

Endurance runner with high media resistance

Excellent coefficient of friction and wear iglidur® 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
iglidur® Z
- When the best universal chemical resistance is required
iglidur® X
- When a cost-effective high-temperature plain bearing is required, not the ideal wear resistance
iglidur® H2
- When an FDA-compliant plain bearing with high temperature resistance is required
iglidur® A500



Ø
3.0 – 50.0
mm

Also available
as:



Bar stock,
round bar;
Page 643



Bar stock,
plate;
Page 581



tribo-tape
liner;
Page 657



Piston rings;
Page 562



Two hole
flange bearing;
Page 581



Modified
special parts;
Page 602



iglidur®
spherical balls;
Page 783



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 coefficient 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

Online service life calculation

www.igus.eu/iglidur-expert

Technical data

General properties	Testing method
Density	1.53
Colour	cream
Max. moisture absorption at +23°C and 50% r.h.	0.1
Max. moisture absorption	0.3
Coefficient of friction, dynamic, against steel	0.06 – 0.20
pv value, max. (dry)	0.80
Mechanical properties	
Flexural modulus	2,800
Flexural strength at +20°C	55
Compressive strength	78
Max. recommended surface pressure (+20°C)	80
Shore D hardness	77
Physical and thermal properties	
Max. application temperature long-term	+200
Max. application temperature short-term	+240
Min. application temperature	-40
Thermal conductivity	0.24
Coefficient of thermal expansion (at +23°C)	6
Electrical properties	
Specific contact resistance	> 10 ¹²
Surface resistance	> 10 ¹¹

Table 01: Material properties table

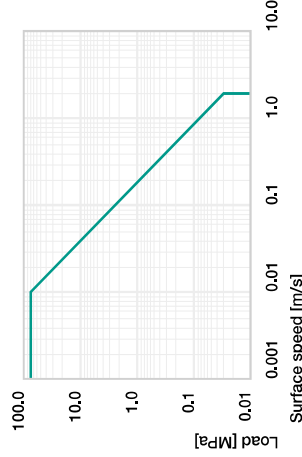


Diagram 01: Permissible pv values for iglidur® H1 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

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 · 10⁶Gy.

UV resistance

iglidur® H1 plain bearings are partially resistant to UV radiation.

Chemicals	Resistance
Alcohols	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+ up to 0
Strong acids	+ up to -
Diluted alkalines	+
Strong alkalines	+ up to -
+ resistant 0 conditionally resistant - not resistant	
All information given at room temperature [+20°C]	

Table 02: Chemical resistance

Chemical table, page 1542

Bearing technology | Plain bearings | iglidur® H1

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.

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.

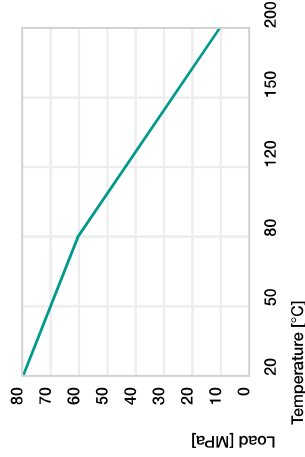


Diagram 02: Maximum recommended surface pressure as a function of temperature (80MPa at +20°C)

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

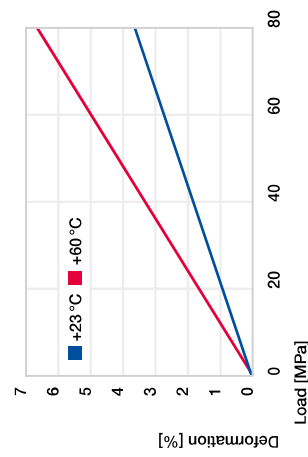


Diagram 03: Deformation under pressure and temperature

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

	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

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

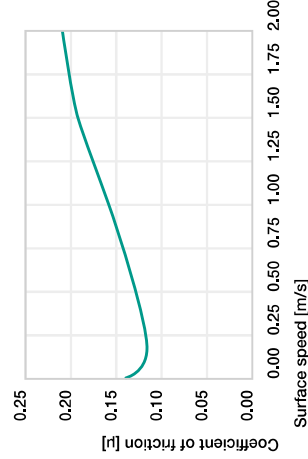


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

Technical data

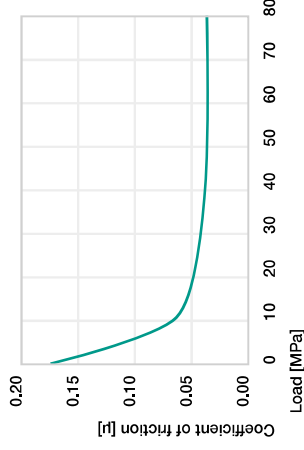


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

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

	Dry	Greases	Oil	Water
Coef. of friction [μ]	0.06 – 0.20	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

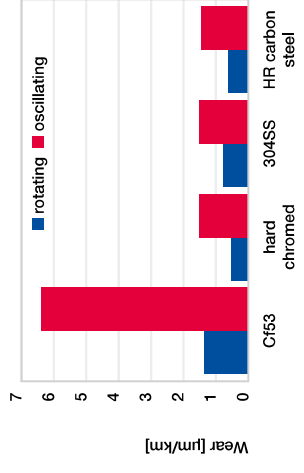


Diagram 07: Wear for rotating and oscillating applications with different shaft materials, p = 2MPa

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).

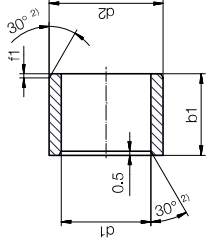
Testing methods, page 57

	Housing	Plain bearing	Shaft
Ø d1 [mm]	H7 [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	-0.090 +0.100

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

Bearing technology | Plain bearings | iglidur® H1

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

³⁾ After press-fit. Testing methods page 57

Product range

d1	d1 Tolerance ³⁾	d2	b1	h13	Part No.
32.0		36.0	20.0	20.0	H1SM-3236-20
32.0		36.0	30.0	30.0	H1SM-3236-30
32.0		36.0	40.0	40.0	H1SM-3236-40
35.0		39.0	20.0	20.0	H1SM-3539-20
35.0	+0.025	39.0	30.0	30.0	H1SM-3539-30
35.0	+0.125	39.0	40.0	40.0	H1SM-3539-40
35.0		39.0	50.0	50.0	H1SM-3539-50
40.0		44.0	20.0	20.0	H1SM-4044-20
40.0		44.0	30.0	30.0	H1SM-4044-30
40.0		44.0	40.0	40.0	H1SM-4044-40

³⁾ After press-fit. Testing methods page 57

d1	d1 Tolerance ³⁾	d2	b1	h13	Part No.
40.0		44.0	50.0	50.0	H1SM-4044-50
45.0		50.0	20.0	20.0	H1SM-4550-20
45.0		50.0	30.0	30.0	H1SM-4550-30
45.0		50.0	40.0	40.0	H1SM-4550-40
45.0	+0.025	50.0	50.0	50.0	H1SM-4550-50
50.0	+0.125	55.0	20.0	20.0	H1SM-5055-20
50.0		55.0	30.0	30.0	H1SM-5055-30
50.0		55.0	40.0	40.0	H1SM-5055-40
50.0		55.0	50.0	50.0	H1SM-5055-50
50.0		55.0	60.0	60.0	H1SM-5055-60



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

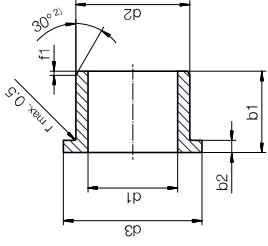
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

Bearing technology | Plain bearings | 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
f [mm]	0.3	0.5	0.8	1.2

i Dimensions according to ISO 3547-1 and special dimensions

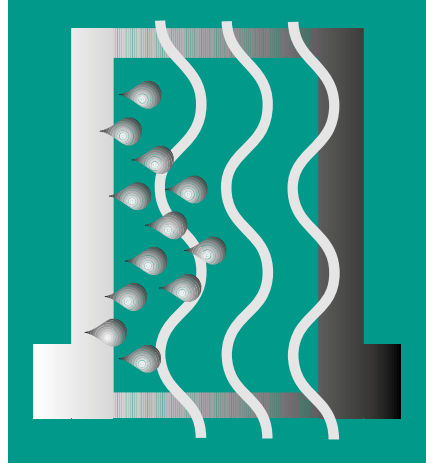
i Order example: H1FM-0304-05 - no minimum order quantity.

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

d1 [mm]	d1 Tolerance ³⁾	d2 [mm]	d3 [mm]	b1 h13 [mm]	b2 h14 [mm]	Part No.
3.0	+0.006	4.5	7.5	5.0	0.75	H1FM-0304-05
5.0	+0.046	7.0	11.0	5.0	1.00	H1FM-0507-05
6.0	+0.013	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	+0.058	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
14.0		16.0	22.0	12.0	1.00	H1FM-1416-12

d1 [mm]	d1 Tolerance ³⁾	d2 [mm]	d3 [mm]	b1 h13 [mm]	b2 h14 [mm]	Part No.
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		17.0	23.0	17.0	1.00	H1FM-1517-17
16.0	+0.016	18.0	24.0	12.0	1.00	H1FM-1618-12
16.0	+0.086	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		23.0	30.0	30.0	1.50	H1FM-2023-30
25.0	+0.020	28.0	35.0	11.5	1.50	H1FM-2528-11
25.0	+0.104	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