



## The classic with high resistance to media and temperature

Up to +200°C

### iglidur® H



#### When to use it?

- For underwater applications
- When high temperature resistance is required
- For high mechanical loading
- For applications in contact with chemicals



#### When not to use?

- When extremely high wear resistance under water is required  
*iglidur® H370*
- When the best universal resistance to chemicals is required  
*iglidur® X*
- For the maximum compressive strength at higher temperatures  
*iglidur® X, iglidur® Z*

# Bearing technology | Plain bearing | iglidur® H



Ø  
3.0 – 70.0mm



Also available  
as:



Bar stock,  
round bar  
Page 657



Bar stock,  
plate  
Page 683



tribo-tape liner  
Page 691



Piston rings  
Page 581



Two hole  
flange  
bearings  
Page 603



Moulded  
special parts  
Page 624



igubal®  
spherical balls  
Page 841

## The classic with high resistance to media and temperature Up to +200°C

Suitable for temperatures up to +200°C. Very low coefficient of friction when used with hardened shafts.

- Suitable for underwater applications
- High temperature resistance
- Resistant to chemicals
- Lubrication-free
- Maintenance-free

### Typical application areas

- Offshore
- Ship building
- Beverage industry
- Medical technology
- Mechatronics

Descriptive technical specifications				
Wear resistance at +23°C	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Wear resistance at +90°C	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Wear resistance at +150°C	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Low coefficient of friction	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Low moisture absorption	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Wear resistance under water	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
High media resistance	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Resistant to edge pressures	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Suitable for shock and impact loads	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+
Resistant to dirt	-	<div style="width: 100%; height: 10px; background-color: #008080;"></div>		+

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

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

## Technical data

General properties		Testing method	
Density	g/cm³	1.71	
Colour		grey	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.3	
Coefficient of friction, dynamic, against steel	μ	0.07 – 0.20	
pv value, max. (dry)	MPa · m/s	1.37	
Mechanical properties			
Flexural modulus	MPa	12,500	DIN 53457
Flexural strength at +20°C	MPa	175	DIN 53452
Compressive strength	MPa	81	
Max. recommended surface pressure (+20°C)	MPa	90	
Shore D hardness		87	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+200	
Max. application temperature short-term	°C	+240	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.60	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K <sup>-1</sup> · 10 <sup>-5</sup>	4	DIN 53752
Electrical properties <sup>9)</sup>			
Specific contact resistance	Ωcm	< 10 <sup>5</sup>	DIN IEC 93
Surface resistance	Ω	< 10 <sup>2</sup>	DIN 53482

<sup>9)</sup> The good conductivity of this material can favour the generation of corrosion on the metallic contact components.

Table 01: Material properties

iglidur® H is a fibre-reinforced thermoplastic material especially developed for applications in high atmospheric humidity or under water. Plain bearings made from iglidur® H can be used completely free of lubrication; in wet applications, the surrounding media acts as additional lubricant.

### Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® H plain bearings is below 0.1% weight. The saturation limit in water is 0.3% weight. iglidur® H is very well suited for use in wet environments.

### Vacuum

In vacuum, any present moisture is released as vapour. The use in vacuum is generally possible.

### Radiation resistance

iglidur® H withstands neutron and gamma particle radiation. Plain bearings made from iglidur® H are resistant up to a radiation intensity of 2 · 10<sup>2</sup>Gy.

### Resistance to weathering

iglidur® H plain bearings are continuously resistant to weathering. The material properties are only slightly affected. Possible discolorations are only superficial.

### Mechanical properties

With increasing temperatures, the compressive strength of iglidur® H 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 03 shows the elastic deformation of iglidur® H at radial loads. At the maximum recommended surface pressure of 90MPa the deformation is about 2.5% at room temperature.

**Surface pressure, page 41**



-40°C up to  
+200°C



90MPa



V-0



## Permissible surface speeds

The maximum permitted surface speed is dependent on whether the temperature at the bearing point becomes too high or not. iglidur® H is suitable for maximum surface speeds of 1.0m/s (rotating) and 3.0m/s (linear) in dry operation. Linear movements enable higher surface speeds, as a large area of the shaft contributes to the cooling.

**Surface speed, page 44**

## Temperature

With increasing temperatures, the compressive strength of iglidur® H plain bearings decreases. Diagram 02 shows this inverse relationship. The temperatures prevailing in the bearing system also have an influence on the wear. For temperatures over +120°C an additional securing is required.

**Application temperatures, page 49**

**Additional securing, page 49**

## Friction and wear

Both the wear resistance and the coefficient of friction change depending on the load. Interestingly, the coefficient of friction  $\mu$  lowers slightly with the increase of surface speed at constant load (see diagrams 04 and 05).

**Coefficient of friction and surfaces, page 47**

**Wear resistance, page 50**

## Shaft materials

Diagrams 06 and 07 show the test results of iglidur® H plain bearings running against various shaft materials. The iglidur® H plain bearings give different results when used in rotating and pivoting applications on different shaft materials. The Cf53 and HR carbon steel shafts give the best wear values in rotating applications, whereas the 304 stainless steel shafts (which are not so good for rotation) give the best results in pivoting applications. Hard-chromed shafts only give an advantage at low pressures when used with iglidur® H bearings.

**Shaft materials, page 52**

## Installation tolerances

iglidur® H 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 F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

**Testing methods, page 57**

Chemicals	Resistance
Alcohols	+
Diluted acids	+ up to 0
Diluted alkalines	+
Fuels	+
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	+ up to -
Strong alkalines	+

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

**Table 02: Chemical resistance**

**Chemical table, page 1636**

	Rotating	Oscillating	linear
long-term	m/s 1.0	0.7	3.0
short-term	m/s 1.5	1.1	4.0

**Table 03: Maximum surface speeds**

	Dry	Greases	Oil	Water
Coefficient of friction $\mu$	0.07 - 0.20	0.09	0.04	0.04

**Table 04: Coefficient of friction against steel (Ra = 1  $\mu$ m, 50HRC)**

$\varnothing$ d1 [mm]	Housing		Plain bearing		Shaft	
	H7 [mm]	F10 [mm]	F10 [mm]	h9 [mm]		
0 - 3	+0.000	+0.010	+0.006	+0.046	-0.025	+0.000
> 3 - 6	+0.000	+0.012	+0.010	+0.058	-0.030	+0.000
> 6 - 10	+0.000	+0.015	+0.013	+0.071	-0.036	+0.000
> 10 - 18	+0.000	+0.018	+0.016	+0.086	-0.043	+0.000
> 18 - 30	+0.000	+0.021	+0.020	+0.104	-0.052	+0.000
> 30 - 50	+0.000	+0.025	+0.025	+0.125	-0.062	+0.000
> 50 - 80	+0.000	+0.030	+0.030	+0.150	-0.074	+0.000
> 80 - 120	+0.000	+0.035	+0.036	+0.176	-0.087	+0.000
> 120 - 180	+0.000	+0.040	+0.043	+0.203	+0.000	+0.100

**Table 05: Important tolerances for plain bearings according to ISO 3547-1 after press-fit**

## Technical data

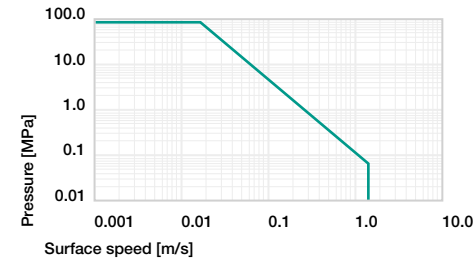


Diagram 01: Permissible pv values for iglidur® H plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

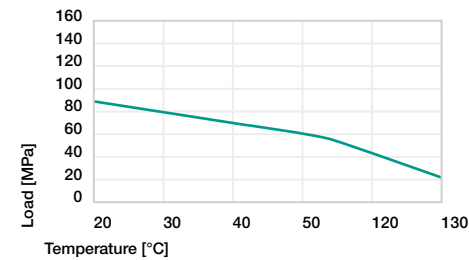


Diagram 02: Maximum recommended surface pressure as a function of temperature (90MPa at +20°C)

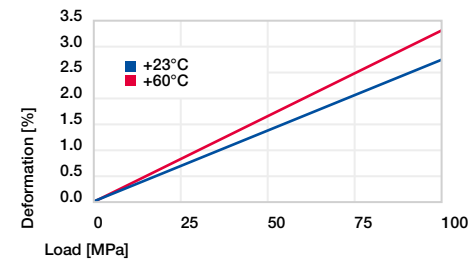


Diagram 03: Deformation under pressure and temperature

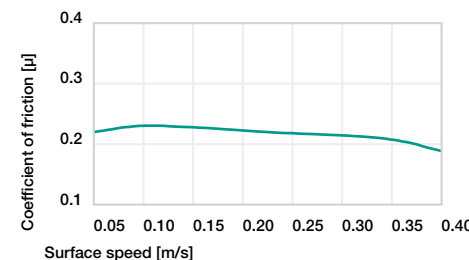


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

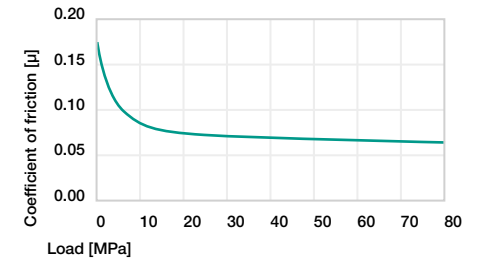


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

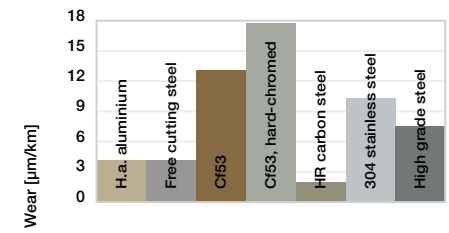


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

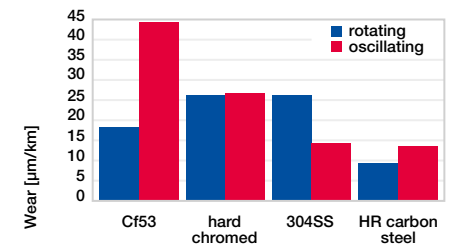
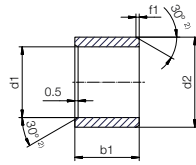


Diagram 07: Wear for rotating and oscillating applications with different shaft materials, p = 2MPa

# Bearing technology | Plain bearing | iglidur® H

## 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
f1 [mm]	0.3	0.5	0.8	1.2

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

**i** Order example: **HSM-0304-03** – no minimum order quantity.

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

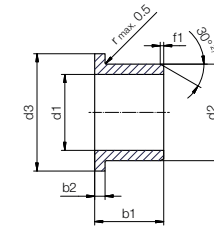
d1	d1 Tolerance <sup>3)</sup>	d2	b1 h13	Part No.
[mm]		[mm]	[mm]	
3.0	+0.006 +0.046	4.5	3.0	<b>HSM-0304-03</b>
4.0		5.5	4.0	<b>HSM-0405-04</b>
5.0	+0.010	7.0	5.0	<b>HSM-0507-05</b>
6.0	+0.058	8.0	3.0	<b>HSM-0608-03</b>
6.0		8.0	6.0	<b>HSM-0608-06</b>
8.0		10.0	8.0	<b>HSM-0810-08</b>
8.0	+0.013	10.0	10.0	<b>HSM-0810-10</b>
10.0	+0.071	12.0	6.0	<b>HSM-1012-06</b>
10.0		12.0	10.0	<b>HSM-1012-10</b>
12.0		14.0	10.0	<b>HSM-1214-10</b>
12.0		14.0	12.0	<b>HSM-1214-12</b>
12.0		14.0	15.0	<b>HSM-1214-15</b>
12.0		14.0	20.0	<b>HSM-1214-20</b>
14.0	+0.016 +0.086	16.0	20.0	<b>HSM-1416-20</b>
15.0		17.0	15.0	<b>HSM-1517-15</b>
16.0		18.0	15.0	<b>HSM-1618-15</b>
16.0		18.0	20.0	<b>HSM-1618-20</b>
16.0		18.0	25.0	<b>HSM-1618-25</b>

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

d1	d1 Tolerance <sup>3)</sup>	d2	b1 h13	Part No.
[mm]		[mm]	[mm]	
18.0	+0.016	20.0	15.0	<b>HSM-1820-15</b>
18.0	+0.086	20.0	25.0	<b>HSM-1820-25</b>
20.0		23.0	20.0	<b>HSM-2023-20</b>
20.0		23.0	30.0	<b>HSM-2023-30</b>
22.0		25.0	20.0	<b>HSM-2225-20</b>
25.0	+0.020	28.0	15.0	<b>HSM-2528-15</b>
25.0	+0.104	28.0	20.0	<b>HSM-2528-20</b>
30.0		34.0	20.0	<b>HSM-3034-20</b>
30.0		34.0	30.0	<b>HSM-3034-30</b>
30.0		34.0	40.0	<b>HSM-3034-40</b>
32.0		36.0	30.0	<b>HSM-3236-30</b>
35.0		39.0	40.0	<b>HSM-3539-40</b>
40.0	+0.025	44.0	20.0	<b>HSM-4044-20</b>
40.0	+0.125	44.0	50.0	<b>HSM-4044-50</b>
45.0		50.0	30.0	<b>HSM-4550-30</b>
50.0		55.0	40.0	<b>HSM-5055-40</b>
55.0	+0.030	60.0	26.0	<b>HSM-5560-26</b>
60.0	+0.150	65.0	60.0	<b>HSM-6065-60</b>
70.0		75.0	50.0	<b>HSM-7075-50</b>

# Bearing technology | Plain bearing | iglidur® H

## 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
f1 [mm]	0.3	0.5	0.8	1.2

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

**i** Order example: **HFM-0405-04** – no minimum order quantity.

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

d1	d1 Tolerance <sup>3)</sup>	d2	d3	b1 d13 <sup>3)</sup>	b2 h13	Part No.
[mm]		[mm]	[mm]	[mm]	[mm]	
4.0		5.5	9.5	4.0	0.75	<b>HFM-0405-04</b>
5.0		7.0	11.0	5.0	1.00	<b>HFM-0507-05</b>
5.0	+0.010	7.0	11.0	8.0	1.00	<b>HFM-0507-08</b>
6.0	+0.058	8.0	12.0	4.0	1.00	<b>HFM-0608-04</b>
6.0		8.0	12.0	6.0	1.00	<b>HFM-0608-06</b>
6.0		8.0	12.0	10.0	1.00	<b>HFM-0608-10</b>
8.0		10.0	15.0	7.0	1.00	<b>HFM-0810-07</b>
8.0		10.0	15.0	10.0	1.00	<b>HFM-0810-10</b>
8.0		10.0	15.0	15.0	1.00	<b>HFM-0810-15</b>
10.0	+0.013	12.0	18.0	4.0	1.00	<b>HFM-1012-04</b>
10.0	+0.071	12.0	18.0	9.0	1.00	<b>HFM-1012-09</b>
10.0		12.0	18.0	15.0	1.00	<b>HFM-1012-15</b>
10.0		12.0	18.0	20.0	1.00	<b>HFM-1012-20</b>
12.0		14.0	20.0	7.0	1.00	<b>HFM-1214-07</b>
12.0	+0.016	14.0	20.0	10.0	1.00	<b>HFM-1214-10</b>
12.0	+0.086	14.0	20.0	15.0	1.00	<b>HFM-1214-15</b>
14.0		16.0	22.0	12.0	1.00	<b>HFM-1416-12</b>

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

**i** Available from stock

Detailed information about delivery time online.

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

**i** Online ordering

Including delivery times, prices, online tools

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

**i** 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.