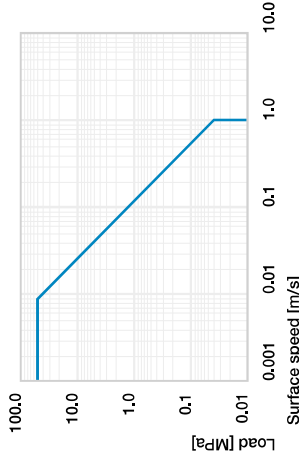


Diagram 01: Permissible pv values for iglidur® P plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

### Moisture absorption

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

### Vacuum

In vacuum, any present moisture is released as vapour. The use in vacuum is only possible to a limited extent.

### Radiation resistance

Plain bearings made from iglidur® P have limited use under radioactive radiation. They are resistant to radiation up to an intensity of 5 · 10<sup>2</sup>Gy.

### UV resistance

iglidur® P bearings have a good resistance to UV radiation.

Chemicals	Resistance
Alcohols	+
Hydrocarbons	-
Greases, oils without additives	+
Fuels	+
Diluted acids	0
Strong acids	-
Diluted alkalines	-
Strong alkalines	-
<b>+ resistant 0 conditionally resistant – not resistant</b>	

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

Table 02: Chemical resistance

Chemical table, page 1542



-40°C up to +130°C



50MPa



HB



Rehst



ISO 35474

# Bearing technology | Plain bearings | iglidur® P

The iglidur® P plain bearings are a cost-effective, maintenance-free bearing solution for the user. Compared to iglidur® G, plain bearings made from iglidur® P are suitable for use with rotational movements and average loads.

## Mechanical properties

With increasing temperatures, the compressive strength of iglidur® P 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.

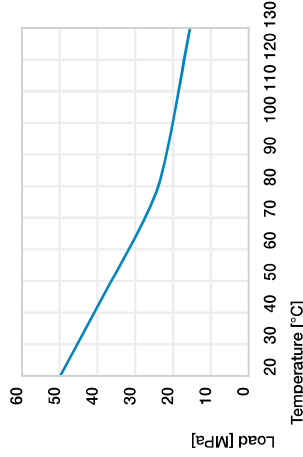


Diagram 02: Maximum recommended surface pressure as a function of temperature (50MPa at +20°C)

Diagram 03 shows the elastic deformation of iglidur® P at radial loads. At the maximum recommended surface pressure of 50MPa the deformation is less than 4%.

## Surface pressure, page 41

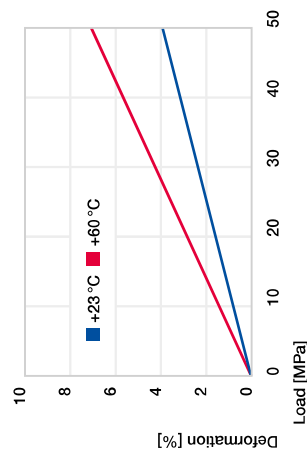


Diagram 03: Deformation under pressure and temperature

## Permissible surface speeds

Plain bearings made from iglidur® P are maintenance-free, they are developed for low to medium surface speeds. The maximum values given in table 03 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 44

	rotating	oscillating	linear
long-term	m/s 1.0	0.7	3.0
short-term	m/s 2.0	1.4	4.0

Table 03: Maximum surface speeds

## Temperature

Even with its maximum long-term application temperature of +130°C, the values for iglidur® P do not quite come up to those of iglidur® G. The temperatures prevailing in the bearing system also have an influence on the wear. The wear rises with increasing temperatures. For temperatures over +90°C an additional securing is required.

## Application temperatures, page 49

## Additional securing, page 49

## Friction and wear

The coefficient of friction declines just as the wear resistance with increasing load (diagrams 04 and 05). iglidur® P plain bearings obtain a minimum coefficient of friction on shafts with a surface finish Ra from 0.1 – 0.2µm. Both smoother and rougher shaft surface finish cause the friction to clearly increase.

## Coefficient of friction and surfaces, page 47

## Wear resistance, page 50

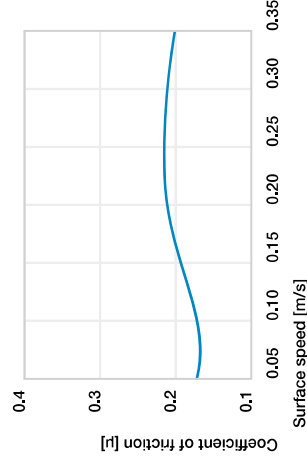


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

# Technical data

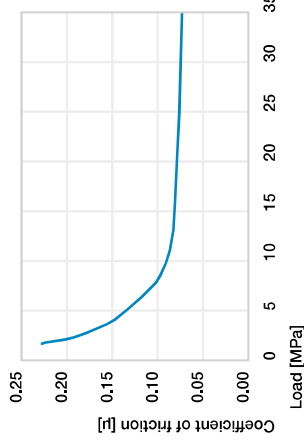


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

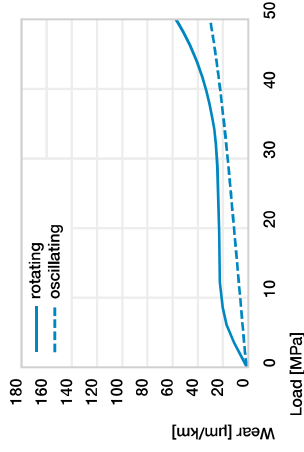


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

## Shaft materials

Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® P. For rotational movements, the wear of iglidur® P with Cf53 and HR carbon steel shafts is very low. On the other hand, the bearings hard-chromed shafts result in higher wear than other shaft materials even in the low load range. For example at a load of 2MPa, cold rolled steel is six times better than 304 stainless steel. For pivoting movements, however, is the „soft“ HR carbon steel shaft significantly less favourable than the hardened shaft versions or the 304 stainless steel shafts.

## Shaft materials, page 52

	Dry	Greases	Oil	Water
Coeff. of friction [µ]	0.06 – 0.21	0.09	0.04	0.04

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

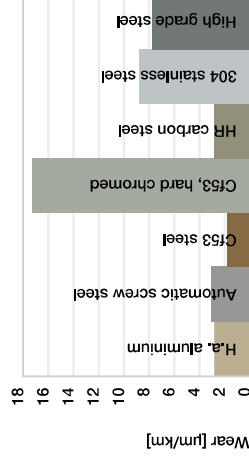


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

## Installation tolerances

iglidur® P 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).

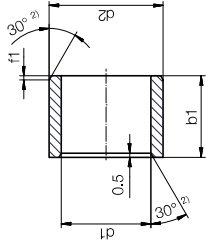
## Testing methods, page 57

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 3547-1 after press-fit

# Bearing technology | Plain bearings | iglidur® P

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: **PSM-0304-03** - no minimum order quantity.

**P** iglidur® material **S** Sleeve bearing **M** Metric **Ø d1** **Ø d2** **Ø d3** 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	3.0	PSM-0304-03	
4.0	+0.054	5.5	4.0	PSM-0405-04	
4.0	+0.020	5.5	6.0	PSM-0405-06	
5.0	+0.068	7.0	5.0	PSM-0507-05	
5.0		7.0	10.0	PSM-0507-10	
6.0		8.0	6.0	PSM-0608-06	
6.0		8.0	8.0	PSM-0608-08	
6.0		8.0	10.0	PSM-0608-10	
8.0		10.0	8.0	PSM-0810-08	
8.0		10.0	10.0	PSM-0810-10	
8.0		10.0	11.5	PSM-0810-11	
8.0	+0.025	10.0	12.0	PSM-0810-12	
8.0	+0.083	12.0	8.0	PSM-1012-08	
10.0		12.0	10.0	PSM-1012-10	
10.0		12.0	12.0	PSM-1012-12	
10.0		12.0	15.0	PSM-1012-15	
10.0		12.0	20.0	PSM-1012-20	
12.0		14.0	10.0	PSM-1214-10	
12.0		14.0	12.0	PSM-1214-12	
12.0		14.0	15.0	PSM-1214-15	
12.0		14.0	20.0	PSM-1214-20	
12.0		14.0	25.0	PSM-1214-25	
13.0		15.0	10.0	PSM-1315-10	
13.0		15.0	20.0	PSM-1315-20	
14.0		16.0	15.0	PSM-1416-15	
14.0		16.0	20.0	PSM-1416-20	
14.0		16.0	25.0	PSM-1416-25	
15.0		17.0	15.0	PSM-1517-15	

<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]	
24.0		27.0	15.0	PSM-2427-15	
24.0		27.0	20.0	PSM-2427-20	
24.0		27.0	25.0	PSM-2427-25	
24.0		27.0	30.0	PSM-2427-30	
25.0		28.0	15.0	PSM-2528-15	
25.0		28.0	20.0	PSM-2528-20	
25.0		28.0	25.0	PSM-2528-25	
25.0		28.0	30.0	PSM-2528-30	
25.0		28.0	35.0	PSM-2528-35	
26.0	+0.040	30.0	25.0	PSM-2630-25	
28.0	+0.124	32.0	20.0	PSM-2832-20	
28.0		32.0	25.0	PSM-2832-25	
28.0		32.0	30.0	PSM-2832-30	
30.0		34.0	20.0	PSM-3034-20	
30.0		34.0	25.0	PSM-3034-25	
30.0		34.0	30.0	PSM-3034-30	
30.0		34.0	40.0	PSM-3034-40	
30.0		34.0	45.0	PSM-3034-45	
32.0		36.0	20.0	PSM-3236-20	
32.0		36.0	30.0	PSM-3236-30	
32.0	+0.050	36.0	40.0	PSM-3236-40	
35.0	+0.150	39.0	20.0	PSM-3539-20	
35.0		39.0	30.0	PSM-3539-30	

<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]	
35.0		39.0	40.0	PSM-3539-40	
35.0		39.0	50.0	PSM-3539-50	
40.0		44.0	20.0	PSM-4044-20	
40.0		44.0	30.0	PSM-4044-30	
40.0		44.0	40.0	PSM-4044-40	
40.0		44.0	50.0	PSM-4044-50	
45.0	+0.050	44.0	58.0	PSM-4550-58	
45.0	+0.150	50.0	20.0	PSM-4550-20	
45.0		50.0	30.0	PSM-4550-30	
45.0		50.0	40.0	PSM-4550-40	
45.0		50.0	50.0	PSM-4550-50	
50.0		55.0	20.0	PSM-5055-20	
50.0		55.0	30.0	PSM-5055-30	
50.0		55.0	40.0	PSM-5055-40	
50.0		55.0	50.0	PSM-5055-50	
50.0		55.0	60.0	PSM-5055-60	
60.0	+0.060	65.0	50.0	PSM-6065-50	
60.0	+0.180	65.0	60.0	PSM-6065-60	
65.0		70.0	50.0	PSM-6570-50	
75.0		80.0	80.0	PSM-7580-80	
90.0	+0.072	95.0	100.0	PSM-9095-100	
95.0	+0.212	100.0	100.0	PSM-95100-100	



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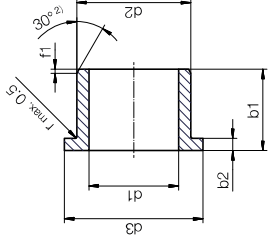
No minimum order value.

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## Bearing technology | Plain bearings | iglidur® P

Flange bearing (form F)



<sup>3)</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: **PFM-0405-04** - no minimum order quantity.

**P** iglidur® material **F** Flange bearing **M** Metric **Ø4** Inner Ø **Ø5** Outer Ø **d2** **Ø4** Total length **b1**

d1 [mm]	d2 [mm]	d3 [mm]	b1 [mm]	b2 [mm]	Part No.
4,0	5,5	9,5	4,0	0,75	PFM-0405-04
5,0	6,0	10,0	3,0	0,50	PFM-0506-03
5,0	7,0	11,0	5,0	1,00	PFM-0507-05
6,0	8,0	12,0	4,0	1,00	PFM-0608-04
6,0	8,0	12,0	6,0	1,00	PFM-0608-06
6,0	8,0	12,0	8,0	1,00	PFM-0608-08
7,0	9,0	15,0	4,0	1,00	PFM-0709-04
8,0	10,0	15,0	5,5	1,00	PFM-0810-05
8,0	10,0	15,0	7,5	1,00	PFM-0810-07
8,0	10,0	15,0	9,5	1,00	PFM-0810-09
8,0	10,0	12,0	10,0	1,00	PFM-0810-10
8,0	10,0	15,0	10,0	1,00	PFM-0810-10
8,0	10,0	15,0	15,0	1,00	PFM-0810-15
10,0	12,0	18,0	7,0	1,00	PFM-1012-07
10,0	12,0	18,0	9,0	1,00	PFM-1012-09
10,0	12,0	18,0	10,0	1,00	PFM-1012-10
10,0	12,0	18,0	12,0	1,00	PFM-1012-12
10,0	12,0	18,0	17,0	1,00	PFM-1012-17
12,0	14,0	20,0	7,0	1,00	PFM-1214-07
12,0	14,0	20,0	8,0	1,00	PFM-1214-08
12,0	14,0	20,0	9,0	1,00	PFM-1214-09
12,0	14,0	20,0	10,0	1,00	PFM-1214-10
12,0	14,0	20,0	10,0	1,00	PFM-121420-10
12,0	14,0	20,0	12,0	1,00	PFM-1214-12
12,0	14,0	20,0	15,0	1,00	PFM-1214-15
12,0	14,0	20,0	17,0	1,00	PFM-1214-17
14,0	16,0	22,0	4,0	1,00	PFM-1416-04
14,0	16,0	22,0	8,0	1,00	PFM-1416-08

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

## Product range

d1 [mm]	d2 [mm]	d3 [mm]	b1 [mm]	b2 [mm]	Part No.	
Tolerance <sup>3)</sup>		d13	h13	-0,14		
30,0	+0,040	34,0	42,0	30,0	2,00	PFM-3034-30
30,0	+0,124	34,0	42,0	37,0	2,00	PFM-3034-37
35,0		39,0	47,0	16,0	2,00	PFM-3539-16
35,0	+0,050	39,0	47,0	25,0	2,00	PFM-3539-26
40,0	+0,150	44,0	52,0	30,0	2,00	PFM-4044-30
40,0		44,0	52,0	40,0	2,00	PFM-4044-40

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

d1 [mm]	d2 [mm]	d3 [mm]	b1 [mm]	b2 [mm]	Part No.	
Tolerance <sup>3)</sup>		d13	h13	-0,14		
45,0	+0,050	50,0	58,0	50,0	2,00	PFM-4550-50
50,0	+0,150	55,0	63,0	50,0	2,00	PFM-5055-50
60,0		65,0	73,0	40,0	2,00	PFM-6065-40
60,0	+0,060	65,0	73,0	50,0	2,00	PFM-6065-50
70,0	+0,180	75,0	83,0	50,0	2,00	PFM-7075-50
80,0		85,0	93,0	100,0	2,50	PFM-8085-100



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