

## V0 rating according to UL94, universal – iglidur® G V0



Standard range from stock

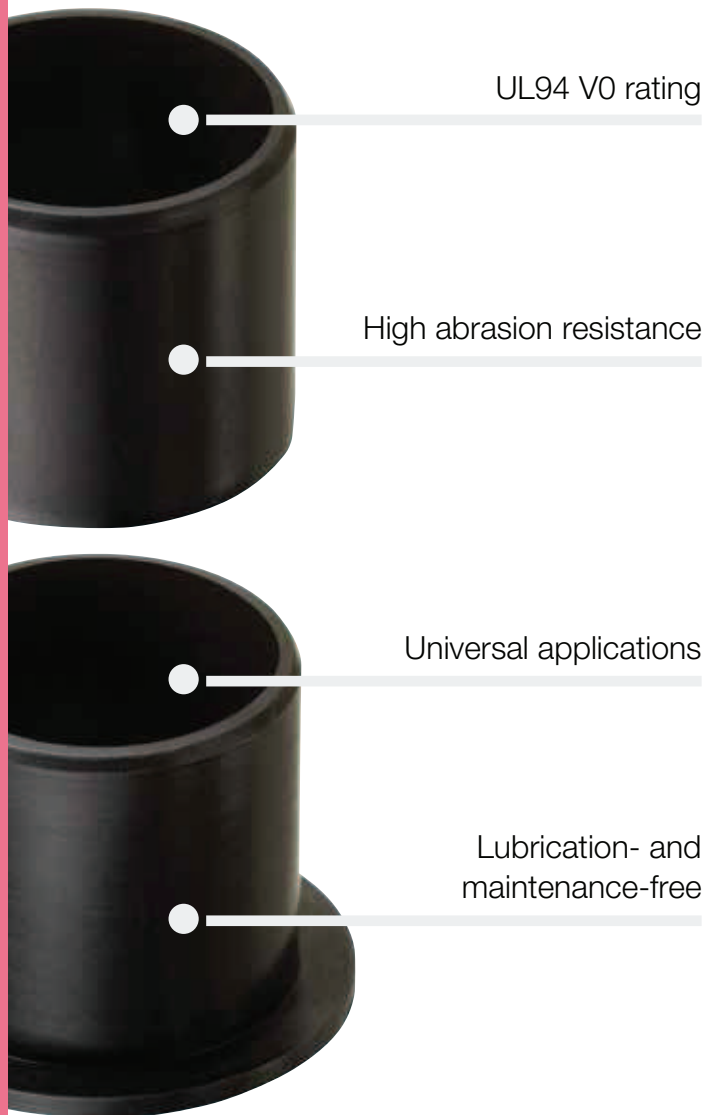
Lubrication- and maintenance-free

UL94 V0 rating

High abrasion resistance

Universal applications

**V0 rating according to UL94, universal.** The new 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 general purpose iglidur® G material.



## When to use it?

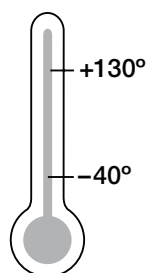
- When you need a UL94 V0 classified bearing for normal environmental conditions
- When you need an economic UL94 V0 classified bearing



## When not to use it?

- When you need a UL94 V0 classified bearing for high-temperature applications  
▶ iglidur® X, page 173
- When you need a standard bearing without having to meet special fire codes  
▶ iglidur® G, page 81

## Temperature



## Product range

2 types  
Ø 6–40 mm  
more dimensions  
on request

## Material properties table

General properties	Unit	iglidur® G V0	Testing method
Density	g/cm <sup>3</sup>	1.53	
Colour		black	
Max. moisture absorption at +23 °C/50 % r. h.	% weight	0.7	DIN 53495
Max. water absorption	% weight	4.0	
Coefficient of sliding friction, dynamic against steel	μ	0.07–0.20	
pv value, max. (dry)	MPa · m/s	0.5	
Mechanical properties			
Modulus of elasticity	MPa	7,900	DIN 53457
Tensile 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. long term application temperature	°C	+130	
Max. short term application temperature	°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 volume resistance	Ωcm	> 10 <sup>12</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>11</sup>	DIN 53482

Table 01: Material properties table

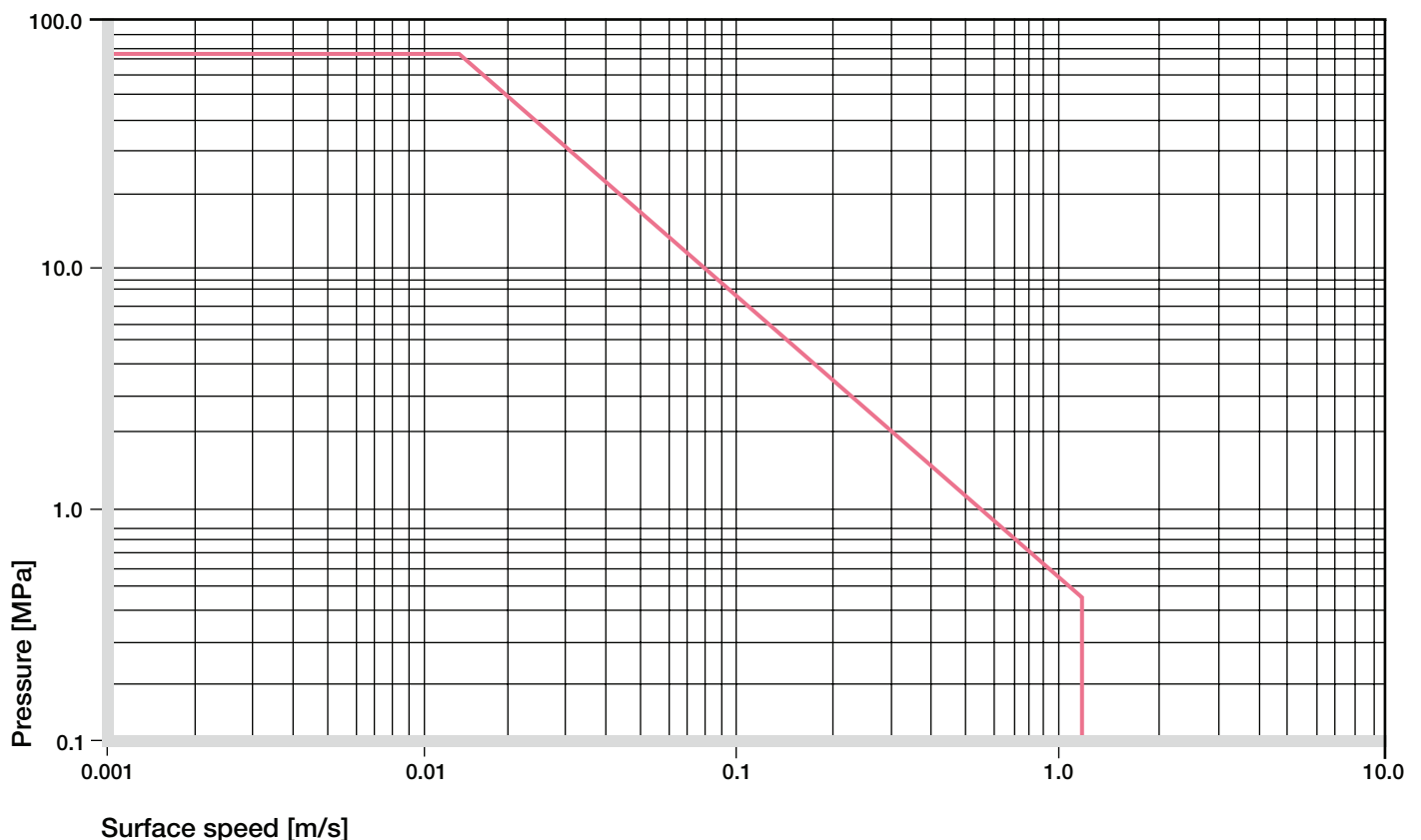
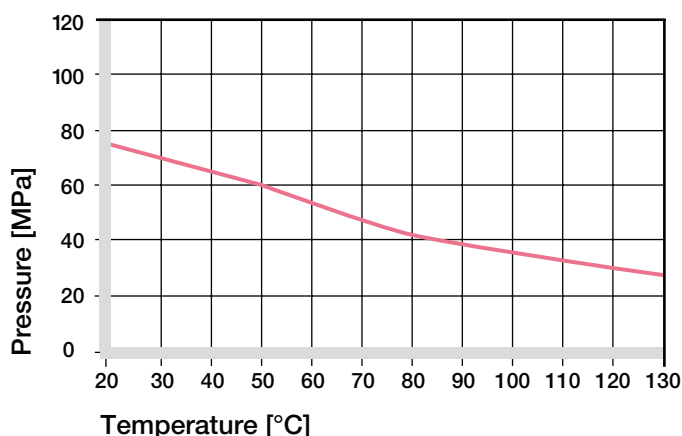


Diagram 01: Permissible pv values for iglidur® G V0 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

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

## Mechanical Properties

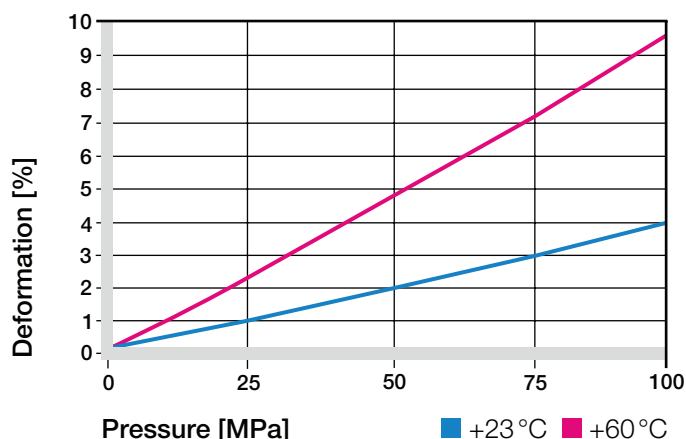
With increasing temperatures, the compressive strength of iglidur® G V0 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +130 °C the permissible surface pressure is still around 35 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.



**Diagram 02: Recommended maximum surface pressure as a function of temperature (75 MPa at +20 °C)**

Diagram 03 shows the elastic deformation of iglidur® G V0 during radial loading. At the recommended maximum surface pressure of 75 MPa the deformation at room temperature is merely 3 %. The plastic deformation is minimal up to a pressure of approximately 100 MPa. However, it is also dependant on the cycle time.

► Surface Pressure, [page 63](#)



**Diagram 03: Deformation under pressure and temperature**

## Permissible Surface Speeds

iglidur® G V0 has been developed for low to medium surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. In practice, though, this temperature level is rarely reached due to varying application conditions.

► Surface Speed, [page 65](#)

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	4
Short term	2	1.4	5

**Table 02: Maximum running speed**

## Temperatures

Application temperatures greatly affect the properties of plain bearings.

The short term maximum temperature is +210 °C, this allows the use of iglidur® G V0 plain bearings in heat treating applications in which the bearings are not subjected to additional loading.

The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +120 °C.

► Application Temperatures, [page 66](#)

iglidur® G V0	Application temperature
Minimum	-40 °C
Max. long term	+130 °C
Max. short term	+210 °C
Add. securing is required from	+100 °C

**Table 03: Temperature limits**

## 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 pressures, 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).

- Coefficients of Friction and Surfaces, **page 68**
- Wear Resistance, **page 69**

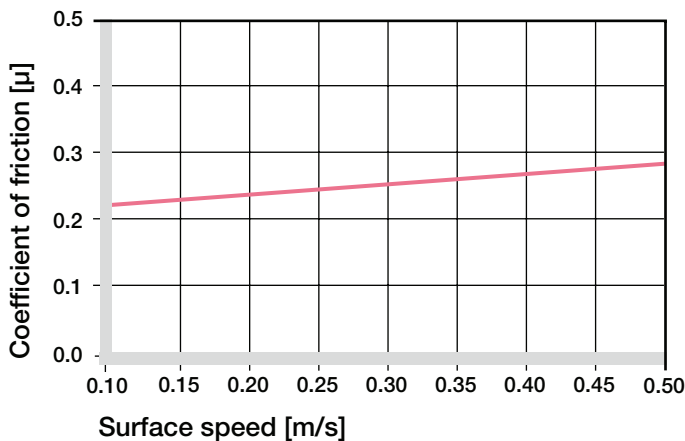


Diagram 04: Coefficient of friction as a function of the running speed,  $p = 1$  MPa

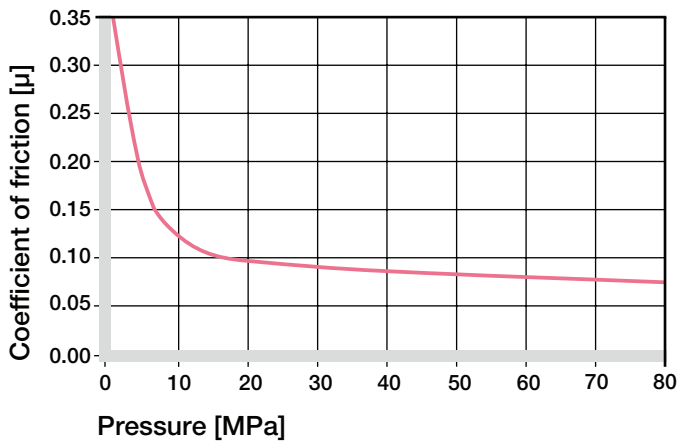


Diagram 05: Coefficient of friction as a function of the pressure,  $v = 0.01$  m/s

## 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 roughness between 0.6 and 0.8  $\mu\text{m}$  is recommended (Diagram 06). Diagrams 07 and 08 show results of testing different shaft materials with plain bearings made of iglidur® G V0. In Diagram 07 it shows that iglidur® G V0 can be combined with various shaft materials. The best performance at low loads has proven to be with HC Aluminum and the standard shaft materials Cf53 and St37. This helps to design cost-effective systems, like for example in seat systems. 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 affect the clearance of the overall system. If the loads exceed 2 MPa it is important to recognize that the wear rate (the gradient of the curves) clearly decreases with the hard shaft materials. In combination with iglidur® G V0 this also applies to HC Aluminum. The comparison of rotational movements to oscillating movements shows that iglidur® G V0 provides advantages in oscillating movements at loads up to 30 MPa.

- Shaft Materials, **page 71**

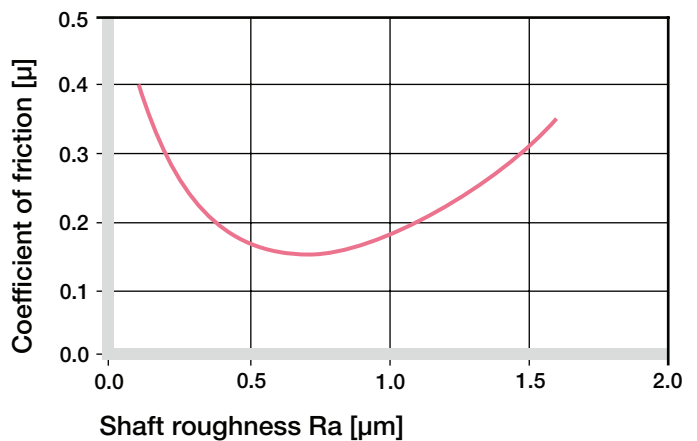


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

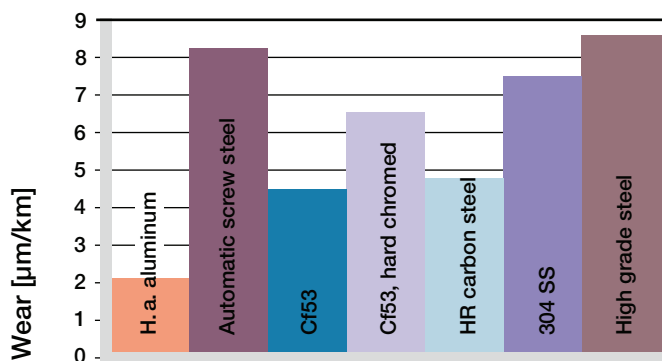


Diagram 07: Wear, rotating with different shaft materials, pressure  $p = 1 \text{ MPa}$ ,  $v = 0.3 \text{ m/s}$

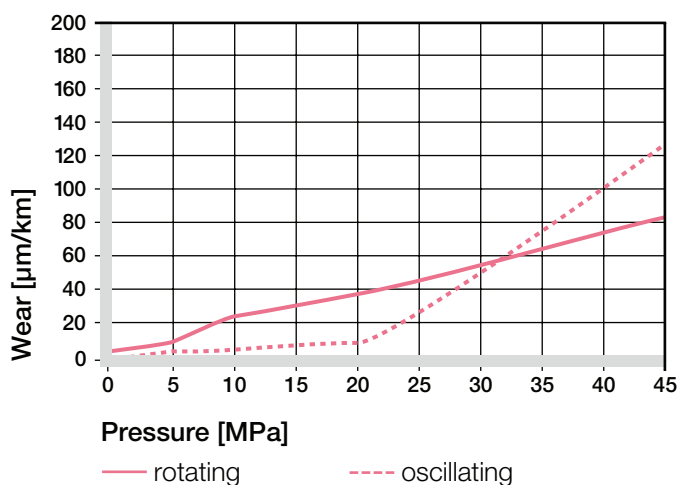


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® G V0	Dry	Greases	Oil	Water
C.o.f. $\mu$	0.07–0.20	0.09	0.04	0.04

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

## Additional Properties

### Chemical Resistance

iglidur® G V0 plain bearings have strong resistance to chemicals. They are also resistant to most lubricants.

iglidur® G V0 plain bearings are not attacked by most weak organic or inorganic acids.

► Chemical Table, page 1258

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases. oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [ $+20 \text{ °C}$ ]

Table 05: Chemical resistance

### Radiation Resistance

Plain bearings made of iglidur® G V0 are resistant to radiation up to an intensity of  $3 \cdot 10^2 \text{ Gy}$ .

### UV Resistance

iglidur® G V0 plain bearings are permanently resistant to UV radiation.

### Vacuum

iglidur® G V0 plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

### Electrical Properties

iglidur® G V0 plain bearings are electrically insulating.

Volume resistance	$> 10^{12} \text{ Ωcm}$
Surface resistance	$> 10^{11} \text{ Ω}$

Moisture Absorption

The moisture absorption of iglidur® G V0 plain bearings is approximately 0.7 % in standard atmosphere. The saturation limit submerged in water is 4 %. This must be taken into account for these types of applications.

Maximum moisture absorption	
At +23 °C/50 % r.h.	0.7 % weight
Max. water absorption	4.0 % weight

Table 06: Moisture absorption

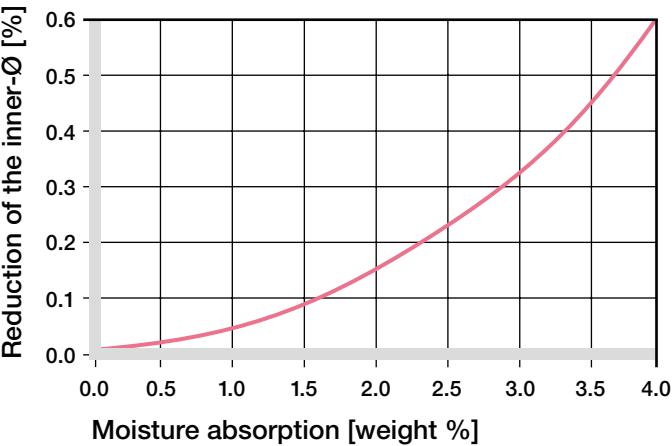


Diagram 09: Effect of moisture absorption on plain bearings

Installation Tolerances

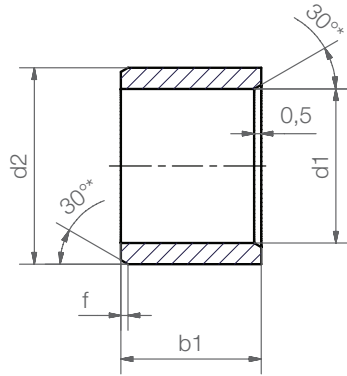
iglidur® G V0 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter automatically adjusts to the E10 tolerances.

► Testing Methods, page 75

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® G V0 E10 [mm]	Housing H7 [mm]
up to 3	0–0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0–0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0–0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0–0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0–0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0–0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0–0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0–0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0–0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

## Sleeve bearing



Order key

**GV0SM-0608-06**



Length b1  
Outer diameter d2  
Inner diameter d1  
Metric  
Type (Form S)  
Material iglidur® G V0

Dimensions according to ISO 3547-1 and special dimensions

\* thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

## Dimensions [mm]

Part number	d1	d1 Tolerance*	d2	b1 h13
GV0SM-0608-06	6.0	+0.020 +0.068	8.0	6.0
GV0SM-0810-10	8.0	+0.025 +0.083	10.0	10.0
GV0SM-1012-10	10.0	+0.025 +0.083	12.0	10.0
GV0SM-1214-12	12.0	+0.032 +0.102	14.0	12.0
GV0SM-1618-15	16.0	+0.032 +0.102	18.0	15.0
GV0SM-2023-20	20.0	+0.040 +0.124	23.0	20.0
GV0SM-2528-20	25.0	+0.040 +0.124	28.0	20.0
GV0SM-3034-30	30.0	+0.040 +0.124	34.0	30.0
GV0SM-3539-40	35.0	+0.050 +0.150	39.0	40.0
GV0SM-4044-40	40.0	+0.050 +0.150	44.0	40.0

\* after pressfit. Testing methods ► page 75



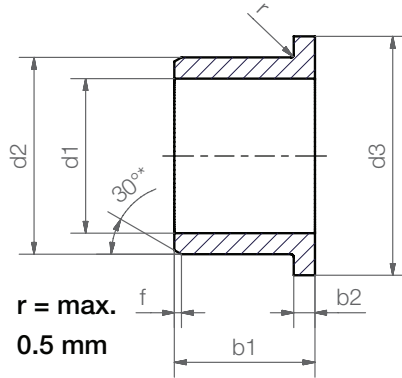
delivery from stock  
time



prices price list online  
[www.igus.eu/eu/gv0](http://www.igus.eu/eu/gv0)



## Flange bearing



### Order key

**GV0FM-0608-06**



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® G V0

Dimensions according to ISO 3547-1 and special dimensions

\* thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

### Dimensions [mm]

Part number	d1	d1 Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
GV0FM-0608-06	6.0	+0.020 +0.068	8.0	12.0	6.0	1.0
GV0FM-0810-10	8.0	+0.025 +0.083	10.0	15.0	10.0	1.0
GV0FM-1012-10	10.0	+0.025 +0.083	12.0	18.0	10.0	1.0
GV0FM-1214-12	12.0	+0.032 +0.102	14.0	20.0	12.0	1.0
GV0FM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
GV0FM-2023-21	20.0	+0.040 +0.124	23.0	30.0	21.5	1.5
GV0FM-2528-21	25.0	+0.040 +0.124	28.0	35.0	21.5	1.5
GV0FM-3034-37	30.0	+0.040 +0.124	34.0	42.0	37.0	2.0
GV0FM-3539-36	35.0	+0.050 +0.150	39.0	47.0	36.0	2.0
GV0FM-4044-40	40.0	+0.050 +0.150	44.0	52.0	40.0	2.0

\* after pressfit. Testing methods ► page 75



### Don't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



**delivery** from stock  
**time**



**prices** price list online  
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