



iglidur® F electrically conductive

Standard range from stock ► from page 463



iglidur® H4 the automotive standard

Standard range from stock ► from page 475



iglidur® Q for high loads

Standard range from stock ► from page 485



iglidur® Q2 for extreme loads

Standard range from stock ► from page 499



iglidur® UW for fast rotation under water

Standard range from stock ► from page 509



iglidur® N54 the biopolymer

Standard range from stock ► from page 519



iglidur® G V0 V0 rating according to UL94, universal

Standard range from stock ► from page 529



iglidur® B high elasticity

On request ► from page 539




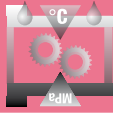
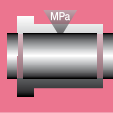





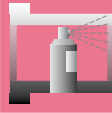












iglidur® C free of PTFE and silicone

On request ► from page 547

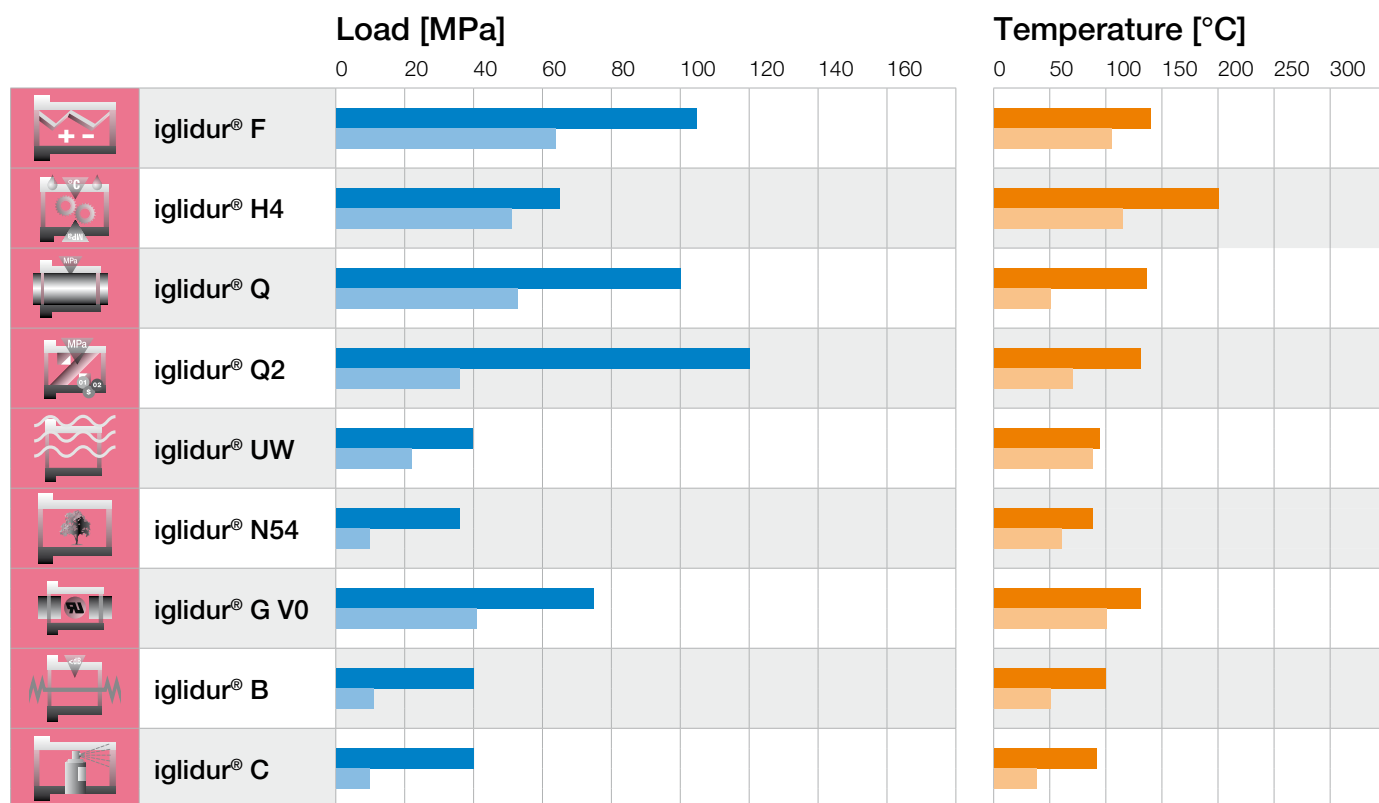
iglidur® Specialists | Selection According to Main Criteria

iglidur®
polymer
bearings

iglidur®- Specialists – Special Applications

| |  |  |  |  |  |  |  |  |  |
|--|---|---|---|---|---|--|---|---|---|
| | iglidur® F | iglidur® H4 | iglidur® Q | iglidur® Q2 | iglidur® UW | iglidur® N54 | iglidur® G V0 | iglidur® B | iglidur® C |
|  Long life dry running | | ● | ● | ● | | | ● | | |
|  For high loads | ● | | ● | | | | | | |
|  For high temperatures | | ● | | | | | | | |
|  Low friction/high speed | | ● | ● | | | | | | |
|  Dirt resistant | | | | ● | | | ● | | |
|  Chemicals resistant | | ● | | | | | | | |
|  Low water absorption | | ● | ● | | ● | | | | |
|  Food-suitable | | | | | | | | | |
|  Vibration-dampening | | | | ● | | | | ● | |
|  Edge pressure | | ● | | ● | | | | ● | ● |
|  For under water use | | ● | | | ● | | | | |
|  Cost-effective | | ● | | ● | ● | ● | ● | | |
| from page | 463 | 475 | 485 | 499 | 509 | 519 | 529 | 539 | 547 |

iglidur® Specialists | Selection According to Main Criteria



Maximum permissible radial load of iglidur® bearings at

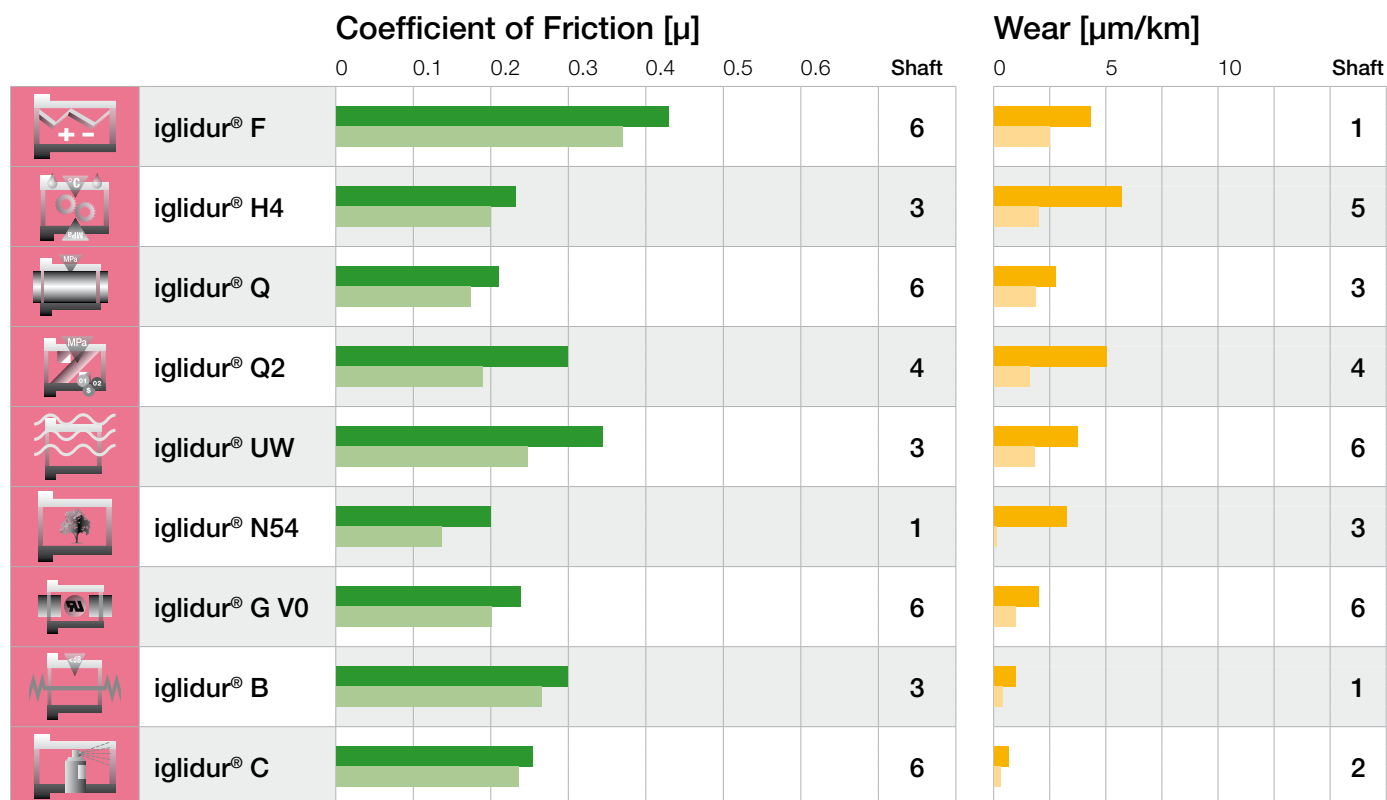
■ +20 °C

■ +80 °C

Important temperature limits of iglidur® bearings

■ Maximum permissible application temperature, continuous

■ Temperature where bearings need to be secured against radial or axial movement in the housing



Coefficients of friction of iglidur® bearings sliding against steel,

p = 1 MPa, v = 0.3 m/s

■ Average coefficient of all the seven sliding combinations tested

■ Coefficient of friction of best combination

Wear of iglidur® bearings sliding against steel, p = 1 MPa

■ Average wear of all the seven sliding combinations tested

■ Wear of best combination

Shaft material:

1 = Cf53

2 = Cf53, hard chromed

3 = Aluminum, hc

4 = Automatic screw steel

5 = HR carbon steel

6 = 304 SS

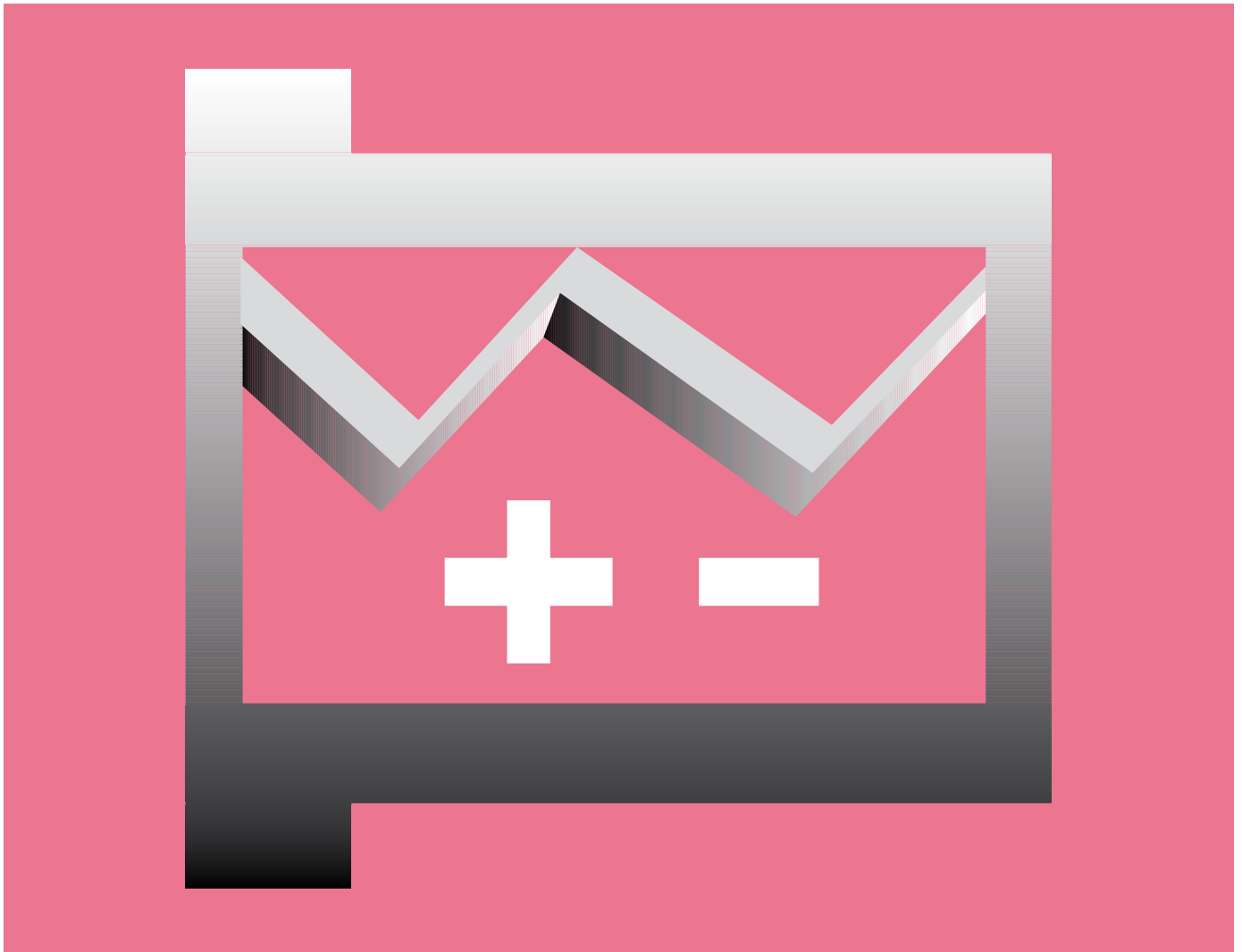
7 = High grade steel

| Material properties table | | | | | | | | | | |
|--|------------|------------|-------------|------------|-------------|-------------|--------------|---------------|------------|------------|
| General properties | Unit | iglidur® F | iglidur® H4 | iglidur® Q | iglidur® Q2 | iglidur® UW | iglidur® N54 | iglidur® G V0 | iglidur® B | iglidur® C |
| Density | g/cm³ | 1.25 | 1.79 | 1.40 | 1.46 | 1.52 | 1.13 | 1.53 | 1.15 | 1.1 |
| Colour | | black | brown | black | beige-brown | black | green | black | grey | white |
| Max. moisture absorption at +23 °C/50 % r.h. | % weight | 1.8 | 0.1 | 0.9 | 1.1 | 0.2 | 1.6 | 0.7 | 1.0 | 1.0 |
| Max. water absorption | % weight | 8.4 | 0.2 | 4.9 | 4.6 | 0.8 | 3.6 | 4.0 | 6.3 | 6.9 |
| Coefficient of sliding friction. dynamic against steel | μ | 0.10–0.39 | 0.08–0.25 | 0.05–0.15 | 0.22–0.42 | 0.15–0.35 | 0.15–0.23 | 0.07–0.20 | 0.18–0.28 | 0.17–0.25 |
| pv value. max. (dry) | MPa · m/s | 0.34 | 0.7 | 0.55 | 0.7 | 0.11 | 0.5 | 0.5 | 0.15 | 0.10 |
| Mechanical properties | | | | | | | | | | |
| Modulus of elasticity | MPa | 11,600 | 7,500 | 4,500 | 8,370 | 9,600 | 1,800 | 7,900 | 1,800 | 1,900 |
| Tensile strength at +20 °C | MPa | 260 | 120 | 120 | 240 | 90 | 70 | 140 | 55 | 60 |
| Compressive strength | MPa | 98 | 50 | 89 | 130 | 70 | 30 | 100 | 20 | 30 |
| Max. recommended surface pressure (+20 °C) | MPa | 105 | 65 | 100 | 120 | 40 | 36 | 75 | 40 | 40 |
| Shore D hardness | | 84 | 80 | 83 | 80 | 78 | 74 | 80 | 69 | 72 |
| Physical and thermal properties | | | | | | | | | | |
| Max. long term application temperature | °C | +140 | +200 | +135 | +130 | +90 | +80 | +130 | +100 | +90 |
| Max. short term application temperature | °C | +180 | +240 | +155 | +200 | +110 | +120 | +210 | +130 | +130 |
| Min. application temperature | °C | –40 | –40 | –40 | –40 | –50 | –40 | –40 | –40 | –40 |
| Thermal conductivity | W/m · K | 0.65 | 0.24 | 0.23 | 0.24 | 0.60 | 0.24 | 0.25 | 0.24 | 0.24 |
| Coefficient of thermal expansion (at +23 °C) | K⁻¹ · 10⁻⁵ | 12 | 5 | 5 | 8 | 6 | 9 | 9 | 12 | 15 |
| Electrical properties | | | | | | | | | | |
| Specific volume resistance | Ωcm | < 10³ | > 10¹³ | > 10¹⁵ | > 10¹⁴ | < 10⁵ | > 10¹³ | > 10¹² | > 10¹⁰ | > 10¹⁰ |
| Surface resistance | Ω | < 10² | > 10¹² | > 10¹² | > 10¹⁴ | < 10⁵ | > 10¹¹ | > 10¹¹ | > 10⁹ | > 10⁹ |

| Material resistance (at +20 °C) | | | | | | | | | | |
|---|------------|-------------|------------|-------------|-------------|--------------|---------------|------------|------------|--|
| Chemical resistance | iglidur® F | iglidur® H4 | iglidur® Q | iglidur® Q2 | iglidur® UW | iglidur® N54 | iglidur® G V0 | iglidur® B | iglidur® C | |
| Alcohol | + to 0 | + | + to 0 | + | + | + to 0 | + bis 0 | + to 0 | + to 0 | |
| Hydrocarbons | + | + | + | + | + | + | + | – | + | |
| Greases, oils without additives | + | + | + | + | + | + | + | – | + | |
| Fuels | + | + | + | + | + | + | + | – | + | |
| Diluted acids | 0 to – | + to 0 | 0 to – | 0 to – | 0 to – | 0 to + | 0 to – | 0 to – | 0 to – | |
| Strong acids | – | + to – | – | – | – | – | – | – | – | |
| Diluted alkalines | + | + | + | + | + | + | + | – | + | |
| Strong alkalines | + to 0 | + | 0 | 0 | + to 0 | 0 | 0 | – | 0 | |
| Radiation resistance [Gy] to | 3 · 10² | 2 · 10² | 3 · 10² | 3 · 10² | 3 · 10² | 1 · 10⁴ | 3 · 10² | 3 · 10² | 2 · 10⁴ | |
| + resistant 0 conditionally resistant – not resistant | | | | | | | | | | |

My Sketches





Electrically conductive – iglidur® F



Standard range from stock

Electrically conductive

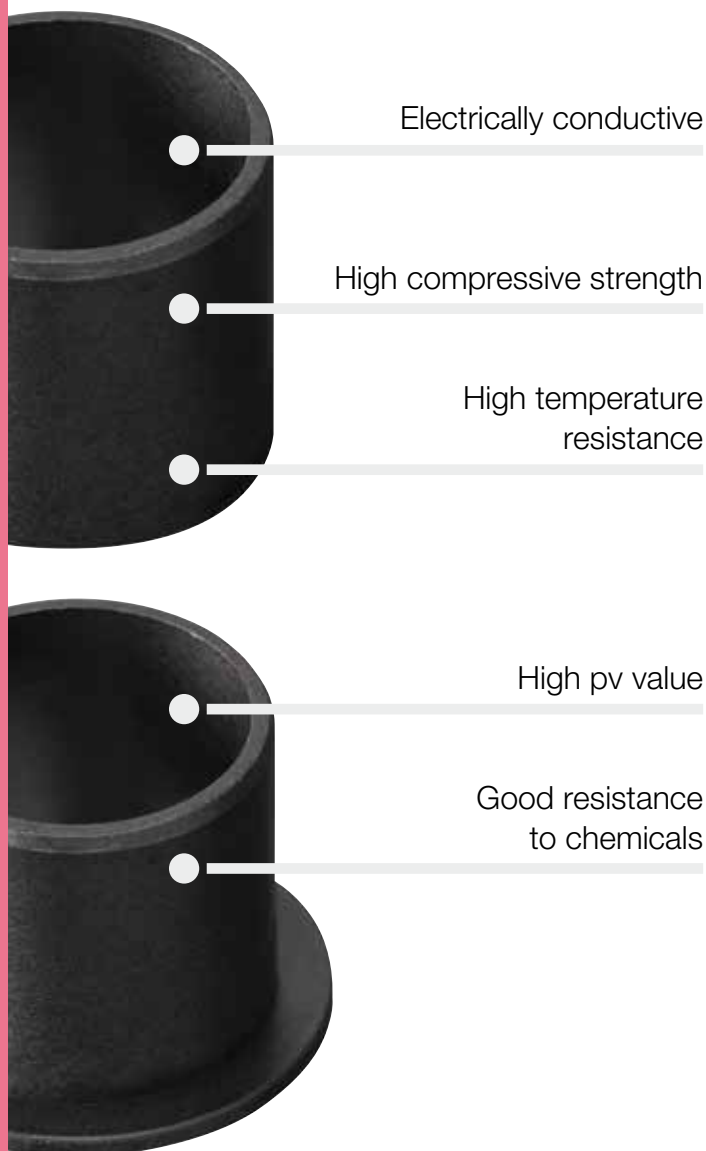
High compressive strength

Good temperature resistance

High pv value

Good resistance to chemicals

Electrically conductive. An extremely stiff and hard material, as well as being electrically conductive, iglidur® F bearings can be used in some dry running operations. Uniquely for an iglidur® material, the full mechanical benefits are only achieved when running in a lubricant.



When to use it?

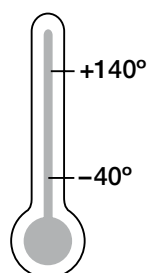
- When the bearing should be electrically conductive
- For high static loads



When not to use it?

- When mechanical reaming of the wall surface is necessary
▶ iglidur® M250, page 111
- When the highest wear resistance is needed
▶ iglidur® W300, page 135
- When very low coefficients of friction in the dry run are needed
▶ iglidur® J, page 93
- For underwater applications
▶ iglidur® H370, page 359
- When you need an universal bearing
▶ iglidur® G, page 65

Temperature



Product range

2 types
Ø 2–70 mm
more dimensions
on request

iglidur® F | Application Examples

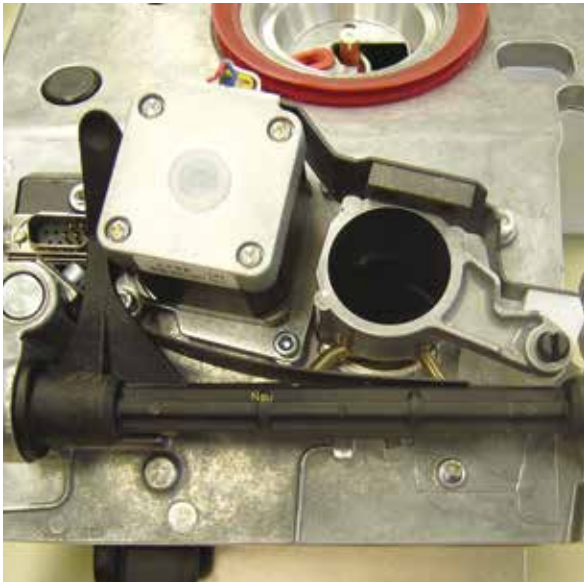


Typical sectors of industry and application areas

- Textile technology
- Automotive etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/spinningbox



► www.igus.co.uk/textile-machine

Material properties table

| General properties | Unit | iglidur® F | Testing method |
|--|------------------------------------|-------------------|----------------|
| Density | g/cm ³ | 1.25 | |
| Colour | | black | |
| Max. moisture absorption at +23 °C/50 % r.h. | % weight | 1.8 | DIN 53495 |
| Max. water absorption | % weight | 8.4 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.1–0.39 | |
| pv value, max. (dry) | MPa · m/s | 0.34 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 11,600 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 260 | DIN 53452 |
| Compressive strength | MPa | 98 | |
| Max. recommended surface pressure (+20 °C) | MPa | 105 | |
| Shore D hardness | | 84 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +140 | |
| Max. short term application temperature | °C | +180 | |
| Min. application temperature | °C | –40 | |
| Thermal conductivity | W/m · K | 0.65 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 12 | DIN 53752 |
| Electrical properties ¹⁾ | | | |
| Specific volume resistance | Ωcm | < 10 ³ | DIN IEC 93 |
| Surface resistance | Ω | < 10 ² | DIN 53482 |

Table 01: Material properties table

¹⁾ The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact components.

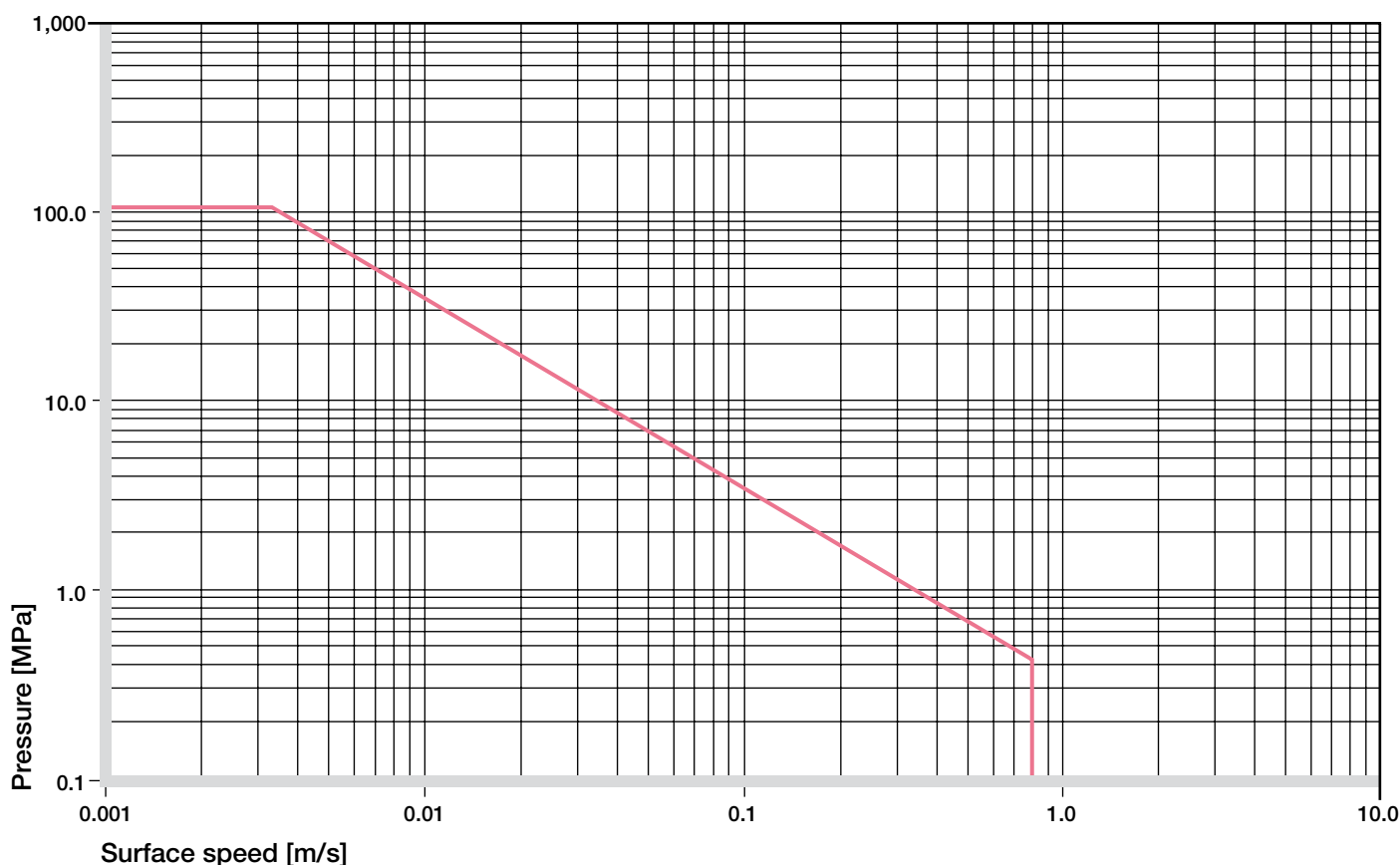


Diagram 01: Permissible pv values for iglidur® F with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

When bearings need to be electrically conductive, especially in applications that should keep out static, the iglidur® F is the right choice. Moreover, the iglidur® F bearings are extremely pressure resistant. At room temperature, they could be statically loaded up to 105 MPa.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® F plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +140°C the permissible surface pressure is almost 50 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

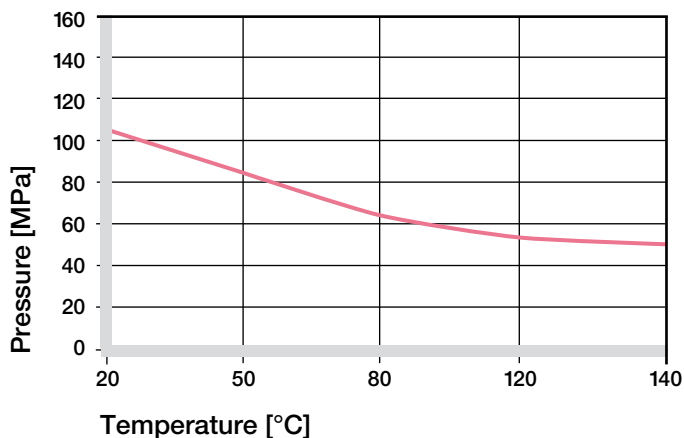


Diagram 02: Recommended maximum surface pressure as a function of temperature (105 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® F at radial loads. At the maximum recommended surface pressure of 105 MPa, the deformation is less than 3.5 % at room temperature.

A plastic deformation can be negligible up to this pressure load. It is however also dependent on the duration of the applied force.

► Surface Pressure, [page 47](#)

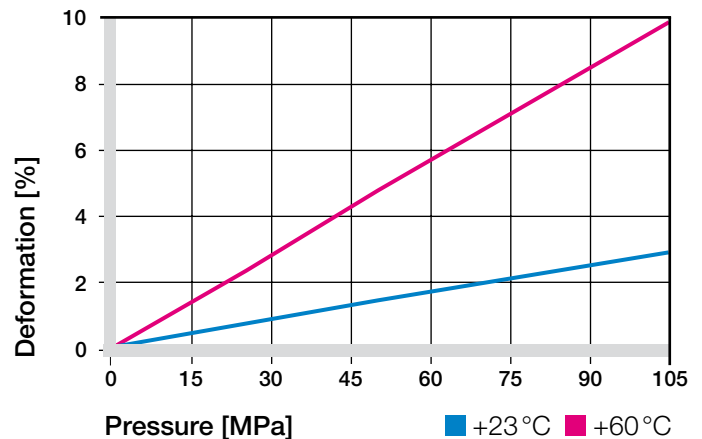


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speeds are based on the operation period and the type of motion. A bearing is the most stressed in long-term rotating motions. Here the maximum speed for the iglidur® F bearing is 0.8 m/s.

The maximum values specified in Table 02 are attained only at minimum pressure loads. In practice these limit values are not often attained due to interactions.

► Surface Speed, [page 49](#)

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8 | 0.6 | 3 |
| Short term | 1.5 | 1.1 | 6 |

Table 02: Maximum running speed

Temperatures

The ambient temperatures strongly influence the features of bearings. The short-term permitted maximum temperature is +180 °C. Long-term operating temperatures should not exceed +140 °C.

With increasing temperatures, the compressive strength of iglidur® F bearings decreases. Diagram 02 clarifies this connection. The wear too rises.

► Application Temperatures, [page 50](#)

| iglidur® F | Application temperature |
|--------------------------------|-------------------------|
| Minimum | -40 °C |
| Max. long term | +140 °C |
| Max. short term | +180 °C |
| Add. securing is required from | +105 °C |

Table 03: Temperature limits

Friction and Wear

In dry operation, the coefficients of friction of iglidur® F bearings are not as favorable as those of many other iglidur® materials. However iglidur® bearings can be lubricated without any problems, and iglidur® F bearings attain excellent results among the lubricated iglidur® bearings.

► Coefficients of Friction and Surfaces, **page 52**

► Wear Resistance, **page 53**

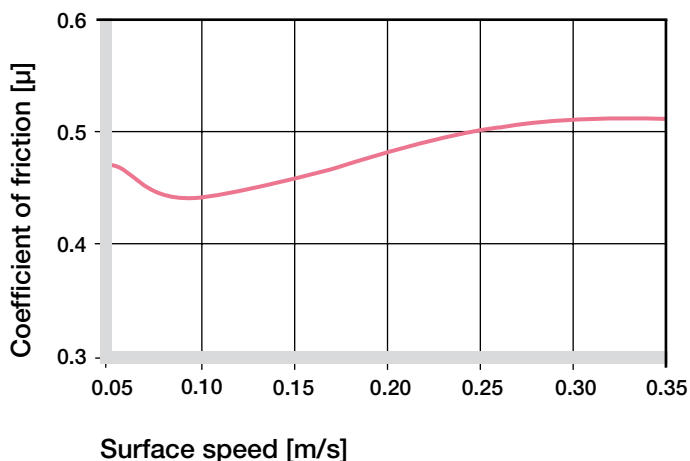


Diagram 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa

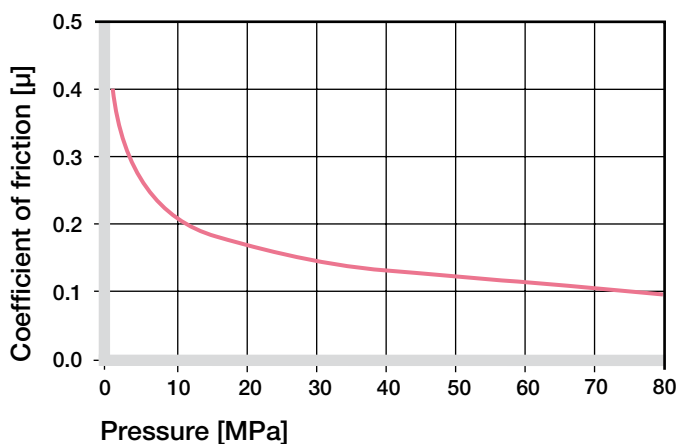


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

Shaft Materials

Diagrams 07–09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® F. In the lowest load range, the hard-chromed shafts prove to be the most suitable in rotating applications with iglidur® F bearings. It behaves otherwise in pivoting applications (see Diagram 09) At 2 MPa loads, the V2A shaft and the hard-chromed shaft are more favorable than the Cf53 shaft, having all in all a much higher wear than in rotations.

Please contact us in case the shaft material scheduled by you is not included in these diagrams.

► Shaft Materials, **page 55**

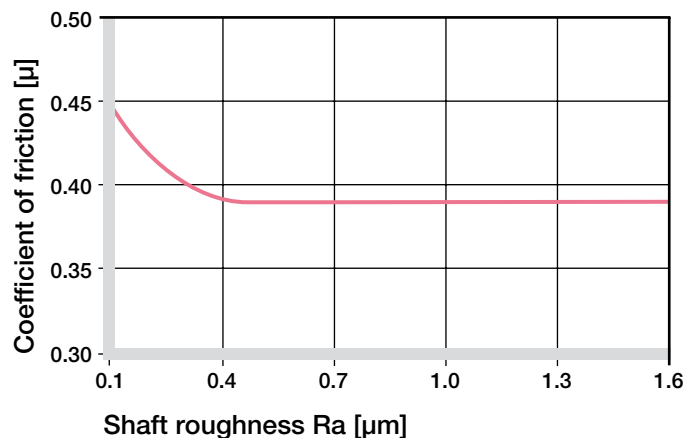


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

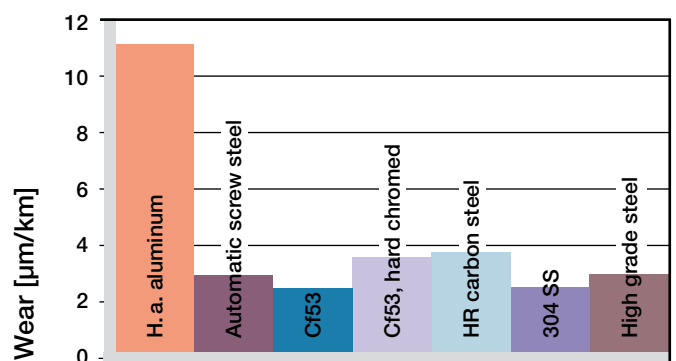


Diagram 07: Wear, rotating with different shaft materials, pressure $p = 1$ MPa, $v = 0.3$ m/s

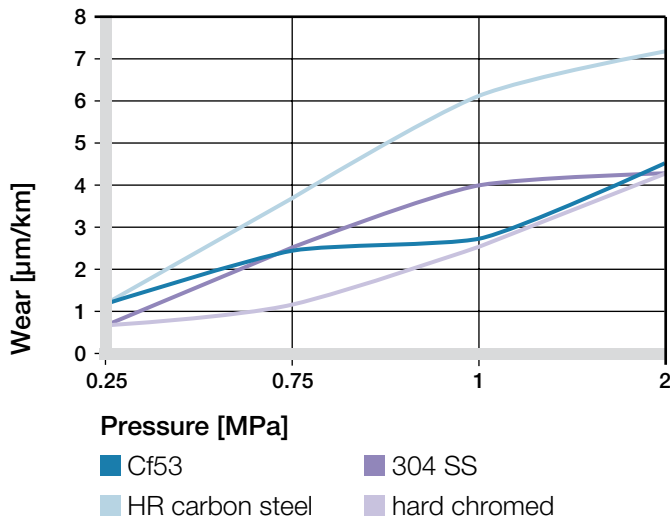


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

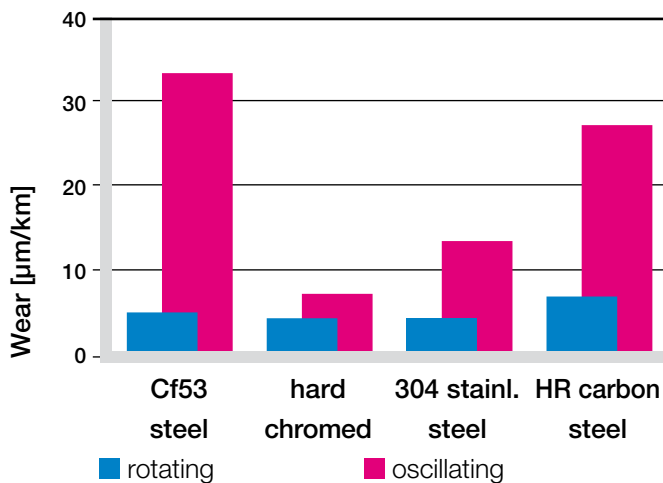


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

| iglidur® F | Dry | Greases | Oil | Water |
|------------|----------|---------|------|-------|
| C.o.f. µ | 0.1–0.39 | 0.09 | 0.04 | 0.04 |

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

Additional Properties

Chemical Resistance

iglidur® F plain bearings have a good chemical resistance. They have a high resistance to lubricants, even at high temperatures (around +120 °C). Hence the iglidur® F bearings are particularly suitable for applications that call for lubrication necessitated by other parts. The iglidur® F is not affected by most weak organic and inorganic acids.

► Chemical Table, **page 1118**

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

+ resistant 0 conditionally resistant – not resistant

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

Table 05: Chemical resistance

Radiation Resistance

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

UV Resistance

iglidur® F plain bearings are permanently resistant to UV radiation.

Vacuum

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

Electrical Properties

iglidur® F plain bearings are electrically conductive.

| | |
|--------------------|---------------------------|
| Volume resistance | < $10^3 \Omega \text{cm}$ |
| Surface resistance | < $10^2 \Omega$ |

Moisture Absorption

The moisture absorption of iglidur® F plain bearings is approximately 1.8 % in standard atmosphere. The saturation limit in water is 8.4 %. This must be taken into account along with the other applicable conditions.

Maximum moisture absorption

At +23 °C/50 % r.h. 1.8 % weight

Max. water absorption 8.4 % weight

Table 06: Moisture absorption



Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® F 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.

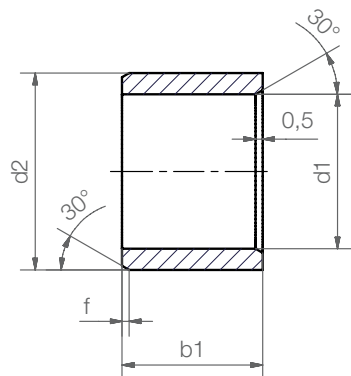
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 59

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® F D11 [mm] | Housing H7 [mm] |
|---------------------|------------------|------------------------|--------------------|
| up to 3 | 0–0.025 | +0.020 +0.080 | 0 +0.010 |
| > 3 to 6 | 0–0.030 | +0.030 +0.105 | 0 +0.012 |
| > 6 to 10 | 0–0.036 | +0.040 +0.130 | 0 +0.015 |
| > 10 to 18 | 0–0.043 | +0.050 +0.160 | 0 +0.018 |
| > 18 to 30 | 0–0.052 | +0.065 +0.195 | 0 +0.021 |
| > 30 to 50 | 0–0.062 | +0.080 +0.240 | 0 +0.025 |
| > 50 to 80 | 0–0.074 | +0.100 +0.290 | 0 +0.030 |

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

Sleeve bearing



Order key

FSM-0203-03



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

Dimensions according to ISO 3547-1 and special dimensions

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 |
|-------------|------|---------------|------|-----------|
| FSM-0203-03 | 2.0 | +0.020 +0.080 | 3.5 | 3.0 |
| FSM-0304-03 | 3.0 | +0.020 +0.080 | 4.5 | 3.0 |
| FSM-0405-04 | 4.0 | +0.030 +0.105 | 5.5 | 4.0 |
| FSM-0507-05 | 5.0 | +0.030 +0.105 | 7.0 | 5.0 |
| FSM-0507-08 | 5.0 | +0.030 +0.105 | 7.0 | 8.0 |
| FSM-0608-06 | 6.0 | +0.030 +0.105 | 8.0 | 6.0 |
| FSM-0608-08 | 6.0 | +0.030 +0.105 | 8.0 | 8.0 |
| FSM-0608-10 | 6.0 | +0.030 +0.105 | 8.0 | 10.0 |
| FSM-0608-13 | 6.0 | +0.030 +0.105 | 8.0 | 13.8 |
| FSM-0709-10 | 7.0 | +0.040 +0.130 | 9.0 | 10.0 |
| FSM-0709-12 | 7.0 | +0.040 +0.130 | 9.0 | 12.0 |
| FSM-0810-08 | 8.0 | +0.040 +0.130 | 10.0 | 8.0 |
| FSM-0810-10 | 8.0 | +0.040 +0.130 | 10.0 | 10.0 |
| FSM-0810-15 | 8.0 | +0.040 +0.130 | 10.0 | 15.0 |
| FSM-1012-06 | 10.0 | +0.040 +0.130 | 12.0 | 6.0 |
| FSM-1012-09 | 10.0 | +0.040 +0.130 | 12.0 | 9.0 |
| FSM-1012-10 | 10.0 | +0.040 +0.130 | 12.0 | 10.0 |
| FSM-1214-10 | 12.0 | +0.050 +0.160 | 14.0 | 10.0 |
| FSM-1214-15 | 12.0 | +0.050 +0.160 | 14.0 | 15.0 |
| FSM-1315-20 | 13.0 | +0.050 +0.160 | 15.0 | 20.0 |
| FSM-1416-15 | 14.0 | +0.050 +0.160 | 16.0 | 15.0 |
| FSM-1517-15 | 15.0 | +0.050 +0.160 | 17.0 | 15.0 |
| FSM-1517-20 | 15.0 | +0.050 +0.160 | 17.0 | 20.0 |
| FSM-1618-15 | 16.0 | +0.050 +0.160 | 18.0 | 15.0 |
| FSM-1820-12 | 18.0 | +0.050 +0.160 | 20.0 | 12.0 |

* after pressfit. Testing methods ► page 59



delivery from stock
time



prices price list online
www.igus.co.uk/en/f



Sleeve bearing

Dimensions [mm]

| Part number | d1 | d1-Tolerance* | d2 | b1 h13 |
|-------------|------|---------------|------|-----------|
| FSM-1820-15 | 18.0 | +0.050 +0.160 | 20.0 | 15.0 |
| FSM-1820-20 | 18.0 | +0.050 +0.160 | 20.0 | 20.0 |
| FSM-2022-14 | 20.0 | +0.065 +0.195 | 22.0 | 14.5 |
| FSM-2022-20 | 20.0 | +0.065 +0.195 | 22.0 | 20.0 |
| FSM-2023-15 | 20.0 | +0.065 +0.195 | 23.0 | 15.0 |
| FSM-2023-20 | 20.0 | +0.065 +0.195 | 23.0 | 20.0 |
| FSM-2225-15 | 22.0 | +0.065 +0.195 | 25.0 | 15.0 |
| FSM-2528-20 | 25.0 | +0.065 +0.195 | 28.0 | 20.0 |
| FSM-2832-20 | 28.0 | +0.065 +0.195 | 32.0 | 20.0 |
| FSM-2832-30 | 28.0 | +0.065 +0.195 | 32.0 | 30.0 |
| FSM-3034-20 | 30.0 | +0.065 +0.195 | 34.0 | 20.0 |
| FSM-3034-30 | 30.0 | +0.065 +0.195 | 34.0 | 30.0 |
| FSM-3034-40 | 30.0 | +0.065 +0.195 | 34.0 | 40.0 |
| FSM-3236-30 | 32.0 | +0.080 +0.240 | 36.0 | 30.0 |
| FSM-3539-30 | 35.0 | +0.080 +0.240 | 39.0 | 30.0 |
| FSM-3539-40 | 35.0 | +0.080 +0.240 | 39.0 | 40.0 |
| FSM-4044-30 | 40.0 | +0.080 +0.240 | 44.0 | 30.0 |
| FSM-4044-50 | 40.0 | +0.080 +0.240 | 44.0 | 50.0 |
| FSM-4550-50 | 45.0 | +0.080 +0.240 | 50.0 | 50.0 |
| FSM-5055-40 | 50.0 | +0.080 +0.240 | 55.0 | 40.0 |
| FSM-5560-50 | 55.0 | +0.100 +0.290 | 60.0 | 50.0 |
| FSM-6065-60 | 60.0 | +0.100 +0.290 | 65.0 | 60.0 |

* after pressfit. Testing methods ► page 59



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.

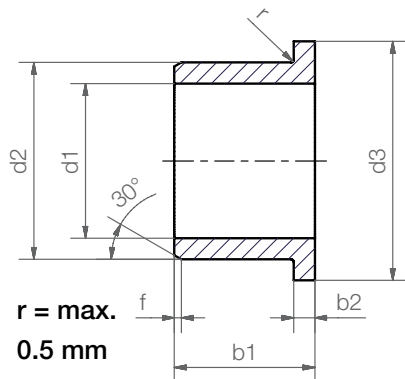


delivery from stock
time



prices price list online
www.igus.co.uk/en/f

Flange bearing



Order key

FFM-0405-04



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

Dimensions according to ISO 3547-1 and special dimensions

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 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| FFM-0405-04 | 4.0 | +0.030 +0.105 | 5.5 | 9.5 | 4.0 | 0.75 |
| FFM-0405-06 | 4.0 | +0.030 +0.105 | 5.5 | 9.5 | 6.0 | 0.75 |
| FFM-0507-05 | 5.0 | +0.030 +0.105 | 7.0 | 11.0 | 5.0 | 1.0 |
| FFM-0608-06 | 6.0 | +0.030 +0.105 | 8.0 | 12.0 | 6.0 | 1.0 |
| FFM-0608-08 | 6.0 | +0.030 +0.105 | 8.0 | 12.0 | 8.0 | 1.0 |
| FFM-0810-06 | 8.0 | +0.040 +0.130 | 10.0 | 15.0 | 6.0 | 1.0 |
| FFM-0810-09 | 8.0 | +0.040 +0.130 | 10.0 | 15.0 | 9.0 | 1.0 |
| FFM-1012-06 | 10.0 | +0.040 +0.130 | 12.0 | 18.0 | 6.0 | 1.0 |
| FFM-1012-08 | 10.0 | +0.040 +0.130 | 12.0 | 18.0 | 8.0 | 1.0 |
| FFM-1012-09 | 10.0 | +0.040 +0.130 | 12.0 | 18.0 | 9.0 | 1.0 |
| FFM-1012-15 | 10.0 | +0.040 +0.130 | 12.0 | 18.0 | 15.0 | 1.0 |
| FFM-1012-18 | 10.0 | +0.040 +0.130 | 12.0 | 18.0 | 18.0 | 1.0 |
| FFM-1214-09 | 12.0 | +0.050 +0.160 | 14.0 | 20.0 | 9.0 | 1.0 |
| FFM-1214-12 | 12.0 | +0.050 +0.160 | 14.0 | 20.0 | 12.0 | 1.0 |
| FFM-1416-12 | 14.0 | +0.050 +0.160 | 16.0 | 22.0 | 12.0 | 1.0 |
| FFM-1416-17 | 14.0 | +0.050 +0.160 | 16.0 | 22.0 | 17.0 | 1.0 |
| FFM-1517-12 | 15.0 | +0.050 +0.160 | 17.0 | 23.0 | 12.0 | 1.0 |
| FFM-1517-17 | 15.0 | +0.050 +0.160 | 17.0 | 23.0 | 17.0 | 1.0 |
| FFM-1618-17 | 16.0 | +0.050 +0.160 | 18.0 | 24.0 | 17.0 | 1.0 |
| FFM-1820-12 | 18.0 | +0.050 +0.160 | 20.0 | 26.0 | 12.0 | 1.0 |
| FFM-1820-17 | 18.0 | +0.050 +0.160 | 20.0 | 26.0 | 17.0 | 1.0 |
| FFM-2023-21 | 20.0 | +0.065 +0.195 | 23.0 | 30.0 | 21.0 | 1.5 |
| FFM-2528-21 | 25.0 | +0.065 +0.195 | 28.0 | 35.0 | 21.0 | 1.5 |
| FFM-3034-26 | 30.0 | +0.065 +0.195 | 34.0 | 42.0 | 26.0 | 2.0 |
| FFM-3236-26 | 32.0 | +0.080 +0.240 | 36.0 | 45.0 | 26.0 | 2.0 |

* after pressfit. Testing methods ► page 59



delivery from stock
time



prices price list online
www.igus.co.uk/en/f



Flange bearing

Dimensions [mm]

| Part number | d1 | d1-Tolerance* | d2 | d3 d13 | b1 h13 | b2 -0.14 |
|-------------|------|---------------|------|-----------|-----------|-------------|
| FFM-3539-06 | 35.0 | +0.080 +0.240 | 39.0 | 47.0 | 6.0 | 2.0 |
| FFM-3539-16 | 35.0 | +0.080 +0.240 | 39.0 | 47.0 | 16.0 | 2.0 |
| FFM-3539-26 | 35.0 | +0.080 +0.240 | 39.0 | 47.0 | 26.0 | 2.0 |
| FFM-4044-30 | 40.0 | +0.080 +0.240 | 44.0 | 52.0 | 30.0 | 2.0 |
| FFM-4044-40 | 40.0 | +0.080 +0.240 | 44.0 | 52.0 | 40.0 | 2.0 |
| FFM-4550-50 | 45.0 | +0.080 +0.240 | 50.0 | 58.0 | 50.0 | 2.0 |
| FFM-5055-10 | 50.0 | +0.080 +0.240 | 55.0 | 63.0 | 10.0 | 2.0 |
| FFM-5055-40 | 50.0 | +0.080 +0.240 | 55.0 | 63.0 | 40.0 | 2.0 |
| FFM-6065-40 | 60.0 | +0.100 +0.290 | 65.0 | 73.0 | 40.0 | 2.0 |
| FFM-7075-40 | 70.0 | +0.100 +0.290 | 75.0 | 83.0 | 40.0 | 2.0 |

* after pressfit. Testing methods ► page 59



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. iglus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

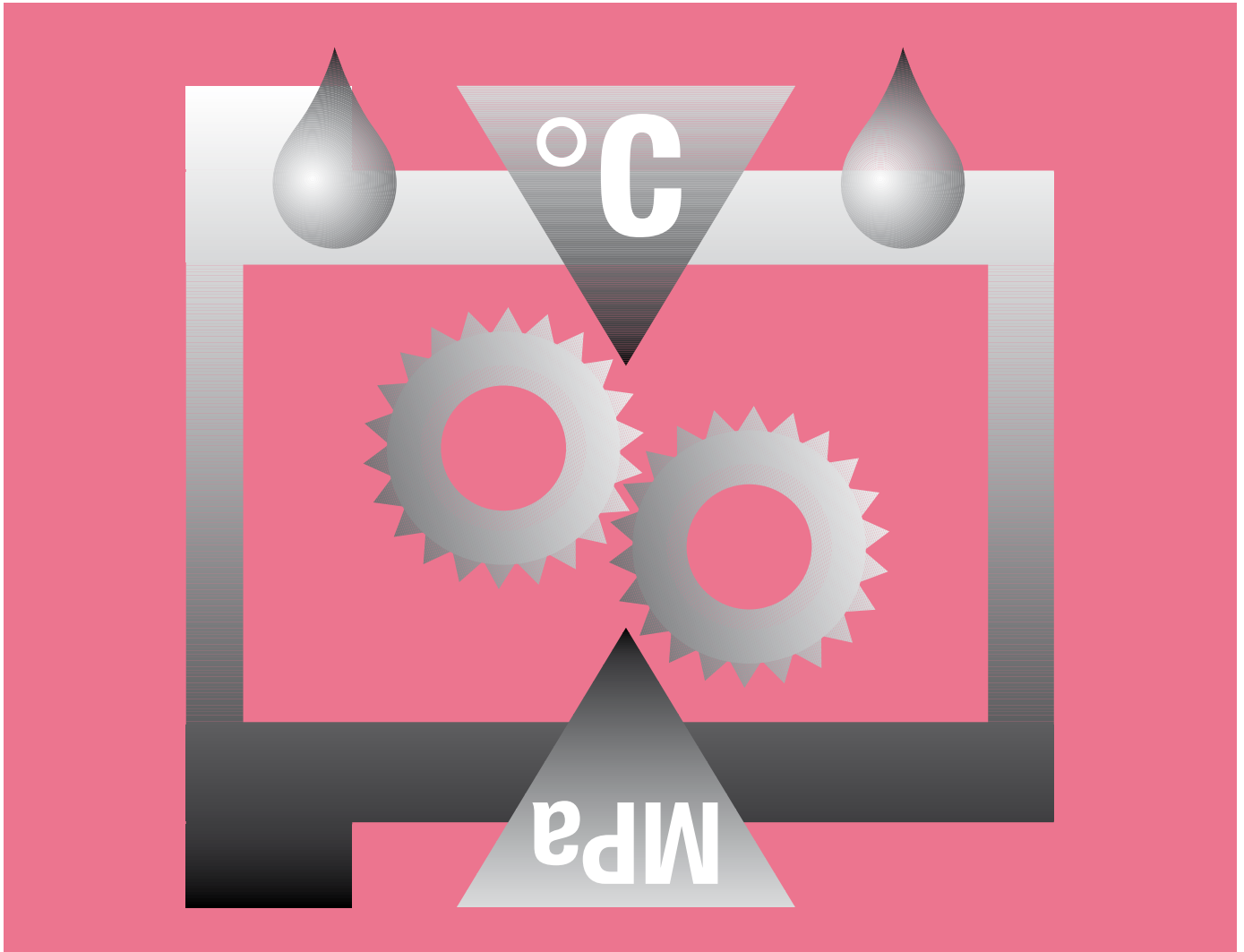
► www.igus.co.uk/iglidur-specialbearings



delivery from stock
time



prices price list online
www.igus.co.uk/en/f



The automotive standard – iglidur® H4



Standard range from stock

Low coefficients of friction

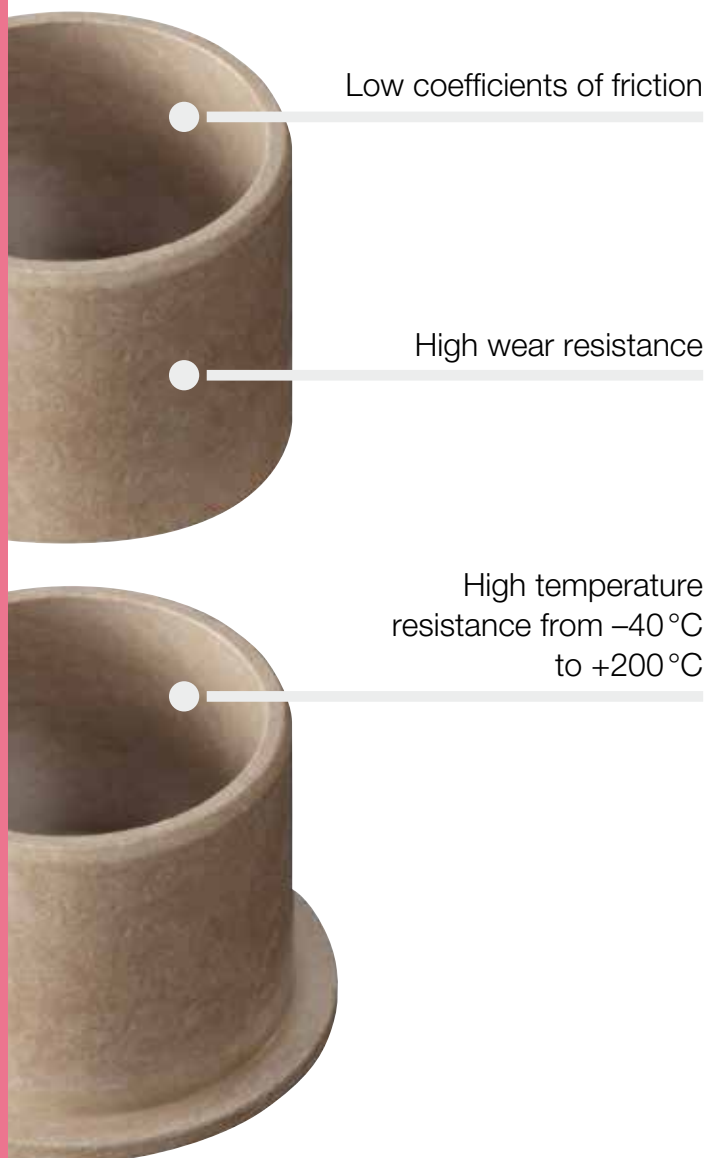
Good abrasion resistance

High temperature resistance from –40 °C
to +200 °C

High chemical resistance

iglidur® H4

The automotive standard. Very cost-efficient high-temperature material with good dry-operation properties and “engine compartment resistance”.



When to use it?

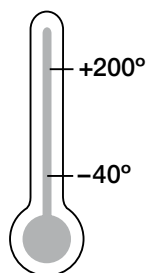
- Application with fuels, oils etc.
- When high wear resistance is required
- For low coefficients of friction
- For high temperature resistance from -40 °C to +200 °C
- For high chemical resistance



When not to use it?

- For underwater use
▶ iglidur® H370, page 359
- When a cost-effective universal bearing is required
▶ iglidur® G, page 65
- When you need a temperature- and media-resistant bearing for static applications.
▶ iglidur® H2, page 383

Temperature



Product range

2 types
Ø 4–40 mm
more dimensions
on request



iglidur® H4 | Application Examples



Typical sectors of industry and application areas

- Automotive ● Automation
- Packaging etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

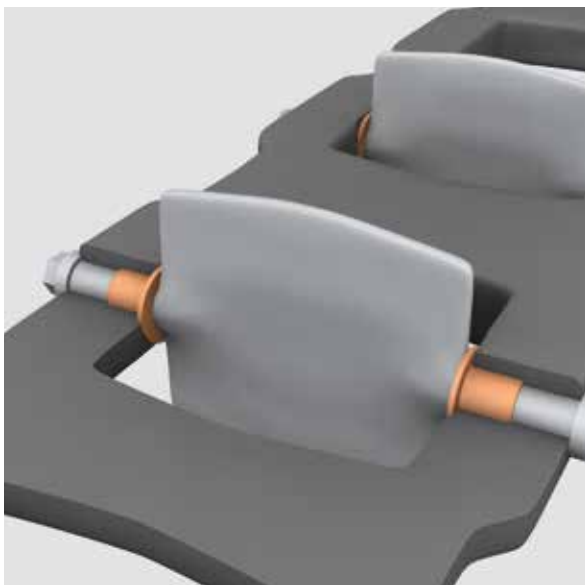
► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/gear-actuator



► www.igus.co.uk/throttle-valves



► www.igus.co.uk/intake-systems



► www.igus.co.uk/automotive

Material properties table

| General properties | Unit | iglidur® H4 | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm ³ | 1.79 | |
| Colour | | brown | |
| Max. moisture absorption at +23 °C/50 % r. h. | % weight | 0.1 | DIN 53495 |
| Max. water absorption | % weight | 0.2 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.08–0.25 | |
| pv value, max. (dry) | MPa · m/s | 0.7 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 7,500 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 120 | DIN 53452 |
| Compressive strength | MPa | 50 | |
| Max. recommended surface pressure (+20 °C) | MPa | 65 | |
| Shore D hardness | | 80 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +200 | |
| Max. short term application temperature | °C | +240 | |
| Max. ambient temperature, short term ¹⁾ | °C | +260 | |
| Min. application temperature | °C | –40 | |
| Thermal conductivity | W/m · K | 0.24 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 5 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹³ | DIN IEC 93 |
| Surface resistance | Ω | > 10 ¹² | DIN 53482 |

¹⁾ Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table

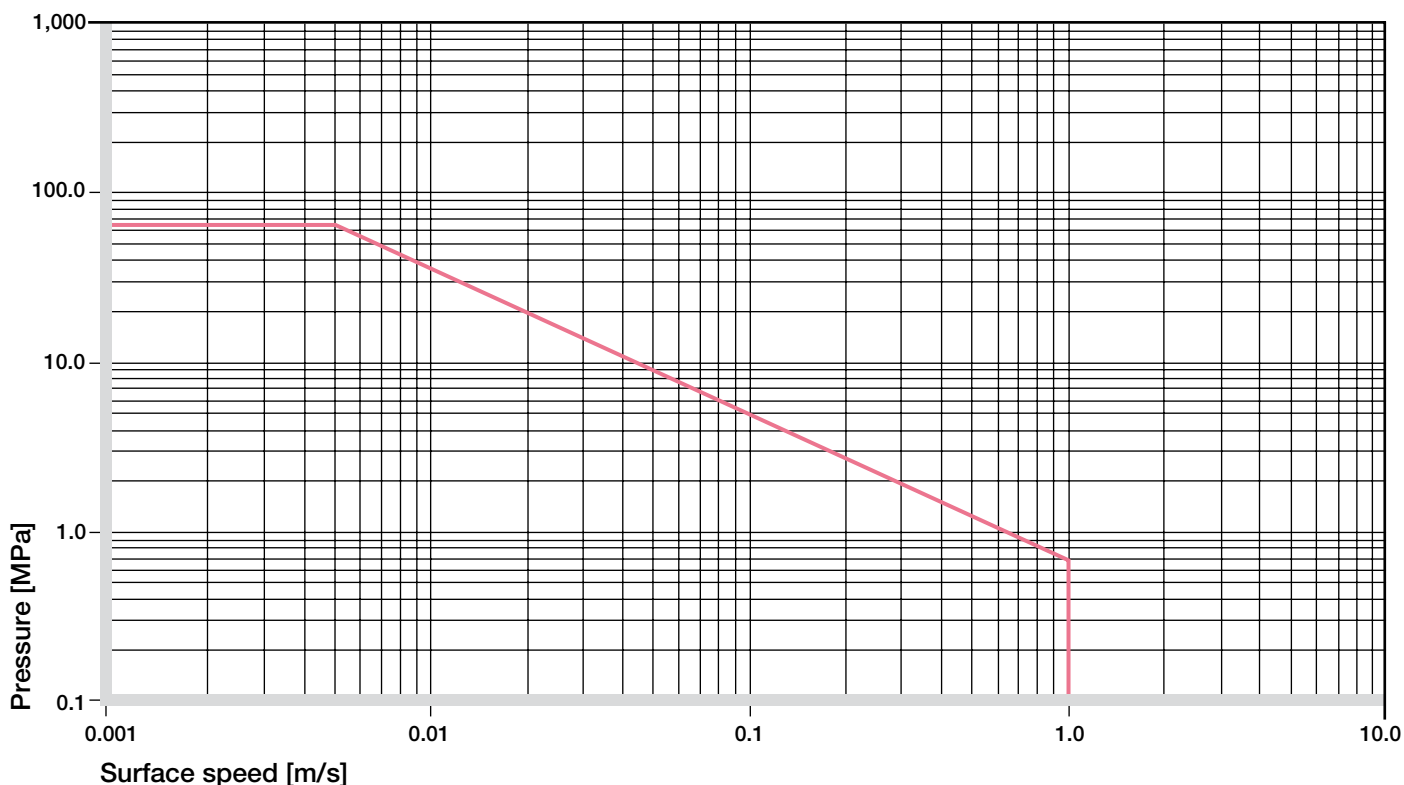


Diagram 01: Permissible pv values for iglidur® H4 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® H4 bearings stand for high carrying capacity, good abrasion resistance and good temperature resistance, besides the obvious economic factors. Temperatures up to +200 °C, permitted surface pressure up to 65 MPa, and excellent chemical resistance are only some of the essential attributes. Solid lubricants lower the coefficient of friction and support the wear resistance, which was considerably improved compared to the likewise cost-efficient iglidur® H2 bearings. iglidur® H4 bearings are self-lubricating and suitable for all motions.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® H4 plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the long-term maximum temperature of +200 °C the permissible surface pressure is almost 7 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

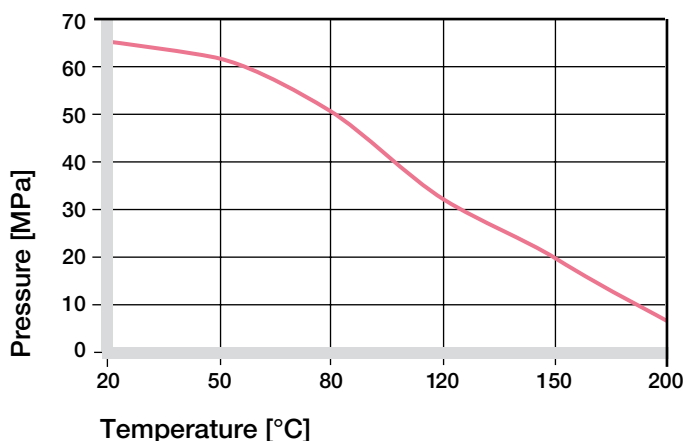


Diagram 02: Recommended maximum surface pressure as a function of temperature (65 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® H4 as a function of radial pressure.

► Surface Pressure, [page 47](#)

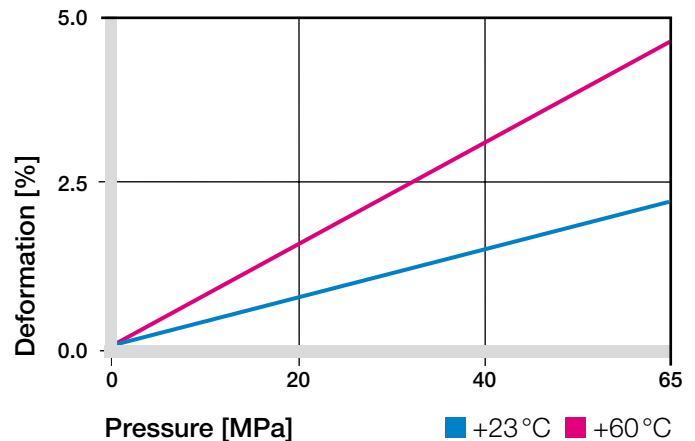


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

In contrast to the similarly cost-efficient iglidur® H2 bearings, the iglidur® H4 has an essentially favorable coefficient of friction. This accounts for the higher permitted surface speeds that can be attained with these bearings. In the dry operation, long-term speeds of 1.0 m/s are possible. The speeds stated in Table 02 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface Speed, [page 49](#)

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1 | 0.7 | 1 |
| Short term | 1.5 | 1.1 | 2 |

Table 02: Maximum running speed

Temperatures

iglidur® H4 is a temperature resistant material. The short-term maximum permissible temperature is +240 °C, and therefore allows for the use of iglidur® H4 plain bearings in applications where the bearings for instance undergo a drying process without further loading. The compressive strength of iglidur® H4, however, decreases with increasing temperatures.

The additional friction heat in the bearing system should be considered.

► Application Temperatures, [page 50](#)

| iglidur® H4 | Application temperature |
|--------------------------------|-------------------------|
| Minimum | -40 °C |
| Max. long term | +200 °C |
| Max. short term | +240 °C |
| Add. securing is required from | +110 °C |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction of the iglidur® H4 bearing is very low. However it must be noted that an extremely coarse gliding partner can increase the friction. We recommend a shaft surface finish (Ra) of 0.1 to maximum 0.4 µm. The coefficient of friction of the iglidur® H4 bearings is dependent on the surface speed only to a minor extent. The influence of the load is greater; an increase in load lowers the coefficient of friction up to 0.08.

► Coefficients of Friction and Surfaces, **page 52**

► Wear Resistance, **page 53**

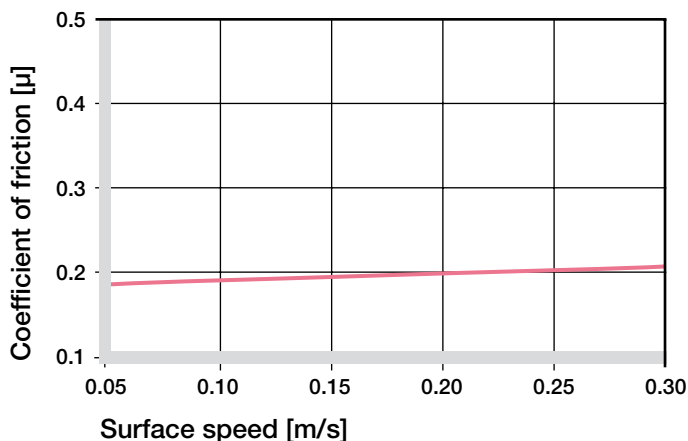


Diagram 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

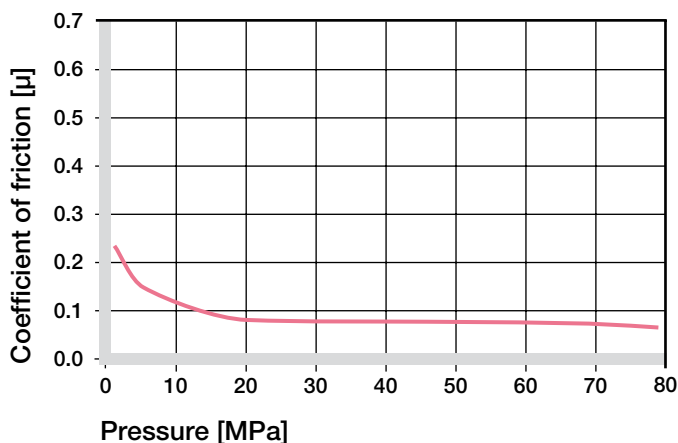


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

With many of the applicable shaft materials, the iglidur® H4 is the economical alternative to many other high-temperature bearings. The important thing is however the selection of the suitable shaft material. It cannot be generally stated that iglidur® H4 is better suited for hard or soft shafts. Tests have however shown that pivoting motions yield better wear data. In rotating applications, the wear increases markedly from 10 MPa.

► Shaft Materials, **page 55**

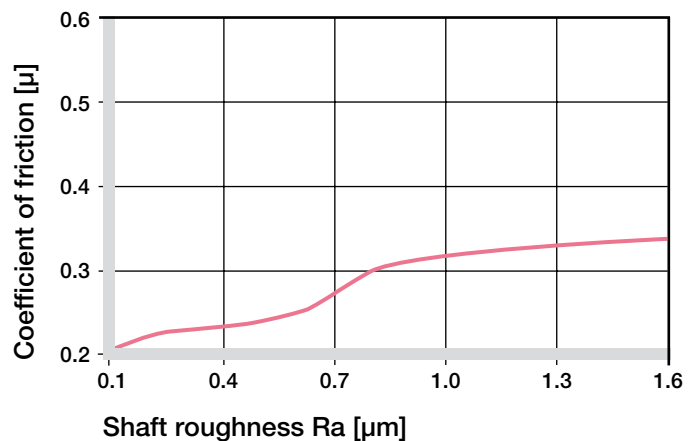


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

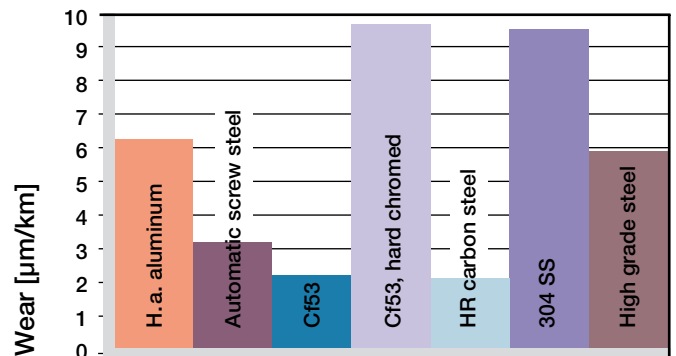


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

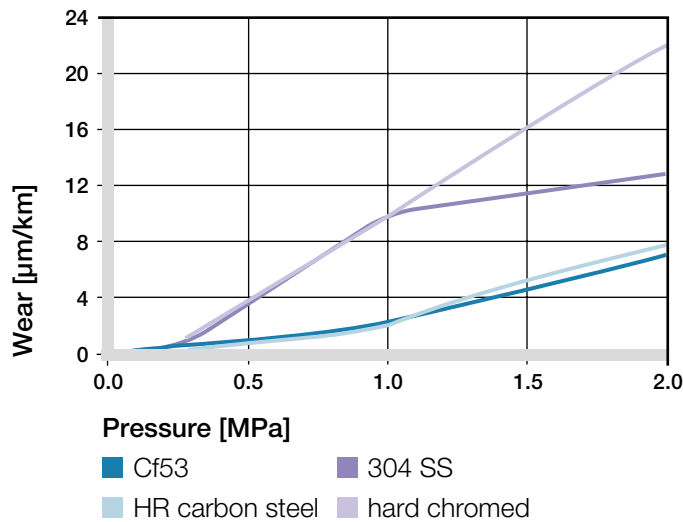


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

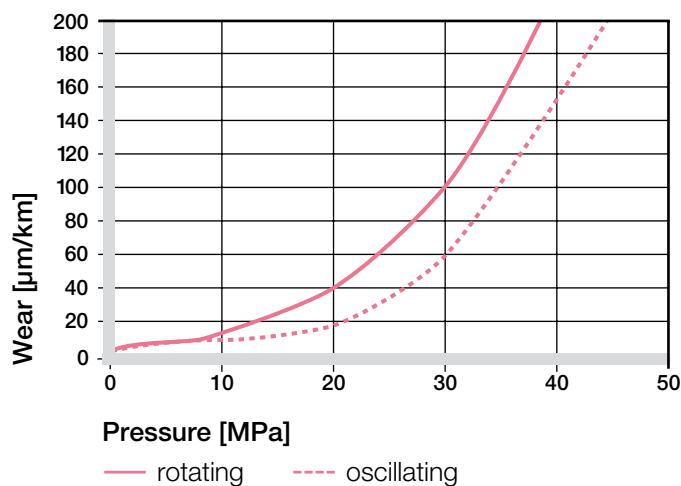


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® H4 | Dry | Greases | Oil | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. μ | 0.08–0.25 | 0.09 | 0.04 | 0.04 |

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

Additional Properties

Chemical Resistance

iglidur® H4 plain bearings feature good chemical resistance. They are resistant to most lubricants. The iglidur® H4 is not affected by most weak organic and inorganic acids.

► Chemical Table, **page 1118**

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

+ resistant 0 conditionally resistant – not resistant

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

Table 05: Chemical resistance

Radiation Resistance

iglidur® H4 withstands neutron radiation as well as gamma radiation without noticeable losses of its excellent mechanical characteristics. Plain bearings of iglidur® H4 are radiation resistant up to a radiation intensity of $2 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® H4 plain bearings change under the influence of UV radiation and other climatic influences. The surface gets rougher, and the compressive strength decreases. The use of iglidur® H4 in applications directly exposed to atmospheric conditions should therefore be tested.

Vacuum

In a vacuum, any moisture present will outgas. Use in a vacuum is usually possible.

Electrical Properties

iglidur® H4 plain bearings are electrically insulating.

| | |
|--------------------|-----------------------------|
| Volume resistance | $> 10^{13} \Omega\text{cm}$ |
| Surface resistance | $> 10^{12} \Omega$ |

Moisture Absorption

The moisture absorption of iglidur® H4 plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is 0.2 %. iglidur® H4 is therefore an ideal material for wet environments.

Maximum moisture absorption

At +23 °C/50 % r. h. 0.1 % weight

Max. water absorption 0.2 % weight

Table 06: Moisture absorption

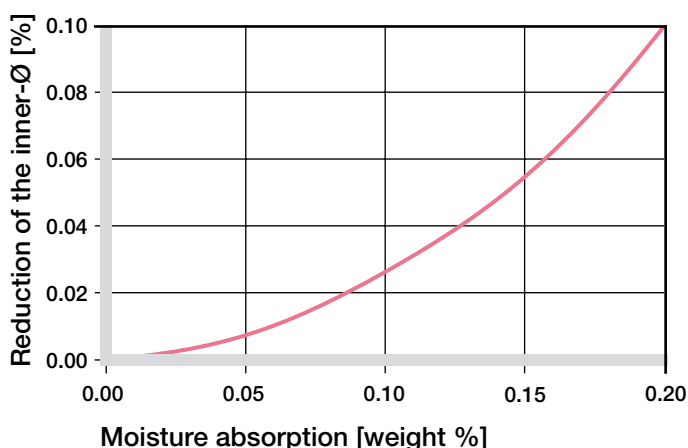


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H4 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.

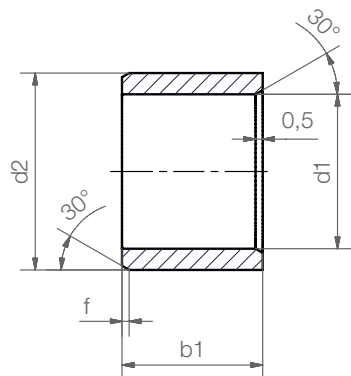
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 59

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® H4 F10 [mm] | Housing H7 [mm] |
|---------------------|------------------|-------------------------|--------------------|
| up to 3 | 0–0.025 | +0.006 +0.046 | 0 +0.010 |
| > 3 to 6 | 0–0.030 | +0.010 +0.058 | 0 +0.012 |
| > 6 to 10 | 0–0.036 | +0.013 +0.071 | 0 +0.015 |
| > 10 to 18 | 0–0.043 | +0.016 +0.086 | 0 +0.018 |
| > 18 to 30 | 0–0.052 | +0.020 +0.104 | 0 +0.021 |
| > 30 to 50 | 0–0.062 | +0.025 +0.125 | 0 +0.025 |
| > 50 to 80 | 0–0.074 | +0.030 +0.150 | 0 +0.030 |

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

Sleeve bearing



Order key

H4SM-0405-04



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material: iglidur® H4

Dimensions according to ISO 3547-1 and special dimensions

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 |
|--------------|------|---------------|------|-----------|
| H4SM-0405-04 | 4.0 | +0.010 +0.058 | 5.5 | 4.0 |
| H4SM-0608-08 | 6.0 | +0.010 +0.058 | 8.0 | 8.0 |
| H4SM-0810-20 | 8.0 | +0.013 +0.071 | 10.0 | 20.0 |
| H4SM-1618-20 | 16.0 | +0.016 +0.086 | 18.0 | 20.0 |
| H4SM-1820-15 | 18.0 | +0.016 +0.086 | 20.0 | 15.0 |
| H4SM-2022-15 | 20.0 | +0.020 +0.104 | 22.0 | 15.0 |
| H4SM-3943-40 | 39.0 | +0.025 +0.125 | 43.0 | 40.0 |

* after pressfit. Testing methods ► page 59



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

► www.igus.co.uk/iglidur-specialbearings

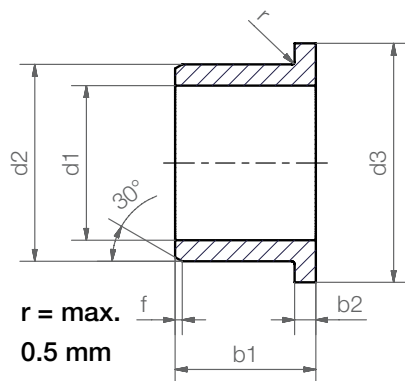


delivery from stock
time



prices price list online
www.igus.co.uk/en/h4

Flange bearing



Order key

H4FM-0405-04



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form F)

Material: iglidur® H4

Dimensions according to ISO 3547-1 and special dimensions

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 |
|----------------|------|---------------|------|-----------|-----------|-------------|
| H4FM-0405-04 | 4.0 | +0.010 +0.058 | 5.5 | 9.5 | 4.0 | 0.75 |
| H4FM-0608-08 | 6.0 | +0.010 +0.058 | 8.0 | 12.0 | 8.0 | 1.0 |
| H4FM-0810-10 | 8.0 | +0.013 +0.071 | 10.0 | 15.0 | 10.0 | 1.0 |
| H4FM-1012-05 | 10.0 | +0.013 +0.071 | 12.0 | 18.0 | 5.0 | 1.0 |
| H4FM-1012-12 | 10.0 | +0.013 +0.071 | 12.0 | 18.0 | 12.0 | 1.0 |
| H4FM-101218-25 | 10.0 | +0.013 +0.071 | 12.0 | 18.0 | 25.0 | 1.0 |
| H4FM-1214-12 | 12.0 | +0.016 +0.086 | 14.0 | 20.0 | 12.0 | 1.0 |
| H4FM-1517-12 | 15.0 | +0.016 +0.086 | 17.0 | 23.0 | 12.0 | 1.0 |
| H4FM-1618-17 | 16.0 | +0.016 +0.086 | 18.0 | 24.0 | 17.0 | 1.0 |
| H4FM-1820-17 | 18.0 | +0.016 +0.086 | 20.0 | 26.0 | 17.0 | 1.0 |
| H4FM-2023-21 | 20.0 | +0.020 +0.104 | 23.0 | 30.0 | 21.5 | 1.5 |
| H4FM-2528-21 | 25.0 | +0.020 +0.104 | 28.0 | 35.0 | 21.5 | 1.5 |
| H4FM-3034-30 | 30.0 | +0.020 +0.104 | 34.0 | 40.0 | 30.0 | 2.0 |
| H4FM-4044-40 | 40.0 | +0.030 +0.150 | 44.0 | 52.0 | 40.0 | 2.0 |

* after pressfit. Testing methods ► page 59



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.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

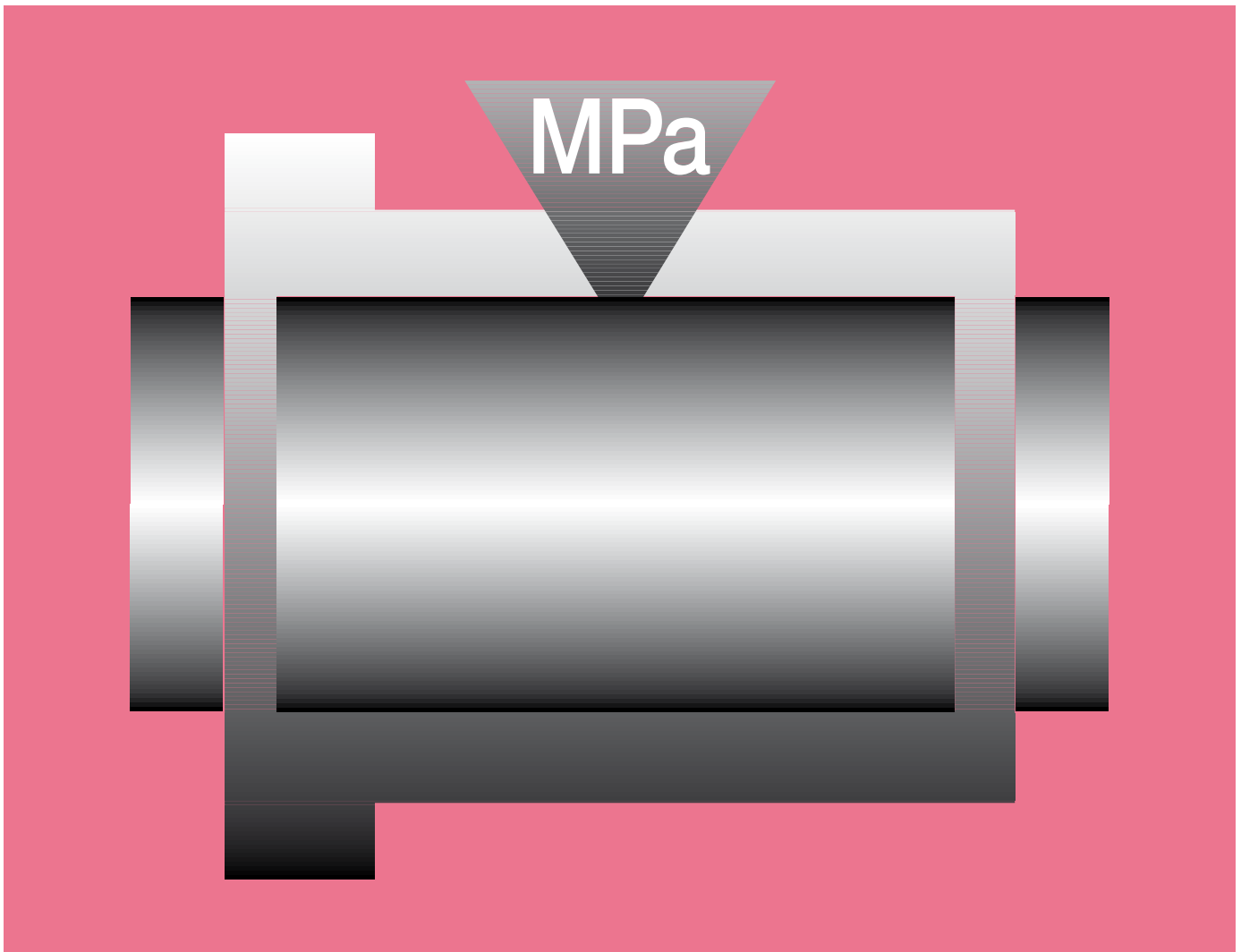
► www.igus.co.uk/iglidur-specialbearings



delivery from stock
time



prices price list online
www.igus.co.uk/en/h4



For high loads – iglidur® Q



Standard range from stock

Excellent wear resistance, especially for extreme loads

Recommended for extreme pv values

Good coefficients of friction

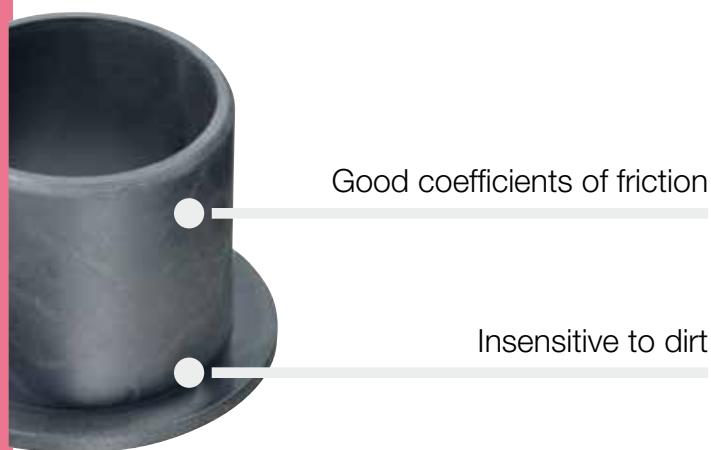
Insensitive to dirt

For high loads. iglidur® Q is the low priced solution for high duty cycles at high to extreme loads. Bearing made from this material can be used in all types of motion, but is best suited to oscillating applications.



Excellent wear resistance,
especially for extreme loads

Recommended for
extreme pv values



Good coefficients of friction

Insensitive to dirt



When to use it?

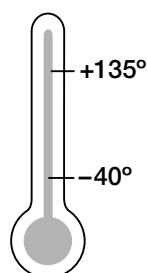
- For oscillating applications
- Excellent wear resistance, especially for extreme loads
- Recommended for extreme pv values
- If the bearing should be insensitive to dirt



When not to use it?

- For underwater applications
 - ▶ iglidur® H370, page 359
- When temperatures are constantly greater than +135 °C
 - ▶ iglidur® J350, page 241
 - ▶ iglidur® X, page 157
 - ▶ iglidur® Z, page 311
- When electrically conductive bearings are needed
 - ▶ iglidur® F, page 463
 - ▶ iglidur® H, page 337

Temperature



Product range

3 types
Ø 6–90 mm
more dimensions
on request

iglidur® Q | Application Examples

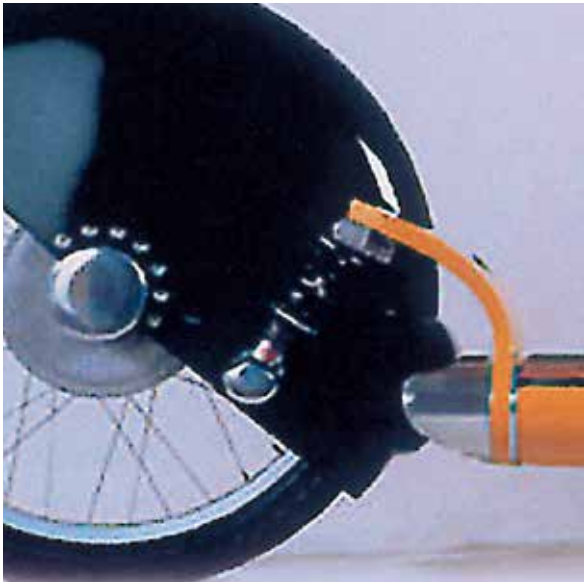


Typical sectors of industry and application areas

- Construction machinery
- Sheet metal industry ● Agricultural machines ● Railway technology
- Doors and gates etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/electro-roller



► www.igus.co.uk/tank-truck



► www.igus.co.uk/baggripper



► www.igus.co.uk/tv-stand

Material properties table

| General properties | Unit | iglidur® Q | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm ³ | 1.40 | |
| Colour | | black | |
| Max. moisture absorption at +23 °C/50 % r. h. | % weight | 0.9 | DIN 53495 |
| Max. water absorption | % weight | 4.9 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.05–0.15 | |
| pv value, max. (dry) | MPa · m/s | 0.55 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 4,500 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 120 | DIN 53452 |
| Compressive strength | MPa | 89 | |
| Max. recommended surface pressure (+20 °C) | MPa | 100 | |
| Shore D hardness | | 83 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +135 | |
| Max. short term application temperature | °C | +155 | |
| Min. application temperature | °C | –40 | |
| Thermal conductivity | W/m · K | 0.23 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 5 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹⁵ | DIN IEC 93 |
| Surface resistance | Ω | > 10 ¹² | DIN 53482 |

Tabelle 01: Material properties table

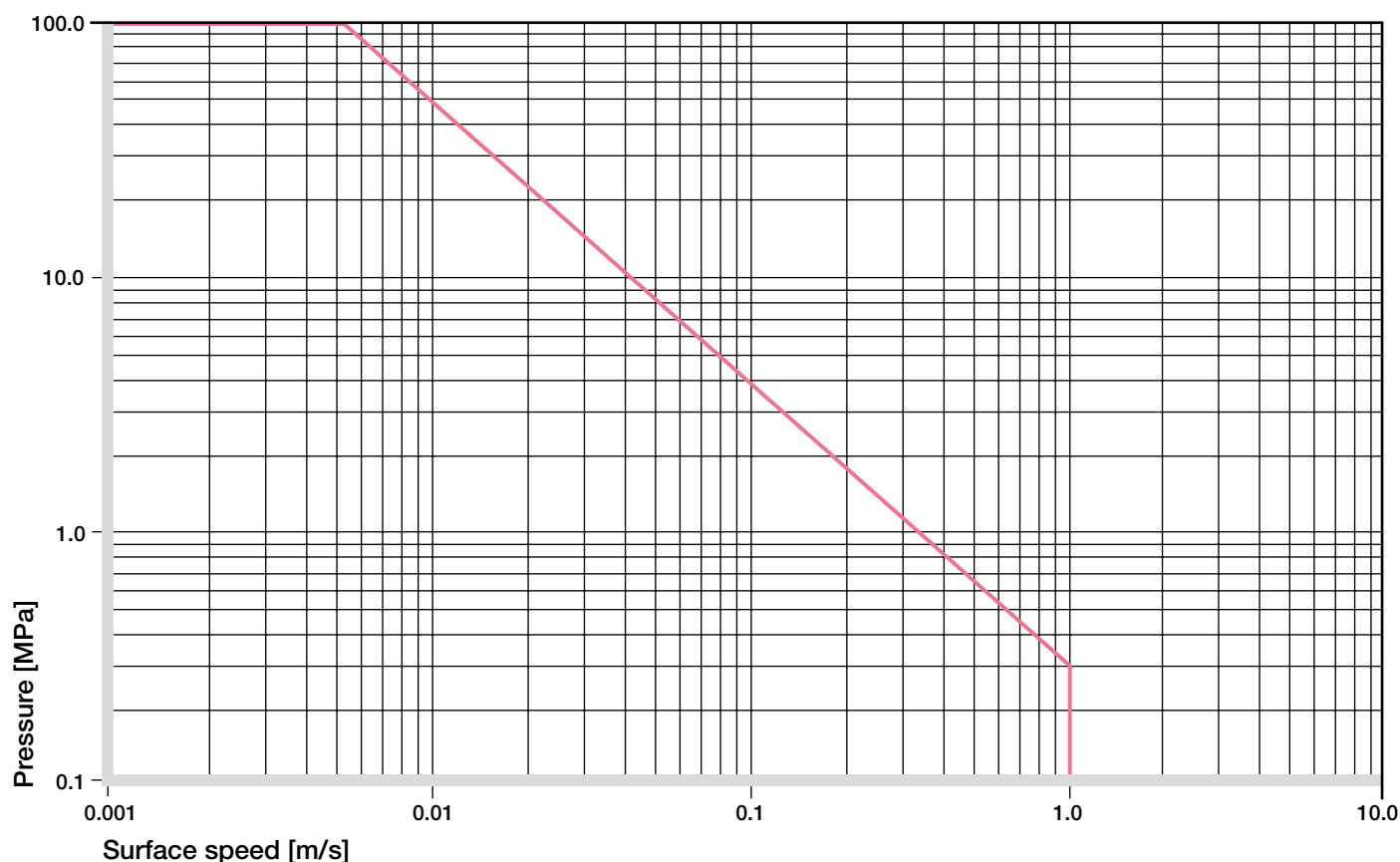


Diagram 01: Permissible pv values for iglidur® Q with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® Q bearings were developed especially for extreme loads. Under high loads, iglidur® Q figures among the iglidur® materials that display the best wear resistance. From a radial pressure of 25 MPa, it outclasses even bearings made of the highly abrasion-resistant iglidur® W300. Specific solid lubricants, precisely integrated into the material, ensure that the maintenance-free dry operation is guaranteed under any load.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® Q plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +135 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

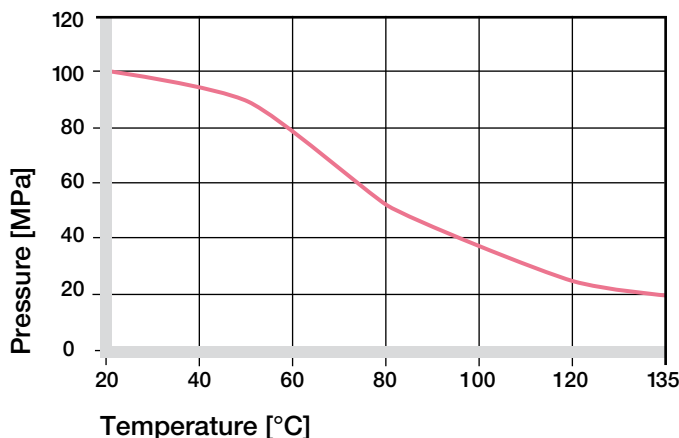


Diagram 02: Recommended maximum surface pressure of as a function of temperature (100 MPa at +20 °C)

iglidur® Q is a material used when high pv values are reached with high loads. Diagram 03 shows the elastic deformation of iglidur® Q at radial loads. At the maximum recommended surface pressure of 100 MPa, the deformation at room temperature is less than 3 %.

► Surface Pressure, [page 47](#)

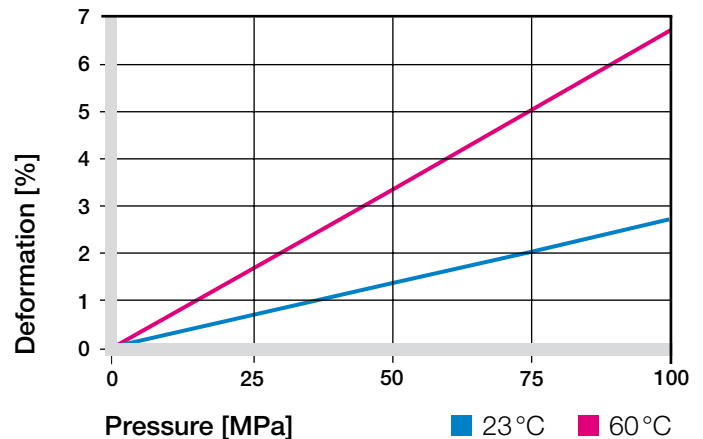


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Under extreme radial loads, the iglidur® Q bearings can reach the maximum pv values, which are possible in the dry operation with plain bearings. Though the iglidur® Q bearings have the greatest advantages with high loads and low speeds, high surface speeds are also attainable due to the excellent coefficients of friction. The values stated in Table 02 show the speed at which the temperature rises to the maximum permitted value as a result of friction.

► Surface Speed, [page 49](#)

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1 | 0.7 | 5 |
| Short term | 2 | 1.4 | 6 |

Table 02: Maximum running speed

Temperatures

Plain bearings made of iglidur® Q have excellent wear resistance even at high temperatures. The maximum long term application temperature is +135 °C. Because of different environmental influences, the bearing can lose pressfit at lower temperatures. Therefore, it may be necessary to secure the bearings in the housing bore. Also, notice that the coefficient of friction increases rapidly as temperature increases from around +100 °C.

► Application Temperatures, [page 50](#)

| iglidur® Q | Application temperature |
|--------------------------------|-------------------------|
| Minimum | -40 °C |
| Max. long term | +135 °C |
| Max. short term | +155 °C |
| Add. securing is required from | +50 °C |

Table 03: Temperature limits

Friction and Wear

Although most dry running plastic bearings feature decreasing coefficients of friction with increasing pressure, iglidur® Q goes further than most, under high pressures the material gives excellent low values. Soon after the short run-in period, the coefficient of friction stabilizes to the final value. The shaft material also has significant influence on friction and wear. Extremely smooth shafts enhance the coefficient of friction of the bearing. For applications with high loads, we recommend hardened and ground surfaces with an average surface finish of $Ra = 0.15$ to $0.3 \mu\text{m}$.

► Coefficients of Friction and Surfaces, **page 52**

► Wear Resistance, **page 53**

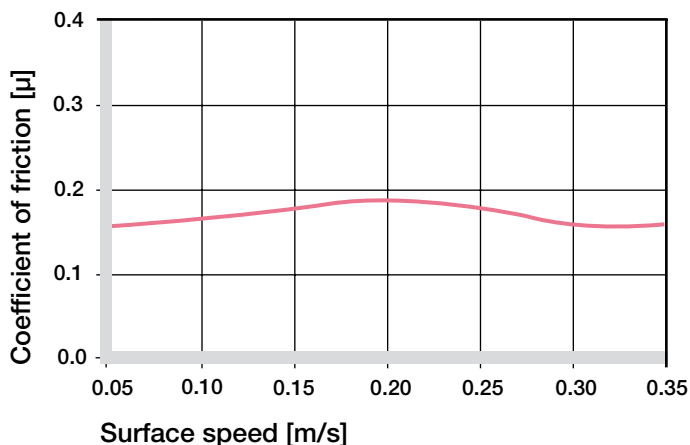


Diagram 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

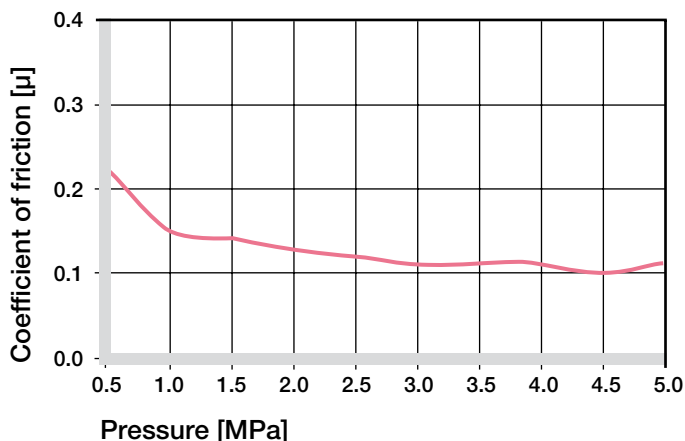


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

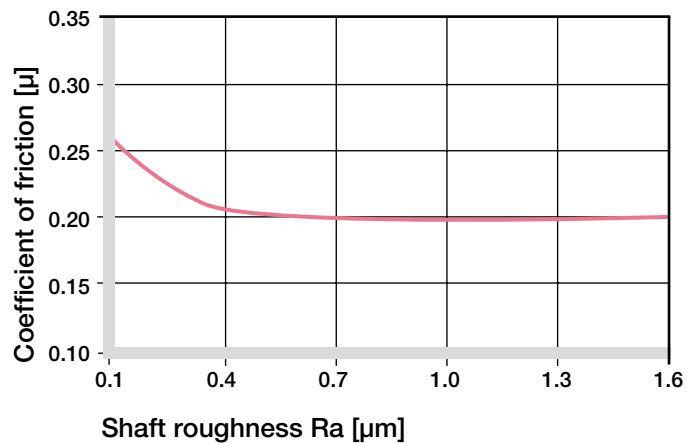


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

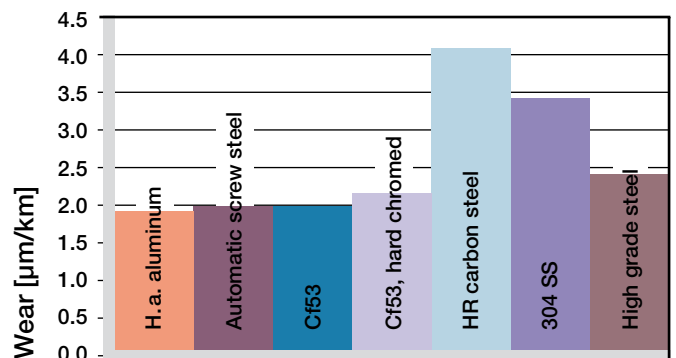


Diagram 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

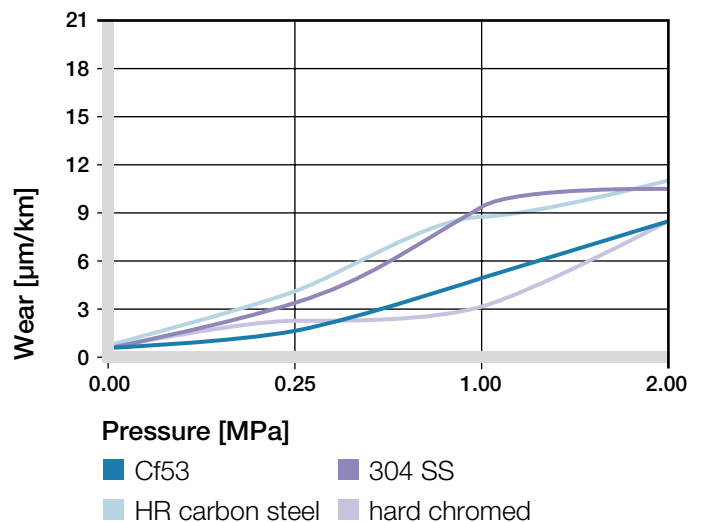


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

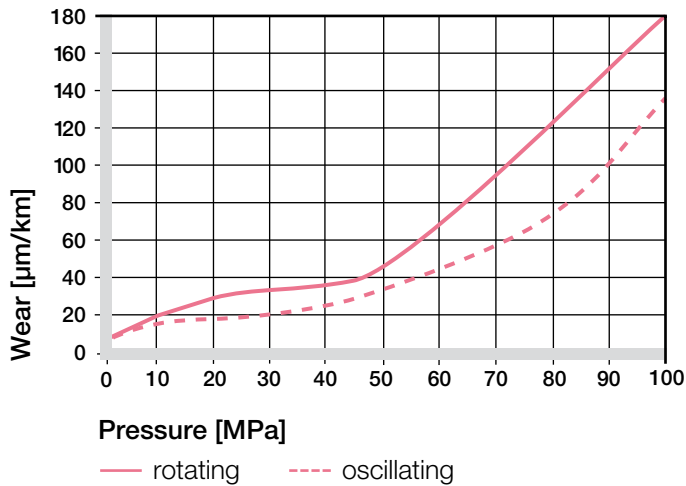


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Shaft Materials

The diagrams 06 and 07 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® Q.

In applications with lower to medium loads iglidur® Q bearings show no advantage compared to e.g. iglidur® J or iglidur® W300. The actual strength of iglidur® Q lies in the wear resistance under heavy loads and in pivoting applications. In pivoting applications, the iglidur® Q pairings with hard-chromed shafts and machining steel shafts turn out to be the best among the tested combinations.

► Shaft Materials, **page 55**

| iglidur® Q | Dry | Greases | Oil | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. μ | 0.05–0.15 | 0.09 | 0.04 | 0.04 |

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

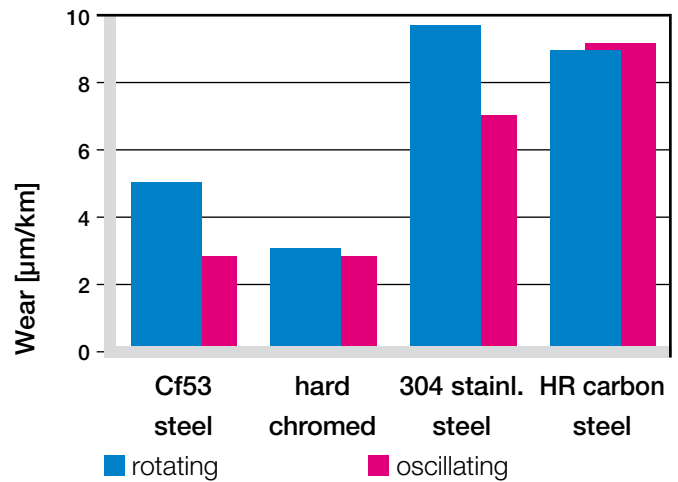


Diagram 10: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

Additional Properties

Chemical Resistance

iglidur® Q bearings have a good resistance against chemicals. They possess an excellent resistance to organic solvents, fuels, oils and fats. The material is only partially resistant to weak acids and alkalis.

► Chemical Table, **page 1118**

| 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 °C]

Table 05: Chemical resistance

Radiation Resistance

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

UV Resistance

The tribological properties of iglidur® Q plain bearings stay constant for the most part under weathering effects. However, the material may become slightly brittle.

Vacuum

When used in a vacuum, the iglidur® Q plain bearings release existing moisture as a vapour. Therefore, only dehumidified bearings made of iglidur® Q are suitable for use in a vacuum.

Electrical Properties

iglidur® Q plain bearings are electrically insulating.

| | |
|--------------------|------------------------------|
| Volume resistance | $> 10^{15} \Omega \text{cm}$ |
| Surface resistance | $> 10^{12} \Omega 10$ |

Moisture Absorption

The moisture absorption of iglidur® Q plain bearings is approximately 0.9% in standard atmosphere. The saturation limit in water is 4.9%. This must be taken into account along with any other application conditions.

Maximum moisture absorption

| | |
|-----------------------|-------------|
| At +23°C/50% r.h. | 0.9% weight |
| Max. water absorption | 4.9% weight |

Table 06: Moisture absorption

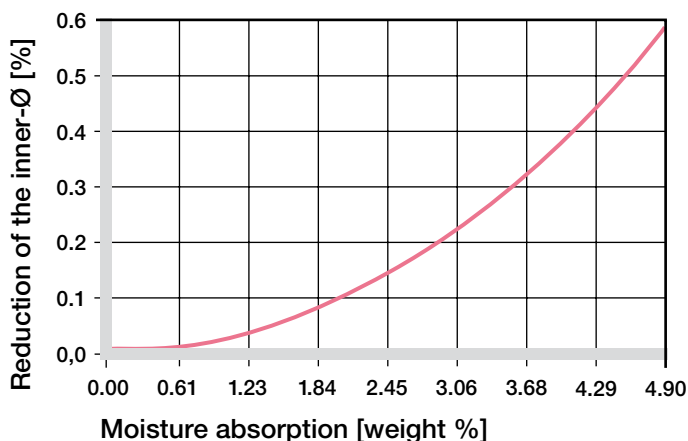


Diagram 11: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® Q 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.

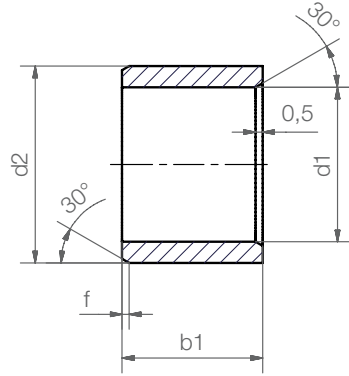
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 59

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® Q 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

QSM-0608-10



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

Dimensions according to ISO 3547-1 and special dimensions

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 |
|-------------|------|---------------|------|-----------|
| QSM-0608-10 | 6.0 | +0.020 +0.068 | 8.0 | 10.0 |
| QSM-0810-08 | 8.0 | +0.025 +0.083 | 10.0 | 8.0 |
| QSM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0 |
| QSM-1214-10 | 12.0 | +0.032 +0.102 | 14.0 | 10.0 |
| QSM-1214-20 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 |
| QSM-1618-08 | 16.0 | +0.032 +0.102 | 18.0 | 8.0 |
| QSM-1618-12 | 16.0 | +0.032 +0.102 | 18.0 | 12.5 |
| QSM-1618-20 | 16.0 | +0.032 +0.102 | 18.0 | 20.0 |
| QSM-1820-20 | 18.0 | +0.032 +0.102 | 20.0 | 20.0 |
| QSM-2022-15 | 20.0 | +0.040 +0.124 | 22.0 | 15.0 |
| QSM-2023-15 | 20.0 | +0.040 +0.124 | 23.0 | 15.0 |
| QSM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0 |
| QSM-2023-25 | 20.0 | +0.040 +0.124 | 23.0 | 25.0 |
| QSM-2023-30 | 20.0 | +0.040 +0.124 | 23.0 | 30.0 |
| QSM-2528-25 | 25.0 | +0.040 +0.124 | 28.0 | 25.0 |
| QSM-2528-48 | 25.0 | +0.040 +0.124 | 28.0 | 48.0 |
| QSM-3034-20 | 30.0 | +0.040 +0.124 | 34.0 | 20.0 |
| QSM-3034-40 | 30.0 | +0.040 +0.124 | 34.0 | 40.0 |
| QSM-3539-15 | 35.0 | +0.050 +0.150 | 39.0 | 15.0 |

| Part number | d1 | d1-Tolerance* | d2 | b1 h13 |
|--------------|------|---------------|------|-----------|
| QSM-3539-30 | 35.0 | +0.050 +0.150 | 39.0 | 30.0 |
| QSM-3539-35 | 35.0 | +0.050 +0.150 | 39.0 | 35.0 |
| QSM-3539-50 | 35.0 | +0.050 +0.150 | 39.0 | 50.0 |
| QSM-4044-30 | 40.0 | +0.050 +0.150 | 44.0 | 30.0 |
| QSM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 40.0 |
| QSM-4044-47 | 40.0 | +0.050 +0.150 | 44.0 | 47.0 |
| QSM-4550-252 | 45.0 | +0.050 +0.150 | 50.0 | 25.2 |
| QSM-4550-50 | 45.0 | +0.050 +0.150 | 50.0 | 50.0 |
| QSM-5055-50 | 50.0 | +0.050 +0.150 | 55.0 | 50.0 |
| QSM-5055-60 | 50.0 | +0.050 +0.150 | 55.0 | 60.0 |
| QSM-5055-80 | 50.0 | +0.050 +0.150 | 55.0 | 80.0 |
| QSM-5560-50 | 55.0 | +0.060 +0.180 | 60.0 | 50.0 |
| QSM-6065-50 | 60.0 | +0.060 +0.180 | 65.0 | 50.0 |
| QSM-6570-34 | 65.0 | +0.060 +0.180 | 70.0 | 34.0 |
| QSM-7075-50 | 70.0 | +0.060 +0.180 | 75.0 | 50.0 |
| QSM-7580-40 | 75.0 | +0.060 +0.180 | 80.0 | 40.0 |
| QSM-8085-60 | 80.0 | +0.060 +0.180 | 85.0 | 60.0 |
| QSM-9095-50 | 90.0 | +0.072 +0.212 | 95.0 | 50.0 |

* after pressfit. Testing methods ► page 59



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

► www.igus.co.uk/iglidur-specialbearings

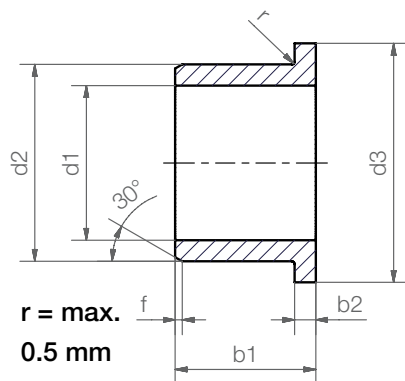


delivery from stock
time



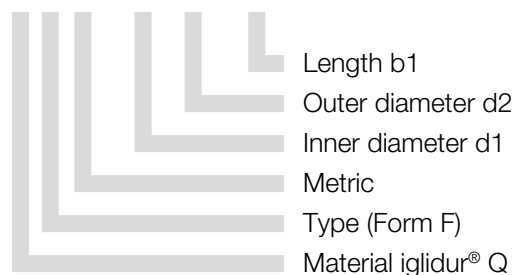
prices price list online
www.igus.co.uk/en/q

Flange bearing



Order key

QFM-0608-03



Dimensions according to ISO 3547-1 and special dimensions

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 |
|----------------|------|---------------|------|---------|---------|-----------|
| QFM-0608-03 | 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 3.0 | 1.0 |
| QFM-0608-04 | 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 4.0 | 1.0 |
| QFM-0810-05 | 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 5.5 | 1.0 |
| QFM-0810-06 | 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 6.0 | 1.0 |
| QFM-1012-06 | 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 6.0 | 1.0 |
| QFM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 |
| QFM-101215-035 | 10.0 | +0.025 +0.083 | 12.0 | 15.0 | 3.5 | 1.0 |
| QFM-101215-08 | 10.0 | +0.025 +0.083 | 12.0 | 15.0 | 8.0 | 1.0 |
| QFM-1214-08 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 8.0 | 1.0 |
| QFM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 |
| QFM-1214-20 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 20.0 | 1.0 |
| QFM-1416-12 | 14.0 | +0.032 +0.102 | 16.0 | 22.0 | 12.0 | 1.0 |
| QFM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 |
| QFM-1820-12 | 18.0 | +0.032 +0.102 | 20.0 | 26.0 | 12.0 | 1.0 |
| QFM-182026-051 | 18.0 | +0.032 +0.102 | 20.0 | 26.0 | 5.0 | 1.0 |
| QFM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 |
| QFM-2528-21 | 25.0 | +0.040 +0.124 | 28.0 | 35.0 | 21.5 | 1.5 |
| QFM-2629-05 | 26.0 | +0.040 +0.124 | 29.0 | 35.0 | 5.0 | 1.5 |
| QFM-2730-20 | 27.0 | +0.040 +0.124 | 30.0 | 38.0 | 20.0 | 1.5 |
| QFM-3034-37 | 30.0 | +0.040 +0.124 | 34.0 | 42.0 | 37.0 | 2.0 |
| QFM-3539-26 | 35.0 | +0.050 +0.150 | 39.0 | 47.0 | 26.0 | 2.0 |
| QFM-353950-35 | 35.0 | +0.050 +0.150 | 39.0 | 50.0 | 35.0 | 2.0 |
| QFM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 52.0 | 40.0 | 2.0 |
| QFM-5055-10 | 50.0 | +0.050 +0.150 | 55.0 | 63.0 | 10.0 | 2.0 |
| QFM-5055-50 | 50.0 | +0.050 +0.150 | 55.0 | 63.0 | 50.0 | 2.0 |
| QFM-6065-50 | 60.0 | +0.060 +0.180 | 65.0 | 78.0 | 50.0 | 2.0 |
| QFM-7075-50 | 70.0 | +0.060 +0.180 | 75.0 | 83.0 | 50.0 | 2.0 |

* after pressfit. Testing methods ► page 59

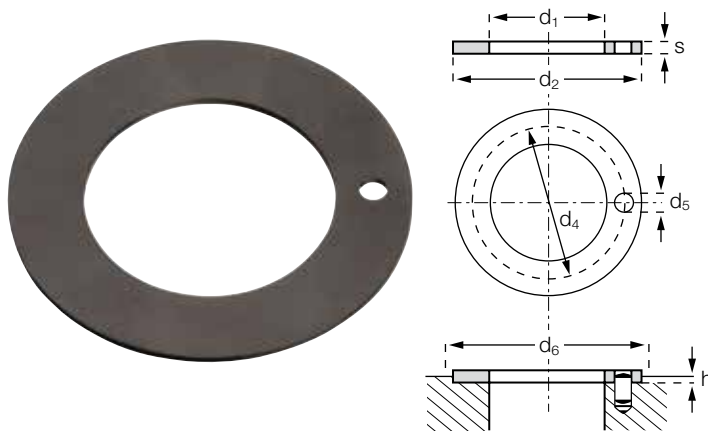


delivery from stock
time



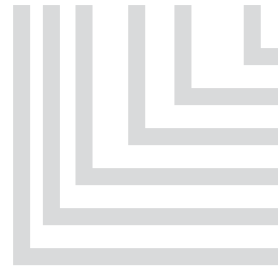
prices price list online
www.igus.co.uk/en/q

Thrust washer



Order key

QTM-2842-015



Thickness s
Outer diameter d2
Inner diameter d1
Metric
Type (Form T)
Material iglidur® Q

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

| Part number | d1 +0.3 | d2 -0.3 | s -0.06 | d4 -0.12/+0.12 | d5 -0.375/+0.125 | h +0.2/-0.2 | d6 +0.12 |
|--------------|------------|------------|------------|-------------------|---------------------|----------------|-------------|
| QTM-2842-015 | 28.0 | 42.0 | 1.5 | 35.0 | 4.0 | 1.0 | 42.0 |
| QTM-3254-015 | 32.0 | 54.0 | 1.5 | 43.0 | 4.0 | 1.0 | 54.0 |

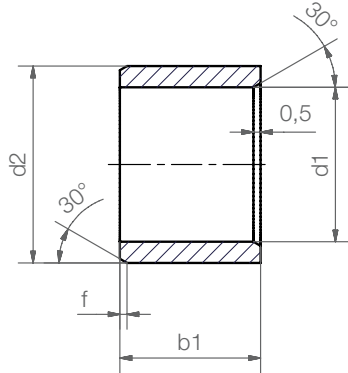


delivery from stock
time



prices price list online
www.igus.co.uk/en/q

Sleeve bearing



Order key

QSI-0607-04



Length b1
Outer diameter d2
Inner diameter d1
Inch
Type (Form S)
Material iglidur® Q

Chamfer in relation to the d1

| | | | | |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]: | 0.012 | 0.019 | 0.031 | 0.047 |

Dimensions [Inch]

| Part number | d1 | d2 | b1 | d1* | | Housing bore | | Shaft size | |
|-------------|-------|---------|-------|--------|--------|--------------|--------|------------|--------|
| | | | | max. | min. | max. | min. | max. | min. |
| QSI-0607-04 | 3/8 | 15/32 | 1/4 | .3773 | .3750 | .4691 | .4684 | .3740 | .3731 |
| QSI-0607-06 | 3/8 | 15/32 | 3/8 | .3773 | .3750 | .4691 | .4684 | .3740 | .3731 |
| QSI-0607-08 | 3/8 | 15/32 | 1/2 | .3773 | .3750 | .4691 | .4684 | .3740 | .3731 |
| QSI-0708-08 | 7/16 | 17/32 | 1/2 | .4406 | .4379 | .5316 | .5309 | .4365 | .4355 |
| QSI-0809-12 | 1/2 | 19/32 | 3/4 | .5030 | .5003 | .5941 | .5934 | .4990 | .4980 |
| QSI-1011-12 | 5/8 | 23/32 | 3/4 | .6280 | .6253 | .7192 | .7184 | .6240 | .6230 |
| QSI-1214-08 | 3/4 | 7/8 | 1/2 | .7541 | .7507 | .8755 | .8747 | .7491 | .7479 |
| QSI-1214-12 | 3/4 | 7/8 | 3/4 | .7541 | .7507 | .8755 | .8747 | .7491 | .7479 |
| QSI-1214-16 | 3/4 | 7/8 | 1 | .7541 | .7507 | .8755 | .8747 | .7491 | .7479 |
| QSI-1416-16 | 7/8 | 1 | 1 | .8791 | .8757 | 1.0005 | .9997 | .8741 | .8729 |
| QSI-1618-16 | 1 | 1 1/8 | 1 | 1.0041 | 1.0007 | 1.1255 | 1.1247 | .9991 | .9979 |
| QSI-1618-24 | 1 | 1 1/8 | 1 1/2 | 1.0041 | 1.0007 | 1.1255 | 1.1247 | .9991 | .9979 |
| QSI-1820-24 | 1 1/8 | 1 9/32 | 1 1/2 | 1.1288 | 1.1254 | 1.2818 | 1.2808 | 1.1238 | 1.1226 |
| QSI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.2548 | 1.2508 | 1.4068 | 1.4058 | 1.2488 | 1.2472 |
| QSI-2022-24 | 1 1/4 | 1 13/32 | 1 1/2 | 1.2548 | 1.2508 | 1.4068 | 1.4058 | 1.2488 | 1.2472 |
| QSI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 1.5048 | 1.5008 | 1.6568 | 1.6558 | 1.4988 | 1.4972 |
| QSI-2629-20 | 1 5/8 | 1 25/32 | 1 1/4 | 1.6297 | 1.6258 | 1.7818 | 1.7808 | 1.6238 | 1.6222 |
| QSI-2831-32 | 1 3/4 | 1 15/16 | 2 | 1.7547 | 1.7507 | 1.9381 | 1.9371 | 1.7487 | 1.7471 |
| QSI-3235-12 | 2 | 2 3/16 | 3/4 | 2.0057 | 2.0011 | 2.1883 | 2.1871 | 1.9981 | 1.9969 |
| QSI-3235-16 | 2 | 2 3/16 | 1 | 2.0057 | 2.0011 | 2.1883 | 2.1871 | 1.9981 | 1.9969 |
| QSI-3235-24 | 2 | 2 3/16 | 1 1/2 | 2.0057 | 2.0011 | 2.1883 | 2.1871 | 1.9981 | 1.9969 |
| QSI-3235-32 | 2 | 2 3/16 | 2 | 2.0057 | 2.0011 | 2.1883 | 2.1871 | 1.9981 | 1.9969 |
| QSI-3235-40 | 2 | 2 3/16 | 2 1/2 | 2.0057 | 2.0011 | 2.1883 | 2.1871 | 1.9981 | 1.9969 |
| QSI-3639-32 | 2 1/4 | 2 7/16 | 2 | 2.2577 | 2.2531 | 2.4377 | 2.4365 | 2.2507 | 2.2489 |

* after pressfit. Testing methods ► page 59

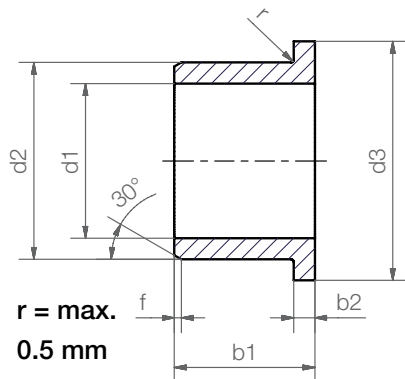


delivery from stock
time



prices price list online
www.igus.co.uk/en/q

Flange bearing



Order key

QFI-0607-04



Length b1
Outer diameter d2
Inner diameter d1
Inch
Type (Form F)
Material iglidur® Q

Chamfer in relation to the d1

| | | | | |
|------------|---------------|---------------|--------------|----------|
| d1 [Inch]: | Ø 0.040–0.236 | Ø 0.236–0.472 | Ø 0.472–1.18 | Ø > 1.18 |
| f [Inch]: | 0.012 | 0.019 | 0.031 | 0.047 |

Dimensions [Inch]

| Part number | d1 | d2 | b1 | d3 | b2 | d1* | | Housing bore | | Shaft size | |
|-------------|-------|---------|-------|-------|------|--------|--------|--------------|--------|------------|--------|
| | | | | | | max. | min. | max. | min. | max. | min. |
| QFI-0607-04 | 3/8 | 15/32 | 1/4 | .687 | .046 | .3773 | .3750 | .4691 | .4684 | .3740 | .3731 |
| QFI-0607-08 | 3/8 | 15/32 | 1/2 | .687 | .046 | .3773 | .3750 | .4691 | .4684 | .3740 | .3731 |
| QFI-0809-04 | 1/2 | 19/32 | 1/4 | .875 | .046 | .5030 | .5003 | .5941 | .5934 | .4990 | .4980 |
| QFI-0809-08 | 1/2 | 19/32 | 1/2 | .875 | .046 | .5030 | .5003 | .5941 | .5934 | .4990 | .4980 |
| QFI-0809-12 | 1/2 | 19/32 | 3/4 | .875 | .046 | .5030 | .5003 | .5941 | .5934 | .4990 | .4980 |
| QFI-1011-12 | 5/8 | 23/32 | 3/4 | .937 | .046 | .6280 | .6253 | .7192 | .7184 | .6240 | .6230 |
| QFI-1012-08 | 5/8 | 3/4 | 3/4 | 1.000 | .062 | .6290 | .6263 | .7510 | .7500 | .6250 | .6240 |
| QFI-1214-08 | 3/4 | 7/8 | 1/2 | 1.125 | .062 | .7541 | .7507 | .8755 | .8747 | .7491 | .7479 |
| QFI-1214-12 | 3/4 | 7/8 | 3/4 | 1.125 | .062 | .7541 | .7507 | .8755 | .8747 | .7491 | .7479 |
| QFI-1214-16 | 3/4 | 7/8 | 1 | 1.125 | .062 | .7541 | .7505 | .8755 | .8747 | .7491 | .7479 |
| QFI-1416-12 | 7/8 | 1 | 3/4 | 1.250 | .062 | .8791 | .8757 | 1.0005 | .9997 | .8741 | .8729 |
| QFI-1416-16 | 7/8 | 1 | 1 | 1.250 | .062 | .8791 | .8757 | 1.0005 | .9997 | .8741 | .8729 |
| QFI-1618-08 | 1 | 1 1/8 | 1/2 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255 | 1.1247 | .9991 | .9979 |
| QFI-1618-16 | 1 | 1 1/8 | 1 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255 | 1.1247 | .9991 | .9979 |
| QFI-1618-24 | 1 | 1 1/8 | 1 1/2 | 1.375 | .062 | 1.0041 | 1.0007 | 1.1255 | 1.1247 | .9991 | .9979 |
| QFI-1820-12 | 1 1/8 | 1 9/32 | 3/4 | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818 | 1.2808 | 1.1238 | 1.1226 |
| QFI-1820-24 | 1 1/8 | 1 9/32 | 1 1/2 | 1.562 | .078 | 1.1288 | 1.1254 | 1.2818 | 1.2808 | 1.1238 | 1.1226 |
| QFI-2022-20 | 1 1/4 | 1 13/32 | 1 1/4 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068 | 1.4058 | 1.2488 | 1.2472 |
| QFI-2022-24 | 1 1/4 | 1 13/32 | 1 1/2 | 1.687 | .078 | 1.2548 | 1.2508 | 1.4068 | 1.4058 | 1.2488 | 1.2472 |
| QFI-2426-24 | 1 1/2 | 1 21/32 | 1 1/2 | 2.000 | .078 | 1.5048 | 1.5008 | 1.6568 | 1.6558 | 1.4988 | 1.4972 |
| QFI-2831-32 | 1 3/4 | 1 15/16 | 2 | 2.375 | .093 | 1.7547 | 1.7507 | 1.9381 | 1.9371 | 1.7487 | 1.7471 |
| QFI-3235-32 | 2 | 2 3/16 | 2 | 2.625 | .093 | 2.0057 | 2.0011 | 2.1883 | 2.1871 | 1.9981 | 1.9969 |
| QFI-3639-32 | 2 1/4 | 2 7/16 | 2 | 2.750 | .093 | 2.2577 | 2.2531 | 2.4377 | 2.4365 | 2.2507 | 2.2489 |

* after pressfit. Testing methods ► page 59

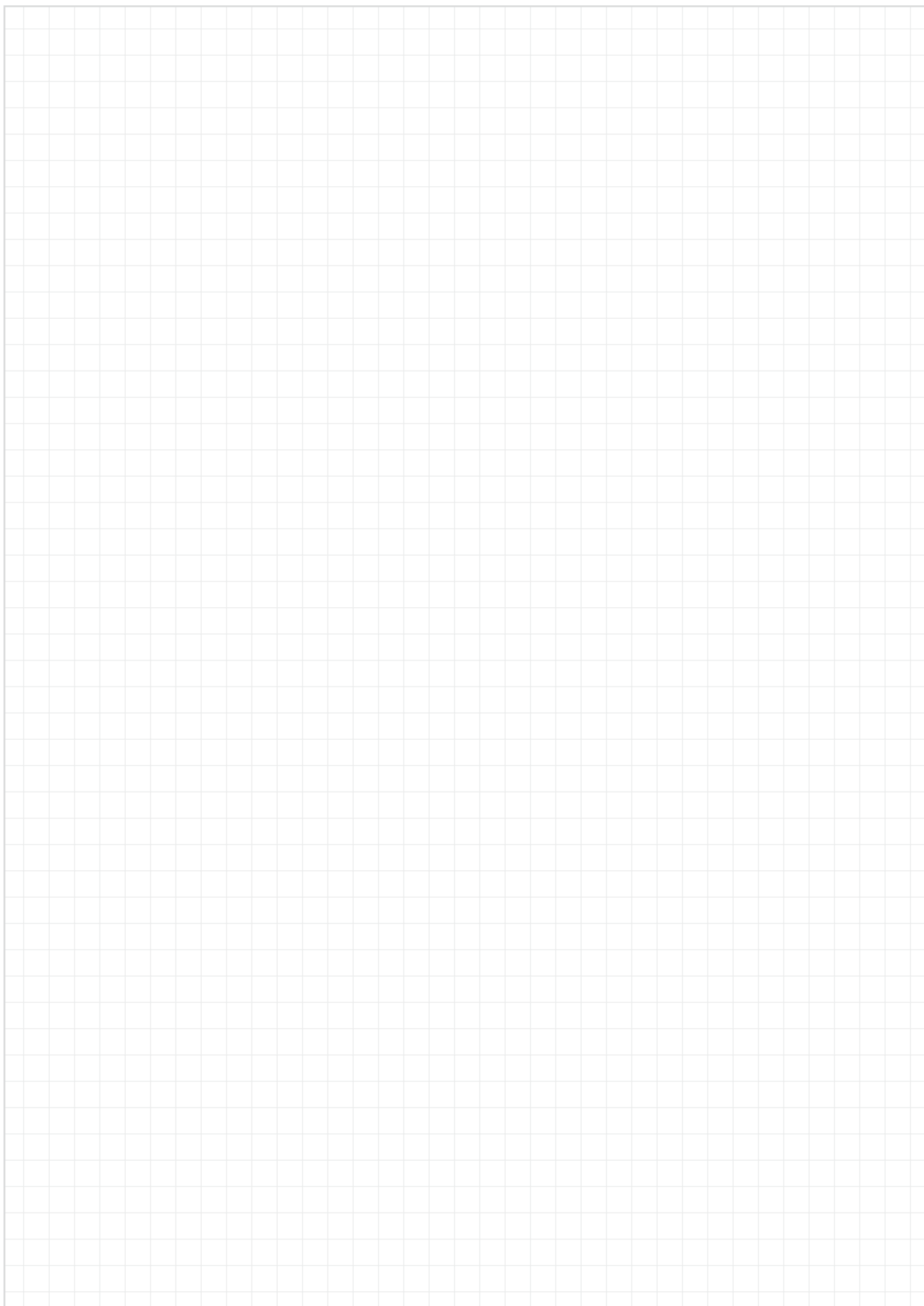


delivery from stock
time



prices price list online
www.igus.co.uk/en/q

My Sketches





For extreme loads – iglidur® Q2



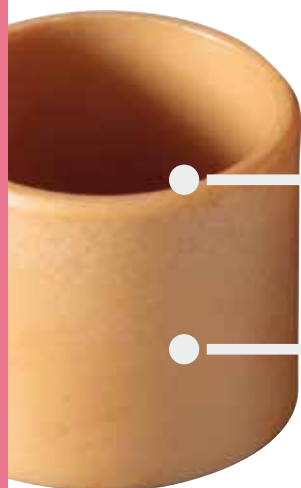
Standard range from stock

Lubricant- and maintenance-free

Wear resistant and dimensionally stable
at high loads

Good cost/performance ratio

For extreme loads. Where previous iglidur® bearing solutions in the extreme load range end, the iglidur® Q2 starts. Made for heavy-duty pivoting applications under extreme conditions.



Lubricant- and
maintenance-free

Wear resistant and
dimensionally stable
at high loads



Good cost/
performance ratio



When to use it?

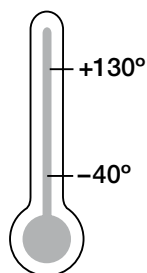
- When high dynamic loads occurs
- When impacts, shocks and contamination occur in addition to high loads
- For highly load pivoting motions



When not to use it?

- When only static loads occur
 - ▶ iglidur® X, page 157
 - ▶ iglidur® H2, page 383
- When high pv values occur in conjunction with high speeds
 - ▶ iglidur® Z, page 311
- When you need a low cost all-round bearing
 - ▶ iglidur® G, page 65
- When soft shafts are in use
 - ▶ iglidur® W300, page 135

Temperature



Product range

2 types
Ø 5–75 mm
more dimensions
on request

| Material properties table | | | |
|--|------------------------------------|--------------------|----------------|
| General properties | Unit | iglidur® Q2 | Testing method |
| Density | g/cm³ | 1.46 | |
| Colour | | beige-brown | |
| Max. moisture absorption at +23 °C/50 % r. h. | % weight | 1.1 | DIN 53495 |
| Max. water absorption | % weight | 4.6 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.22–0.42 | |
| pv value, max. (dry) | MPa · m/s | 0.7 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 8,370 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 240 | DIN 53452 |
| Compressive strength | MPa | 130 | |
| Max. recommended surface pressure (+20 °C) | MPa | 120 | |
| Shore D hardness | | 80 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +130 | |
| Max. short term application temperature | °C | +200 | |
| Max. ambient temperature, short term ¹⁾ | °C | +220 | |
| Min. application temperature | °C | –40 | |
| Thermal conductivity | W/m · K | 0.24 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 8 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹³ | DIN IEC 93 |
| Surface resistance | Ω | > 10 ¹¹ | DIN 53482 |

¹⁾ Without additional load; no gliding motion; relaxation cannot be excluded

Tabelle 01: Material properties table

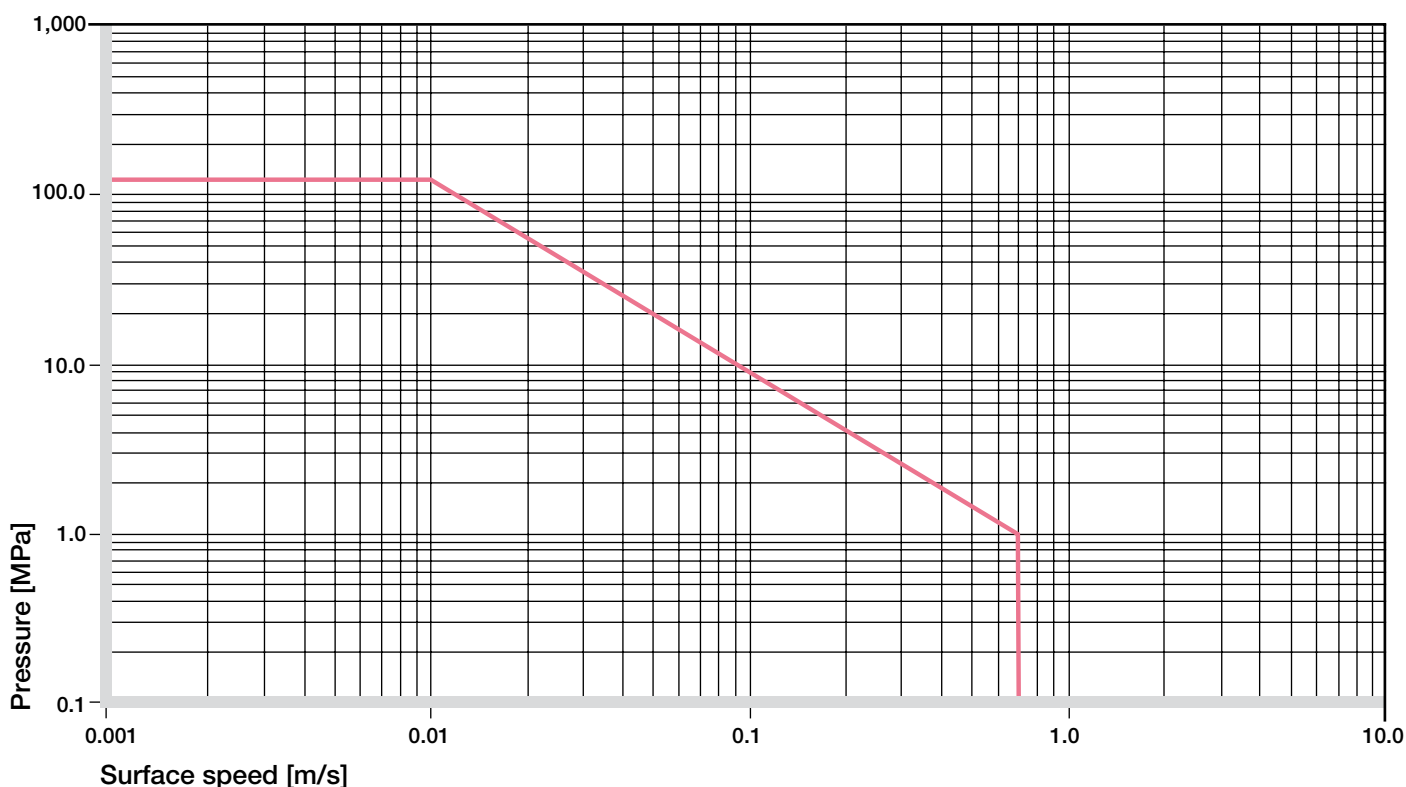


Diagram 01: Permissible pv values for iglidur® Q2 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

The maximum recommended surface pressure is a mechanical material parameter. This does not permit conclusions to be drawn about the tribological properties. The pressure resistance of iglidur® Q2 plain bearings declines with increasing temperatures. Diagram 02 clarifies this relationship. At a long-term permitted application temperature of +130°C, the permitted surface pressure is still 20 MPa.

Mechanical properties

iglidur® Q2 plain bearings represent high load capacities and good abrasion resistance at high loads. The price-performance ratio is outstanding. Solid lubricants reduce the coefficient of friction and improve the resistance to wear, which was markedly improved as compared to other iglidur® plain bearings, especially for highly loaded pivot applications. iglidur® Q2 plain bearings are self-lubricating and suitable for all motions.

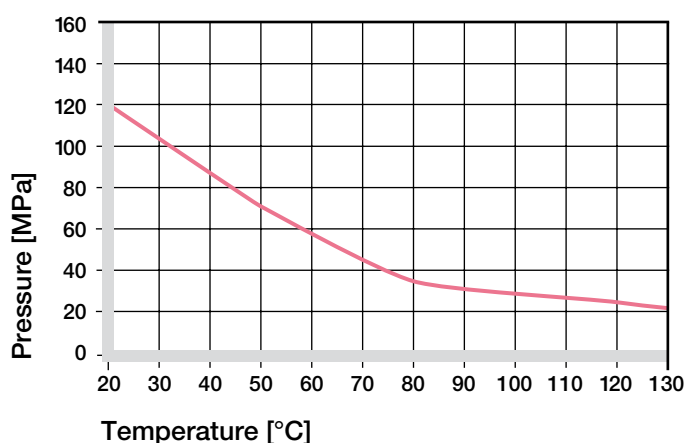


Diagram 02: Recommended maximum surface pressure of as a function of temperature (120 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® Q2 at radial loads.

► Surface Pressure, [page 47](#)

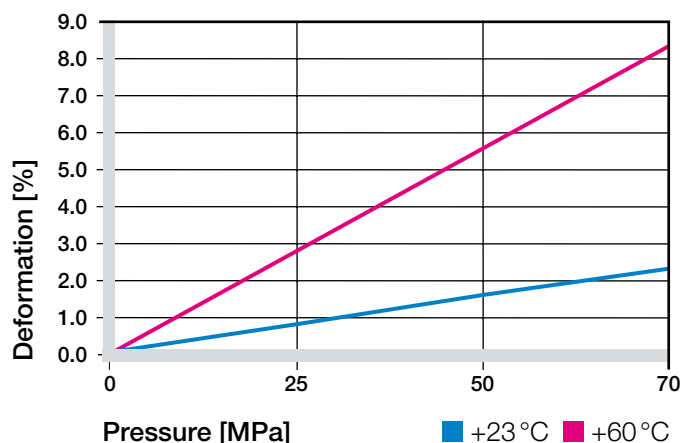


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

The typical applications for iglidur® Q2 plain bearings are highly loaded pivoting motions at comparatively low speeds. However relatively high speeds are still attainable. The speeds shown in Table 02 are threshold values for minimal bearing loads. As loads increase, the permissible speed is reduced with higher loads due to the limitations of the pv value.

► Surface Speed, [page 49](#)

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

Table 02: Maximum running speed

Temperatures

iglidur® Q2 is a very temperature resistant material. The short-term upper temperature limit is +200. The long-term upper temperature limit of +130 °C permits the broad use in applications typical for the agricultural, utility vehicle or construction equipment sectors. However, the pressure resistance of iglidur® Q2 plain bearings declines as temperatures increase.

When considering temperatures, the additional frictional heat in the bearing system must be taken into account.

► Application Temperatures, [page 50](#)

| iglidur® Q2 | Application temperature |
|--------------------------------|-------------------------|
| Minimum | -40 °C |
| Max. long term | +130 °C |
| Max. short term | +200 °C |
| Add. securing is required from | +70 °C |

Table 03: Temperature limits

Friction and Wear

iglidur® Q2 has a low coefficient of friction. Please note that a sliding surface with a rough surface finish will increase the friction. The highest coefficients of friction occur at $R_a = 1 \mu\text{m}$. We recommend shaft surface finishes (R_a) of 0.1 to a maximum of $0.4 \mu\text{m}$. Furthermore, the coefficient of friction of iglidur® Q2 plain bearings largely depends on the speed and load. The coefficient of friction also quickly increases as speeds increase. However, as the load is reduced, the coefficient of friction initially drops significantly, then moderately.

► Coefficients of Friction and Surfaces, **page 52**

► Wear Resistance, **page 53**

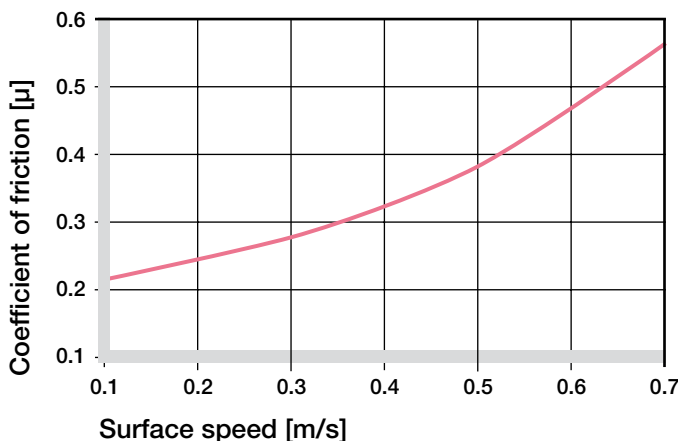


Diagram 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

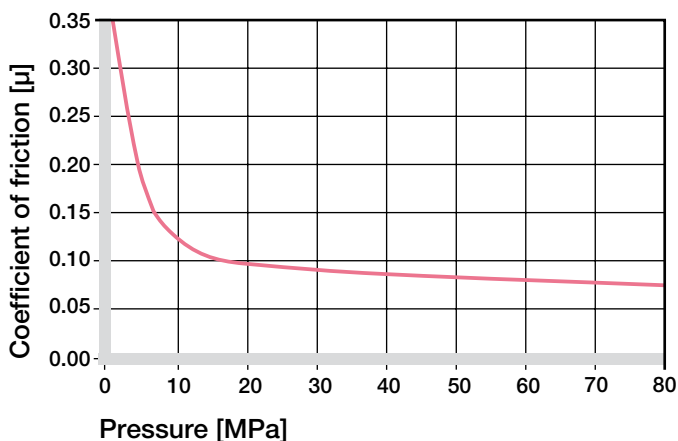


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

Generally speaking, we recommend the use of hardened shafts for highly loaded applications. Furthermore, even at low to medium loads, iglidur® Q2 will give increased service life with "hard" shafts as compared to "soft" shafts. But for low load applications, the results are outstanding with free cutting steel as well. For high loads, the wear in pivoting applications is much lower than for rotations.

► Shaft Materials, **page 55**

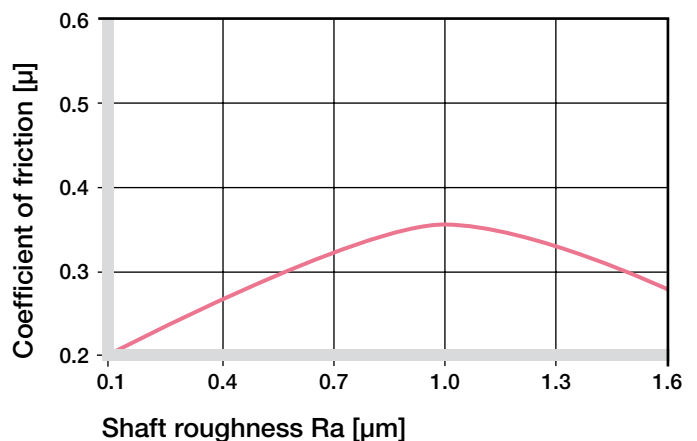


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

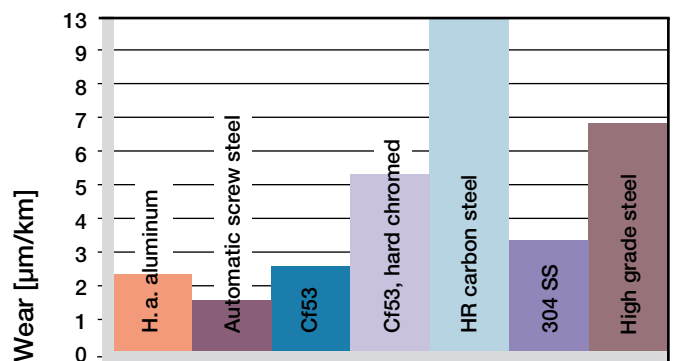


Diagram 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

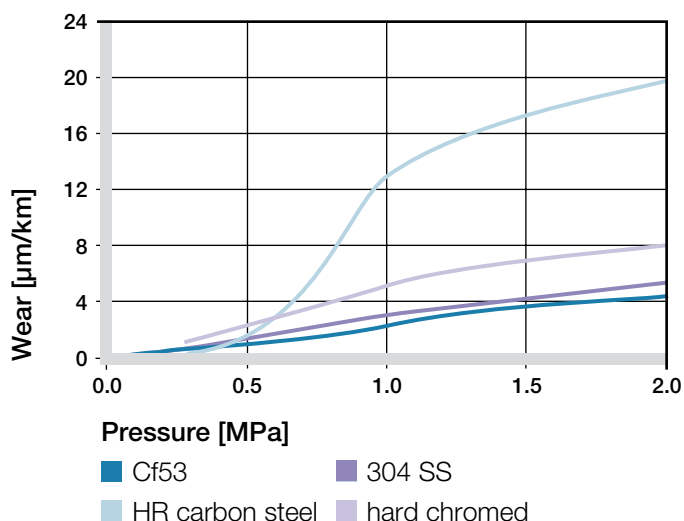


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

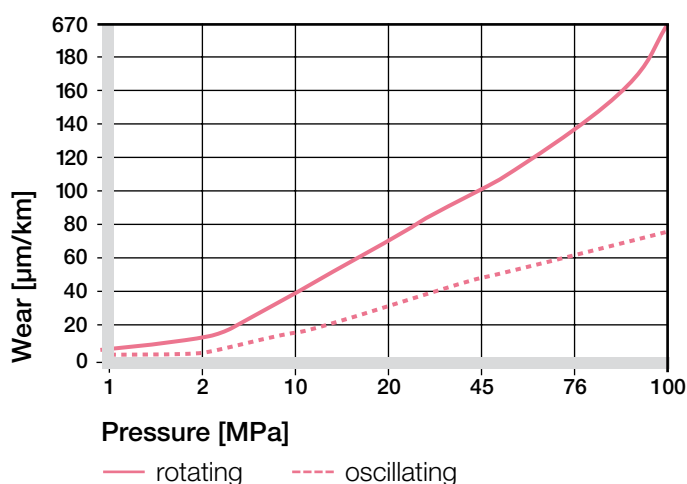


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® Q2 | Dry | Greases | Oil | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. μ | 0.22–0.42 | 0.09 | 0.04 | 0.04 |

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

Additional Properties

Chemical Resistance

iglidur® Q2 bearings have a good resistance against chemicals. They are resistant to most lubricants. The resistance is only limited for acids.

► Chemical Table, page 1118

| Medium | Resistance |
|---------------------------------|------------|
| Alcohol | + |
| 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 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® Q2 are resistant to radiation up to an intensity of applications $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® Q2 are permanently resistant to UV radiation.

Vacuum

Any absorbed water will be emitted as gas in a vacuum. Applications under vacuum conditions are possible with restrictions.

Electrical Properties

iglidur® Q2 plain bearings are electrically insulating.

| | |
|--------------------|-----------------------------|
| Volume resistance | $> 10^{13} \Omega\text{cm}$ |
| Surface resistance | $> 10^{11} \Omega$ |

Moisture Absorption

The humidity absorption of iglidur® Q2 bearings amounts to about 1.1 % in standard climatic conditions. The saturation limit in water is 4.6 %.

Maximum moisture absorption

| | |
|-----------------------|--------------|
| At +23 °C/50 % r.h. | 1.1 % weight |
| Max. water absorption | 4.6 % weight |

Table 06: Moisture absorption

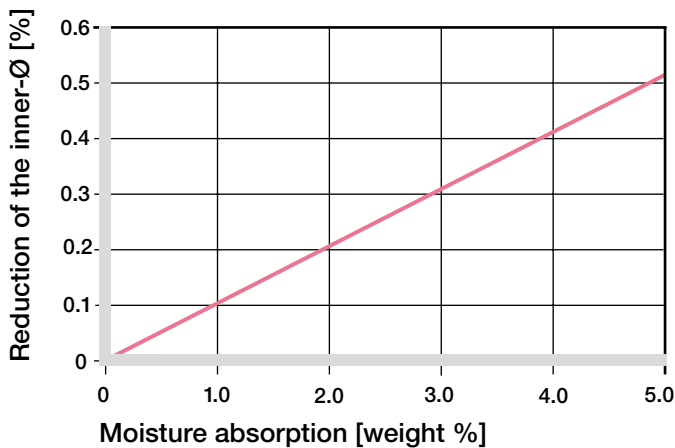


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® Q2 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.

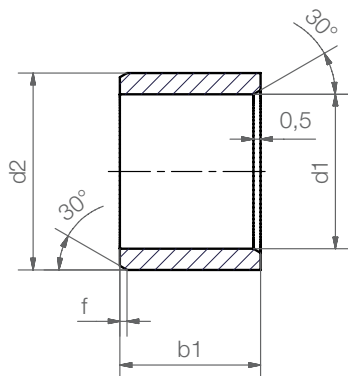
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 59

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® Q2 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

Q2SM-0608-06



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form S)

Material iglidur® Q2

Dimensions according to ISO 3547-1 and special dimensions

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 |
|--------------------------|------|---------------|------|-----------|
| Q2SM-0507-05 New! | 5.0 | +0.020 +0.068 | 7.0 | 5.0 |
| Q2SM-0608-06 | 6.0 | +0.020 +0.068 | 8.0 | 6.0 |
| Q2SM-0810-10 | 8.0 | +0.025 +0.083 | 10.0 | 10.0 |
| Q2SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0 |
| Q2SM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0 |
| Q2SM-1517-15 New! | 15.0 | +0.032 +0.102 | 17.0 | 15.0 |
| Q2SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0 |
| Q2SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0 |
| Q2SM-2023-30 New! | 20.0 | +0.040 +0.124 | 23.0 | 30.0 |
| Q2SM-2528-20 | 25.0 | +0.040 +0.124 | 28.0 | 20.0 |
| Q2SM-3034-30 | 30.0 | +0.040 +0.124 | 34.0 | 30.0 |
| Q2SM-3240-40 New! | 32.0 | +0.050 +0.150 | 40.0 | 40.0 |
| Q2SM-3539-40 | 35.0 | +0.050 +0.150 | 39.0 | 40.0 |
| Q2SM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 40.0 |
| Q2SM-4550-50 New! | 45.0 | +0.050 +0.150 | 50.0 | 50.0 |
| Q2SM-5055-50 New! | 50.0 | +0.050 +0.150 | 55.0 | 50.0 |
| Q2SM-6065-60 New! | 60.0 | +0.060 +0.180 | 65.0 | 60.0 |
| Q2SM-6570-60 New! | 65.0 | +0.060 +0.180 | 70.0 | 60.0 |
| Q2SM-7075-60 New! | 70.0 | +0.060 +0.180 | 75.0 | 60.0 |
| Q2SM-7580-40 New! | 75.0 | +0.060 +0.180 | 80.0 | 40.0 |

* after pressfit. Testing methods ► page 59

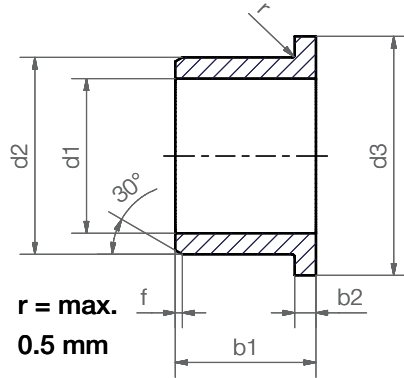


delivery from stock
time



prices price list online
www.igus.co.uk/en/q2

Flange bearing



Order key

Q2FM-0608-06



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form F)

Material iglidur® Q2

Dimensions according to ISO 3547-1 and special dimensions

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 |
|--------------------------|------|---------------|------|-----------|-----------|-------------|
| Q2FM-0507-05 New! | 5.0 | +0.020 +0.068 | 7.0 | 11.0 | 5.0 | 1.0 |
| Q2FM-0608-06 | 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 |
| Q2FM-0810-10 | 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 |
| Q2FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 |
| Q2FM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 |
| Q2FM-1517-17 New! | 15.0 | +0.032 +0.102 | 17.0 | 23.0 | 17.0 | 1.0 |
| Q2FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 |
| Q2FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 |
| Q2FM-2528-21 | 25.0 | +0.040 +0.124 | 28.0 | 35.0 | 21.5 | 1.5 |
| Q2FM-3034-40 | 30.0 | +0.040 +0.124 | 34.0 | 42.0 | 40.0 | 2.0 |
| Q2FM-3539-40 | 35.0 | +0.050 +0.150 | 39.0 | 47.0 | 40.0 | 2.0 |
| Q2FM-4044-40 | 40.0 | +0.050 +0.150 | 44.0 | 52.0 | 40.0 | 2.0 |
| Q2FM-4550-50 New! | 45.0 | +0.050 +0.150 | 50.0 | 58.0 | 50.0 | 2.0 |
| Q2FM-5055-50 New! | 50.0 | +0.050 +0.150 | 55.0 | 63.0 | 50.0 | 2.0 |
| Q2FM-6065-60 New! | 60.0 | +0.060 +0.180 | 65.0 | 73.0 | 60.0 | 2.0 |

* after pressfit. Testing methods ► page 59



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.

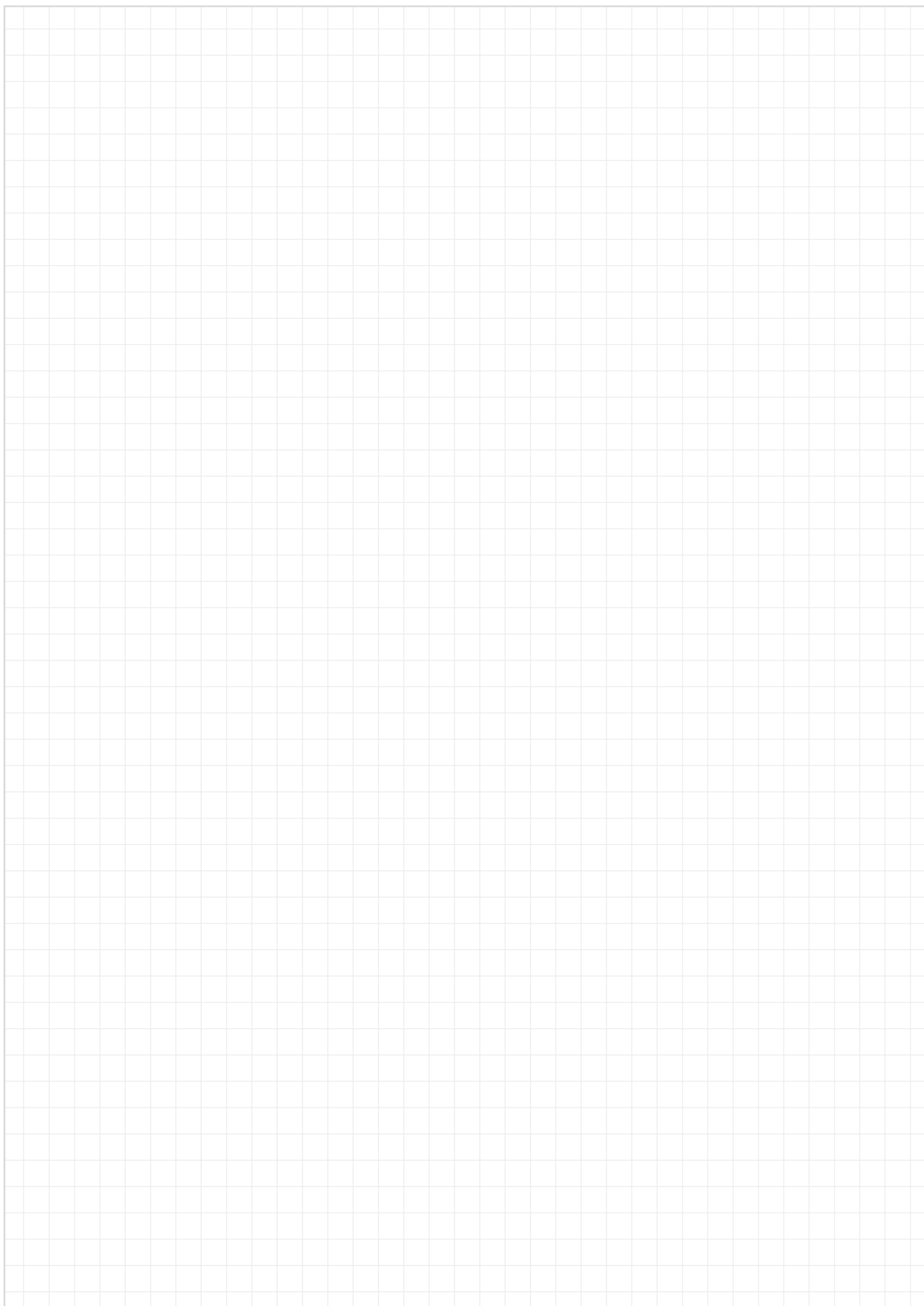


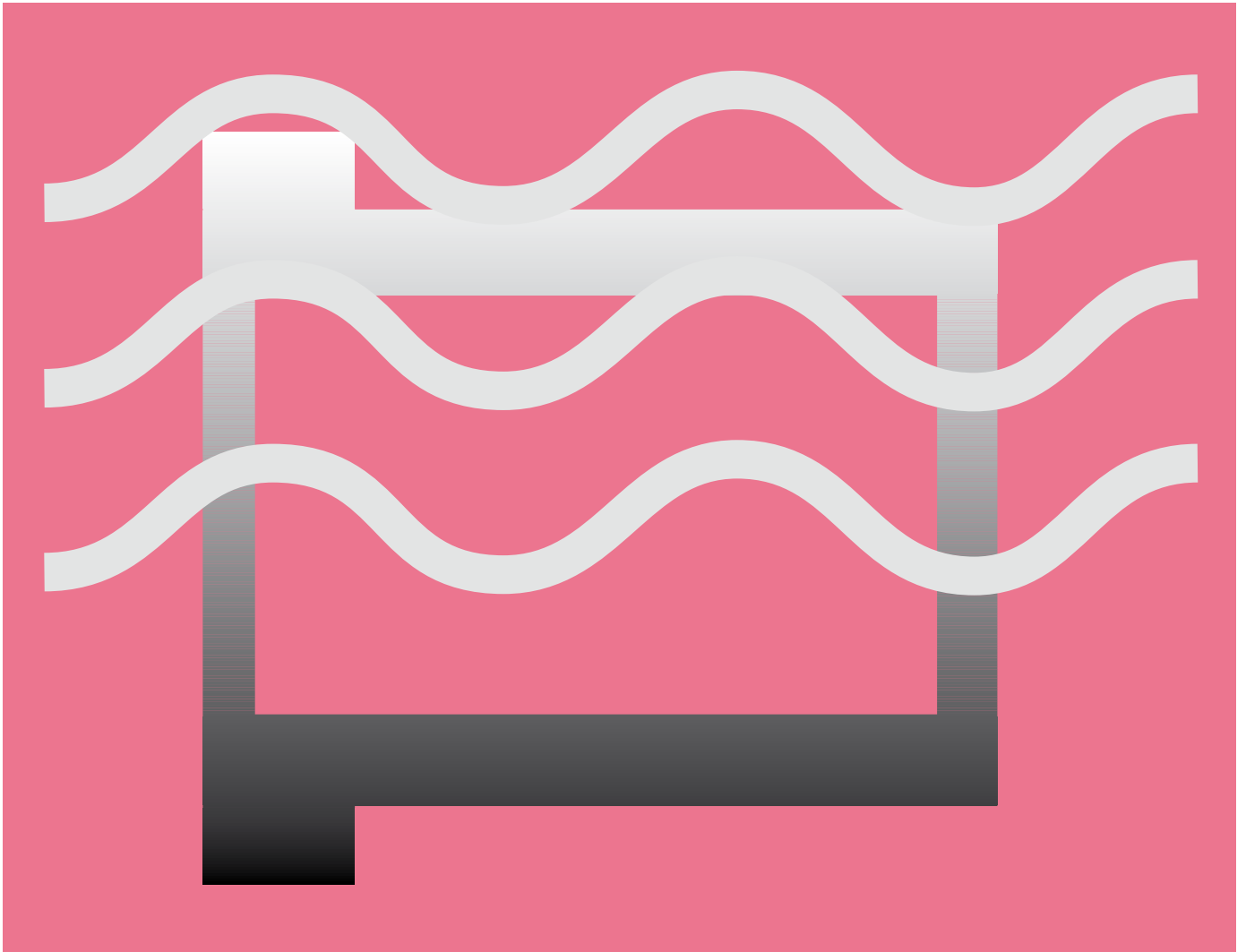
delivery from stock
time



prices price list online
www.igus.co.uk/en/q2

My Sketches





For fast rotation under water – iglidur® UW



Standard range from stock

For underwater applications

For fast and constant motion

Long service life

For fast rotation under water. The best iglidur® bearings for underwater applications. Extremely wear resistant under water, tested and free from maintenance. The first choice for pumping applications.

For underwater applications

For fast and constant motion

Long service life



When to use it?

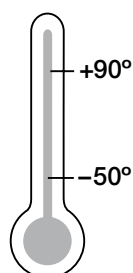
- For underwater applications and in liquid media
- For low loads
- For high speeds
- For extreme wear resistance in media-lubricated continuous operation



When not to use it?

- When temperatures are continuously higher than +90 °C
 - ▶ iglidur® UW500, page 325
- When high loads are required
 - ▶ iglidur® H370, page 359
 - ▶ iglidur® UW500, page 325
 - ▶ iglidur® X, page 157
- When only dry operation is feasible
 - ▶ iglidur® J, page 93

Temperature



Product range

2 types
Ø 3–20 mm
more dimensions
on request



Typical sectors of industry and application areas

- Fluid technology etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain
bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/underwater-powerpump

Material properties table

| General properties | Unit | iglidur® UW | Testing method |
|--|------------------------------------|-------------------|----------------|
| Density | g/cm ³ | 1.52 | |
| Colour | | black | |
| Max. moisture absorption at +23 °C/50 % r. h. | % weight | 0.2 | DIN 53495 |
| Max. water absorption ³⁾ | % weight | 0.8 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.15–0.35 | |
| pv value, max. (dry) | MPa · m/s | 0.11 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 9,600 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 90 | DIN 53452 |
| Compressive strength | MPa | 70 | |
| Max. recommended surface pressure (+20 °C) | MPa | 40 | |
| Shore D hardness | | 78 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +90 | |
| Max. short term application temperature | °C | +110 | |
| Max. short term ambient temperature ¹⁾ | °C | +140 | |
| Min. application temperature | °C | –50 | |
| Thermal conductivity | W/m · K | 0.60 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 6 | DIN 53752 |
| Electrical properties ²⁾ | | | |
| Specific volume resistance | Ωcm | < 10 ⁵ | DIN IEC 93 |
| Surface resistance | Ω | < 10 ⁵ | DIN 53482 |

¹⁾ Without additional load, no sliding movement; relaxation possible

²⁾ The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact component.

³⁾ With respect to the use of the material in direct contact with water, it has to be pointed out that all results have been attained under laboratory conditions DW (demineralised water). We therefore recommend custom-designed tests under real application conditions.

Table 01: Material properties table

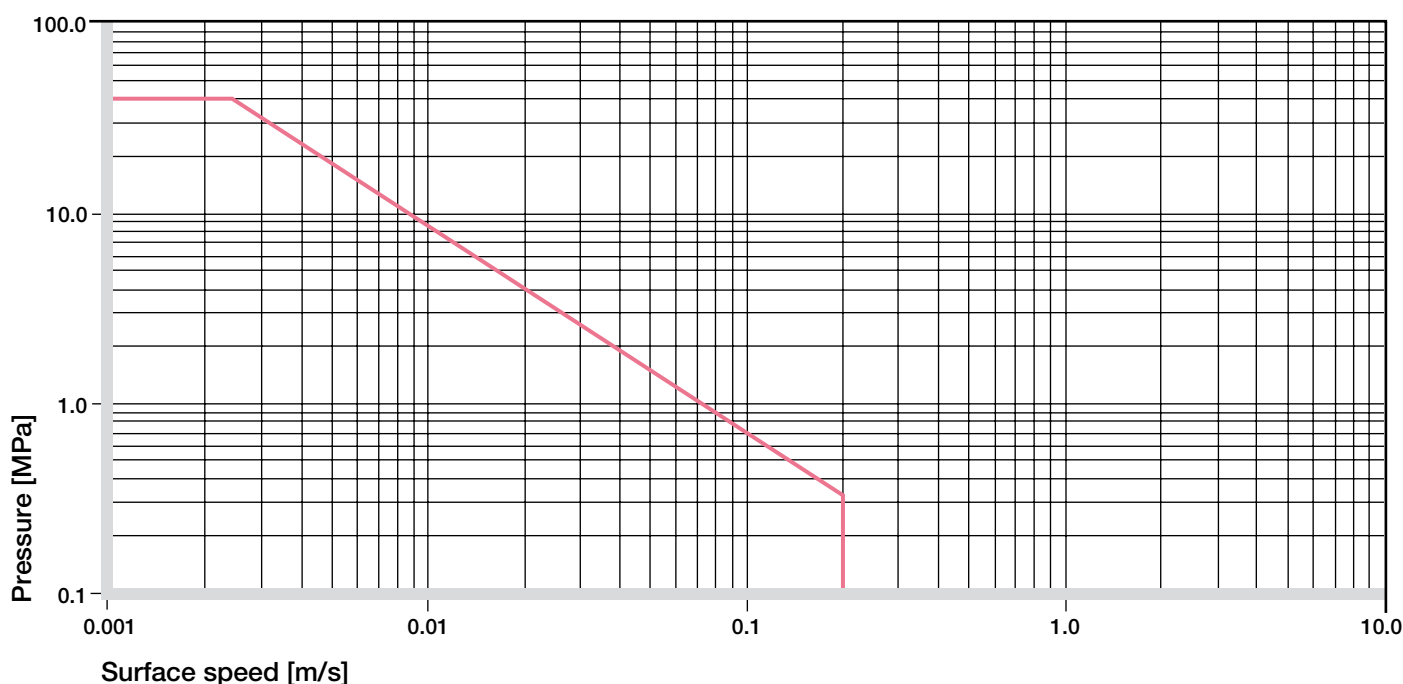


Diagram 01: Permissible pv values for iglidur® UW with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® UW was developed for underwater applications in which the maximum temperatures clearly lie below +100 °C. For application temperatures above this limit, the bearings made of iglidur® UW500 (► [page 325](#)) are available. Though iglidur® UW was developed for application in liquids, it is also suitable for dry operation. This one is particularly important in applications that call for both dry and wet operations. These applications can be seen often in practice. The features of the bearings made of iglidur® UW described in this section apply to the dry operation. Unless it is expressly mentioned otherwise.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® UW plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 20 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

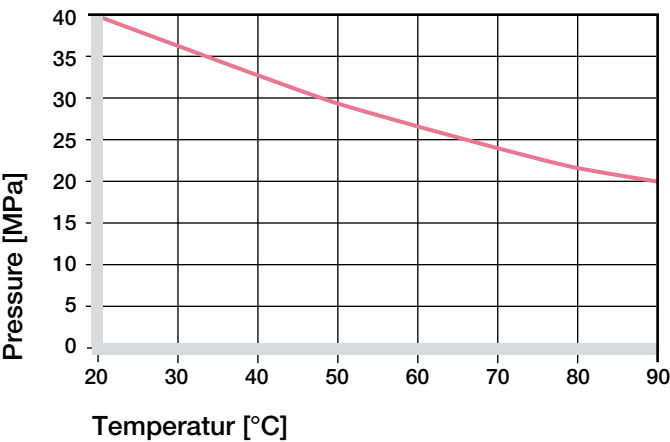


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

Diagram 02 shows the permissible bearing loads at the respective temperatures. It can be said that iglidur® UW plain bearings are not very suitable for high loads. Normally in underwater applications there is no question of high loads being present. Diagram 03 shows the elastic deformation of iglidur® UW as a function of radial pressure. At the maximum recommended surface pressure of 40 MPa, the deformation at room temperature is less than 1 %.

► Surface Pressure, [page 47](#)

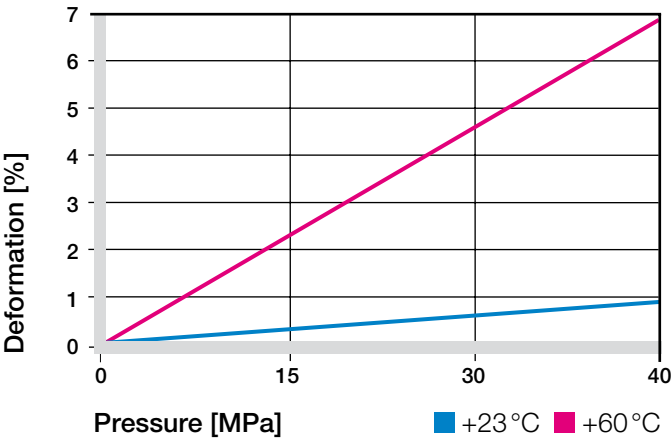


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® UW is excellent in both dry and wet operations. Through a hydrodynamic lubrication, attained under water with high speeds, surface speeds far above 2 m/s can be achieved. In dry operation the iglidur® UW bearings can be used anyhow up to 1.5 m/s on the short term.

► Surface Speed, [page 49](#)

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.5 | 0.4 | 2 |
| Short term | 1.5 | 1.1 | 3 |

Table 02: Maximum running speed

Temperatures

As stated earlier, iglidur® UW plain bearings are recommended for the low temperature range. The bearing temperature can be up to 90 °C, although the frictional heat must also be considered here, especially when running dry. In underwater applications, the fluid helps to support the heat dissipation, so the temperature of the fluid itself is more important.

► Application Temperatures, [page 50](#)

| iglidur® UW | Application temperature |
|--------------------------------|-------------------------|
| Minimum | -50 °C |
| Max. long term | +90 °C |
| Max. short term | +110 °C |
| Add. securing is required from | +80 °C |

Table 03: Temperature limits

Friction and Wear

In dry operation the coefficient of friction rises up to 0.4 with low loads. With higher loads, it lowers to 0.1. The surface of the shafts should not be extremely smooth in order to prevent a high adhesion effect and the related increase of the coefficient of friction.

Please contact us for the specifications of shaft surface finishes in underwater applications.

- Coefficients of Friction and Surfaces, **page 52**
- Wear Resistance, **page 53**

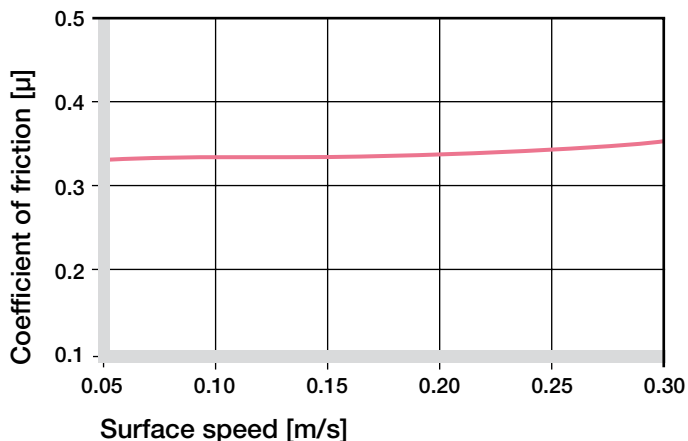


Diagram 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa

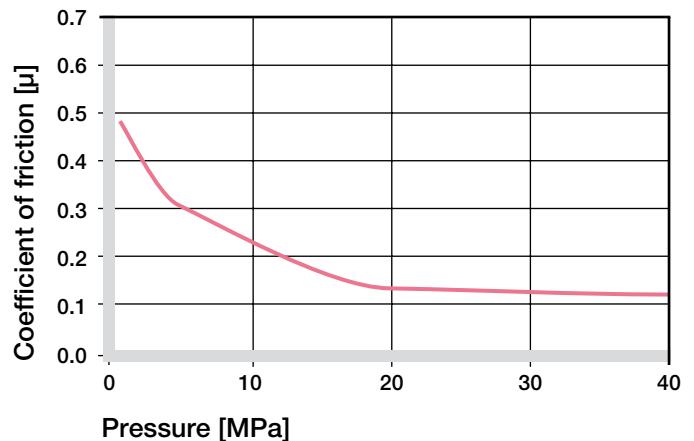


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

Shaft Materials

For low loads with rotation, the combinations achieve the best wear values with the stainless steels X90 and V2A. The conditions shift with increasing loads.

It is also important to note that the wear rate increases significantly from loads of 5 MPa.

- Shaft Materials, **page 55**

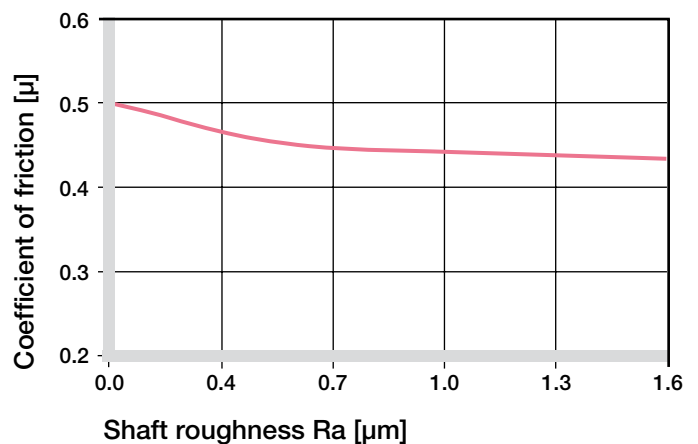


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

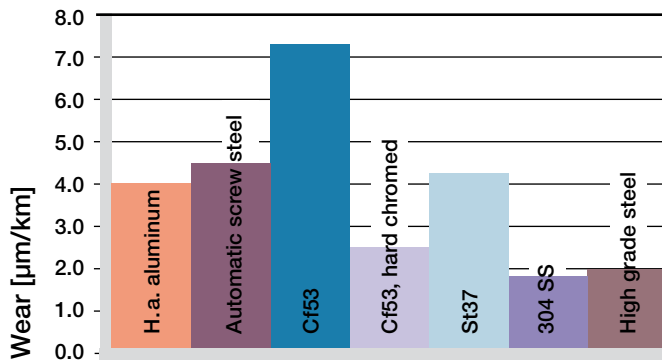


Diagram 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

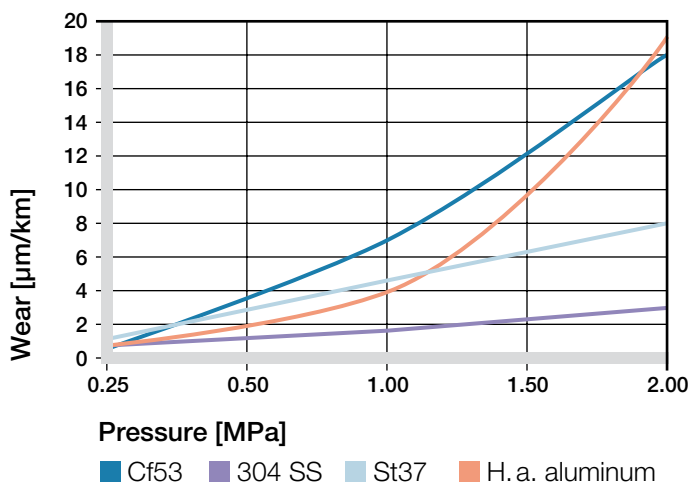


Diagram 08: Wear with different shaft materials in rotational applications

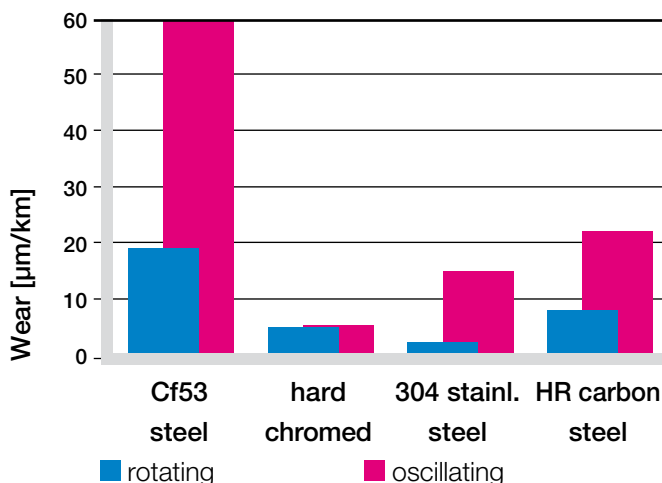


Diagram 09: Wear for rotating and oscillating applications with different shaft materials, $p = 2 \text{ MPa}$

| iglidur® UW | Dry | Greases | Oil | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. μ | 0.15–0.35 | 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® UW bearings are resistant to diluted alkalis and very weak acids as well as to solvents and all kinds of lubricants.

► Chemical Table, page 1118

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

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [$+20^\circ\text{C}$]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® UW are resistant to a radiation intensity of $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® UW plain bearings are resistant to the impact of UV radiation.

Vacuum

Applications in a vacuum are only possible to a limited extent. Only dehumidified bearings of iglidur® UW should be tested in a vacuum.

Electrical Properties

iglidur® UW plain bearings are electrically conductive.

| | |
|--------------------|--------------------------|
| Volume resistance | $< 10^5 \Omega\text{cm}$ |
| Surface resistance | $< 10^5 \Omega 10$ |

Moisture Absorption

The humidity absorption of iglidur® UW bearings amounts to about 0.2 % in standard climatic conditions. The saturation limit in water is 0.8 %. These values are so low that a moisture expansion need to be considered only in extreme cases.

Maximum moisture absorption

| | |
|-----------------------|--------------|
| At +23 °C/50 % r.h. | 0.2 % weight |
| Max. water absorption | 0.8 % weight |

Table 06: Moisture absorption

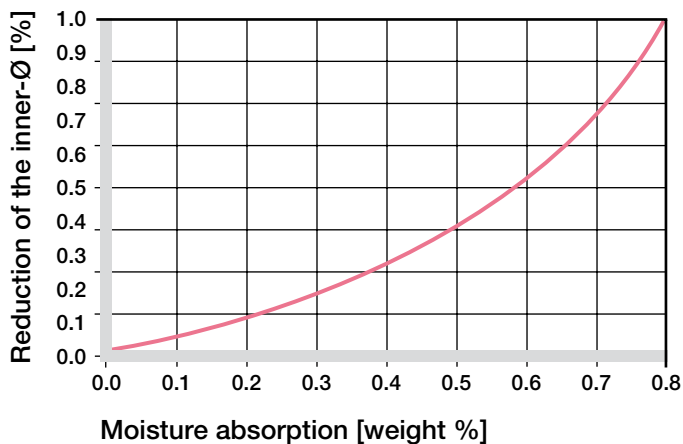


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® UW 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.

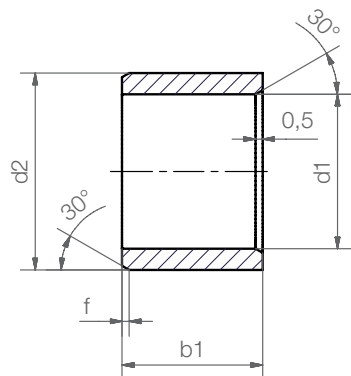
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 59

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® UW 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

UWSM-0304-05



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

Dimensions according to ISO 3547-1 and special dimensions

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 |
|--------------|------|---------------|------|-----------|
| UWSM-0304-05 | 3.0 | +0.014 +0.054 | 4.5 | 5.0 |
| UWSM-0405-06 | 4.0 | +0.020 +0.068 | 5.5 | 6.0 |
| UWSM-0507-08 | 5.0 | +0.020 +0.068 | 7.0 | 8.0 |
| UWSM-0608-08 | 6.0 | +0.020 +0.068 | 8.0 | 8.0 |
| UWSM-0810-10 | 8.0 | +0.025 +0.083 | 10.0 | 10.0 |
| UWSM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0 |
| UWSM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0 |
| UWSM-1618-12 | 16.0 | +0.032 +0.102 | 18.0 | 12.0 |
| UWSM-1820-15 | 18.0 | +0.032 +0.102 | 20.0 | 15.0 |

* after pressfit. Testing methods ► page 59

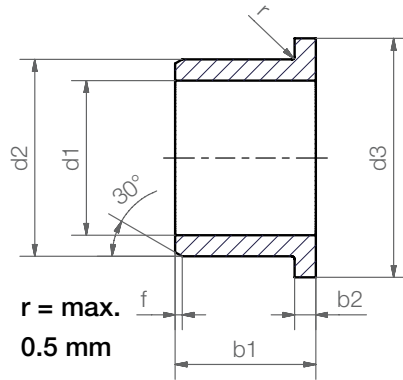


delivery from stock
time



prices price list online
www.igus.co.uk/en/uw

Flange bearing



Order key

UWFM-0304-05



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

Dimensions according to ISO 3547-1 and special dimensions

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 |
|--------------|------|---------------|------|-----------|-----------|-------------|
| UWFM-0304-05 | 3.0 | +0.014 +0.054 | 4.5 | 7.5 | 5.0 | 0.75 |
| UWFM-0405-06 | 4.0 | +0.020 +0.068 | 5.5 | 9.5 | 6.0 | 0.75 |
| UWFM-0507-05 | 5.0 | +0.020 +0.068 | 7.0 | 11.0 | 5.0 | 1.0 |
| UWFM-0608-06 | 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 |
| UWFM-0810-10 | 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 |
| UWFM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 |
| UWFM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 |
| UWFM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 |
| UWFM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 |

* after pressfit. Testing methods ► page 59



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.



Even more dimensions from stock

More than 300 dimensions are now available. Search online for your required bearing.

► www.igus.co.uk/iglidur-specialbearings



delivery from stock
time



prices price list online
www.igus.co.uk/en/uw



The biopolymer – iglidur® N54



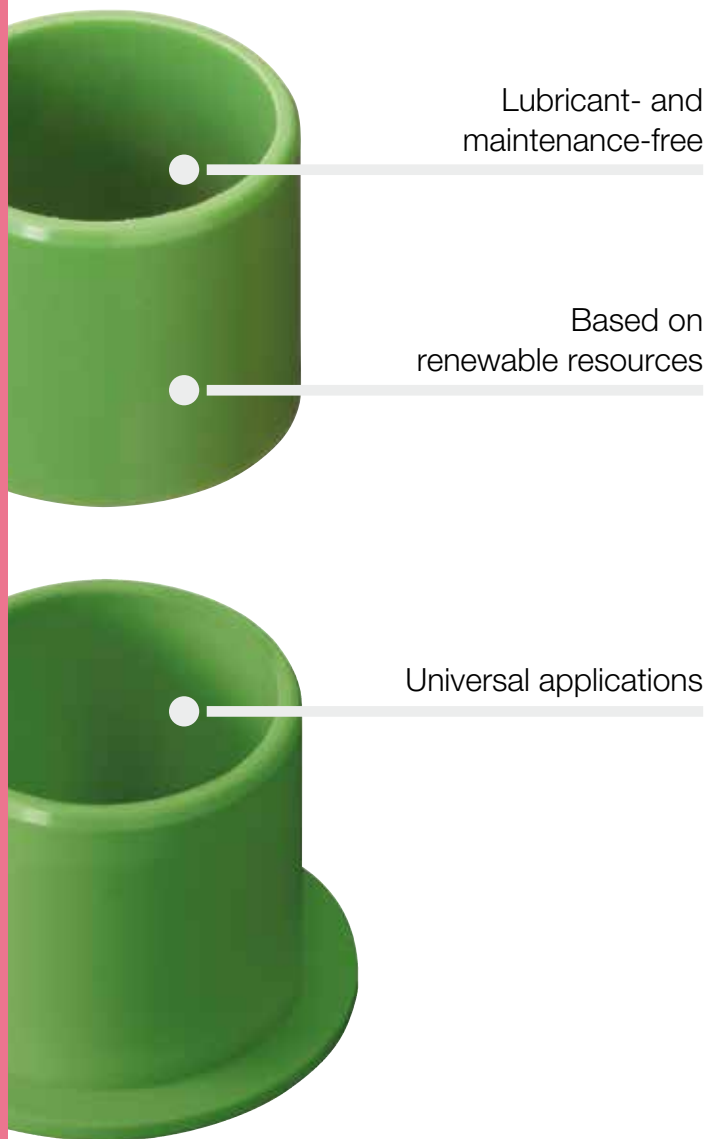
Standard range from stock

Lubricant- and maintenance-free

Based on renewable resources

Universal applications

The biopolymer. Based on 54 % renewable resources, technically this new material also meets high requirements.



When to use it?

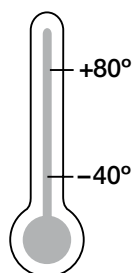
- For applications with sporadic movements at low to medium loads
- At quasi static loads
- If the environmental impact of a product needs to be optimized



When not to use it?

- When looking for a universal standard bearing
▶ iglidur® G, page 65
- When dealing with high motion frequencies and continuous operation
▶ iglidur® J, page 93
- When dealing with high temperatures
▶ iglidur® J350, page 241

Temperature



Product range

2 types
Ø 6–20 mm
more dimensions
on request

Material properties table

| General properties | Unit | iglidur® N54 | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm ³ | 1.13 | |
| Colour | | green | |
| Max. moisture absorption at +23 °C/50 % r. h. | % weight | 1.6 | DIN 53495 |
| Max. water absorption | % weight | 3.6 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.15–0.23 | |
| pv value, max. (dry) | MPa · m/s | 0.5 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 1,800 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 70 | DIN 53452 |
| Compressive strength | MPa | 30 | |
| Max. recommended surface pressure (+20 °C) | MPa | 36 | |
| Shore D hardness | | 74 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +80 | |
| Max. short term application temperature | °C | +120 | |
| Max. ambient temperature, short term ¹⁾ | °C | +140 | |
| Min. application temperature | °C | –40 | |
| Thermal conductivity | W/m · K | 0.24 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 9 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹³ | DIN IEC 93 |
| Surface resistance | Ω | > 10 ¹¹ | DIN 53482 |

¹⁾ Without additional load; no gliding motion; relaxation cannot be eliminated

Tabelle 01: Material properties table

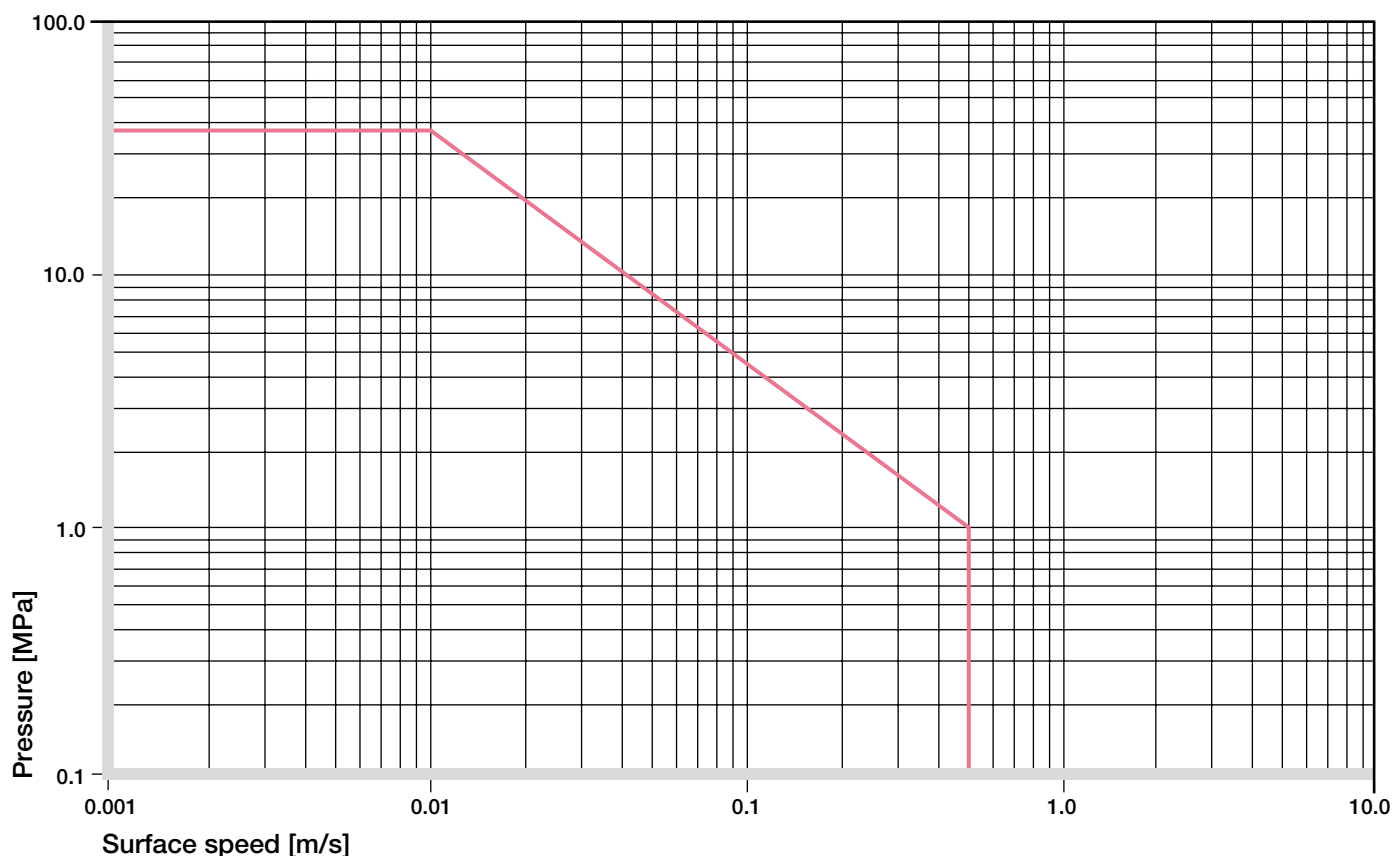


Diagram 01: Permissible pv values for iglidur® N54 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Maximum recommended surface pressure is a mechanical material parameter. Tribological conclusions cannot be drawn from it. With increasing temperatures, the compressive strength of iglidur® N54 bearings decreases.

Mechanical properties

iglidur® N54 is the first iglidur® material based largely on bio-polymers. In addition to the proven lubricant-free properties of all iglidur® materials, this is one further contribution to positive environmental stewardship. The good coefficients of friction in conjunction with long life ensure that these materials have a permanent place in the iglidur® product range.

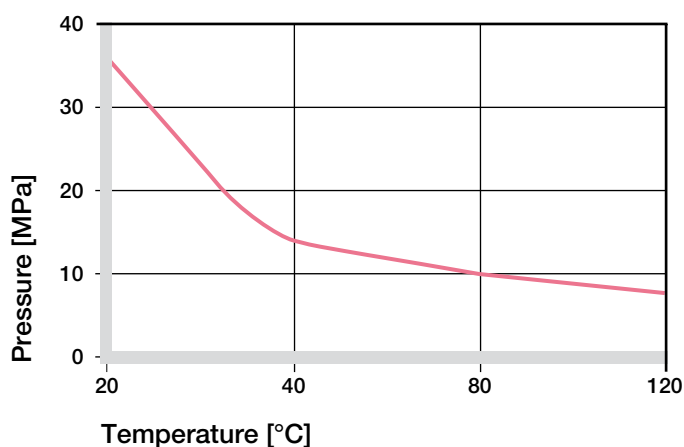


Diagram 02: Recommended maximum surface pressure as a function of temperature (36 MPa bei +20 °C)

With increasing temperatures, the compressive strength of iglidur® N54 plain bearings decreases. The Diagram 02 shows this relationship. With the long-term permitted application temperature of +120 °C the permitted surface pressure is less than 10 MPa.

Diagram 03 shows the elastic deformation of iglidur® N54 with radial loads.

► Surface Pressure, [page 47](#)

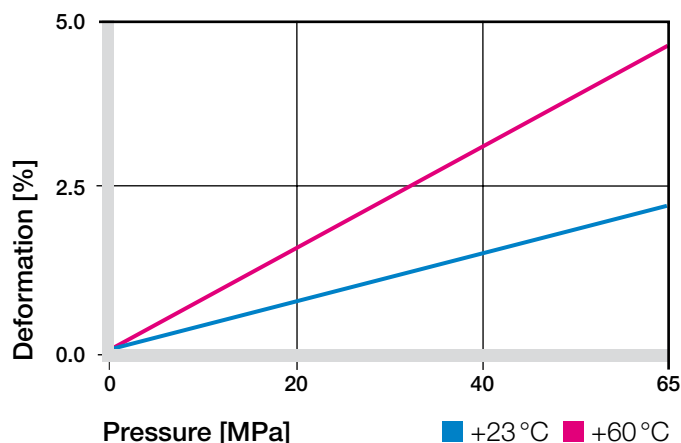


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Even if the typical applications for iglidur® N54 plain bearings are generally for intermittent service, depending on the type of motion, the maximum attainable speeds can be quite high. The speeds shown in Table 02 are threshold values for minimal bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface Speed, [page 49](#)

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8 | 0.6 | 1 |
| Short term | 1.5 | 1.1 | 2 |

Table 02: Maximum running speed

Temperatures

The short-term permissible temperature limit is +140 °C, thus permitting the use of iglidur® N54 plain bearings in all applications with elevated ambient temperatures. However, the compressive strength of iglidur® N54 bearings decreases as temperatures increase. The additional frictional heat in the bearing system should be taken into account when considering the temperature limits.

► Application Temperatures, [page 50](#)

| iglidur® N54 | Application temperature |
|--------------------------------|-------------------------|
| Minimum | -40 °C |
| Max. long term | +80 °C |
| Max. short term | +120 °C |
| Add. securing is required from | +60 °C |

Table 03: Temperature limits

Friction and Wear

iglidur® N54 has a low coefficient of friction. However it must be noted that a gliding partner with a rough surface finish increases the friction. We recommend shaft surface finishes (Ra) of 0.1 to a maximum of 0.4 µm. The coefficient of friction of iglidur® N54 bearings is only marginally dependent on the surface speed. The influence of the load is greater; an increase in load lowers the coefficient of friction to as low as 0.08.

► Coefficients of Friction and Surfaces, **page 52**

► Wear Resistance, **page 53**

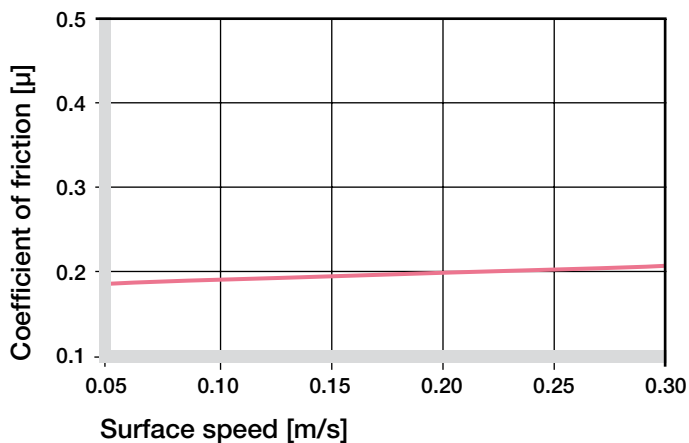


Diagram 04: Coefficient of friction as a function of the running speed, p = 1 MPa

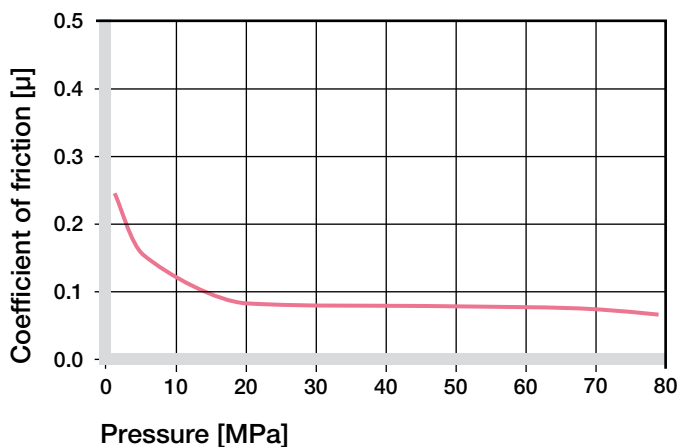


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

It is important to select a suitable shaft material. As a rule, iglidur® N54 is suitable for use with hard or soft shafts, but “hard” shaft surfaces tend to give better life times. Starting at loads of 1 MPa, wear increases measurably and continuously.

► Shaft Materials, **page 55**

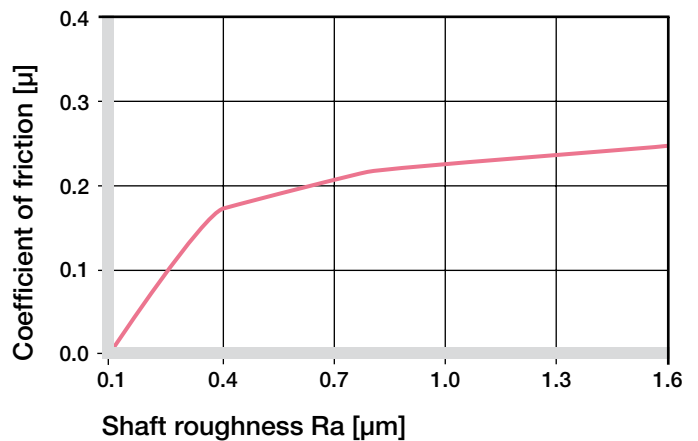


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

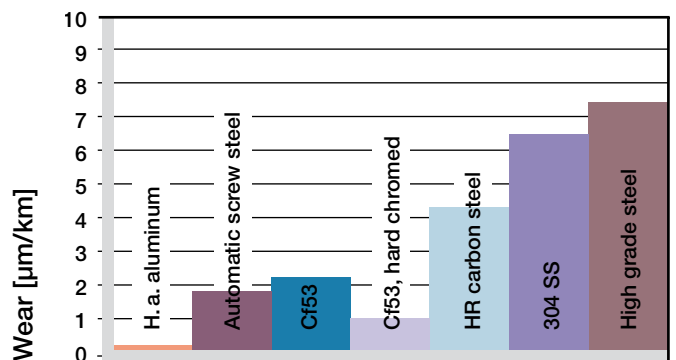


Diagram 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s

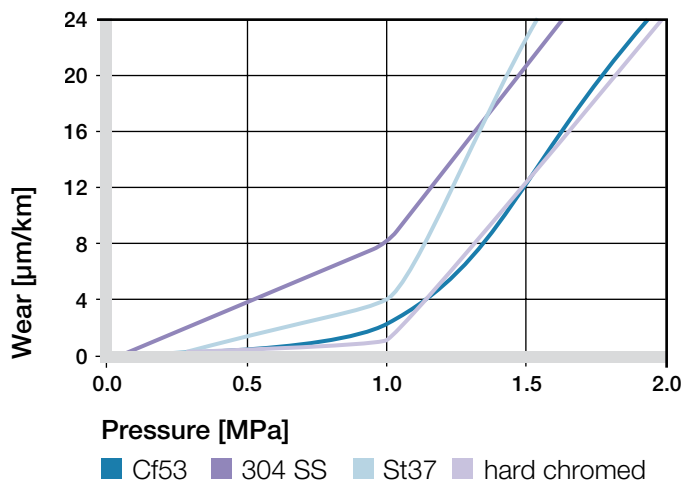


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

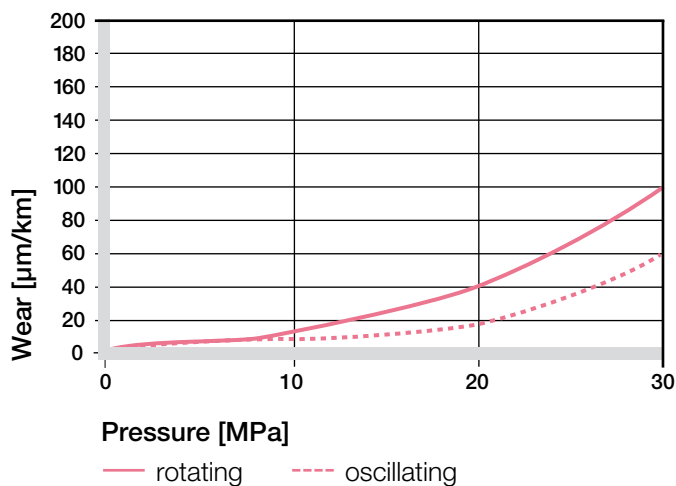


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® N54 | Dry | Greases | Oil | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. μ | 0.15–0.23 | 0.09 | 0.04 | 0.04 |

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

Further properties

Chemical Resistance

iglidur® N54 plain bearings have good resistance to chemicals. They are resistant to most lubricants. iglidur® N54 is not impaired by most weak organic and inorganic acids and bases.

► Chemical Table, page 1118

| 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 °C]

Table 05: Chemical resistance

Radiation Resistance

Bearings made of iglidur® N54 are conditionally usable under radioactive radiation. They are resistant up to a radiation intensity of 1×10^4 Gy.

UV Resistance

iglidur® N54 bearings are resistant to UV rays.

Vacuum

Any absorbed water will be emitted as gas in a vacuum. Applications under vacuum conditions are possible with restrictions.

Electrical Properties

iglidur® N54 plain bearings are electrically insulating.

| | |
|--------------------|-----------------------------|
| Volume resistance | $> 10^{13} \Omega\text{cm}$ |
| Surface resistance | $> 10^{11} \Omega$ |

Moisture Absorption

The humidity absorption of iglidur® N54 bearings amounts to about 1.6 Wt.-% in standard climatic conditions. The saturation limit in water is 3.6 %.

Maximum moisture absorption

| | |
|-----------------------|--------------|
| At +23 °C/50 % r.h. | 1.6 % weight |
| Max. water absorption | 3.6 % weight |

Table 06: Moisture absorption

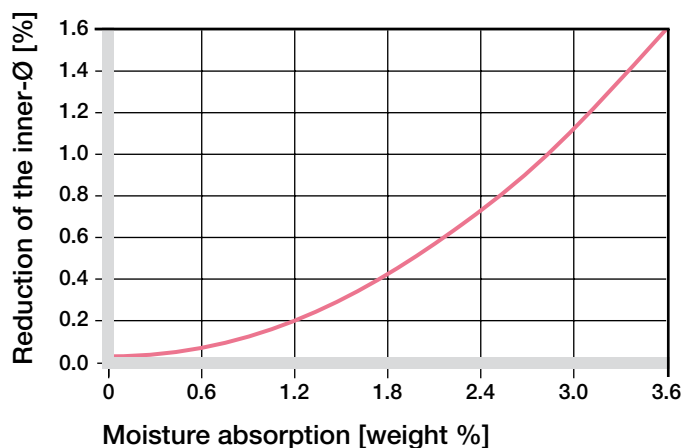


Diagram 10: Effect of moisture absorption on plain bearings

Installation tolerances

iglidur® N54 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.

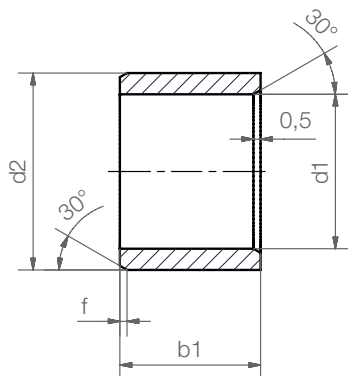
After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance changes, depending on the wall thickness (please see product range table).

► Testing Methods, page 59

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® N54 E10 [mm] | Housing H7 [mm] |
|---------------------|------------------|--------------------------|--------------------|
| 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 |

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

Sleeve bearing



Order key

N54SM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material iglidur® N54

Dimensions according to ISO 3547-1 and special dimensions

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 |
|---------------|------|---------------|------|-----------|
| N54SM-0608-06 | 6.0 | +0.020 +0.068 | 8.0 | 6.0 |
| N54SM-0810-10 | 8.0 | +0.025 +0.083 | 10.0 | 10.0 |
| N54SM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 10.0 |
| N54SM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 12.0 |
| N54SM-1618-15 | 16.0 | +0.032 +0.102 | 18.0 | 15.0 |
| N54SM-2023-20 | 20.0 | +0.040 +0.124 | 23.0 | 20.0 |

* after pressfit. Testing methods ► page 59

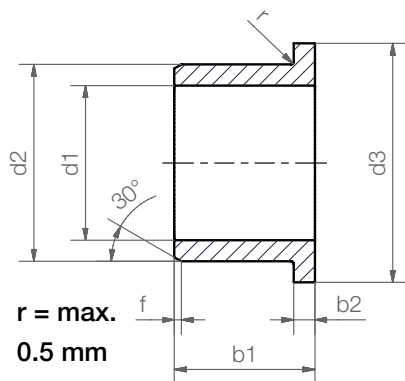


delivery from stock
time



prices price list online
www.igus.co.uk/en/n54

Flange bearing



Order key

N54FM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form F)
Material iglidur® N54

Dimensions according to ISO 3547-1 and special dimensions

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 |
|---------------|------|---------------|------|-----------|-----------|-------------|
| N54FM-0608-06 | 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 |
| N54FM-0810-10 | 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 |
| N54FM-1012-10 | 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 |
| N54FM-1214-12 | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 |
| N54FM-1618-17 | 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 |
| N54FM-2023-21 | 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 |

* after pressfit. Testing methods ► page 59



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.

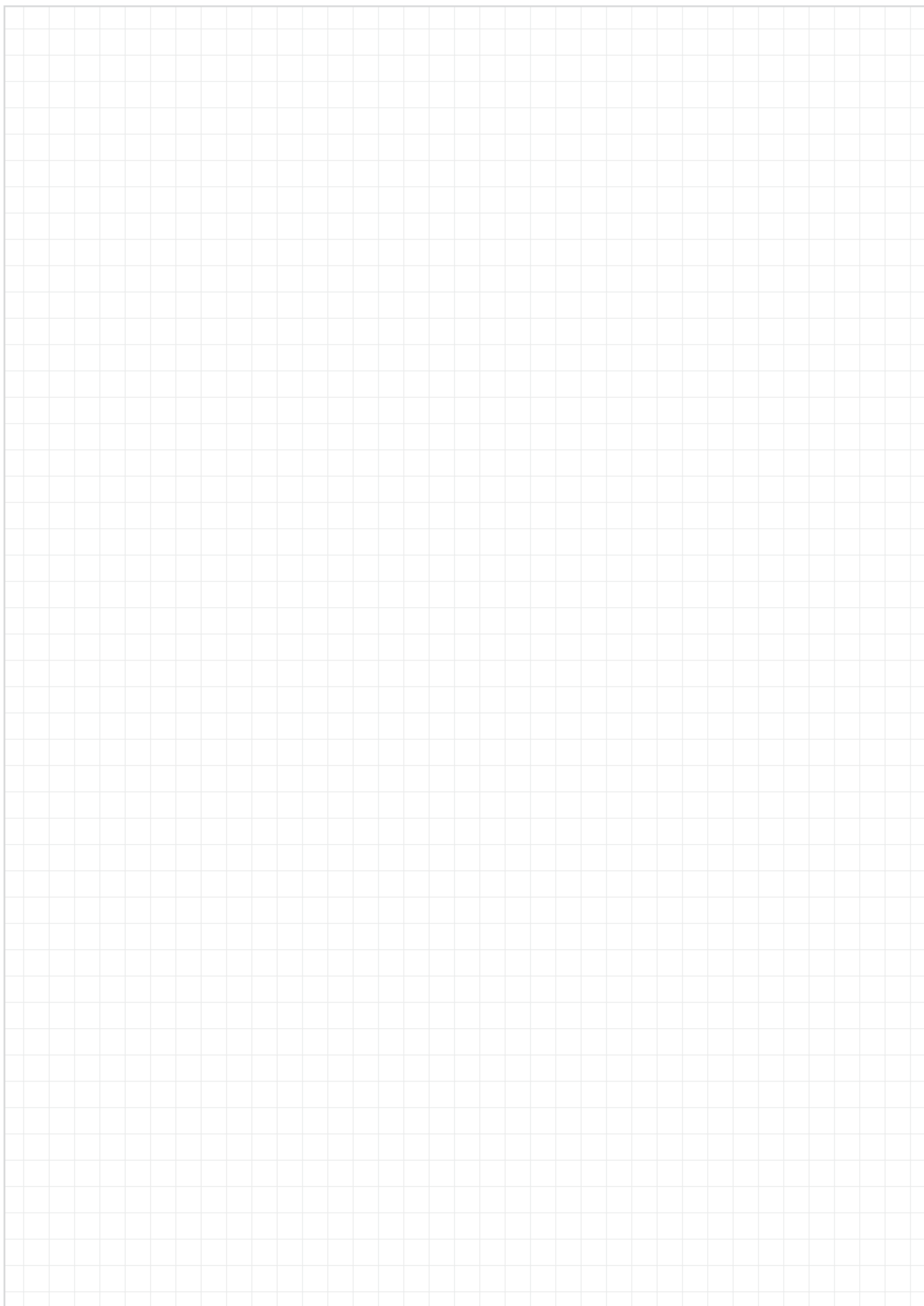


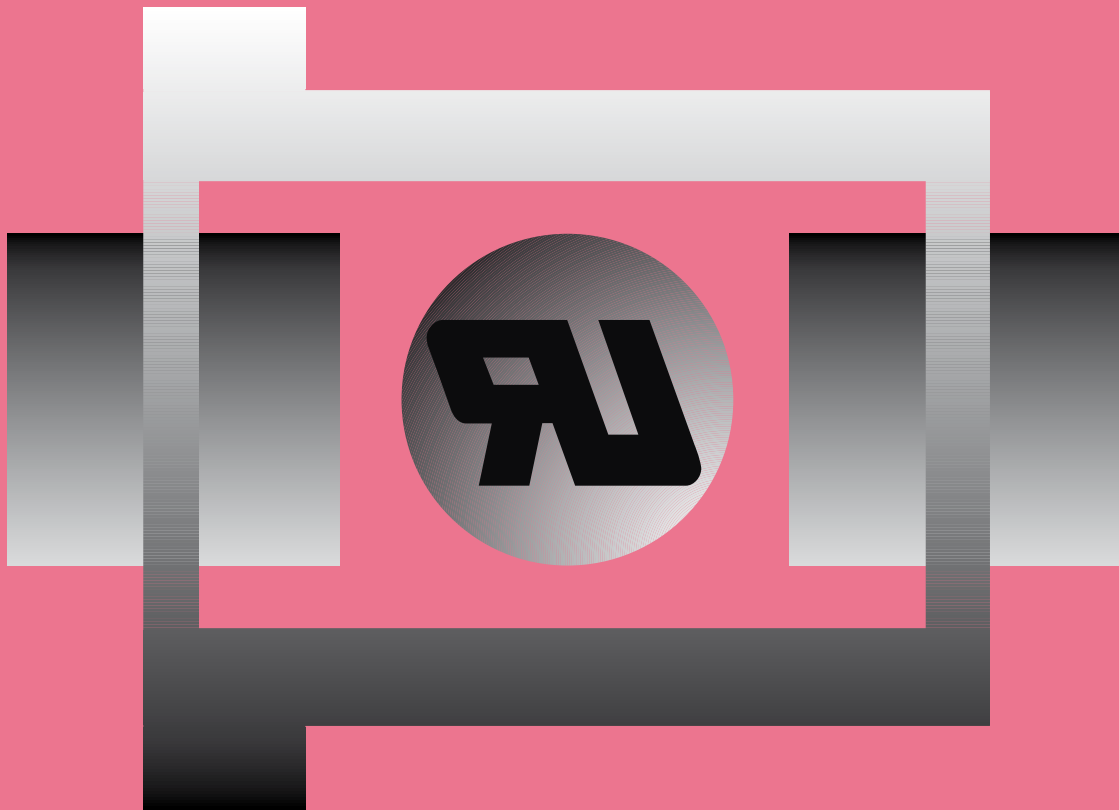
delivery from stock
time



prices price list online
www.igus.co.uk/en/n54

My Sketches





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



Standard range from stock

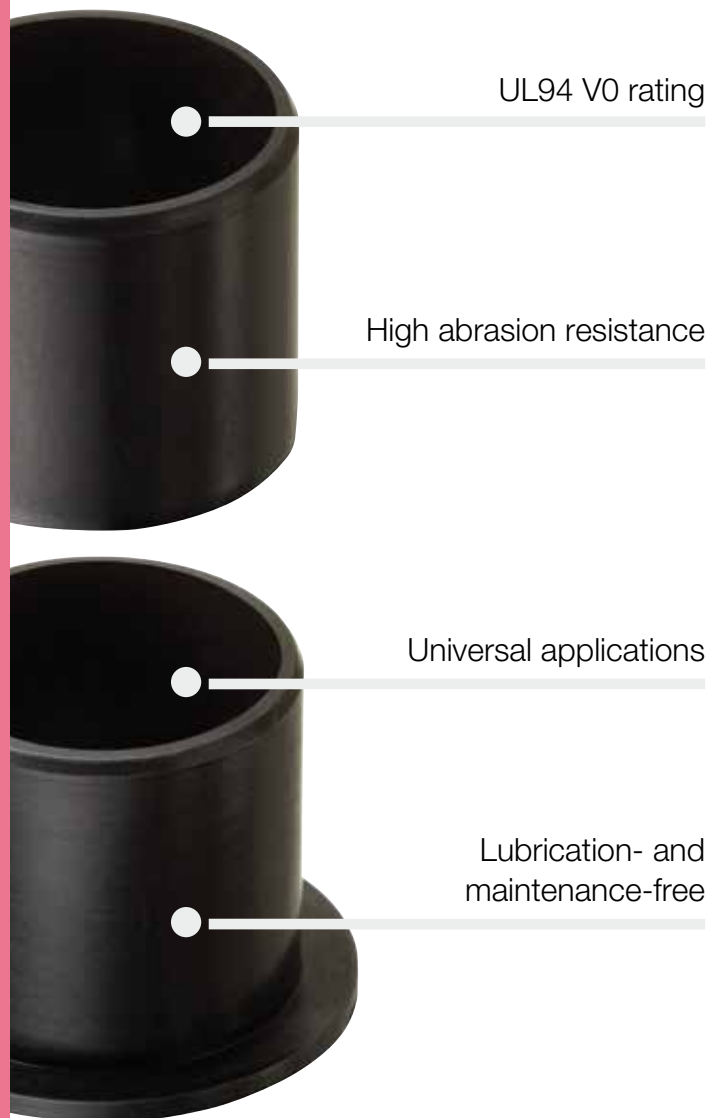
Lubrication- and maintenance-free

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?

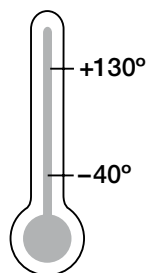
- When you need a UL94 V0 classified bearing for normal environmental conditions
- When you need an economic UL94 V0 classified bearing



When not to use it?

- When you need a UL94 V0 classified bearing for high-temperature applications
▶ iglidur® X, page 157
- When you need a standard bearing without having to meet special fire codes
▶ iglidur® G, page 65

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 ³ | 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 ⁻¹ · 10 ⁻⁵ | 9 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹² | DIN IEC 93 |
| Surface resistance | Ω | > 10 ¹¹ | DIN 53482 |

Tabelle 01: Material properties table

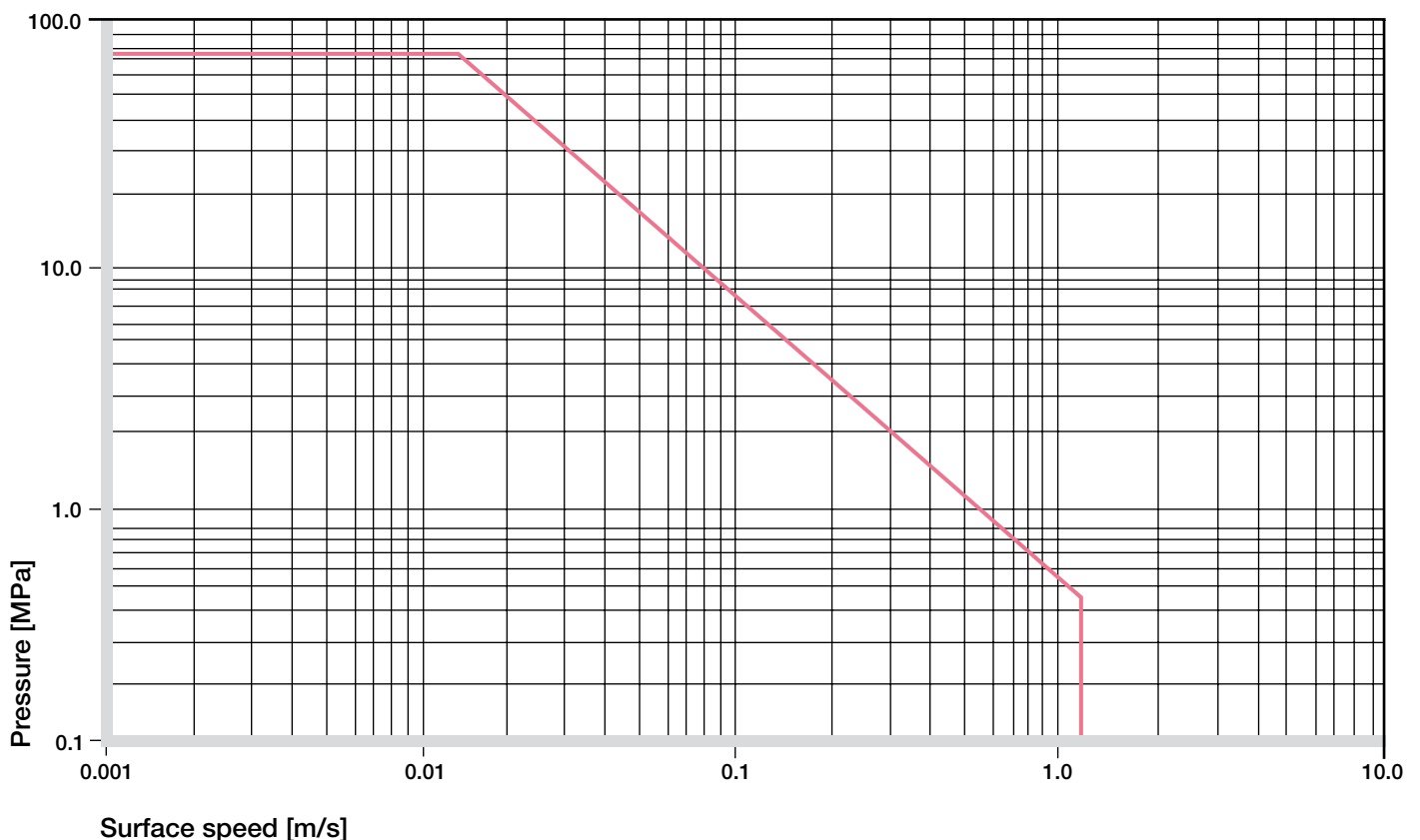


Diagram 01: Permissible pv values for iglidur® G V0 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

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.

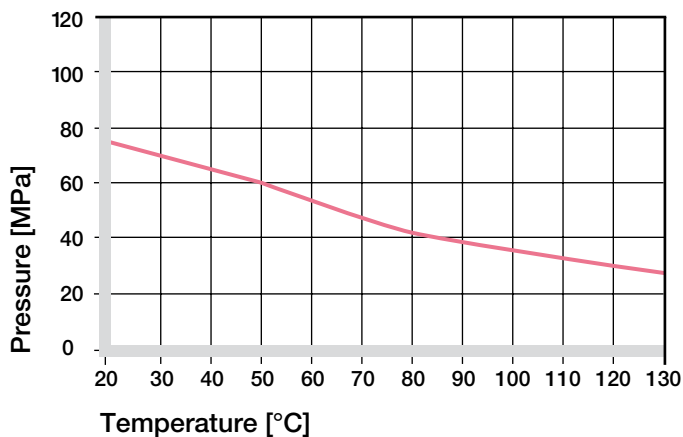


Diagram 02: Recommended maximum surface pressure as a function of temperature (75 MPa at +20 °C)

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 47](#)

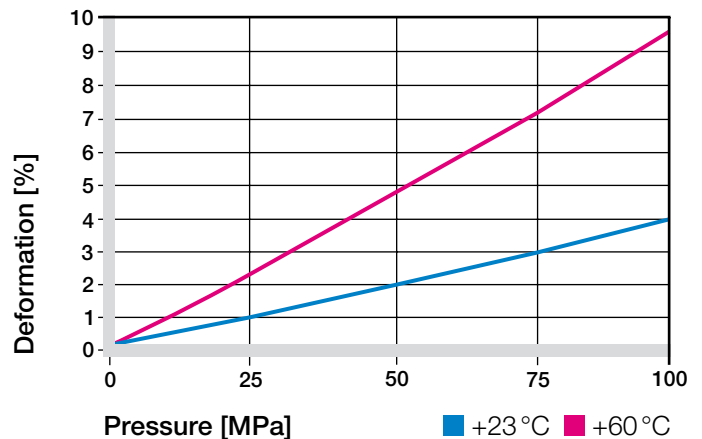


Diagram 03: Deformation under pressure and temperature

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 49](#)

| 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 50](#)

| 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 μ 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 52**
- Wear Resistance, **page 53**

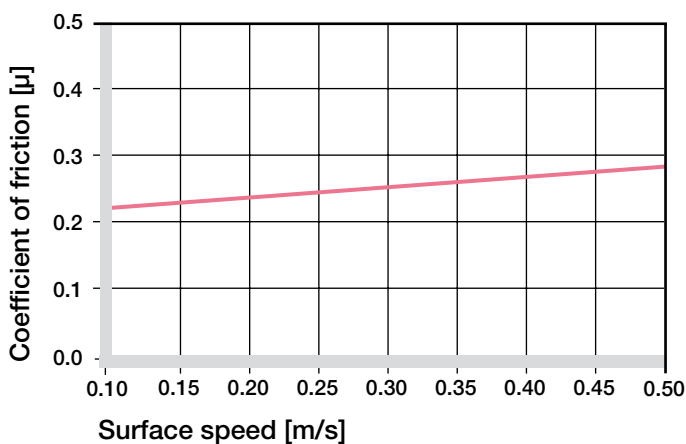


Diagram 04: Coefficient of friction as a function of the running speed, $p = 1$ MPa

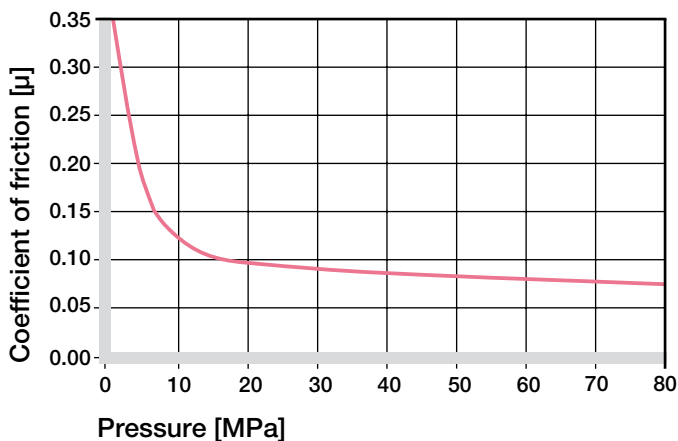


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

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 55**

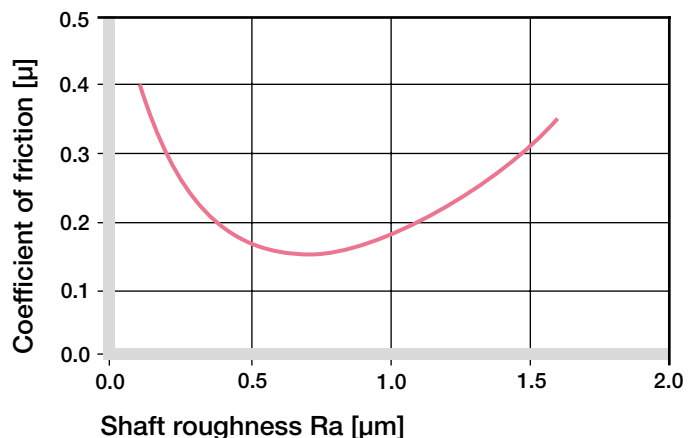


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

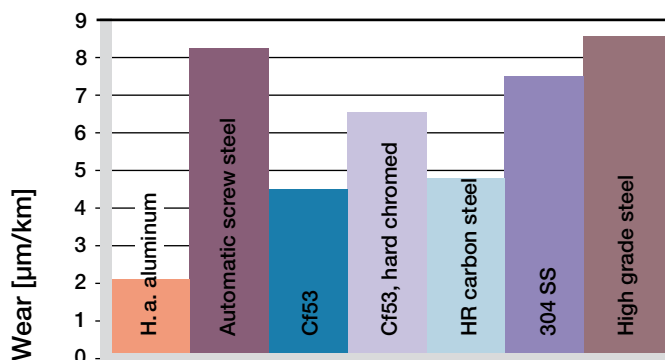


Diagram 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

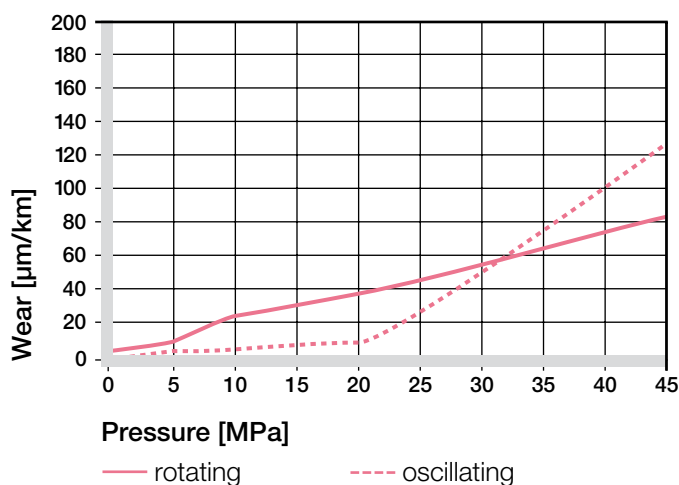


Diagram 08: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® G V0 | Dry | Greases | Oil | Water |
|---------------|-----------|---------|------|-------|
| C.o.f. μ | 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 1118

| 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

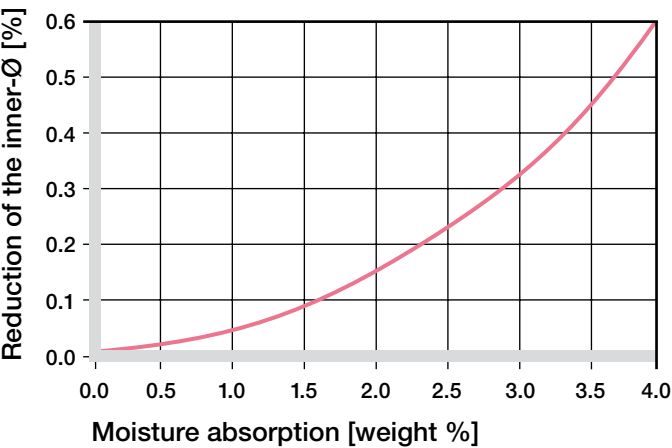


Diagram 09: Effect of moisture absorption on plain bearings

Installation Tolerances

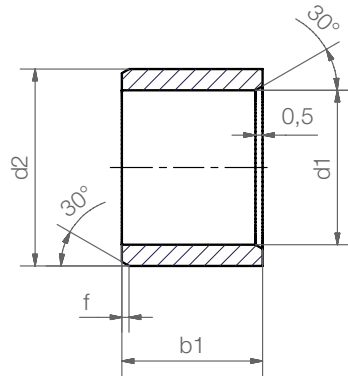
iglidur® G V0 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter automatically adjusts to the E10 tolerances.

► Testing Methods, page 59

| 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

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 New! | 6.0 | +0.020 +0.068 | 8.0 | 6.0 |
| GV0SM-0810-10 New! | 8.0 | +0.025 +0.083 | 10.0 | 10.0 |
| GV0SM-1012-10 New! | 10.0 | +0.025 +0.083 | 12.0 | 10.0 |
| GV0SM-1214-12 New! | 12.0 | +0.032 +0.102 | 14.0 | 12.0 |
| GV0SM-1618-15 New! | 16.0 | +0.032 +0.102 | 18.0 | 15.0 |
| GV0SM-2023-20 New! | 20.0 | +0.040 +0.124 | 23.0 | 20.0 |
| GV0SM-2528-20 New! | 25.0 | +0.040 +0.124 | 28.0 | 20.0 |
| GV0SM-3034-30 New! | 30.0 | +0.040 +0.124 | 34.0 | 30.0 |
| GV0SM-3539-40 New! | 35.0 | +0.050 +0.150 | 39.0 | 40.0 |
| GV0SM-4044-40 New! | 40.0 | +0.050 +0.150 | 44.0 | 40.0 |

* after pressfit. Testing methods ► page 59

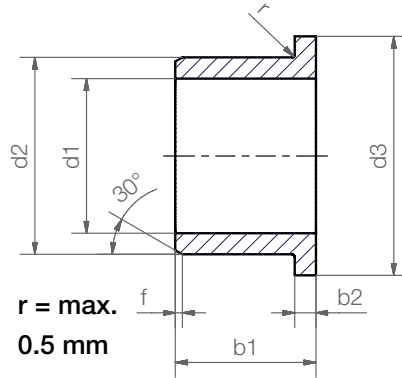


delivery from stock
time



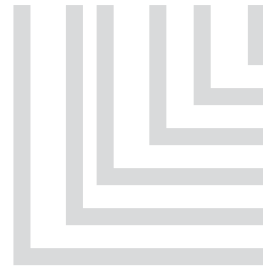
prices price list online
www.igus.co.uk/en/gv0

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

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 New! | 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 |
| GV0FM-0810-10 New! | 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 |
| GV0FM-1012-10 New! | 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 |
| GV0FM-1214-12 New! | 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 |
| GV0FM-1618-17 New! | 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 |
| GV0FM-2023-21 New! | 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 |
| GV0FM-2528-21 New! | 25.0 | +0.040 +0.124 | 28.0 | 35.0 | 21.5 | 1.5 |
| GV0FM-3034-37 New! | 30.0 | +0.040 +0.124 | 34.0 | 42.0 | 37.0 | 2.0 |
| GV0FM-3539-36 New! | 35.0 | +0.050 +0.150 | 39.0 | 47.0 | 36.0 | 2.0 |
| GV0FM-4044-40 New! | 40.0 | +0.050 +0.150 | 44.0 | 52.0 | 40.0 | 2.0 |

* after pressfit. Testing methods ► page 59



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.

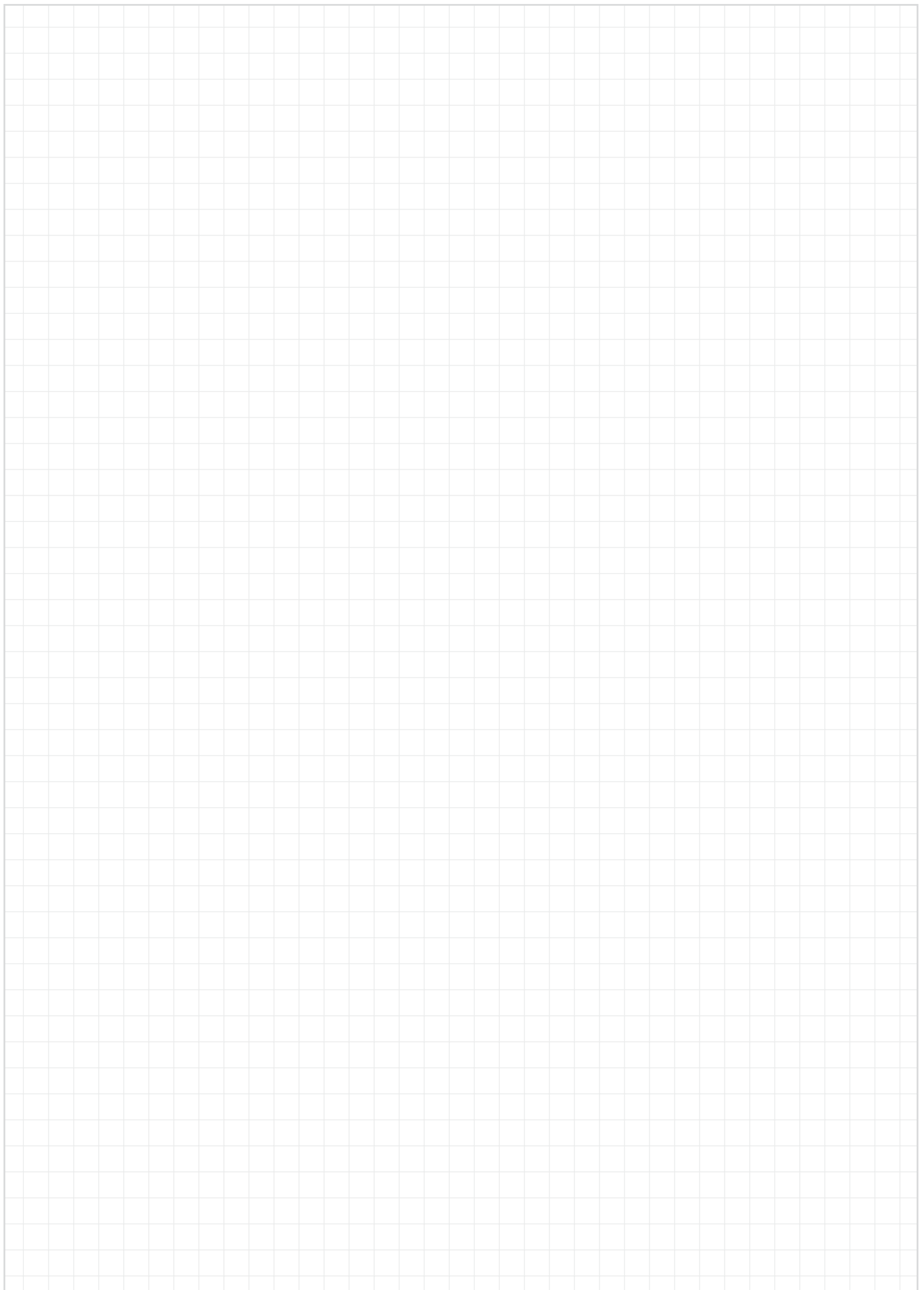


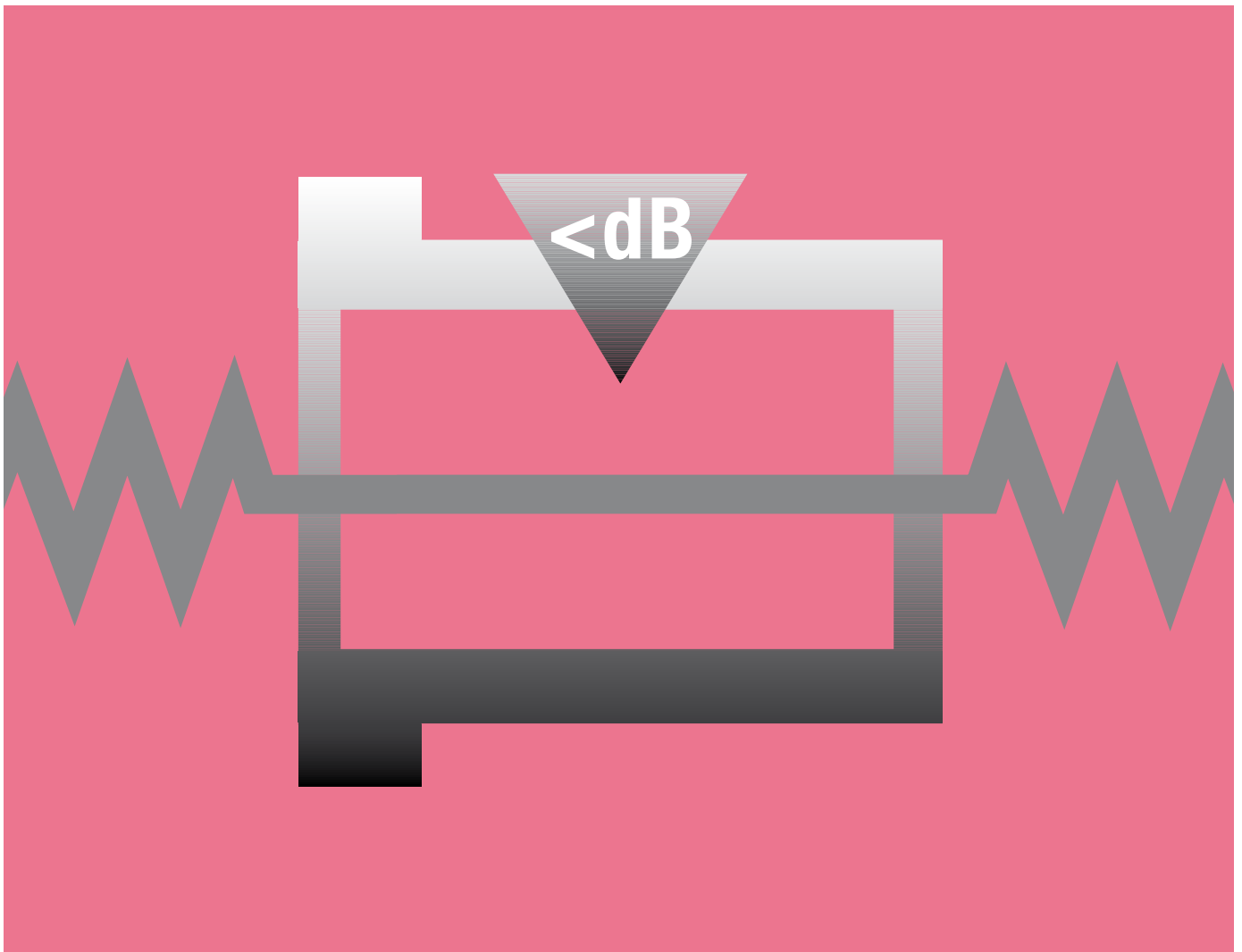
delivery from stock
time



prices price list online
www.igus.co.uk/en/gv0

My Sketches





High elasticity – iglidur® B

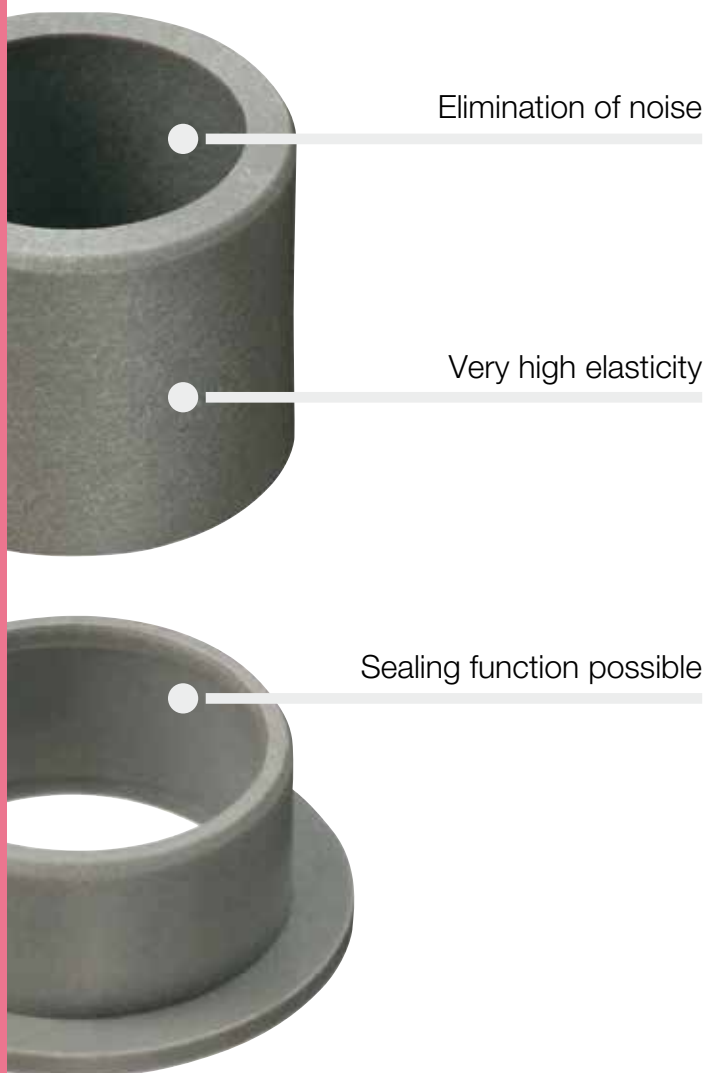


Elimination of noise

Very high elasticity

Sealing function possible

High elasticity. Vibration dampening is the predominant feature of the iglidur® B material which is also well-suited for edge loads at low pressure.



When to use it?

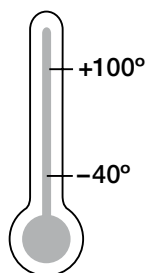
- When maximum vibration dampening is required
- When sealing function has to be integrated
- When high edge loads occur



When not to use it?

- In applications with high atmospheric humidity
▶ iglidur® J, page 93
- When a cost-effective universal bearing is required
▶ iglidur® R, page 261
- When the highest wear resistance is required
▶ iglidur® J, page 93

Temperature



Product range

on request

Material properties table

| General properties | Unit | iglidur® B | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm ³ | 1.15 | |
| Colour | | grey | |
| Max. moisture absorption at +23 °C/50 % r.h. | % weight | 1.0 | DIN 53495 |
| Max. water absorption | % weight | 6.3 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.18–0.28 | |
| pv value, max. (dry) | MPa · m/s | 0.15 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 1,800 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 55 | DIN 53452 |
| Compressive strength | MPa | 20 | |
| Max. recommended surface pressure (+20 °C) | MPa | 40 | |
| Shore D hardness | | 69 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +100 | |
| Max. short term application temperature | °C | +130 | |
| Max. short term ambient temperature ¹⁾ | °C | +150 | |
| Min. application temperature | °C | –40 | |
| Thermal conductivity | W/m · K | 0.24 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 12 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹⁰ | DIN IEC 93 |
| Surface resistance | Ω | > 10 ⁹ | DIN 53482 |

¹⁾ Without additional load; no sliding movement; relaxation possible

Tabelle 01: Material properties table

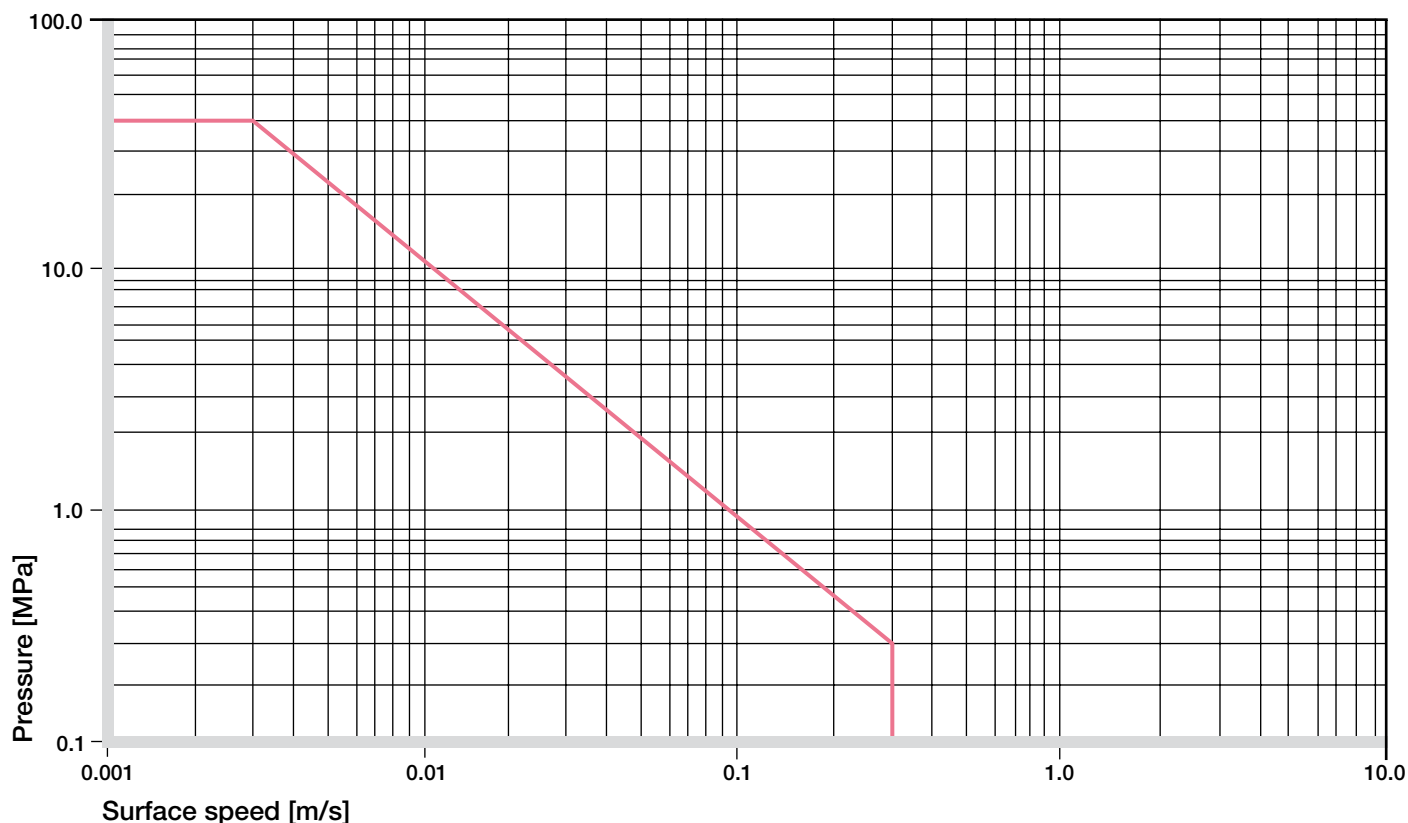


Diagram 01: Permissible pv values for iglidur® B with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

The compressive strength of the iglidur® B bearings is on the one hand low, but on the other, is an important property of the bearing. They are mainly used where vibration dampening and acoustic separation are required.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® B plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +100°C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

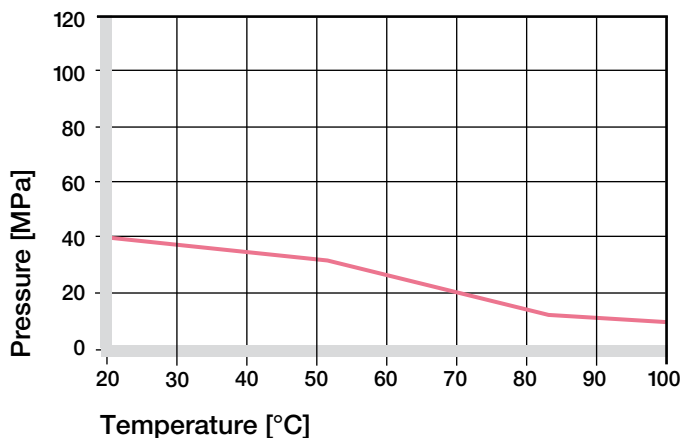


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

The elastic deformation at 40 MPa at room temperature is 5.3 % (Diagram 03).

► Surface Pressure, page 47

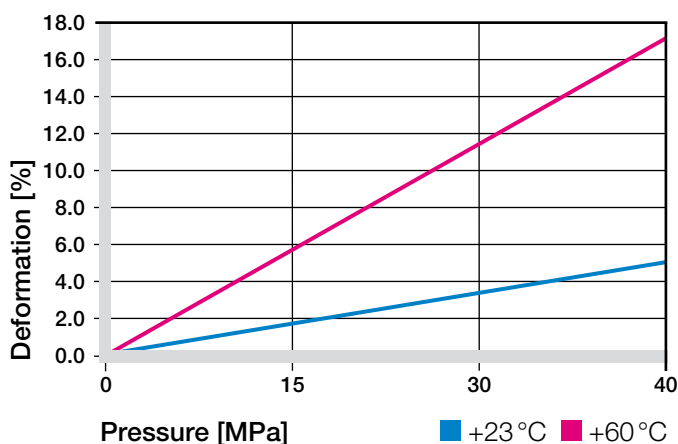


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® B bearings can be continuously used up to 0.7 m/s. The frictional heat provides the speed limits. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 49

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.7 | 0.5 | 2 |
| Short term | 1 | 0.7 | 3 |

Table 02: Maximum running speed

Temperatures

The operating temperature of the iglidur® B bearings is limited to +100°C. From +50 °C onward, the very soft bearing should be mechanically fastened, so that the danger of bushings creeping out of the bores is avoided. The wear resistance declines disproportionately from +70 °C.

► Application Temperatures, page 50

| iglidur® B | Application temperature |
|--------------------------------|-------------------------|
| Minimum | −40 °C |
| Max. long term | +100 °C |
| Max. short term | +130 °C |
| Add. securing is required from | +50 °C |

Table 03: Temperature limits

Friction and Wear

The coefficients of friction increase slightly with the speed and decrease with the load. Surface finishes of the shaft between 0.4 and 0.6 Ra are ideal. The iglidur® B bearings assume a center position in wear resistance. As far as the bearing load is not too high, the attained wear values are pretty good. An increase in load results in a disproportionate increase in abrasion.

► Coefficients of Friction and Surfaces, **page 52**

► Wear Resistance, **page 53**

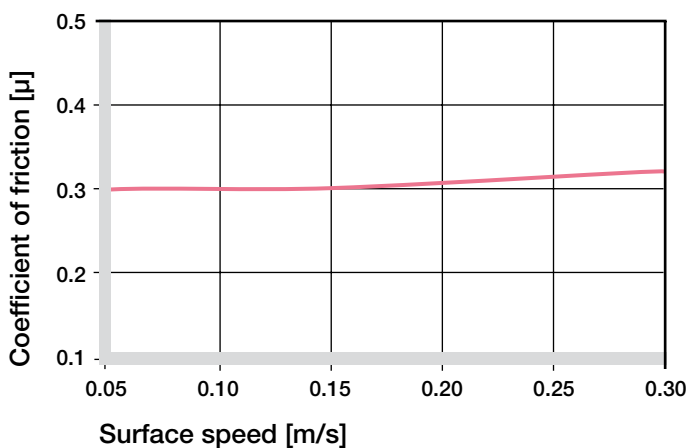


Diagram 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa

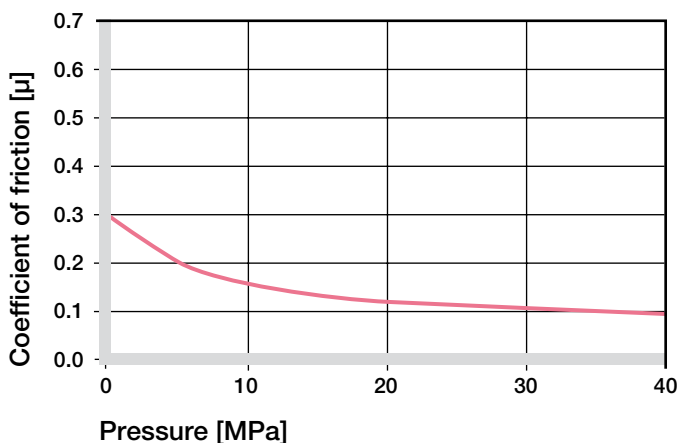


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

Shaft Materials

The influence of the shaft is not very large on the wear resistance.

Diagram 07 and 08 clarify that very similar wear data are attained with different shaft materials. If high operational performances are expected, the bearing load should not be too high.

► Shaft Materials, **page 55**

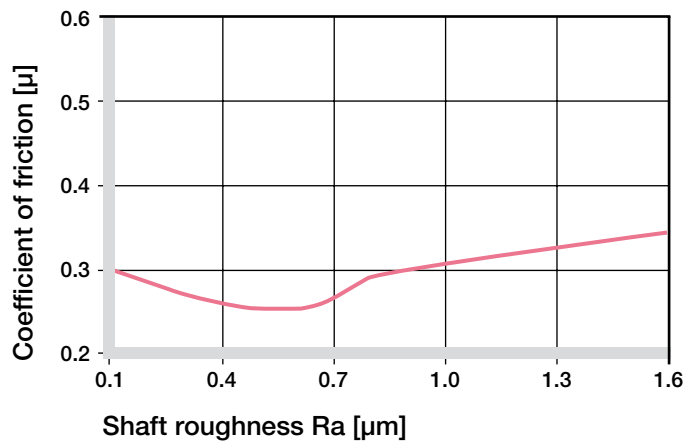


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

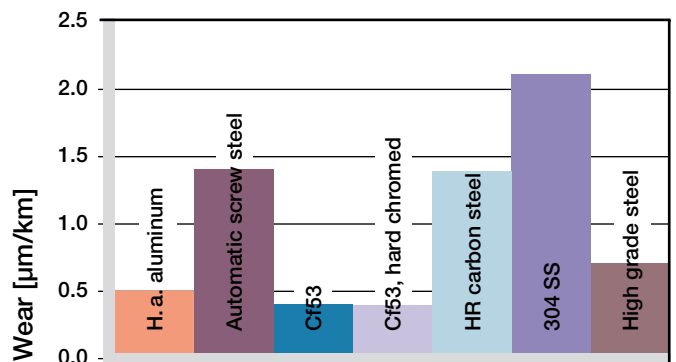


Diagram 07: Wear, rotating with different shaft materials, pressure $p = 1$ MPa, $v = 0.3$ m/s

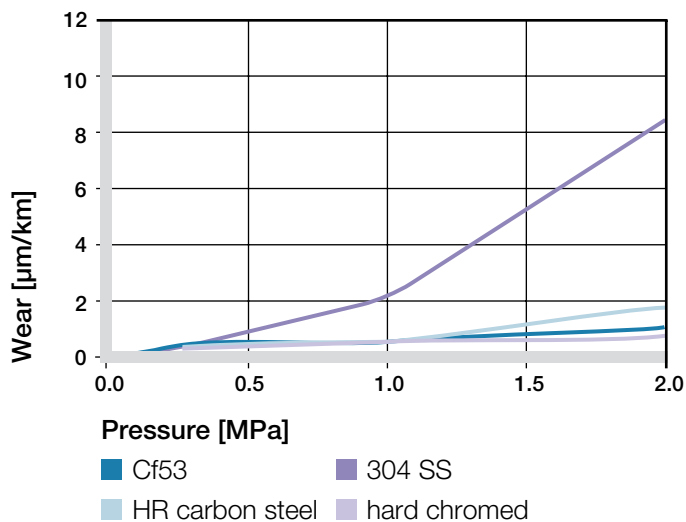


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

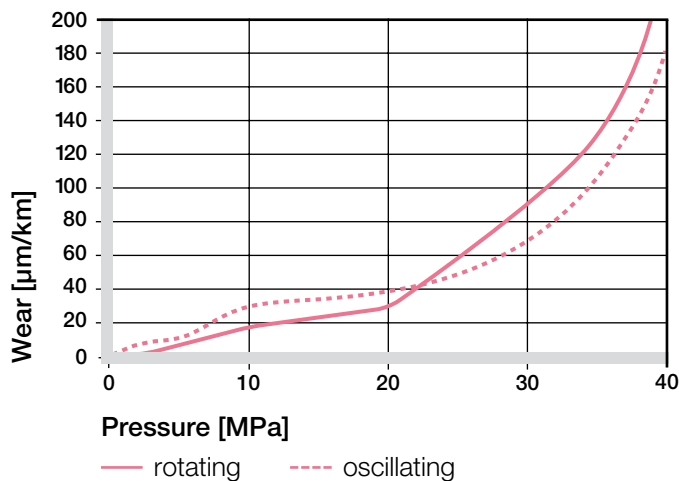


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® B | Dry | Greases | Oil | Water |
|--------------|-----------|---------|------|-------|
| C.o.f. μ | 0.18–0.28 | 0.09 | 0.04 | 0.04 |

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

Additional Properties

Chemical Resistance

iglidur® B plain bearings are not very resistant to chemicals. Where chemical resistance is required, other iglidur® materials featuring better characteristics should be used.

► Chemical Table, [page 1118](#)

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

+ resistant 0 conditionally resistant – not resistant

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

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® B are radiation resistant to a radiation intensity of $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® B plain bearings are not resistant to the impact of UV radiation.

Vacuum

Use of iglidur® B plain bearings is limited in vacuum. Only dehumidified bearings should be tested.

Electrical Properties

iglidur® B plain bearings are electrically insulating.

| | |
|--------------------|-----------------------------|
| Volume resistance | $> 10^{10} \Omega\text{cm}$ |
| Surface resistance | $> 10^9 \Omega 10$ |

Moisture Absorption

The moisture absorption is relatively high and must be considered in the selection and design.

Maximum moisture absorption

At +23 °C/50 % r.h. 1.0 % weight

Max. water absorption 6.3 % weight

Table 06: Moisture absorption

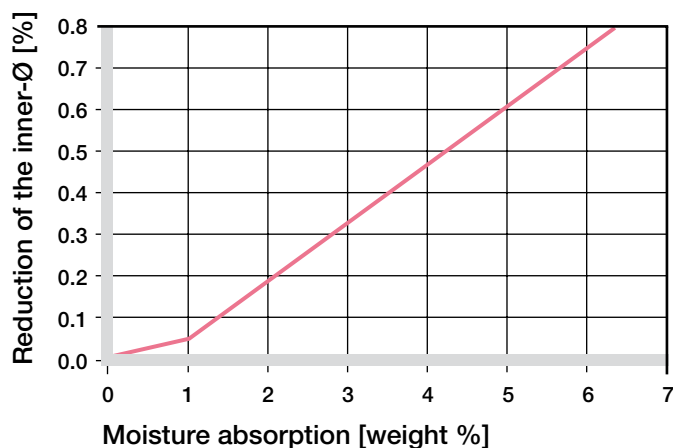


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® B 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, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, page 59

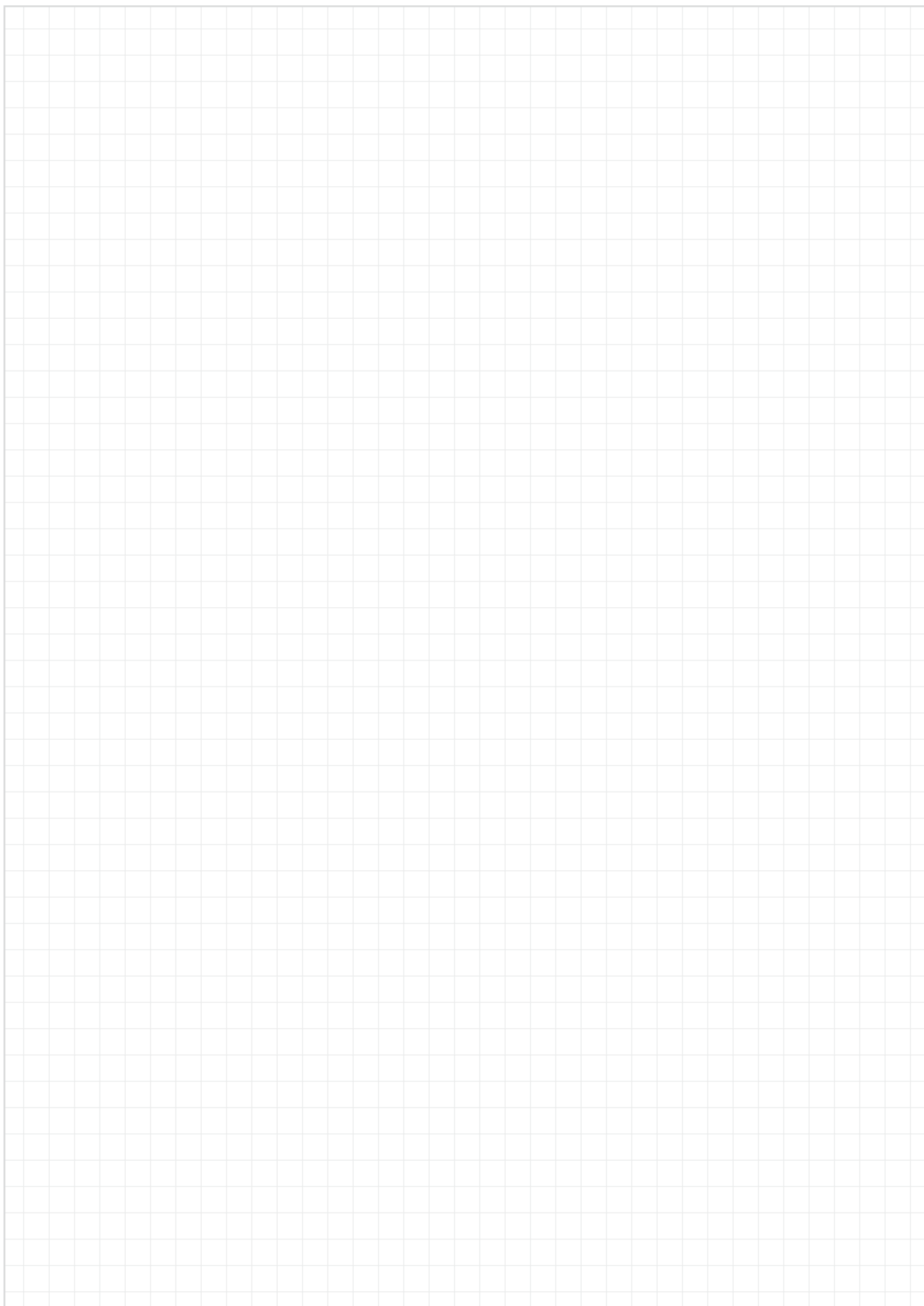
| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® B D11 [mm] | Housing H7 [mm] |
|---------------------|------------------|------------------------|--------------------|
| up to 3 | 0–0.025 | +0.020 +0.080 | 0 +0.010 |
| > 3 to 6 | 0–0.030 | +0.030 +0.105 | 0 +0.012 |
| > 6 to 10 | 0–0.036 | +0.040 +0.130 | 0 +0.015 |
| > 10 to 18 | 0–0.043 | +0.050 +0.160 | 0 +0.018 |
| > 18 to 30 | 0–0.052 | +0.065 +0.195 | 0 +0.021 |
| > 30 to 50 | 0–0.062 | +0.080 +0.240 | 0 +0.025 |
| > 50 to 80 | 0–0.074 | +0.100 +0.290 | 0 +0.030 |

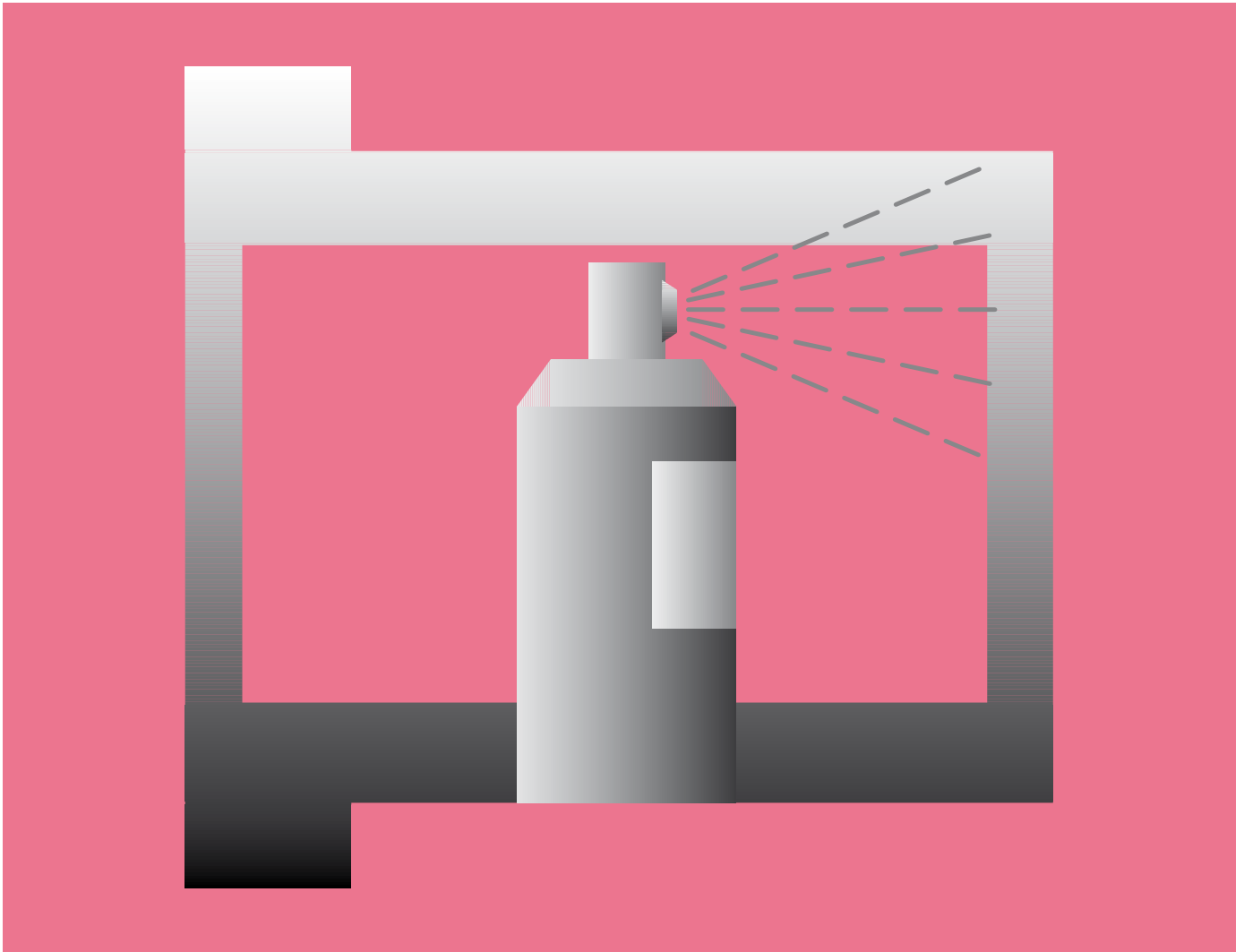
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® B plain bearings are manufactured to special order.

My Sketches





Free of PTFE and silicone – iglidur® C

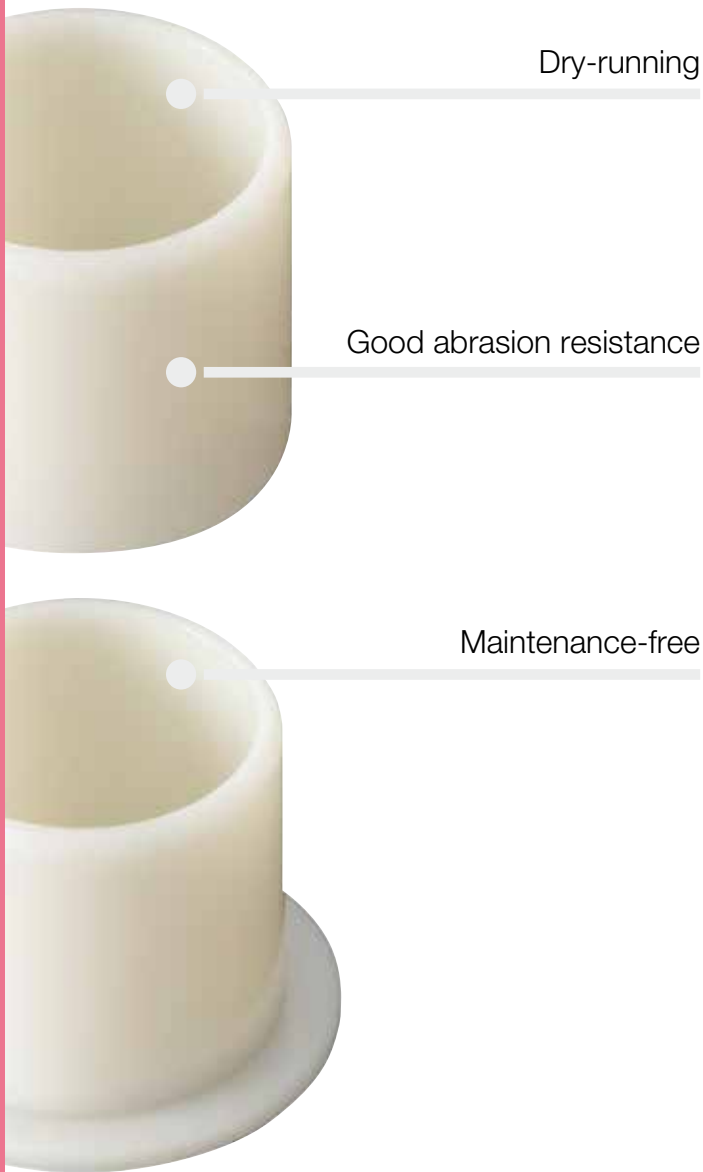


Dry-running

Good abrasion resistance

Maintenance-free

Free of PTFE and silicone. In iglidur® C, the use of Teflon and silicone as lubricants is deliberately avoided. However the bearings display excellent wear resistance at low loads.



When to use it?

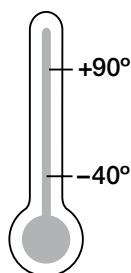
- When PTFE and silicone are not allowed in your application
- For applications with low speed
- If you need dirt-resistant bearings
- If you need maintenance-free, self-lubricating bearings



When not to use it?

- When highest wear resistance is required
▶ iglidur® W300, page 135
- When low coefficients of friction are required
▶ iglidur® J, page 93
▶ iglidur® L250, page 251
- If a cost-effective option is requested
▶ iglidur® M250, page 111
- When low moisture absorption is required
▶ iglidur® R, page 540

Temperature



Product range

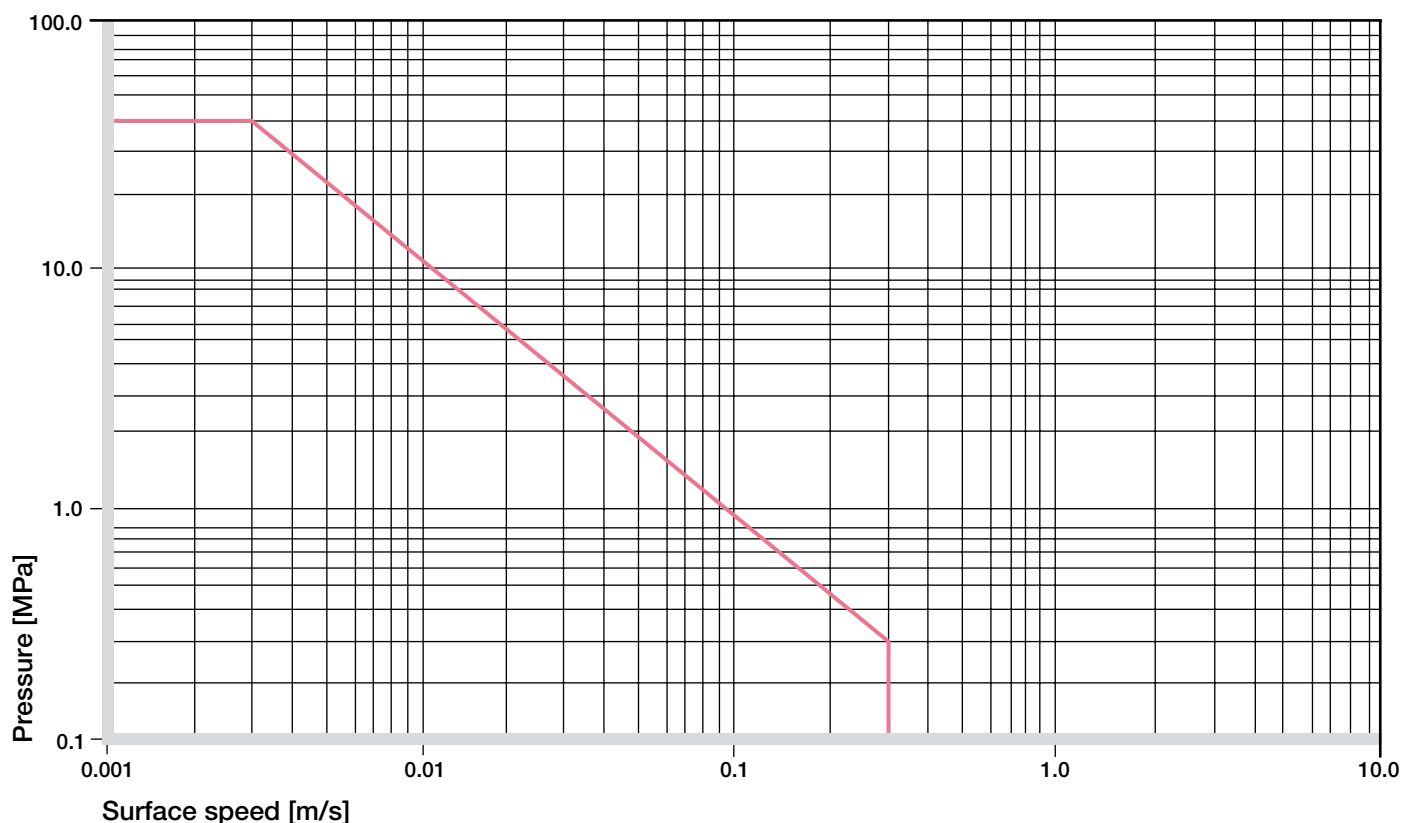
on request

Material properties table

| General properties | Unit | iglidur® C | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm ³ | 1.1 | |
| Colour | | off white | |
| Max. moisture absorption at +23 °C/50 % r.h. | % weight | 1.0 | DIN 53495 |
| Max. water absorption | % weight | 6.9 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.17–0.25 | |
| pv value, max. (dry) | MPa · m/s | 0.10 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 1,900 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 60 | DIN 53452 |
| Compressive strength | MPa | 30 | |
| Max. recommended surface pressure (+20 °C) | MPa | 40 | |
| Shore D hardness | | 72 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +90 | |
| Max. short term application temperature | °C | +130 | |
| Maximum short term ambient temperature ¹⁾ | °C | +150 | |
| Min. application temperature | °C | –40 | |
| Thermal conductivity | W/m · K | 0.24 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 15 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹⁰ | DIN IEC 93 |
| Surface resistance | Ω | > 10 ⁹ | DIN 53482 |

¹⁾ Without additional load; no sliding movement; relaxation possible

Table 01: Material properties table



Though iglidur® C is a very soft material, it also has a maximum surface pressure limit of 40 MPa. The high elasticity makes the bearing suitable for vibrations and edge loads.

Mechanical Properties

With increasing temperatures, the compressive strength of iglidur® C plain bearings decreases. The Diagram 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

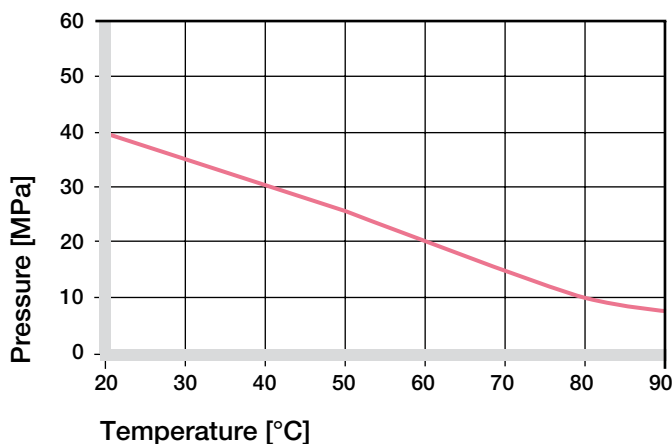


Diagram 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

► Surface Pressure, [page 47](#)

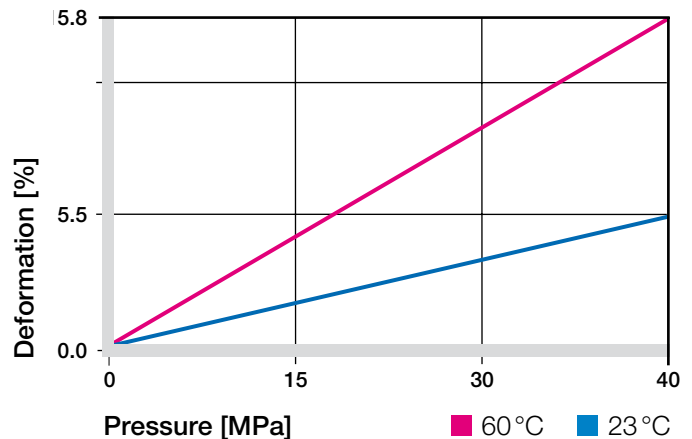


Diagram 03: Deformation under pressure and temperature

Permissible Surface Speeds

Though important solid lubricants have been deliberately avoided in the development of the iglidur® C, the bearings are very wear resistant and for this reason suitable also for continuous movements at medium surface speeds. Though speeds up to 1.5 m/s can be achieved short term, for general long term applications the speeds should be below 05 m/s.

► Surface Speed, [page 49](#)

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 1 | 0.7 | 2 |
| Short term | 1.5 | 1.1 | 3 |

Table 02: Maximum running speed

Temperatures

The short-term maximum application temperature is +130 °C. However no real loads are possible at this temperature. Therefore it would be reasonable to limit the operating temperature to about +120 °C.

Note that the bearing should be mechanically secured in the housing from temperatures of +40 °C to prevent the bearing coming out of the housing.

► Application Temperatures, [page 50](#)

| iglidur® C | Application temperature |
|--------------------------------|-------------------------|
| Minimum | −40 °C |
| Max. long term | +90 °C |
| Max. short term | +130 °C |
| Add. securing is required from | +40 °C |

Table 03: Temperature limits

Friction and Wear

The coefficient of friction of the iglidur® C bearing is dependent to a large degree on the shaft surface finish. Even though PTFE and silicone have been designed out of this material, iglidur® C still gives very low coefficients of friction. Similarly the wear of the bearing is very good in applications with rotating or pivoting motions with low loads.

► Coefficients of Friction and Surfaces, **page 52**

► Wear Resistance, **page 53**

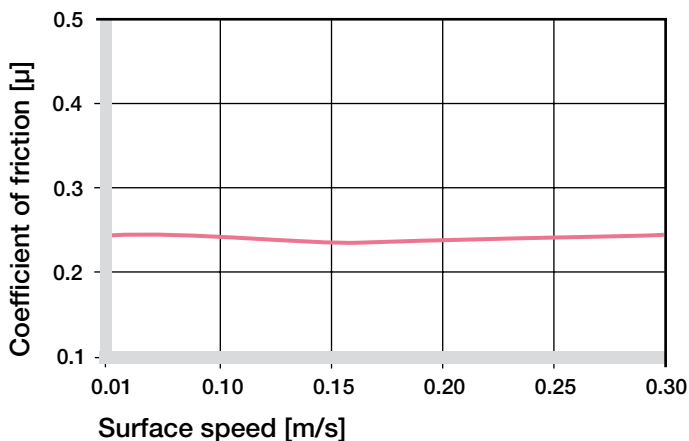


Diagram 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

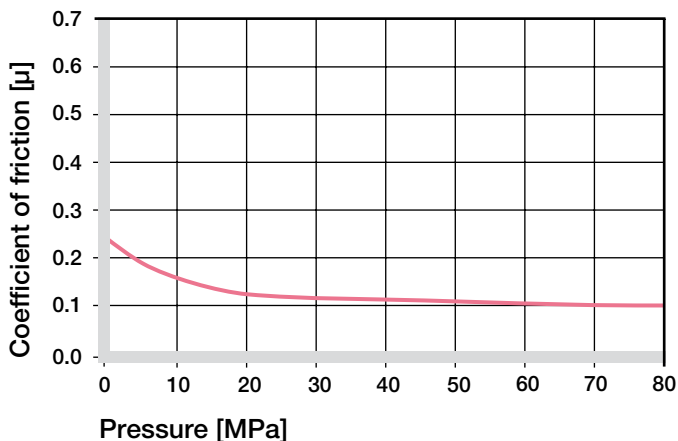


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

Diagram 07 clearly shows how critical the choice of shaft material is. Though all results of this rotation test under the load of 0.75 MPa can be read as excellent, the difference is significant.

Diagram 08 shows eventually that this difference rises still further with increasing pressures.

► Shaft Materials, **page 55**

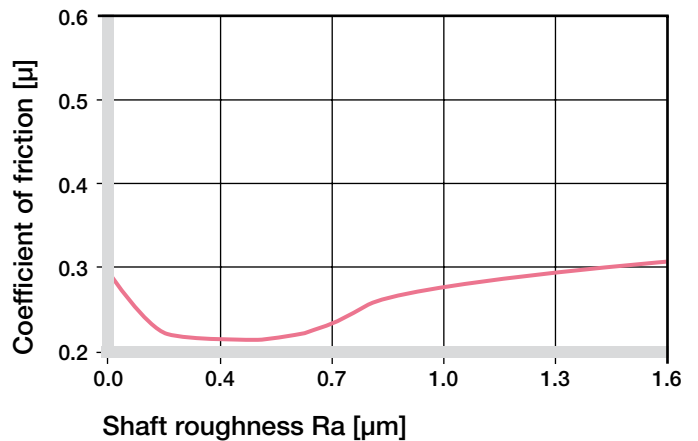


Diagram 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

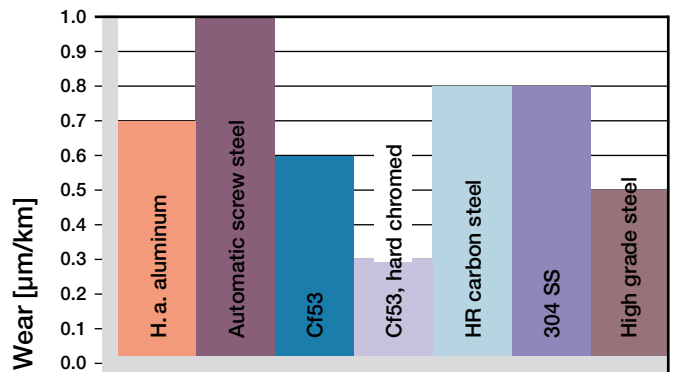


Diagram 07: Wear, rotating with different shaft materials, pressure, $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

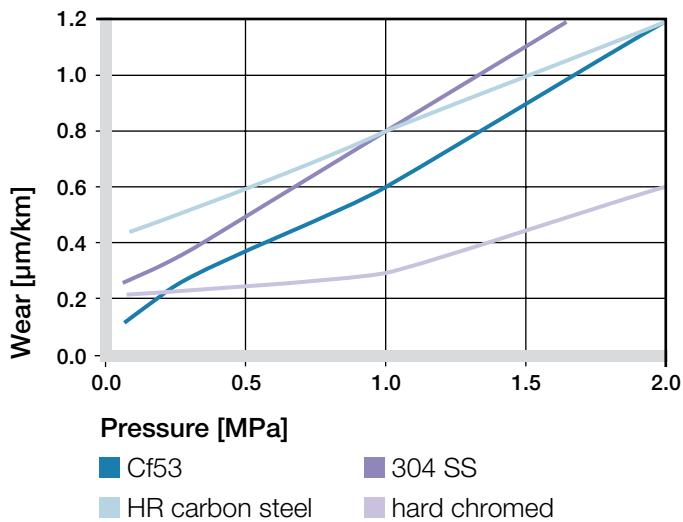


Diagram 08: Wear with different shaft materials in rotational operation, as a function of the pressure

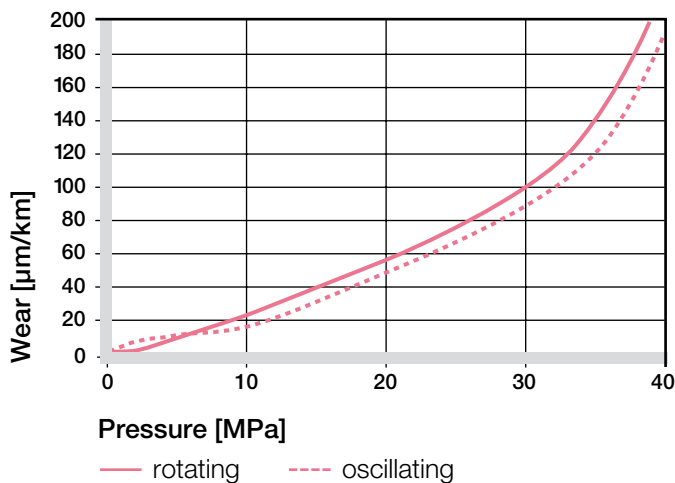


Diagram 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| iglidur® C | Dry | Greases | Oil | Water |
|----------------|-----------|---------|------|-------|
| C. o. f. μ | 0.17–0.25 | 0.09 | 0.04 | 0.04 |

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

Additional Properties

Chemical Resistance

iglidur® C plain bearings are resistant to detergents, greases, oils, diluted alkalines and weak acids.

► Chemical Table, **page 1118**

| 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 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® C are radiation resistant up to a radiation intensity of $2 \cdot 10^4$ Gy. Higher radiation affects the material and can result in a loss of important mechanical characteristics.

UV Resistance

iglidur® C plain bearings are not resistant to UV radiation. For applications in outdoor areas, or in cases of other intensive radiation, adequate protection against direct radiation must be provided.

Vacuum

When used in a vacuum environment, the iglidur® C plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® C plain bearings are electrically insulating.

| | |
|--------------------|-----------------------------|
| Volume resistance | $> 10^{10} \Omega\text{cm}$ |
| Surface resistance | $> 10^9 \Omega$ |

Moisture Absorption

The moisture absorption of iglidur® C plain bearings is approx. 7 % when saturated in water, and this needs to be taken into account if this material is to be used in wet environments.

Maximum moisture absorption

At +23 °C/50 % r.h. 1.0 % weight

Max. water absorption 6.9 % weight

Table 06: Moisture absorption

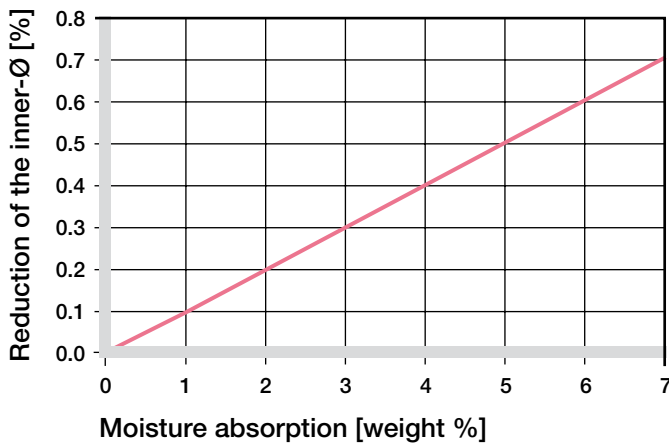


Diagram 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® C 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, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing Methods, [page 59](#)

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® C D11 [mm] | Housing H7 [mm] |
|---------------------|------------------|------------------------|--------------------|
| up to 3 | 0–0.025 | +0.020 +0.080 | 0 +0.010 |
| > 3 to 6 | 0–0.030 | +0.030 +0.105 | 0 +0.012 |
| > 6 to 10 | 0–0.036 | +0.040 +0.130 | 0 +0.015 |
| > 10 to 18 | 0–0.043 | +0.050 +0.160 | 0 +0.018 |
| > 18 to 30 | 0–0.052 | +0.065 +0.195 | 0 +0.021 |
| > 30 to 50 | 0–0.062 | +0.080 +0.240 | 0 +0.025 |
| > 50 to 80 | 0–0.074 | +0.100 +0.290 | 0 +0.030 |

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

Product Range

iglidur® C plain bearings are produced to special order.

