

## Low-cost all-rounder for fire protection

UL94 V0 rating

**iglidur® G V0**



### When to use it?

- When a UL94 V0 classified plain bearing for normal environmental conditions is required
- When an economic UL94 V0 classified plain bearing is required



### When not to use?

- When a UL94 V0 classified plain bearing for high-temperature applications is required  
*iglidur® X*
- When a standard plain bearing without having to meet special fire codes is required  
*iglidur® G*

# Bearing technology | Plain bearing | iglidur® G V0



Ø  
6.0 – 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

## Low-cost all-rounder for fire protection UL94 V0 rating

The material achieves the UL94 V0 rating and is therefore ideally suited for applications with stringent fire protection regulations (vehicle and aircraft interiors, building interior systems, etc.). Other properties are similar to the all-rounder material iglidur® G.

- UL94 V0-compliant
- High wear resistance
- Universal installation
- Lubrication-free
- Maintenance-free

### Typical application areas

- Passenger seats
- Elevators
- Escalators
- Switch cabinets
- Hinges

Descriptive technical specifications				
Wear resistance at +23°C	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Wear resistance at +90°C	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Wear resistance at +150°C	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Low coefficient of friction	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Low moisture absorption	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Wear resistance under water	-	<div style="width: 75%; background-color: #ccc;"></div>		+
High media resistance	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Resistant to edge pressures	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Suitable for shock and impact loads	-	<div style="width: 75%; background-color: #ccc;"></div>		+
Resistant to dirt	-	<div style="width: 75%; background-color: #ccc;"></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>	1.53	
Colour		black	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.7	DIN 53495
Max. moisture absorption	% weight	4.0	
Coefficient of friction, dynamic, against steel	μ	0.07 – 0.20	
pv value, max. (dry)	MPa · m/s	0.50	
Mechanical properties			
Flexural modulus	MPa	7,900	DIN 53457
Flexural strength at +20°C	MPa	140	DIN 53452
Compressive strength	MPa	100	
Max. recommended surface pressure (+20°C)	MPa	75	
Shore D hardness		80	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+130	
Max. application temperature short-term	°C	+210	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K <sup>-1</sup> · 10 <sup>-5</sup>	9	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 <sup>12</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>11</sup>	DIN 53482

Table 01: Material properties

iglidur® GV0 is the first iglidur® material with a UL94 V0 rating for universal use in the normal temperature range. All other iglidur® materials with V0 rating are part of the high-temperature segment. The general mechanical and thermal properties are largely comparable to the all-rounder, iglidur® G.

### Moisture absorption

Under standard climatic conditions, the moisture absorption of iglidur® G V0 plain bearings is approximately 0.7% weight. The saturation limit in water is 4.0% weight. This must be taken into account for these types of applications.

### Vacuum

In vacuum, any present moisture is released as vapour. Use in vacuum is only possible with dehumidified iglidur® G V0 bearings.

### Radiation resistance

Plain bearings made from iglidur® G V0 are resistant up to a radiation intensity of 3 · 10<sup>2</sup>Gy.

### Resistance to weathering

iglidur® G V0 plain bearings are resistant to weathering. The material properties are slightly affected. Discoloration occurs.

### Mechanical properties

With increasing temperatures, the compressive strength of iglidur® G V0 plain bearings decreases. Diagram 02 shows this inverse relationship. However, at the long-term maximum temperature of +130°C the permissible surface pressure is around 35MPa. 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® G V0 at radial loads. The plastic deformation is minimal up to a pressure of approximately 100MPa. However, it is also dependent on the service time.

### Surface pressure, page 41



-40°C up to +130°C



75MPa



## Permissible surface speeds

iglidur® G V0 has been developed for low to medium surface speeds. The maximum values shown in table 03 can only be achieved at low pressures. In practice, though, this level is rarely reached due to varying application conditions.

**Surface speed, page 44**

## Temperature

The ambient temperatures strongly influence the properties of plain bearings. The short-term maximum permissible temperature is +210°C and allows the use of iglidur® G V0 plain bearings in applications where the bearings are not subjected to any additional load such as a paint drying process. The temperatures prevailing in the bearing system also have an influence on the wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +120°C. For temperatures over +100°C an additional securing is required.

**Application temperatures, page 49**

**Additional securing, page 49**

## Friction and wear

Similar to wear resistance, the coefficient of friction  $\mu$  also changes with the load. The coefficient of friction decreases considerably with increasing loads, whereas a slight increase in surface speed causes an increase of the coefficient of friction. This relationship explains the excellent results of iglidur® G V0 plain bearings for high loads and low speeds (diagrams 04 and 05).

**Coefficient of friction and surfaces, page 47**

**Wear resistance, page 50**

## Shaft materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® G V0 a ground surface with an average surface finish  $R_a = 0.6 - 0.8\mu\text{m}$  is recommended. Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® G V0. It is important to notice that with increasing loads, the recommended hardness of the shaft increases. The "soft" shafts tend to wear more easily and thus the wear of the overall system increases. If the loads exceed 2MPa it is important to recognise that the wear rate (the gradient of the curves) clearly decreases with the hard shaft materials. The comparison of rotation and pivoting shows that iglidur® G V0 provides advantages in pivoting movements (diagram 07). 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® G V0 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 E10 tolerances.

**Testing methods, page 57**

Chemicals	Resistance
Alcohols	+ up to 0
Diluted acids	0 up to -
Diluted alkalines	+
Fuels	+
Greases, oils without additives	+
Hydrocarbons	+
Strong acids	-
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	1.0	0.7	4.0
short-term m/s	2.0	1.4	5.0

Table 03: Maximum surface speeds

	Dry	Greases	Oil	Water
Coefficient of friction $\mu$	0.07 – 0.20	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ( $R_a = 1\mu\text{m}$ , 50HRC)

$\varnothing d1$ [mm]	Housing		Plain bearing		Shaft	
	H7 [mm]	E10 [mm]	H7 [mm]	E10 [mm]	h9 [mm]	h9 [mm]
0 – 3	+0.000 +0.010	+0.014 +0.054	-0.025 +0.000			
> 3 – 6	+0.000 +0.012	+0.020 +0.068	-0.030 +0.000			
> 6 – 10	+0.000 +0.015	+0.025 +0.083	-0.036 +0.000			
> 10 – 18	+0.000 +0.018	+0.032 +0.102	-0.043 +0.000			
> 18 – 30	+0.000 +0.021	+0.040 +0.124	-0.052 +0.000			
> 30 – 50	+0.000 +0.025	+0.050 +0.150	-0.062 +0.000			
> 50 – 80	+0.000 +0.030	+0.060 +0.180	-0.074 +0.000			
> 80 – 120	+0.000 +0.035	+0.072 +0.212	-0.087 +0.000			
> 120 – 180	+0.000 +0.040	+0.085 +0.245	-0.100 +0.000			

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

## Technical data

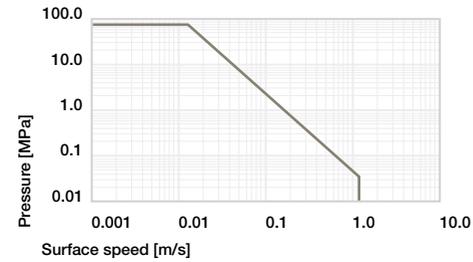


Diagram 01: Permissible pv values for iglidur® G V0 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

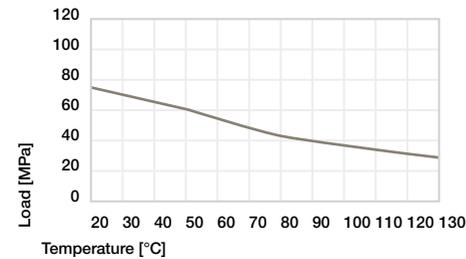


Diagram 02: Maximum recommended surface pressure as a function of temperature (75MPa at +20°C)

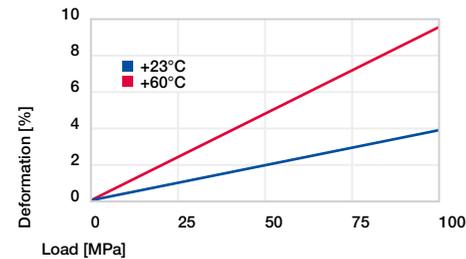


Diagram 03: Deformation under pressure and temperature

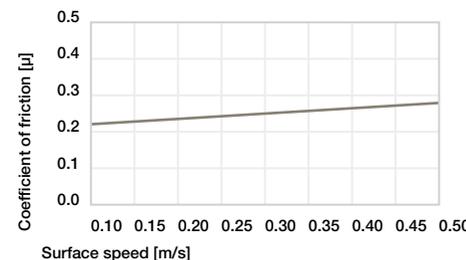


Diagram 04: Coefficient of friction as a function of the surface speed,  $p = 1\text{MPa}$

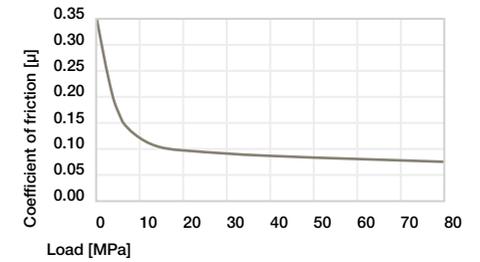


Diagram 05: Coefficient of friction as a function of the load,  $v = 0.01\text{m/s}$

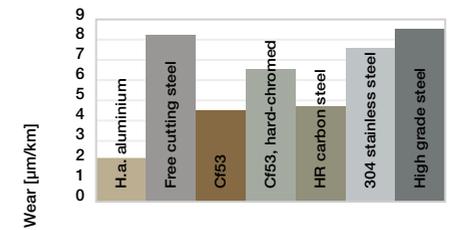


Diagram 06: Wear, rotating with different shaft materials, pressure,  $p = 1\text{MPa}$ ,  $v = 0.3\text{m/s}$

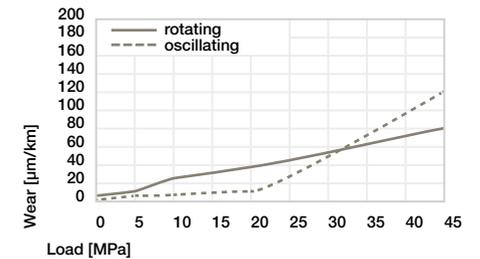
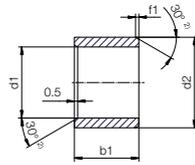


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the load

## Bearing technology | Plain bearing | iglidur® G V0

### Sleeve bearing (form S)



<sup>2)</sup> 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:** GV0SM-0608-06 – no minimum order quantity.

G V0 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	+0.020 +0.068	8.0	6.0	GV0SM-0608-06
8.0		10.0	10.0	GV0SM-0810-10
10.0		12.0	8.0	GV0SM-1012-08
10.0	+0.025 +0.083	12.0	9.0	GV0SM-1012-09
10.0		12.0	10.0	GV0SM-1012-10
10.0		12.0	15.0	GV0SM-1012-15
10.0		12.0	17.0	GV0SM-1012-17
12.0	+0.032 +0.102	14.0	12.0	GV0SM-1214-12
16.0		18.0	15.0	GV0SM-1618-15
20.0		23.0	20.0	GV0SM-2023-20
25.0	+0.040 +0.124	28.0	20.0	GV0SM-2528-20
30.0		34.0	30.0	GV0SM-3034-30
35.0		39.0	40.0	GV0SM-3539-40
40.0	+0.050 +0.150	44.0	40.0	GV0SM-4044-40

<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/GV0](http://www.igus.eu/GV0)



#### 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

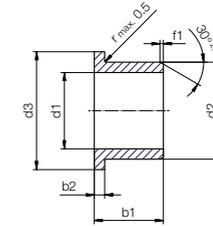
No minimum order value.

No low-quantity surcharges.

Free shipping within Germany for orders above €150.

## Bearing technology | Plain bearing | iglidur® G V0

### Flange bearing (form F)



<sup>2)</sup> 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:** GV0FM-0608-06 – no minimum order quantity.

G V0 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	+0.020 +0.068	8.0	12.0	6.0	1.00	GV0FM-0608-06
8.0		10.0	15.0	10.0	1.00	GV0FM-0810-10
10.0	+0.025 +0.083	12.0	18.0	10.0	1.00	GV0FM-1012-10
12.0		14.0	20.0	12.0	1.00	GV0FM-1214-12
16.0	+0.032 +0.102	18.0	24.0	17.0	1.00	GV0FM-1618-17
20.0		23.0	30.0	21.5	1.50	GV0FM-2023-21
25.0	+0.040 +0.124	28.0	35.0	21.0	1.50	GV0FM-2528-21
30.0		34.0	42.0	37.0	2.00	GV0FM-3034-37
35.0		39.0	47.0	36.0	2.00	GV0FM-3539-36
40.0	+0.050 +0.150	44.0	52.0	40.0	2.00	GV0FM-4044-40

<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/GV0](http://www.igus.eu/GV0)



#### 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.