



## For soft shafts and high temperatures

Wear and media-resistant

### iglidur® 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?

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

# Bearing technology | Plain bearing | iglidur® V400



Ø  
6.0 – 20.0mm



Also available  
as:



Bar stock,  
round bar  
Page 657



Bar stock,  
plate  
Page 683



tribo-tape liner  
Page 699



Piston rings  
Page 581



Two hole  
flange  
bearings  
Page 603



Moulded  
special parts  
Page 624



igubal®  
spherical balls  
Page 841

## 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
- High chemical resistance
- 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 style="width: 80%; background-color: red;"></div>	+
Wear resistance at +90°C	-	<div style="width: 70%; background-color: red;"></div>	+
Wear resistance at +150°C	-	<div style="width: 60%; background-color: red;"></div>	+
Low coefficient of friction	-	<div style="width: 80%; background-color: red;"></div>	+
Low moisture absorption	-	<div style="width: 80%; background-color: red;"></div>	+
Wear resistance under water	-	<div style="width: 70%; background-color: red;"></div>	+
High media resistance	-	<div style="width: 80%; background-color: red;"></div>	+
Resistant to edge pressures	-	<div style="width: 70%; background-color: red;"></div>	+
Suitable for shock and impact loads	-	<div style="width: 70%; background-color: red;"></div>	+
Resistant to dirt	-	<div style="width: 30%; background-color: red;"></div>	+

Online product finder  
[www.igus.eu/iglidur-finder](http://www.igus.eu/iglidur-finder)

Online service life calculation  
[www.igus.eu/iglidur-expert](http://www.igus.eu/iglidur-expert)

## Technical data

General properties		Testing method	
Density	g/cm <sup>3</sup>	1.51	
Colour		cream	
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	0.15 – 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. recommended 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 <sup>-1</sup> · 10 <sup>-5</sup>	3	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 <sup>12</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>12</sup>	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 · 10<sup>4</sup>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 discolorations are only superficial.

### Mechanical properties

With increasing temperatures, 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 41**



-50°C up to  
+200°C



45MPa



V-0



ISO  
35474

## 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 44**

## 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. With increasing temperatures, the compressive strength of iglidur® V400 plain bearings decreases. Diagram 02 shows this inverse relationship.

**Application temperatures, page 49**

**Additional securing, page 49**

## 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 47**

**Wear resistance, page 50**

## 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 52**

## 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 57**

Chemicals	Resistance
Alcohols	+
Diluted acids	+
Diluted alkalines	+
Fuels	+
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	+
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 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 $\mu$	0.15 – 0.20	0.09	0.04	0.04

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

$\varnothing$ 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

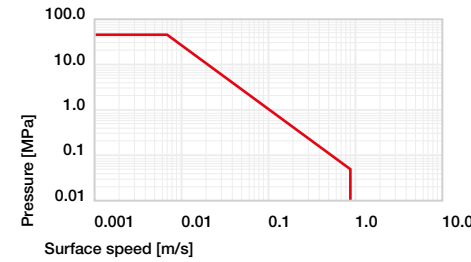


Diagram 01: Permissible pv values for iglidur® V400 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

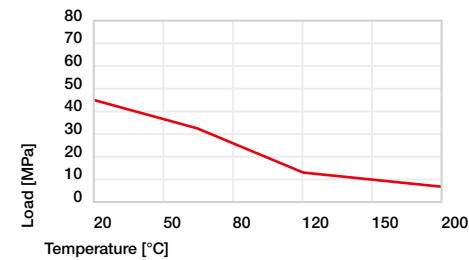


Diagram 02: Maximum recommended surface pressure as a function of temperature (45MPa at +20°C)

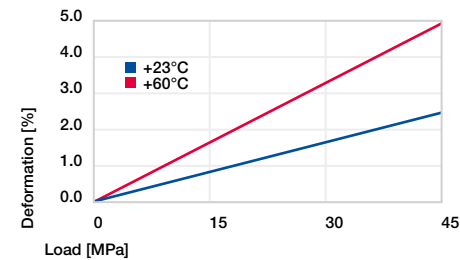


Diagram 03: Deformation under pressure and temperature

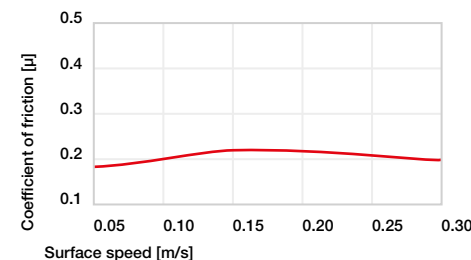


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75MPa

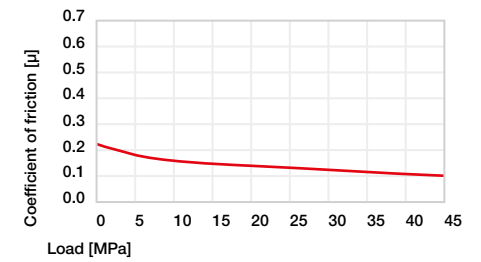


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

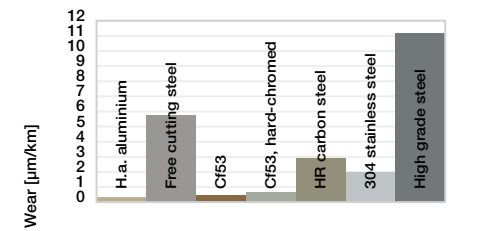


Diagram 06: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

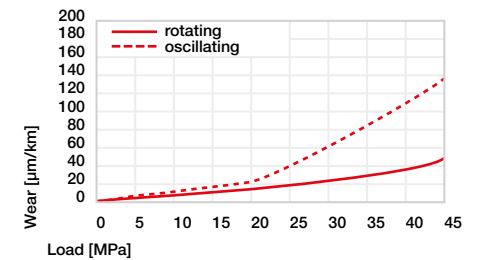
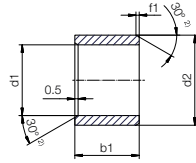


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

## Bearing technology | Plain bearing | iglidur® V400

### Sleeve bearing (form S)



<sup>2)</sup> Thickness < 0.6mm: Chamfer = 20°

**i** Dimensions according to ISO 3547-1 and special dimensions

#### Chamfer in relation to d1

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



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

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

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

<sup>3)</sup> After press-fit. *Testing methods, page 57*



#### Available from stock

Detailed information about delivery time online.

[www.igus.eu/24](http://www.igus.eu/24)



#### Online ordering

Including delivery times, prices, online tools

[www.igus.eu/V400](http://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

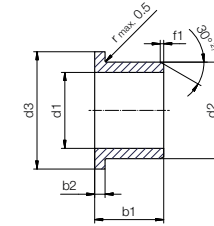
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

## Bearing technology | Plain bearing | iglidur® V400

### Flange bearing (form F)



<sup>2)</sup> Thickness < 0.6mm: Chamfer = 20°

**i** Dimensions according to ISO 3547-1 and special dimensions

#### Chamfer in relation to d1

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



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

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

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

<sup>3)</sup> After press-fit. *Testing methods, page 57*



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