

The automotive standard

Up to +200°C, media-resistant
iglidur® H4



When to use it?

- For application with fuels, oils, etc.
- When high wear resistance is required
- For low coefficient of friction
- For high temperature resistance from -40°C to +200°C
- For high chemical resistance



When not to use?

- For underwater use
iglidur® H370
- When a cost-effective universal plain bearing is required
iglidur® G
- When a temperature and media-resistant plain bearing for static applications is required
iglidur® H2

Bearing technology | Plain bearing | iglidur® H4



Ø
4.0 – 40.0mm



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 automotive standard Up to +200°C, media-resistant

Cost-effective high-temperature material with good dry-operation properties and "engine compartment resistance".

- Low coefficient of friction
- High wear resistance
- Temperature-resistant from –40°C to +200°C
- High chemical resistance
- Lubrication-free
- Maintenance-free

Typical application areas

- Automotive industry
- Automation
- Packaging

Descriptive technical specifications

Wear resistance at +23°C	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Wear resistance at +90°C	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Wear resistance at +150°C	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Low coefficient of friction	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Low moisture absorption	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Wear resistance under water	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
High media resistance	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Resistant to edge pressures	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Suitable for shock and impact loads	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+
Resistant to dirt	–	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+

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

502 3D CAD, finder and service life calculation ... www.igus.eu/H4



Technical data

General properties		Testing method	
Density	g/cm³	1.79	
Colour		brown	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.2	
Coefficient of friction, dynamic, against steel	μ	0.08 – 0.25	
pv value, max. (dry)	MPa · m/s	0.70	
Mechanical properties			
Flexural modulus	MPa	7,500	DIN 53457
Flexural strength at +20°C	MPa	120	DIN 53452
Compressive strength	MPa	50	
Max. recommended surface pressure (+20°C)	MPa	65	
Shore D hardness		80	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	5	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10¹³	DIN IEC 93
Surface resistance	Ω	> 10¹²	DIN 53482

Table 01: Material properties

iglidur® H4 plain bearings stand for high carrying capacity, good abrasion resistance and good temperature resistance, besides the obvious economic factors. Temperatures up to +200°C, permitted surface pressure up to 65MPa, and excellent chemical resistance are only some of the essential attributes. Solid lubricants lower the coefficient of friction and support the wear resistance, which was considerably improved compared to the likewise cost-effective iglidur® H2 plain bearings. iglidur® H4 bearings are self-lubricating and suitable for all motions.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® H4 plain bearings is below 0.1% weight. The saturation limit in water is 0.2% weight. iglidur® H4 is therefore an ideal material for wet environments.

Vacuum

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

Radiation resistance

Plain bearings made from iglidur® H4 are resistant up to a radiation intensity of 2 · 10²Gy.

Resistance to weathering

iglidur® H4 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® H4 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® H4 at radial loads.

Surface pressure, page 41



–40°C up to
+200°C



65MPa



V-0



RoHS



ISO
35474



Lubrication-free made easy ... from stock ... no minimum order quantity 503

Permissible surface speeds

In contrast to the similarly cost-effective iglidur® H2 plain bearings, iglidur® H4 has an essentially favourable coefficient of friction. This accounts for the higher permitted surface speeds that can be attained with these bearings. 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® H4 is a temperature-resistant material. With increasing temperatures, the compressive strength of iglidur® H4 plain bearings decreases. When considering temperatures, the additional frictional heat in the bearing system must be taken into account. For temperatures over +110°C an additional securing is required.

Application temperatures, page 49

Additional securing, page 49

Friction and wear

The coefficient of friction of the iglidur® H4 plain bearings is very low (diagrams 04 and 05). Please note that a sliding surface with a rough surface finish will increase the friction.

Coefficient of friction and surfaces, page 47

Wear resistance, page 50

Shaft materials

With many of the suitable shaft materials, iglidur® H4 is the economical alternative to many other high-temperature bearings. The important thing is however the selection of the suitable shaft material. It cannot be generally stated that iglidur® H4 is suitable for use with hard or soft shafts. Tests have however shown that pivoting applications yield better wear data. In rotating applications, the wear increases markedly from 10MPa.

Shaft materials, page 52

Installation tolerances

iglidur® H4 plain bearings are standard bearings for shafts with h tolerance (recommended minimum h9). 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	0 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	1.0
short-term m/s	1.5	1.1	2.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.08 – 0.25	0.09	0.04	0.04

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

	Housing	Plain bearing	Shaft
\varnothing 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 +0.000 +0.100		

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

Technical data

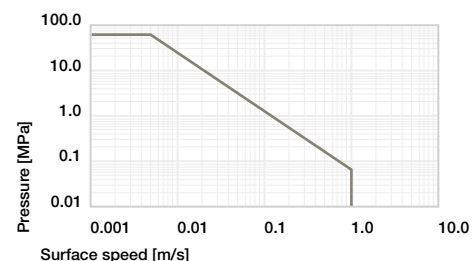


Diagram 01: Permissible pv values for iglidur® H4 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

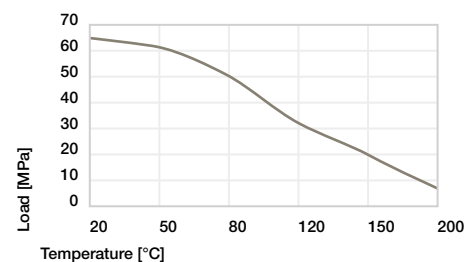


Diagram 02: Maximum recommended surface pressure as a function of temperature (65MPa at +20°C)

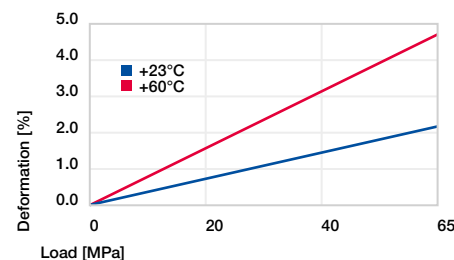


Diagram 03: Deformation under pressure and temperature

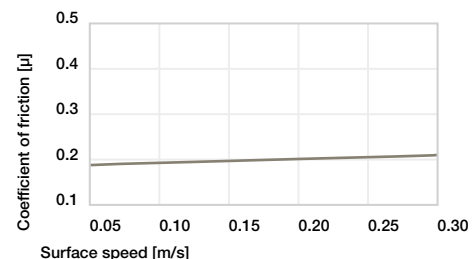


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

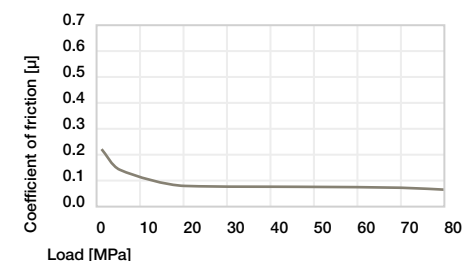


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

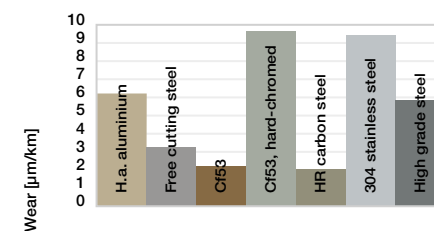


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

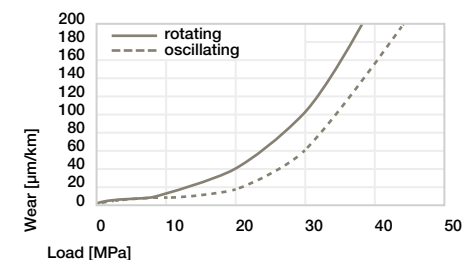
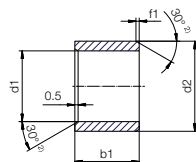


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

Bearing technology | Plain bearing | iglidur® H4

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



Dimensions according to ISO 3547-1 and special dimensions



Order example: H4SM-0405-04 – no minimum order quantity.

H4 iglidur® material S Sleeve bearing M Metric 04 Inner Ø d1 05 Outer Ø d2 04 Total length b1

d1 [mm]	d1 Tolerance ³⁾	d2 [mm]	b1 h13 [mm]	Part No.
4.0	+0.010 +0.058	5.5	4.0	H4SM-0405-04
6.0		8.0	8.0	H4SM-0608-08
8.0	+0.013 +0.071	10.0	10.0	H4SM-0810-10
8.0		10.0	20.0	H4SM-0810-20
16.0	+0.016 +0.086	18.0	20.0	H4SM-1618-20
18.0		20.0	15.0	H4SM-1820-15
20.0	+0.020 +0.104	22.0	15.0	H4SM-2022-15
39.0	+0.025 +0.125	43.0	40.0	H4SM-3943-40

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



Available from stock

Detailed information about delivery time online.

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Online ordering

Including delivery times, prices, online tools

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Discount scaling

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25 – 49	200 – 499	2,500 – 4,999

No minimum order value.

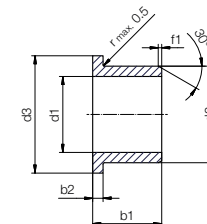
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Bearing technology | Plain bearing | iglidur® H4

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



Dimensions according to ISO 3547-1 and special dimensions



Order example: H4FM-0405-04 – no minimum order quantity.

H4 iglidur® material F Flange bearing M Metric 04 Inner Ø d1 05 Outer Ø d2 04 Total length b1

d1 [mm]	d1 Tolerance ³⁾	d2 [mm]	d3 d13 ³⁾ [mm]	b1 h13 [mm]	b2 h13 [mm]	Part No.
4.0		5.5	9.5	4.0	0.75	H4FM-0405-04
6.0	+0.010 +0.058	8.0	12.0	8.0	1.00	H4FM-0608-08
6.0		10.0	12.0	20.0	1.00	H4FM-060810-20
8.0		10.0	15.0	10.0	1.00	H4FM-0810-10
10.0	+0.013 +0.071	12.0	18.0	5.0	1.00	H4FM-1012-05
10.0		12.0	18.0	12.0	1.00	H4FM-1012-12
10.0		12.0	18.0	25.0	1.00	H4FM-101218-25
12.0		14.0	20.0	12.0	1.00	H4FM-1214-12
15.0	+0.016 +0.086	17.0	23.0	12.0	1.00	H4FM-1517-12
16.0		18.0	24.0	17.0	1.00	H4FM-1618-17
18.0		20.0	26.0	17.0	1.00	H4FM-1820-17
20.0		23.0	30.0	21.5	1.50	H4FM-2023-21
25.0	+0.020 +0.104	28.0	35.0	21.5	1.50	H4FM-2528-21
30.0		34.0	40.0	30.0	2.00	H4FM-3034-30
40.0	+0.030 +0.150	44.0	52.0	40.0	2.00	H4FM-4044-40

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



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