

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

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



Bar stock, plate
Page 683



tribo-tape liner
Page 691

Typical application areas

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



Piston rings
Page 584

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	-	██████████	+



Two hole flange bearings
Page 603



Moulded special parts
Page 624



igubal® spherical balls
Page 841

Online product finder
www.igus.eu/iglidur-finder

Online service life calculation
www.igus.eu/iglidur-expert

334 3D CAD, finder and service life calculation ... www.igus.eu/H1



Technical data

General properties		Testing method	
Density	g/cm ³	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 ⁻¹ · 10 ⁻⁵	6	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	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 · 10²Gy.

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



V-0



RoHS II



ISO 35471

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 μ	0.06 – 0.20	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 μ 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

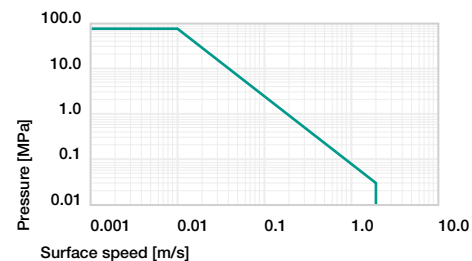


Diagram 01: Permissible pv values for iglidur® H1 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

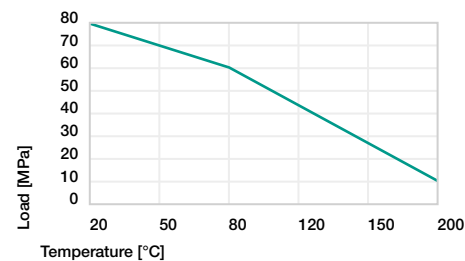


Diagram 02: Maximum recommended surface pressure as a function of temperature (80MPa at +20°C)

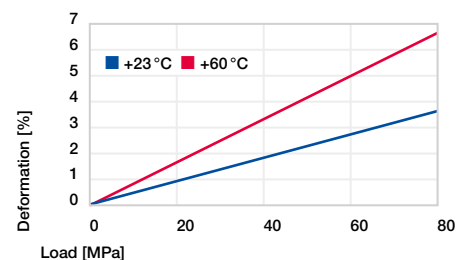


Diagram 03: Deformation under pressure and temperature

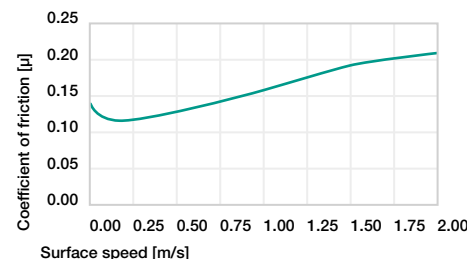


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

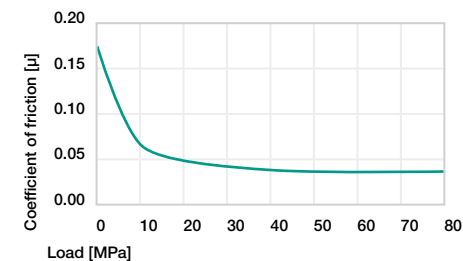


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

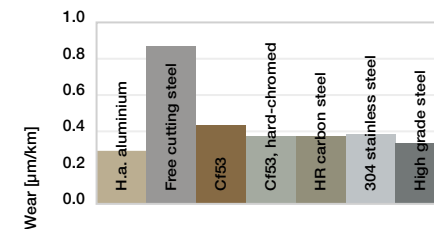


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

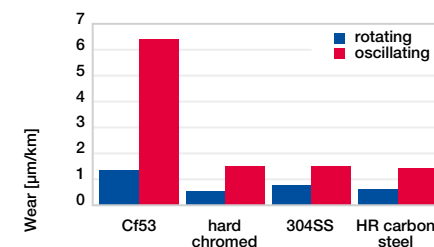
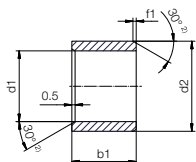


Diagram 07: Wear for rotating and oscillating applications with different shaft materials, p = 2MPa

Sleeve bearing (form S)



²⁾ 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: **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 [mm]	d1 Tolerance ³⁾	d2 [mm]	b1 [mm]	Part No.	
3.0	+0.006 +0.046	4.5	5.0	H1SM-0304-05	
4.0	+0.010 +0.058	5.5	4.0	H1SM-0405-04	
4.0		5.5	6.0	H1SM-0405-06	
5.0		7.0	5.0	H1SM-0507-05	
5.0		7.0	10.0	H1SM-0507-10	
6.0		8.0	6.0	H1SM-0608-06	
6.0		8.0	8.0	H1SM-0608-08	
6.0	+0.013 +0.071	8.0	10.0	H1SM-0608-10	
8.0		10.0	8.0	H1SM-0810-08	
8.0		10.0	10.0	H1SM-0810-10	
8.0		10.0	12.0	H1SM-0810-12	
8.0		10.0	15.0	H1SM-0810-15	
10.0		12.0	8.0	H1SM-1012-08	
10.0		12.0	10.0	H1SM-1012-10	
10.0		12.0	12.0	H1SM-1012-12	
10.0		12.0	15.0	H1SM-1012-15	
10.0		12.0	20.0	H1SM-1012-20	
12.0		+0.016 +0.086	14.0	10.0	H1SM-1214-10
12.0			14.0	12.0	H1SM-1214-12
12.0	14.0		15.0	H1SM-1214-15	
12.0	14.0		20.0	H1SM-1214-20	
13.0	15.0		10.0	H1SM-1315-10	
13.0	15.0		20.0	H1SM-1315-20	
14.0	16.0		15.0	H1SM-1416-15	
14.0	16.0		20.0	H1SM-1416-20	
14.0	16.0		25.0	H1SM-1416-25	
15.0	17.0		15.0	H1SM-1517-15	
15.0	17.0		20.0	H1SM-1517-20	

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

³⁾ After press-fit. Testing methods, page 57

Product range

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

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

³⁾ After press-fit. Testing methods, page 57

Available from stock
Detailed information about delivery time online.
www.igus.eu/24

Online ordering
Including delivery times, prices, online tools
www.igus.eu/H1

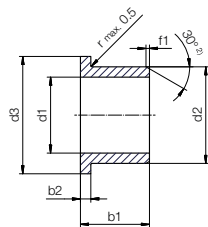
Ordering note
Our prices are scaled according to order quantities, current prices can be found online.

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)



²⁾ 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

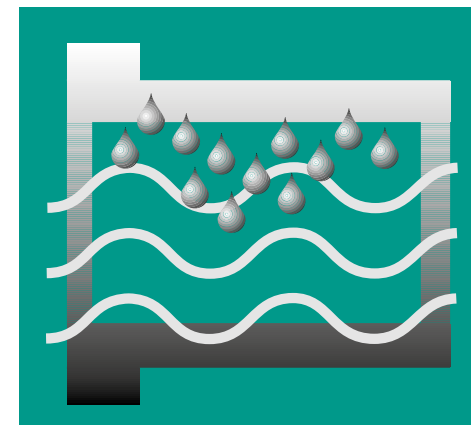
i Order example: **H1FM-0304-05** – no minimum order quantity.

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 ³⁾	[mm]	d13 ³⁾	h13	h13	
3.0	+0.006 +0.046	4.5	7.5	5.0	0.75	H1FM-0304-05
5.0	+0.010 +0.058	7.0	11.0	5.0	1.00	H1FM-0507-05
6.0	+0.013 +0.071	8.0	12.0	4.0	1.00	H1FM-0608-04
6.0	+0.010	8.0	12.0	6.0	1.00	H1FM-0608-06
6.0	+0.058	8.0	12.0	8.0	1.00	H1FM-0608-08
6.0		8.0	12.0	10.0	1.00	H1FM-0608-10
8.0		10.0	15.0	5.5	1.00	H1FM-0810-05
8.0		10.0	15.0	6.5	1.00	H1FM-0810-065
8.0		10.0	15.0	7.5	1.00	H1FM-0810-07
8.0		10.0	15.0	9.5	1.00	H1FM-0810-09
8.0	+0.013	10.0	15.0	10.0	1.00	H1FM-0810-10
10.0	+0.071	12.0	18.0	7.0	1.00	H1FM-1012-07
10.0		12.0	18.0	9.0	1.00	H1FM-1012-09
10.0		12.0	18.0	10.0	1.00	H1FM-1012-10
10.0		12.0	18.0	12.0	1.00	H1FM-1012-12
10.0		12.0	18.0	17.0	1.00	H1FM-1012-17
12.0		14.0	20.0	7.0	1.00	H1FM-1214-07
12.0		14.0	20.0	9.0	1.00	H1FM-1214-09
12.0	+0.016	14.0	20.0	12.0	1.00	H1FM-1214-12
12.0	+0.086	14.0	20.0	17.0	1.00	H1FM-1214-17
12.0		14.0	20.0	20.0	1.00	H1FM-1214-20

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

³⁾ 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