

## Endurance runner with high media resistance

Excellent coefficient of friction and wear  
**igidur® H1**



### When to use it?

- When extreme service life is required under the influence of temperature and humidity
- When low coefficient of friction at high temperature is important
- When normal aggressive cleaning is required (splashes, steam blasting)
- For under bonnet applications



### When not to use?

- When high surface pressures occur  
*igidur® Z*
- When the best universal chemical resistance is required  
*igidur® X*
- When a cost-effective high-temperature plain bearing is required, not the ideal wear resistance  
*igidur® H2*
- When an FDA-compliant plain bearing with high temperature resistance is required  
*igidur® A500*

# Bearing technology | Plain bearing | iglidur® H1



Ø  
3.0 – 50.0mm



Also available as:



Bar stock, round bar  
Page 679



Bar stock, plate  
Page 683



tribo-tape liner  
Page 691



Piston rings  
Page 584



Two hole flange bearings  
Page 603



Moulded special parts  
Page 624



igubal® spherical balls  
Page 841

## Endurance runner with high media resistance Excellent coefficient of friction and wear

iglidur® H1 is the first choice when long service life is required in extreme environmental conditions. Extreme wear resistance is coupled with excellent resistance to temperature and media – not only in the packaging and food industries or the automotive industry.

- High wear resistance in extreme ambient conditions
- Very low coefficients of friction
- High temperature resistance
- For underbonnet applications
- Lubrication-free
- High chemical resistance
- Maintenance-free

### Typical application areas

- Beverage industry
- Automation
- Packaging
- Textile industry
- Optical industry

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		Testing method	
Density	g/cm <sup>3</sup>	1.53	
Colour		cream	
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	0.06 – 0.20	
pv value, max. (dry)	MPa · m/s	0.80	
Mechanical properties			
Flexural modulus	MPa	2,800	DIN 53457
Flexural strength at +20°C	MPa	55	DIN 53452
Compressive strength	MPa	78	
Max. recommended surface pressure (+20°C)	MPa	80	
Shore D hardness		77	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	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K <sup>-1</sup> · 10 <sup>-5</sup>	6	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 <sup>12</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>11</sup>	DIN 53482

Table 01: Material properties

iglidur® H1 plain bearings have been specially developed for use under extreme environmental conditions. Their strengths are the extremely high wear resistance and the excellent coefficient of friction even in applications in which the bearing is exposed to extreme temperatures and/or aggressive chemicals. iglidur® H1 plain bearings can be used completely free of lubrication; in wet area applications, the surrounding medium acts as additional lubricant.

### Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® H1 plain bearings is approximately 0.1% weight. The saturation limit in water is 0.3% weight. Therefore iglidur® H1 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

Resistant to radiation up to an intensity of 2 · 10<sup>2</sup>Gy.

### Resistance to weathering

iglidur® H1 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® H1 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® H1 at radial loads. Among the iglidur® H materials, iglidur® H1 material has the greatest flexibility. This must be considered for applications with high surface pressure or edge loads.

**Surface pressure, page 41**



-40°C up to +200°C



80MPa



## Permissible surface speeds

Due to their excellent coefficient of friction, rotating surface speeds of up to 2.0m/s are possible with iglidur® H1 plain bearings in dry operation. Linear speeds up to 5.0m/s can be attained. The speeds stated in table 03 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

### Surface speed, page 44

## Temperature

iglidur® H1 is a very temperature-stable material. The temperatures prevailing in the bearing system also have an influence on the wear. The wear rises with increasing temperatures. In the case of iglidur® H1 in particular, however, this increase is very low. For temperatures over +80°C an additional securing is required.

### Application temperatures, page 49

### Additional securing, page 49

## Friction and wear

The coefficient of friction alters similarly to the wear resistance with increasing load and surface speed (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® H1 plain bearings running against various shaft materials. The iglidur® H1 plain bearings display excellent wear behaviour in combination with a wide variety of shaft materials both in rotating and pivoting applications. On the 304 stainless steel shafts in particular, iglidur® H1 attains very low wear rates both in rotating and pivoting operations. Even on hard-anodised aluminium shafts, iglidur® H1 plain bearings attain high service life in rotating applications with low to medium loads.

### Shaft materials, page 52

## Installation tolerances

iglidur® H1 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	+ up to -

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

Table 02: Chemical resistance

### Chemical table, page 1636

	Rotating	Oscillating	linear
long-term	m/s 2.0	1.0	5.0
short-term	m/s 2.5	1.5	7.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction $\mu$	0.06 – 0.20	0.09	0.04	0.04

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

Ø d1 [mm]	Housing		Plain bearing		Shaft	
	H7 [mm]	F10 [mm]	F10 [mm]	h9 [mm]	h9 [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

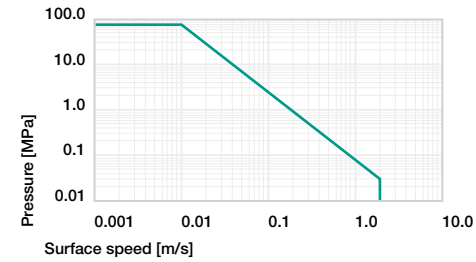


Diagram 01: Permissible pv values for iglidur® H1 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

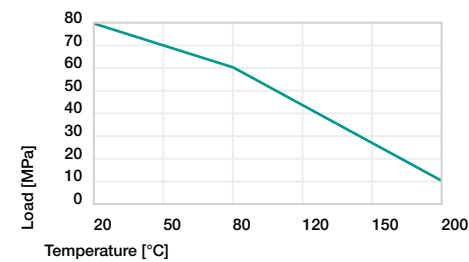


Diagram 02: Maximum recommended surface pressure as a function of temperature (80MPa at +20°C)

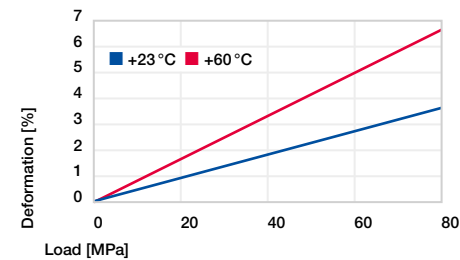


Diagram 03: Deformation under pressure and temperature

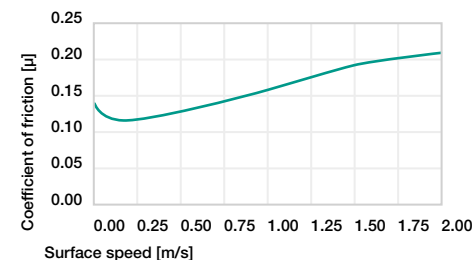


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

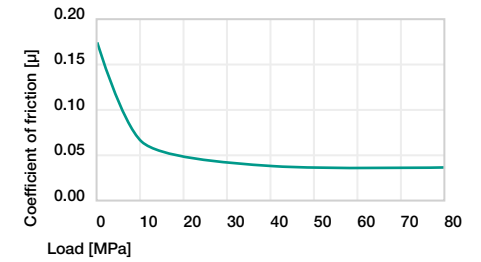


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

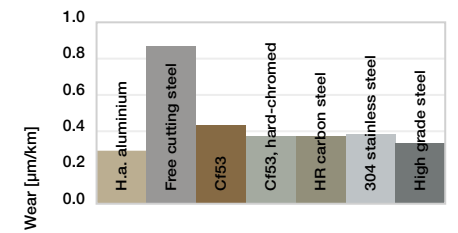


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

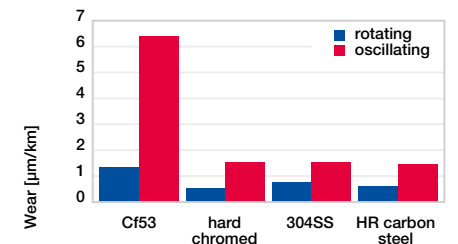
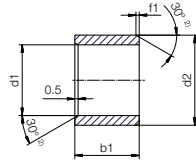


Diagram 07: Wear for rotating and oscillating applications with different shaft materials, p = 2MPa

# Bearing technology | Plain bearing | iglidur® H1

## 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



Dimensions according to ISO 3547-1 and special dimensions



Order example: **H1SM-0304-05** – no minimum order quantity.

**H1** iglidur® material **S** Sleeve bearing **M** Metric **03** Inner Ø d1 **04** Outer Ø d2 **05** Total length b1

d1	d1	d2	b1	Part No.
[mm]	Tolerance <sup>3)</sup>	[mm]	h13 [mm]	
3.0	+0.006 +0.046	4.5	5.0	<b>H1SM-0304-05</b>
4.0		5.5	4.0	<b>H1SM-0405-04</b>
4.0		5.5	6.0	<b>H1SM-0405-06</b>
5.0	+0.010	7.0	5.0	<b>H1SM-0507-05</b>
5.0		7.0	10.0	<b>H1SM-0507-10</b>
6.0	+0.058	8.0	6.0	<b>H1SM-0608-06</b>
6.0		8.0	8.0	<b>H1SM-0608-08</b>
6.0		8.0	10.0	<b>H1SM-0608-10</b>
8.0	+0.013 +0.071	10.0	8.0	<b>H1SM-0810-08</b>
8.0		10.0	10.0	<b>H1SM-0810-10</b>
8.0		10.0	12.0	<b>H1SM-0810-12</b>
8.0		10.0	15.0	<b>H1SM-0810-15</b>
10.0		12.0	8.0	<b>H1SM-1012-08</b>
10.0		12.0	10.0	<b>H1SM-1012-10</b>
10.0		12.0	12.0	<b>H1SM-1012-12</b>
10.0		12.0	15.0	<b>H1SM-1012-15</b>
10.0		12.0	20.0	<b>H1SM-1012-20</b>
12.0		14.0	10.0	<b>H1SM-1214-10</b>
12.0	14.0	12.0	<b>H1SM-1214-12</b>	
12.0	14.0	15.0	<b>H1SM-1214-15</b>	
12.0	14.0	20.0	<b>H1SM-1214-20</b>	
13.0	+0.016	15.0	10.0	<b>H1SM-1315-10</b>
13.0		15.0	20.0	<b>H1SM-1315-20</b>
14.0	+0.086	16.0	15.0	<b>H1SM-1416-15</b>
14.0		16.0	20.0	<b>H1SM-1416-20</b>
14.0	16.0	25.0	<b>H1SM-1416-25</b>	
15.0	17.0	15.0	<b>H1SM-1517-15</b>	
15.0	17.0	20.0	<b>H1SM-1517-20</b>	

d1	d1	d2	b1	Part No.
[mm]	Tolerance <sup>3)</sup>	[mm]	h13 [mm]	
15.0		17.0	25.0	<b>H1SM-1517-25</b>
16.0		18.0	15.0	<b>H1SM-1618-15</b>
16.0	+0.016	18.0	20.0	<b>H1SM-1618-20</b>
16.0		18.0	25.0	<b>H1SM-1618-25</b>
18.0	+0.086	20.0	15.0	<b>H1SM-1820-15</b>
18.0		20.0	20.0	<b>H1SM-1820-20</b>
18.0		20.0	25.0	<b>H1SM-1820-25</b>
20.0		23.0	10.0	<b>H1SM-2023-10</b>
20.0		23.0	15.0	<b>H1SM-2023-15</b>
20.0		23.0	20.0	<b>H1SM-2023-20</b>
20.0		23.0	25.0	<b>H1SM-2023-25</b>
20.0		23.0	30.0	<b>H1SM-2023-30</b>
22.0		25.0	15.0	<b>H1SM-2225-15</b>
22.0		25.0	20.0	<b>H1SM-2225-20</b>
22.0		25.0	25.0	<b>H1SM-2225-25</b>
22.0		25.0	30.0	<b>H1SM-2225-30</b>
24.0		27.0	15.0	<b>H1SM-2427-15</b>
24.0	+0.020	27.0	20.0	<b>H1SM-2427-20</b>
24.0		27.0	25.0	<b>H1SM-2427-25</b>
24.0	+0.104	27.0	30.0	<b>H1SM-2427-30</b>
25.0		28.0	15.0	<b>H1SM-2528-15</b>
25.0		28.0	20.0	<b>H1SM-2528-20</b>
25.0		28.0	25.0	<b>H1SM-2528-25</b>
25.0		28.0	30.0	<b>H1SM-2528-30</b>
28.0		32.0	20.0	<b>H1SM-2832-20</b>
28.0		32.0	25.0	<b>H1SM-2832-25</b>
28.0		32.0	30.0	<b>H1SM-2832-30</b>
30.0		34.0	30.0	<b>H1SM-3034-30</b>
30.0		34.0	40.0	<b>H1SM-3034-40</b>

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

## Product range

d1	d1	d2	b1	Part No.
[mm]	Tolerance <sup>3)</sup>	[mm]	h13 [mm]	
32.0		36.0	20.0	<b>H1SM-3236-20</b>
32.0		36.0	30.0	<b>H1SM-3236-30</b>
32.0		36.0	40.0	<b>H1SM-3236-40</b>
35.0		39.0	20.0	<b>H1SM-3539-20</b>
35.0	+0.025	39.0	30.0	<b>H1SM-3539-30</b>
35.0	+0.125	39.0	40.0	<b>H1SM-3539-40</b>
35.0		39.0	50.0	<b>H1SM-3539-50</b>
40.0		44.0	20.0	<b>H1SM-4044-20</b>
40.0		44.0	30.0	<b>H1SM-4044-30</b>
40.0		44.0	40.0	<b>H1SM-4044-40</b>

d1	d1	d2	b1	Part No.
[mm]	Tolerance <sup>3)</sup>	[mm]	h13 [mm]	
40.0		44.0	50.0	<b>H1SM-4044-50</b>
45.0		50.0	20.0	<b>H1SM-4550-20</b>
45.0		50.0	30.0	<b>H1SM-4550-30</b>
45.0		50.0	40.0	<b>H1SM-4550-40</b>
45.0	+0.025	50.0	50.0	<b>H1SM-4550-50</b>
50.0	+0.125	55.0	20.0	<b>H1SM-5055-20</b>
50.0		55.0	30.0	<b>H1SM-5055-30</b>
50.0		55.0	40.0	<b>H1SM-5055-40</b>
50.0		55.0	50.0	<b>H1SM-5055-50</b>
50.0		55.0	60.0	<b>H1SM-5055-60</b>

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



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/H1](http://www.igus.eu/H1)



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

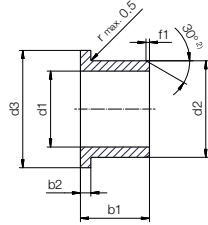
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

# Bearing technology | Plain bearing | iglidur® H1

## 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



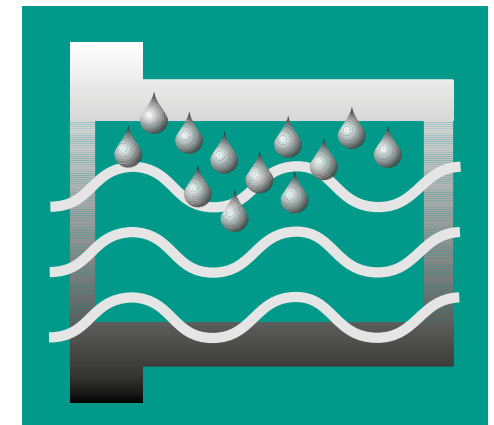
Order example: **H1FM-0304-05** – no minimum order quantity.

**H1** iglidur® material **F** Flange bearing **M** Metric **03** Inner Ø d1 **04** Outer Ø d2 **05** Total length b1

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance <sup>3)</sup>	[mm]	d13 <sup>3)</sup>	h13	h13	
3.0	+0.006	4.5	7.5	5.0	0.75	<b>H1FM-0304-05</b>
	+0.046					
5.0	+0.010	7.0	11.0	5.0	1.00	<b>H1FM-0507-05</b>
	+0.058					
6.0	+0.013	8.0	12.0	4.0	1.00	<b>H1FM-0608-04</b>
	+0.071					
6.0		8.0	12.0	6.0	1.00	<b>H1FM-0608-06</b>
6.0	+0.010	8.0	12.0	8.0	1.00	<b>H1FM-0608-08</b>
	+0.058					
6.0		8.0	12.0	10.0	1.00	<b>H1FM-0608-10</b>
8.0		10.0	15.0	5.5	1.00	<b>H1FM-0810-05</b>
8.0		10.0	15.0	6.5	1.00	<b>H1FM-0810-065</b>
8.0		10.0	15.0	7.5	1.00	<b>H1FM-0810-07</b>
8.0		10.0	15.0	9.5	1.00	<b>H1FM-0810-09</b>
8.0	+0.013	10.0	15.0	10.0	1.00	<b>H1FM-0810-10</b>
10.0	+0.071	12.0	18.0	7.0	1.00	<b>H1FM-1012-07</b>
10.0		12.0	18.0	9.0	1.00	<b>H1FM-1012-09</b>
10.0		12.0	18.0	10.0	1.00	<b>H1FM-1012-10</b>
10.0		12.0	18.0	12.0	1.00	<b>H1FM-1012-12</b>
10.0		12.0	18.0	17.0	1.00	<b>H1FM-1012-17</b>
12.0		14.0	20.0	7.0	1.00	<b>H1FM-1214-07</b>
12.0		14.0	20.0	9.0	1.00	<b>H1FM-1214-09</b>
12.0	+0.016	14.0	20.0	12.0	1.00	<b>H1FM-1214-12</b>
	+0.086					
12.0		14.0	20.0	17.0	1.00	<b>H1FM-1214-17</b>
12.0		14.0	20.0	20.0	1.00	<b>H1FM-1214-20</b>

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance <sup>3)</sup>	[mm]	d13 <sup>3)</sup>	h13	h13	
14.0		16.0	22.0	12.0	1.00	<b>H1FM-1416-12</b>
14.0		16.0	22.0	17.0	1.00	<b>H1FM-1416-17</b>
15.0		17.0	23.0	9.0	1.00	<b>H1FM-1517-09</b>
15.0		17.0	23.0	12.0	1.00	<b>H1FM-1517-12</b>
15.0		17.0	23.0	17.0	1.00	<b>H1FM-1517-17</b>
16.0	+0.016	18.0	24.0	12.0	1.00	<b>H1FM-1618-12</b>
	+0.086					
16.0		18.0	24.0	17.0	1.00	<b>H1FM-1618-17</b>
16.0		18.0	24.0	25.0	1.00	<b>H1FM-1618-25</b>
18.0		20.0	26.0	12.0	1.00	<b>H1FM-1820-12</b>
18.0		20.0	26.0	17.0	1.00	<b>H1FM-1820-17</b>
18.0		20.0	26.0	22.0	1.00	<b>H1FM-1820-22</b>
20.0		23.0	30.0	11.5	1.50	<b>H1FM-2023-11</b>
20.0		23.0	30.0	16.5	1.50	<b>H1FM-2023-16</b>
20.0		23.0	30.0	21.5	1.50	<b>H1FM-2023-21</b>
20.0		23.0	30.0	30.0	1.50	<b>H1FM-2023-30</b>
25.0	+0.020	28.0	35.0	11.5	1.50	<b>H1FM-2528-11</b>
	+0.104					
25.0		28.0	35.0	16.5	1.50	<b>H1FM-2528-16</b>
25.0		28.0	35.0	21.5	1.50	<b>H1FM-2528-21</b>
30.0		34.0	42.0	16.0	2.00	<b>H1FM-3034-16</b>
30.0		34.0	42.0	26.0	2.00	<b>H1FM-3034-26</b>
35.0		39.0	47.0	16.0	2.00	<b>H1FM-3539-16</b>
35.0		39.0	47.0	26.0	2.00	<b>H1FM-3539-26</b>
40.0	+0.025	44.0	52.0	30.0	2.00	<b>H1FM-4044-30</b>
	+0.125					
40.0		44.0	52.0	40.0	2.00	<b>H1FM-4044-40</b>
45.0		50.0	58.0	50.0	2.00	<b>H1FM-4550-50</b>

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



## Long service life under water High media resistance iglidur® H370



**When to use it?**

- For underwater applications
- When high temperature resistance is required
- When high mechanical loading and wear resistance is required
- When good chemical resistance is required



**When not to use?**

- When mechanical reaming of the bore is necessary  
*iglidur® M250*
- When high wear resistance in temperatures is required  
*iglidur® H1*
- For use in dirty surroundings  
*iglidur® Z*
- When a cost-effective, large-volume solution is required  
*iglidur® H2*