



For soft shafts and high temperatures

Wear and media-resistant **igidur® V400**



When to use it?

- When extreme wear resistance is required with soft shafts
- When the highest wear resistance at temperatures above +100°C is required
- When vibrations and edge loads are present
- When the bearing should be resistant to chemicals



When not to use it?

- For hardened shafts
igidur® W300
- For applications at normal temperatures
igidur® G, iglidur® J, iglidur® W300
- When a cost-effective universal plain bearing is required
igidur® G

Bearing technology | Plain bearings | iglidur® V400



Ø
6.0-20.0mm



Also available
as:



Bar stock,
round bar
Page 743



Bar stock,
plate
Page 773



tribo-tape liner
Page 781



Guide rings
Page 641



Two hole
flange
bearings
Page 667



Moulded
special parts
Page 696



igubal®
spherical balls
Page 993

For soft shafts and high temperatures
Wear and media-resistant

Highly wear-resistant bearings for soft shafts and temperatures up to +200°C with low moisture absorption and excellent resistance to chemicals.

- Excellent wear resistance with soft shaft materials and for temperatures up to +200°C
- Chemical-resistant
- High elasticity
- Lubrication-free
- Maintenance-free

Typical application areas

- Plant construction
- Automotive industry
- Automation
- Aerospace engineering
- Mechatronics

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>	+
Slide property	-	<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>	+
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>	+
Resistant to 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>	+
Dirt resistance	-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	+

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

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

Technical data

General properties			Testing method
Density	g/cm³	1.51	
Colour		cream	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.2	
Coefficient of friction, dynamic, against steel	μ	0.15-0.20	
pv value, max. (dry)	MPa · m/s	0.50	
Mechanical properties			
Flexural modulus	MPa	4,500	DIN 53457
Flexural strength at +20°C	MPa	95	DIN 53452
Compressive strength	MPa	47	
Max. permissible surface pressure (+20°C)	MPa	45	
Shore D hardness		74	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+200	
Max. application temperature short-term	°C	+240	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	3	DIN 53752
Electrical properties			
Specific transitional resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material properties

iglidur® V400 plain bearings are not suitable for high pressures or static high loads. However they are characterised by a high wear resistance all the way up to the maximum recommended surface pressure.

Moisture absorption

The moisture absorption of iglidur® V400 plain bearings is only 0.2%weight after saturation in water.

Vacuum

In vacuum, any present moisture is released as vapour. The use in vacuum is only possible to a limited extent.

Radiation resistance

Plain bearings made from iglidur® V400 are resistant up to a radiation intensity of 2 · 10⁴ Gy. Higher radiation affects their mechanical properties.

Resistance to weathering

iglidur® V400 plain bearings are continuously resistant to weathering. The material properties are only slightly affected. Possible discolourations are only superficial.

Mechanical properties

When temperatures increase, the compressive strength of iglidur® V400 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.

Moreover the limit of the permitted loads at +100°C is still very high with 20MPa. The high flexibility is shown in diagram 03.

Surface pressure, page 45



-50°C up to
+200°C



45MPa



V-0



ISO 35474



RoHS II



ISO 35474

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Permissible surface speeds

iglidur® V400 also permits high surface speeds due to the high temperature resistance. The very favourable coefficient of friction of the bearing enables maximum surface speeds up to 1.3m/s. In linear applications, the permissible speeds are even higher and can be up to 3.0m/s.

Surface speed, page 48

Temperature

The maximum long-term application temperature is +200°C. For temperatures over +100°C an additional securing is required. Then, however, the wear resistance of the bearings is very good and adopts a leading position among all iglidur® materials. When temperatures increase, the compressive strength of iglidur® V400 plain bearings decreases. Diagram 02 shows this inverse relationship.

Application temperatures, page 53

Additional securing, page 53

Friction and wear

The coefficient of friction is dependent on the bearing's stressing capacity (diagrams 04 and 05). The coefficient of friction of iglidur® V400 is very constant. No other iglidur® plain bearing material exhibits a lower variance in the coefficients of friction, even when the shaft material is altered.

Coefficient of friction and surfaces, page 51

Wear resistance, page 54

Shaft materials

The influence of the shaft material on the wear resistance is bigger than on the friction. Here, even at low loads (0.75MPa), significant differences occur, as shown in diagram 06. With regard to wear, iglidur® V400 plain bearings show better values in rotating applications than in pivoting movements (diagram 07).

Shaft materials, page 56

Installation tolerances

iglidur® V400 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 61

Chemicals	Resistance
Alcohols	+
Diluted acids	+
Diluted alkalines	+
Fuels	+
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	+
Strong alkalines	-

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

Table 02: Chemical resistance

Chemical table, page 1170

	Rotating	Oscillating	linear
Long-term m/s	0.9	0.6	2.0
Short-term m/s	1.3	0.9	3.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction μ	0.15-0.20	0.09	0.04	0.04

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

	Housing	Plain bearings	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

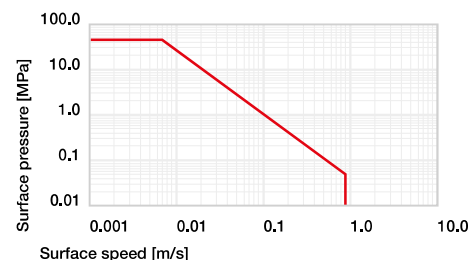


Diagram 01: Permissible pv values for iglidur® V400 with a wall thickness of 1mm dry operation against a steel shaft at +20°C, mounted in a steel housing

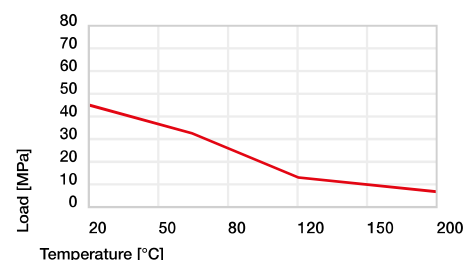


Diagram 02: Maximum recommended surface pressure as a function of temperature (45MPa at +20°C)

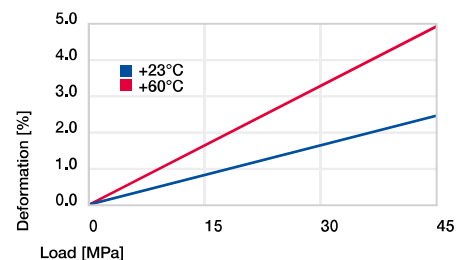


Diagram 03: Deformation under pressure and temperature

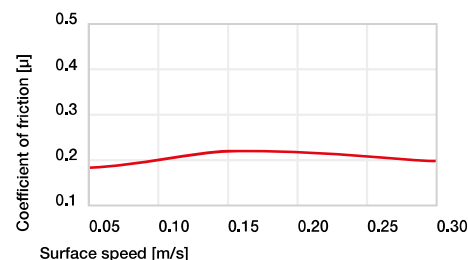


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

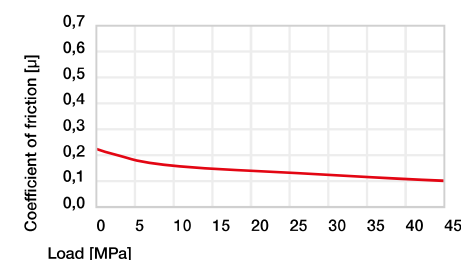


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01m/s

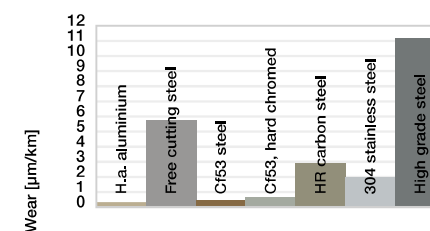


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

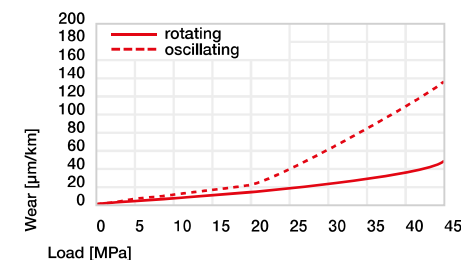
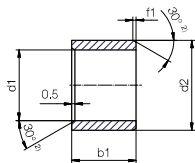


Diagram 07: Wear for oscillating and rotating applications with shaft material Cr53 hardened and ground steel, as a function of the load

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Sleeve bearings (form S)



²⁾ Thickness < 0.6mm: chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1-6	Ø 6-12	Ø 12-30
f1 [mm]	0.3	0.5	0.8



Dimensions according to ISO 3547-1 and special dimensions



Order example: **VSM-0608-06** – no minimum order quantity.

V400 iglidur® material **S** Cylindrical **M** Metric **06** Inner Ø d1 **08** Outer Ø d2 **06** Total length b1

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

³⁾ After press-fit. *Testing methods, page 61*



Available from stock

Detailed information about delivery time online.

www.igus.eu/24



Order online

including delivery times, prices, online tools

www.igus.eu/V400



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

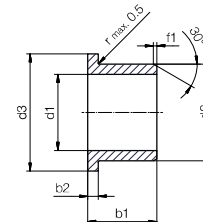
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

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Flange bearings (form F)



²⁾ Thickness < 0.6mm: chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1-6	Ø 6-12	Ø 12-30
f1 [mm]	0.3	0.5	0.8



Dimensions according to ISO 3547-1 and special dimensions



Order example: **VFM-0608-06** – no minimum order quantity.

V400 iglidur® material **F** With flange **M** Metric **06** Inner Ø d1 **08** Outer Ø d2 **06** Total length b1

d1	d1	d2	d3	b1	b2	Part No.
[mm]	Tolerance ³⁾	[mm]	d13 ³⁾ [mm]	h13 [mm]	h13 [mm]	
6.0	+0.010 +0.058	8.0	12.0	6.0	1.00	VFM-0608-06
8.0	+0.013 +0.071	10.0	15.0	10.0	1.00	VFM-0810-10
10.0		12.0	18.0	10.0	1.00	VFM-1012-10
12.0	+0.016 +0.086	14.0	20.0	12.0	1.00	VFM-1214-12
16.0		18.0	24.0	17.0	1.00	VFM-1618-17
18.0	+0.020 +0.104	20.0	26.0	20.0	1.00	VFM-1820-20
20.0		23.0	30.0	21.5	1.50	VFM-2023-21

³⁾ After press-fit. *Testing methods, page 61*



Available from stock

Detailed information about delivery time online.

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