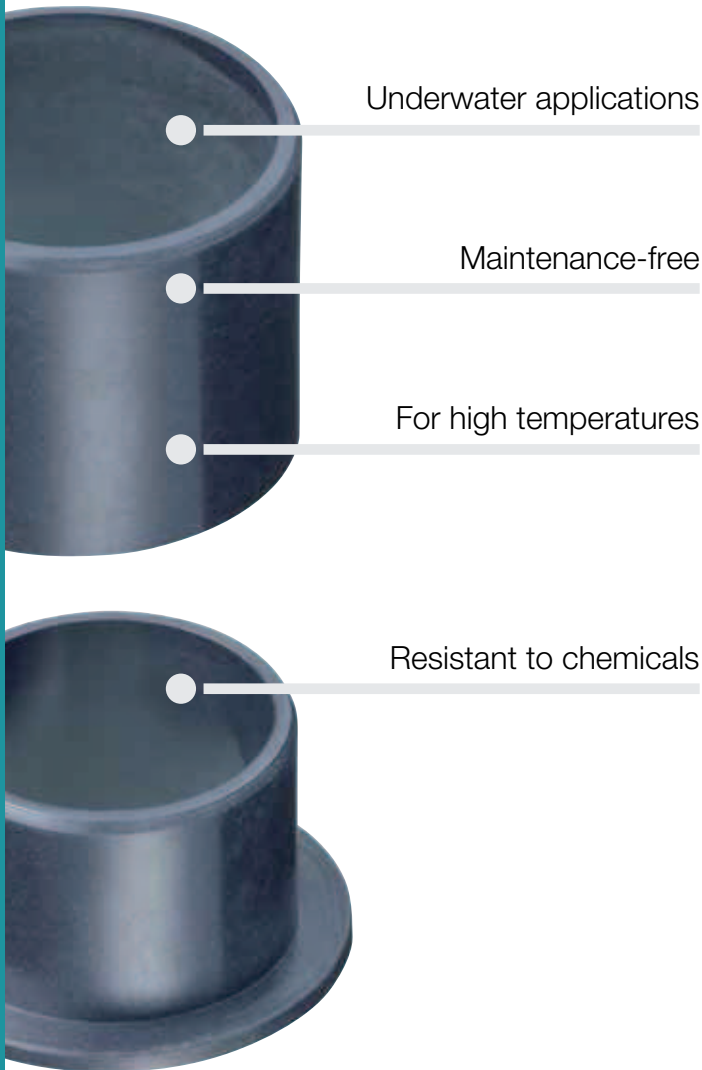


iglidur® H

The standard for wet and hot conditions. Resistant to chemicals and suitable for temperatures up to +200 °C. Very low coefficients of friction when used with hardened shafts.



When to use it?

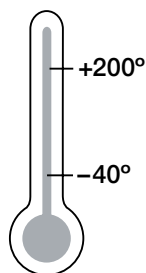
- Suitable for underwater applications
- When high temperature resistance is necessary
- For high mechanical loading
- For applications in contact with chemicals



When not to use it?

- When extremely high wear resistance under water is required
▶ **iglidur® H370, page 347**
- When universal resistance to chemicals is needed
▶ **iglidur® X, page 153**
- For the maximum pressure at higher temperatures
▶ **iglidur® X, page 153**
▶ **iglidur® Z, page 299**

Temperature



Product Range

2 types
Ø 3–70 mm
more dimensions
on request



iglidur® H | Application Examples



Typical sectors of industry and application areas

- Offshore ● Marine engineering
- Beverage technology ● Medical
- Mechatronics etc.

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

► www.igus.eu/eu/iglidur-applications



► www.igus.eu/cup-filling-line



► www.igus.eu/pneumatic-lifting

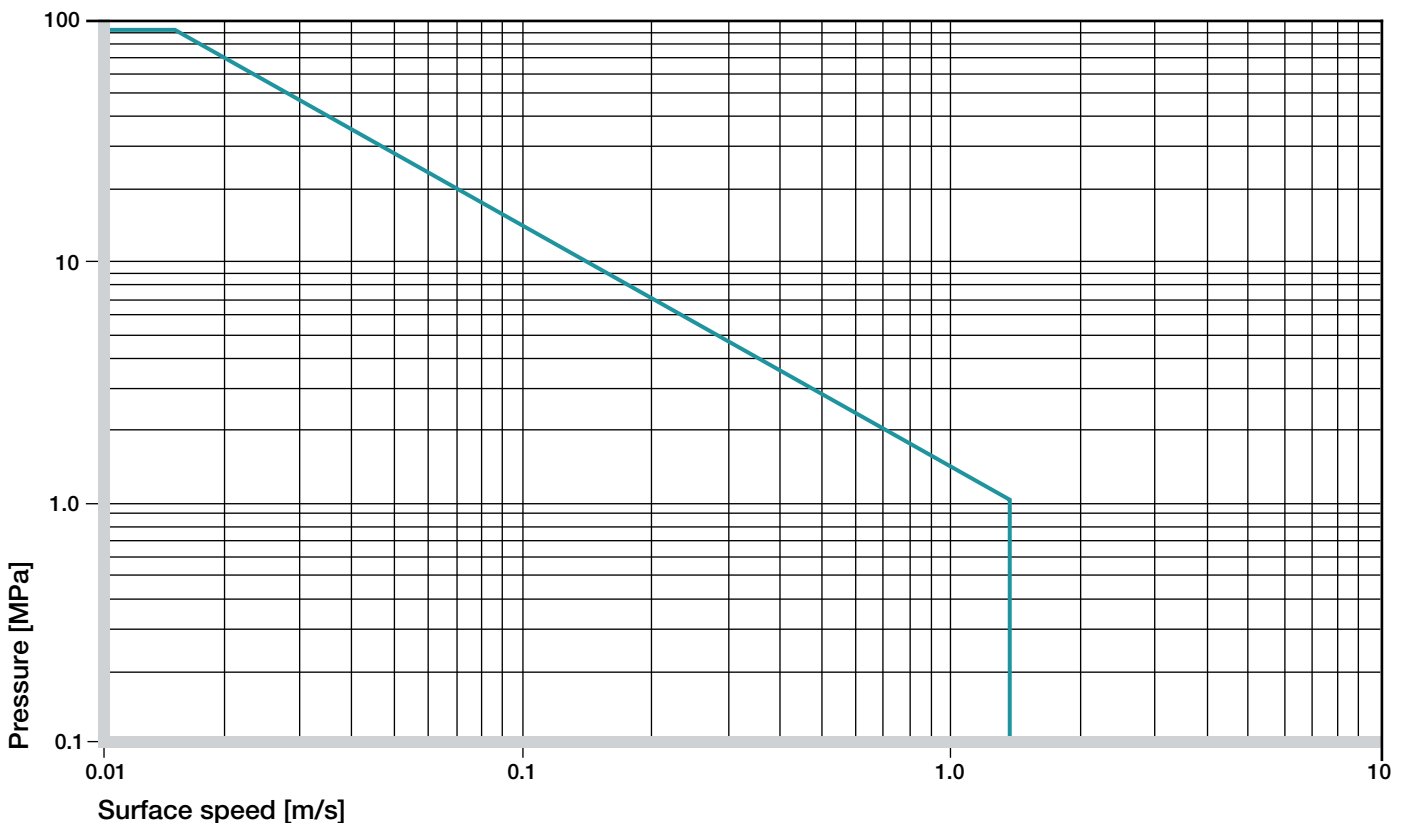


► www.igus.eu/hull-cleaning

Material data			
General properties	Unit	iglidur® H	Testing method
Density	g/cm ³	1.71	
Colour		grey	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.3	
Coefficient of sliding friction, dynamic against steel	μ	0.07–0.2	
pv value, max. (dry)	MPa · m/s	1.37	
Mechanical properties			
Modulus of elasticity	MPa	12,500	DIN 53457
Tensile 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. long term application temperature	°C	+200	
Max. short term application temperature	°C	+240	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.6	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	4	DIN 53752
Electrical properties ¹⁾			
Specific volume resistance	Ωcm	< 10 ⁵	DIN IEC 93
Surface resistance	Ω	< 10 ²	DIN 53482

¹⁾ The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact component.

Table 01: Material data

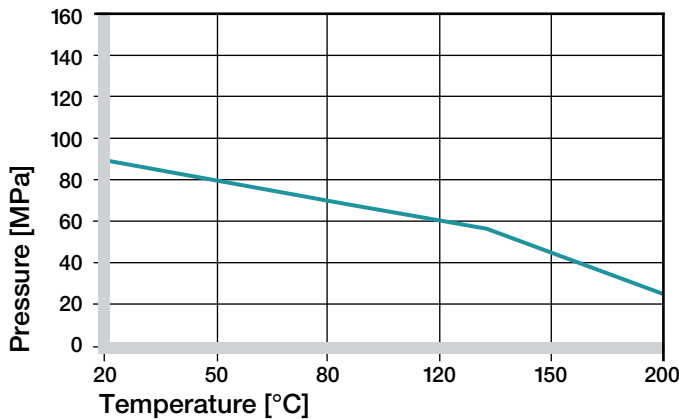


Graph 01: Permissible pv values for iglidur® H with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® H | 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® H plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +200°C the permissible surface pressure is almost 25 MPa.

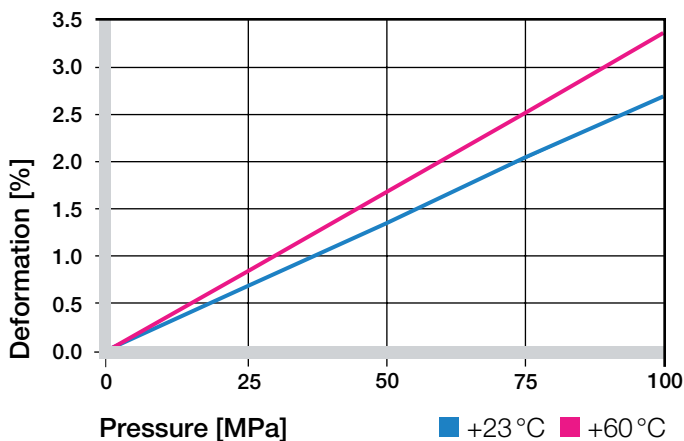


Graph 02: Recommended maximum surface pressure as a function of temperature (90 MPa at +20 °C)

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

Graph 03 shows the elastic deformation of iglidur® H during radial loading. At the recommended maximum surface pressure of 90 MPa the deformation is less than 2.5 %.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speed is dependent on whether the temperature in the bearing location rises or not. Running dry, iglidur® H can be used at a maximum surface speed of 1 m/s (rotating) and 4 m/s (linear) respectively. Linear movements enable higher surface speeds, as a large area of the shaft contributes to the cooling.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	1.5	1.1	4

Table 02: Maximum running speed

Temperatures

iglidur® H is an extremely temperature resistant material. With a maximum permissible short term temperature of +240 °C iglidur® H plain bearings may be used in heat treated applications at low loads.

With increasing temperatures, the compressive strength of iglidur® H plain bearings decreases. Graph 02 shows this relationship.

The ambient temperatures prevalent in the bearing system also have an effect on the bearing wear.

► Application Temperatures, page 46

iglidur® H	Application temperature
Minimum	-40 °C
Max. long term	+200 °C
Max. short term	+240 °C
Add. securing is required from	+120 °C

Table 03: Temperature limits

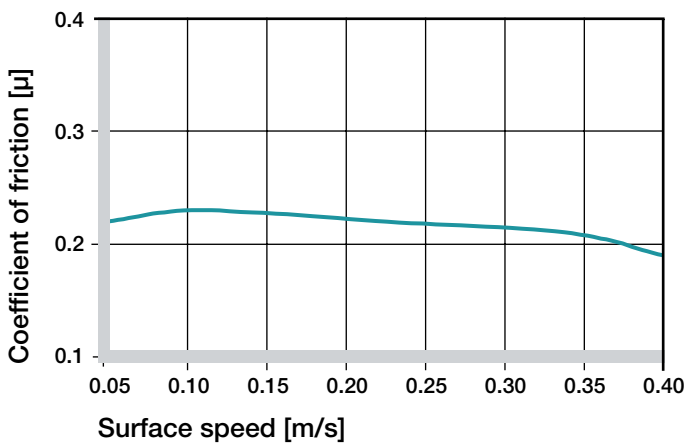
Friction and Wear

Both the wear rate and the coefficient of friction values change depending on the pressure. Interestingly, the friction coefficient μ lowers slightly with the increase of surface speed at constant load (see Graphs 04 and 05).

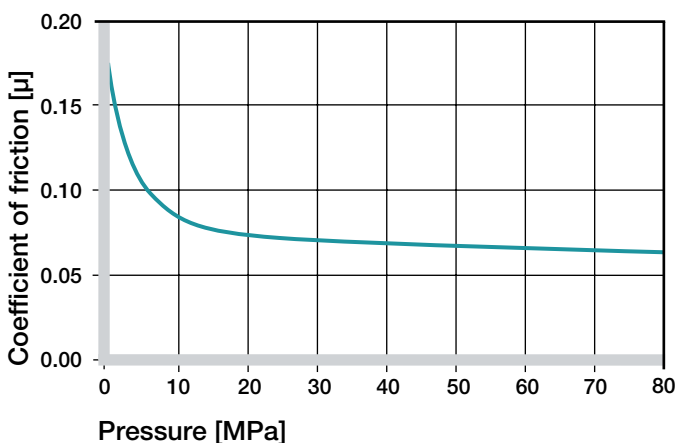
The choice of the shaft material to run against iglidur® H bearings is critical, as this has a large impact on the wear and friction values. More than $Ra = 0.1 \mu\text{m}$ shaft surface finish raises the coefficient of friction. For applications with high loads, we recommend hardened and ground surfaces with an average surface finish of $Ra = 0.3$ to $0.4 \mu\text{m}$.

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

► Wear Resistance, **page 49**



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



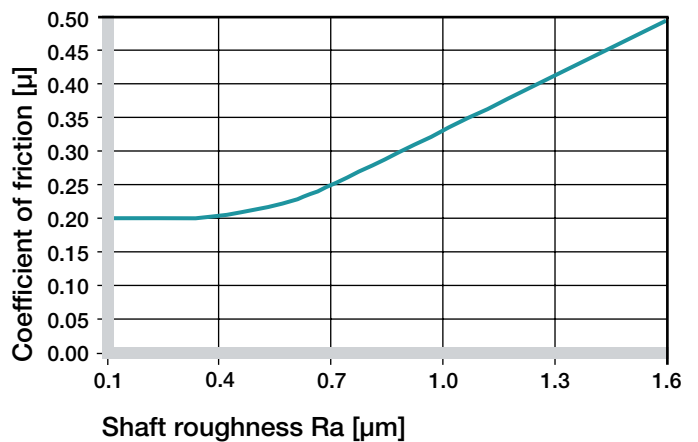
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

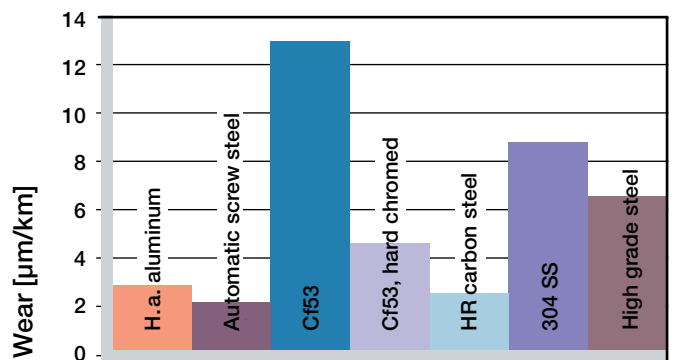
Graphs 07 to 09 show the test results of iglidur® H bearings running against various shaft materials.

The iglidur® H bearings give different results when used in rotating and pivoting applications. The CF53 and St37 shafts give the best wear values in rotary applications, whereas the V2A shafts (which are not so good for rotation) give the best results in oscillating applications. Hard chromed shafts only give an advantage at low pressures when used with iglidur® H bearings.

► Shaft Materials, **page 51**

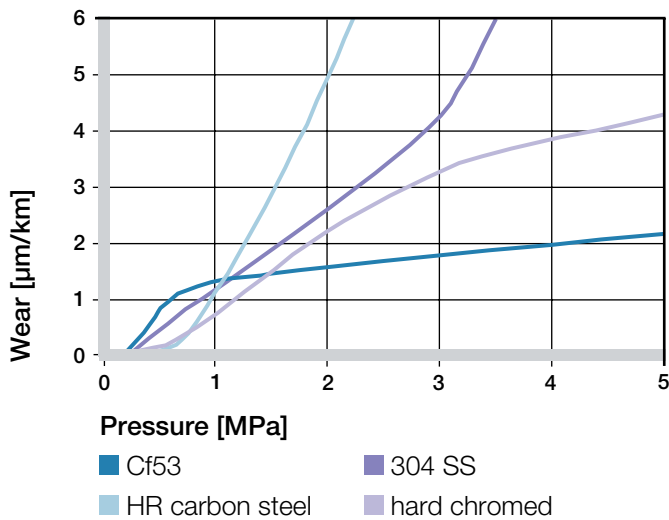


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

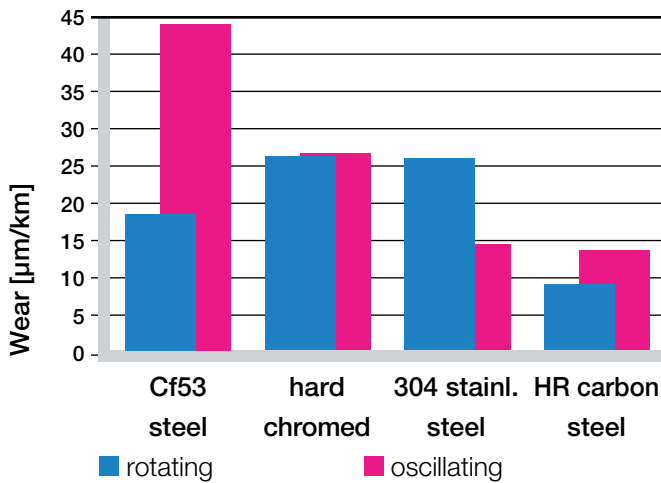


Graph 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

iglidur[®] H | Technical Data



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



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur [®] H	Dry	Greases	Oil	Water
C.o.f. μ	0.07–0.2	0.09	0.04	0.04

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

Additional Properties

Chemical Resistance

iglidur[®] H plain bearings have a good resistance to chemicals. Thus, even aggressive chemicals can act as lubricants.

Plain bearings made of iglidur[®] H are not resistant to hot, oxidizing acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+ to 0
Strong acids	+ to –
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur[®] H withstands both neutron as well as gamma particle radiation without noticeable loss to the excellent mechanical properties. Plain bearings made from iglidur[®] H are resistant to radiation up to an intensity of $2 \cdot 10^2$ Gy.

UV Resistance

iglidur[®] H plain bearings are only conditionally resistant against UV radiation. Under the effects of weathering, the surface of iglidur[®] H becomes rougher, and the compressive strength of the material decreases.

Vacuum

For use in a vacuum environment, it must be taken into account that a small amount of moisture is released as vapour.

Electrical Properties

iglidur[®] H bearings are electrically conductive.

Volume resistance	< $10^5 \Omega\text{cm}$
Surface resistance	< $10^2 \Omega$

Moisture Absorption

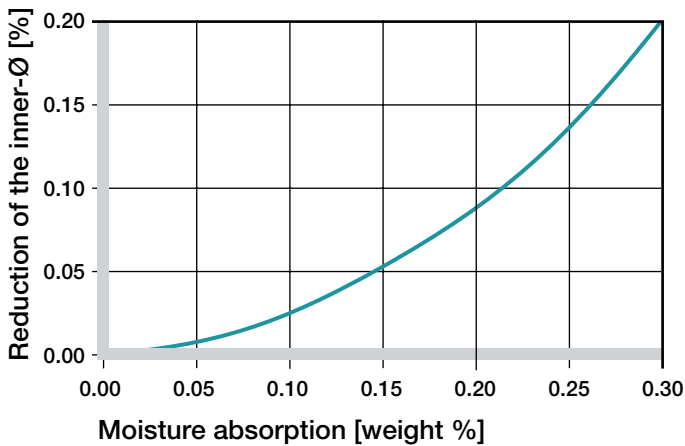
The moisture absorption of iglidur® H plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is 0.3 %. iglidur® H is very well suited for use in wet applications.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.1 % weight

Max. moisture absorption 0.3 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H 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, the inner diameter adjusts to meet the specified tolerances.

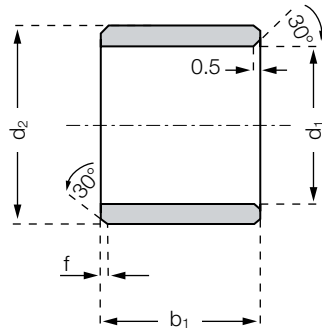
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® H F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® H | Product Range

Sleeve bearing



Order key

HSM-0304-03



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

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
HSM-0304-03	3.0	+0.006 +0.046	4.5	3.0
HSM-0405-04	4.0	+0.010 +0.058	5.5	4.0
HSM-0507-05	5.0	+0.010 +0.058	7.0	5.0
HSM-0608-03	6.0	+0.010 +0.058	8.0	3.0
HSM-0608-06	6.0	+0.010 +0.058	8.0	6.0
HSM-0810-08	8.0	+0.013 +0.071	10.0	8.0
HSM-0810-10	8.0	+0.013 +0.071	10.0	10.0
HSM-1012-06	10.0	+0.013 +0.071	12.0	6.0
HSM-1012-10	10.0	+0.013 +0.071	12.0	10.0
HSM-1214-10	12.0	+0.016 +0.086	14.0	10.0
HSM-1214-12	12.0	+0.016 +0.086	14.0	12.0
HSM-1214-15	12.0	+0.016 +0.086	14.0	15.0
HSM-1214-20	12.0	+0.016 +0.086	14.0	20.0
HSM-1416-20	14.0	+0.016 +0.086	16.0	20.0
HSM-1517-15	15.0	+0.016 +0.086	17.0	15.0
HSM-1618-15	16.0	+0.016 +0.086	18.0	15.0
HSM-1618-20	16.0	+0.016 +0.086	18.0	20.0
HSM-1618-25	16.0	+0.016 +0.086	18.0	25.0

Part number	d1	d1-Tolerance*	d2	b1 h13
HSM-1820-15	18.0	+0.016 +0.086	20.0	15.0
HSM-1820-25	18.0	+0.016 +0.086	20.0	25.0
HSM-2023-20	20.0	+0.020 +0.104	23.0	20.0
HSM-2225-20	22.0	+0.020 +0.104	25.0	20.0
HSM-2528-15	25.0	+0.020 +0.104	28.0	15.0
HSM-2528-20	25.0	+0.020 +0.104	28.0	20.0
HSM-3034-20	30.0	+0.020 +0.104	34.0	20.0
HSM-3034-30	30.0	+0.020 +0.104	34.0	30.0
HSM-3034-40	30.0	+0.020 +0.104	34.0	40.0
HSM-3236-30	32.0	+0.025 +0.125	36.0	30.0
HSM-3539-40	35.0	+0.025 +0.125	39.0	40.0
HSM-4044-20	40.0	+0.025 +0.125	44.0	20.0
HSM-4044-50	40.0	+0.025 +0.125	44.0	50.0
HSM-4550-30	45.0	+0.025 +0.125	50.0	30.0
HSM-5055-40	50.0	+0.025 +0.125	55.0	40.0
HSM-5560-26	55.0	+0.030 +0.150	60.0	26.0
HSM-6065-60	60.0	+0.030 +0.150	65.0	60.0
HSM-7075-50	70.0	+0.030 +0.150	75.0	50.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

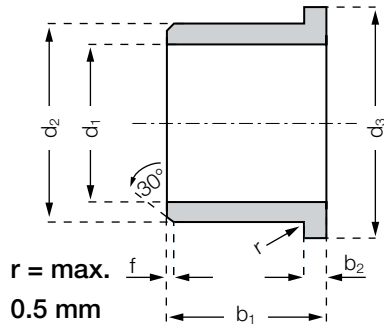


prices price list online
www.igus.eu/eu/h



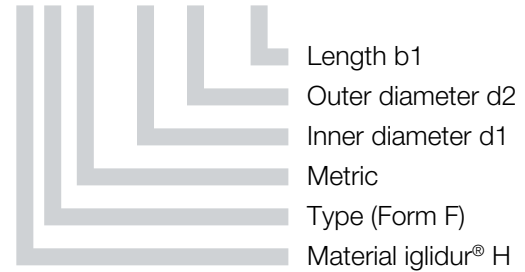
order part number
example HSM-0304-03

Flange bearing



Order key

HFM-0405-04



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
HFM-0405-04	4.0	+0.010 +0.058	5.5	9.5	4.0	0.75
HFM-0507-05	5.0	+0.010 +0.058	7.0	11.0	5.0	1.0
HFM-0507-08	5.0	+0.010 +0.058	7.0	11.0	8.0	1.0
HFM-0608-04	6.0	+0.010 +0.058	8.0	12.0	4.0	1.0
HFM-0608-06	6.0	+0.010 +0.058	8.0	12.0	6.0	1.0
HFM-0810-07	8.0	+0.013 +0.071	10.0	15.0	7.0	1.0
HFM-0810-10	8.0	+0.013 +0.071	10.0	15.0	10.0	1.0
HFM-0810-15	8.0	+0.013 +0.071	10.0	15.0	15.0	1.0
HFM-1012-04	10.0	+0.013 +0.071	12.0	18.0	4.0	1.0
HFM-1012-09	10.0	+0.013 +0.071	12.0	18.0	9.0	1.0
HFM-1012-15	10.0	+0.013 +0.071	12.0	18.0	15.0	1.0
HFM-1012-20	10.0	+0.013 +0.071	12.0	18.0	20.0	1.0
HFM-1214-07	12.0	+0.016 +0.086	14.0	20.0	7.0	1.0
HFM-1214-10	12.0	+0.016 +0.086	14.0	20.0	10.0	1.0
HFM-1214-15	12.0	+0.016 +0.086	14.0	20.0	15.0	1.0
HFM-1416-12	14.0	+0.016 +0.086	16.0	22.0	12.0	1.0
HFM-1517-17	15.0	+0.016 +0.086	17.0	23.0	17.0	1.0
HFM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
HFM-1820-17	18.0	+0.016 +0.086	20.0	26.0	17.0	1.0
HFM-2023-16	20.0	+0.020 +0.104	23.0	30.0	16.5	1.5
HFM-2023-30	20.0	+0.020 +0.104	23.0	30.0	30.0	1.5

* after pressfit. Testing methods ► page 55



delivery available
time from stock



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



order part number
example HFM-0405-04



Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
HFM-2528-30	25.0	+0.020 +0.104	28.0	35.0	30.0	1.5
HFM-2730-20	27.0	+0.020 +0.104	30.0	38.0	20.0	1.5
HFM-3034-40	30.0	+0.020 +0.104	34.0	42.0	40.0	2.0
HFM-3438-13	34.0	+0.025 +0.125	38.0	46.0	13.0	2.0
HFM-3539-26	35.0	+0.025 +0.125	39.0	47.0	26.0	2.0
HFM-4044-40	40.0	+0.025 +0.125	44.0	52.0	40.0	2.0
HFM-5055-50	50.0	+0.025 +0.125	55.0	63.0	50.0	2.0
HFM-6065-50	60.0	+0.030 +0.150	65.0	73.0	50.0	2.0
HFM-7075-50	70.0	+0.030 +0.150	75.0	83.0	50.0	2.0

* after pressfit. Testing methods ► page 55

My Sketches

