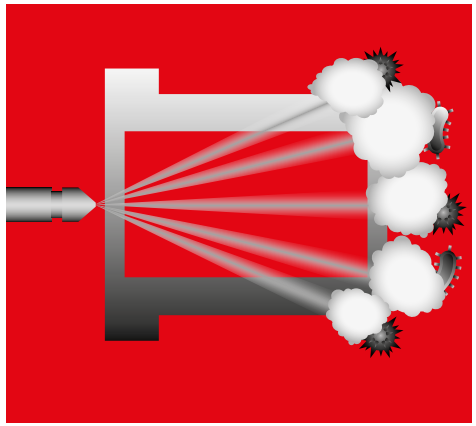


All-rounder for steam sterilisation

Low-cost, media-resistant and hygienic

iglidur® HSD350

When to use it?

- If the bearing point is regularly sterilised with hot steam
- When a low-cost material is required at the same time
- When good chemical resistance is required
- Low moisture absorption

When not to use?

- When high pressures occur
  iglidur® G, iglidur® W300
- When continuous operating temperatures are higher than +180°C
  iglidur® G, iglidur® Z
- When a cost-effective bearing for occasional movements is necessary
  iglidur® G

Bearing technology | Plain bearing | iglidur® HSD350

Ø 6.0 – 20.0mm

Also available as:

Bar stock, round bar Page 679

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

All-rounder for steam sterilisation
Low-cost, media-resistant and hygienic

The new material enables continuous operation where hygiene is important, including regular sterilisation, with an outstanding price-performance ratio.

- Temperature-resistant up to +180°C
- Suitable for wet environments
- High media resistance
- Corrosion-free
- Lubrication-free
- Sterilisable
- Maintenance-free

Typical application areas

- Filling technology
- Medical and laboratory technology

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

iglidur® HSD350 +180°C 30MPa

Technical data

General properties			Testing method
Density	g/cm³	1.39	
Colour		beige	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.6	ISO 175
Max. moisture absorption	% weight	1.2	ISO 62
Coefficient of friction, dynamic, against steel	µ	0.07 – 0.23	
pv value, max. (dry)	MPa · m/s	0.30	
Mechanical properties			
Flexural modulus	MPa	2,150	DIN EN ISO 178
Flexural strength at +20°C	MPa	67	DIN EN ISO 178
Compressive strength	MPa	44	
Max. recommended surface pressure (+20°C)	MPa	30	
Shore D hardness		77	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+180	
Max. application temperature short-term	°C	+210	
Min. application temperature	°C	–40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	$K^{-1} \cdot 10^{-5}$	7	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	$> 10^{13}$	DIN IEC 93
Surface resistance	Ω	$> 10^{14}$	DIN 53482

Table 01: Material properties

–40°C up to +180°C

30MPa

V-0

RoHS-II

ISO 3547-1

iglidur® HSD350 was specially developed for use in applications where decontamination by steam (e.g. in autoclaves) is necessary. iglidur® HSD350 offers an excellent price-performance ratio.

Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® HSD350 plain bearings is approximately 0.6% weight. The saturation limit in water is 1.2% weight. These values are so low that a moisture expansion need to be considered only in extreme cases.

Vacuum

In vacuum, the moisture content is released as vapour. Due to its low moisture absorption, use in a vacuum is possible.

Radiation resistance

Plain bearings made from iglidur® HSD350 are resistant up to a radiation intensity of $3 \cdot 10^2$Gy.

Resistance to weathering

iglidur® HSD350 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® HSD350 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® HSD350 at radial loads. At the maximum recommended surface pressure of 30MPa the deformation is less than 2%. A possible deformation could be, among others, dependant on the duty cycle of the load.
Surface pressure, page 41

Permissible surface speeds

Due to its rather good thermal conductivity and thermal resistance, iglidur® HSD350 is suitable for speeds in the medium range. The permissible surface speed decreases with increasing surface pressure.

Surface speed, page 44

Temperature

The ambient temperatures strongly influence the properties of plain bearings. According to its field of application as autoclavable material, iglidur® HSD350 offers good thermal resistance. For temperatures over +130°C an axial securing is required.

Application temperatures, page 49
Additional securing, page 49

Friction and wear

The coefficient of friction increases constantly and slowly over the speed, but remains below 0.3µ up to a speed of 2.0m/s.

Coefficient of friction and surfaces, page 47
Wear resistance, page 50

Shaft materials

Diagrams 06 and 07 display a summary of the test results with different shaft materials conducted with plain bearings made from iglidur® HSD350. At 0.3m/s and 1MPa surface pressure, a wide variety of shafts are suitable and provide good wear results. Hard-anodised aluminium, free cutting steel, hard-chromed Cf53, 304 stainless steel and high grade steel exhibit low wear. If the shaft material you plan on using is not shown in these test results, please contact us.

Shaft materials, page 52

Installation tolerances

iglidur® HSD350 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). In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

Testing methods, page 57

Chemicals	Resistance
Alcohols	+ up to 0
Diluted acids	+
Diluted alkalines	+
Fuels	+ up to 0
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	0
Strong alkalines	0

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

Table 02: Chemical resistance

Chemical table, page 1636

		Rotating	Oscillating	linear
long-term	**m/s**	1.1	0.8	3.0
short-term	**m/s**	1.2	1.0	3.2

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction µ	0.07 – 0.23	0.09	0.04	0.04

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

	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	+0.000	+0.100

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

iglidur®
HSD350
+180°C
30MPa

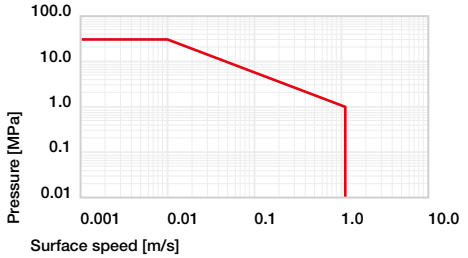


Diagram 01: Permissible pv values for iglidur® HSD350 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

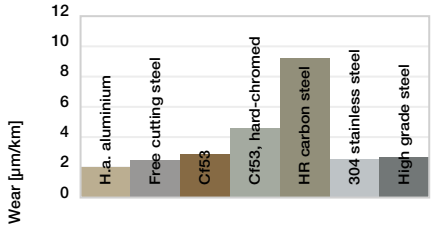


Diagram 05: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

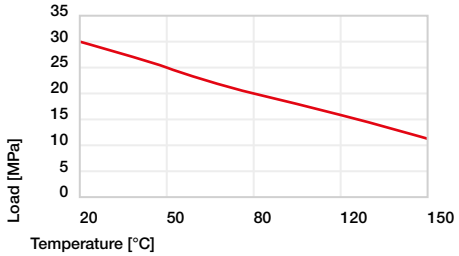


Diagram 02: Maximum recommended surface pressure as a function of temperature (30MPa at +20°C)

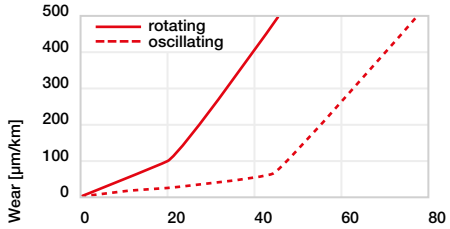


Diagram 06: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

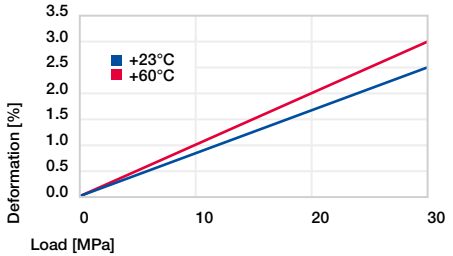


Diagram 03: Deformation under pressure and temperature

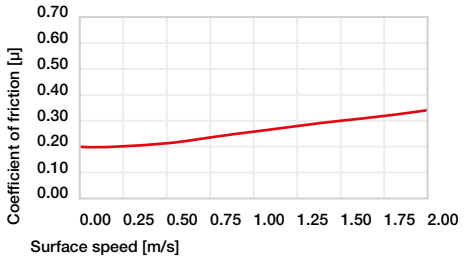
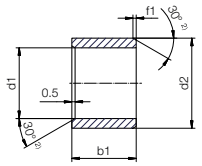


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1MPa

Bearing technology | Plain bearing | iglidur® HSD350

Sleeve bearing (form S)



[2] Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 6–12	Ø 12–30
f1 [mm]	0.5	0.8

Dimensions according to ISO 3547-1 and special dimensions

Order example: HSD350SM-0608-06 – no minimum order quantity.
HSD350 iglidur® material S Sleeve bearing M Metric 06 Inner Ø d1 08 Outer Ø d2 06 Total length b1

d1 [mm]	d1 Tolerance[3]	d2 [mm]	b1 h13 [mm]	Part No.
6.0	+0.010 +0.058	8.0	6.0	HSD350SM-0608-06
8.0	+0.013 +0.071	10.0	10.0	HSD350SM-0810-10
10.0		12.0	10.0	HSD350SM-1012-10
12.0	+0.016 +0.086	14.0	12.0	HSD350SM-1214-12
16.0		18.0	15.0	HSD350SM-1618-15
20.0	+0.020 +0.104	23.0	20.0	HSD350SM-2023-20

[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/HSD350

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

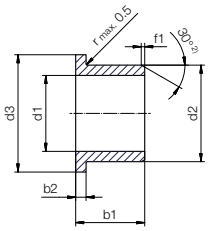
Discount scaling		
1 – 9	50 – 99	500 – 999
10 – 24	100 – 199	1,000 – 2,499
25 – 49	200 – 499	2,500 – 4,999

No minimum order value.
No low-quantity surcharges.
Free shipping within Germany for orders above €150.

iglidur®
HSD350
+180°C
30MPa

Bearing technology | Plain bearing | iglidur® HSD350

Flange bearing (form F)



[2] Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 6–12	Ø 12–30
f1 [mm]	0.5	0.8

Dimensions according to ISO 3547-1 and special dimensions

Order example: HSD350FM-0608-06 – no minimum order quantity.
HSD350 iglidur® material F Flange bearing M Metric 06 Inner Ø d1 08 Outer Ø d2 06 Total length b1

d1 [mm]	d1 Tolerance[3]	d2 [mm]	d3 d13[3] [mm]	b1 h13 [mm]	b2 h13 [mm]	Part No.
6.0	+0.010 +0.058	8.0	12.0	6.0	1.00	HSD350FM-0608-06
8.0	+0.013 +0.071	10.0	15.0	10.0	1.00	HSD350FM-0810-09
10.0		12.0	18.0	9.0	1.00	HSD350FM-1012-09
12.0	+0.016 +0.086	14.0	20.0	12.0	1.00	HSD350FM-1214-12
16.0		18.0	24.0	17.0	1.00	HSD350FM-1618-17
20.0	+0.020 +0.104	23.0	30.0	21.5	1.50	HSD350FM-2023-21

[3] After press-fit. *Testing methods, page 57*

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

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