


Special applications


This group brings together the iglidur® materials for very special cases. Those who have not yet found a suitable bearing, will find it here.

Electrical conductivity, free from PTFE and silicone or fast rotation under water: One iglidur® material for all requirements.

- Lubrication and maintenance free
- Low weight
- Good price/performance ratio
- Predictable service life

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

 **max. +200 °C**
min. -50 °C

 **9 materials**
Ø 2–70 mm



 **Available from stock**
Detailed information about delivery time online.

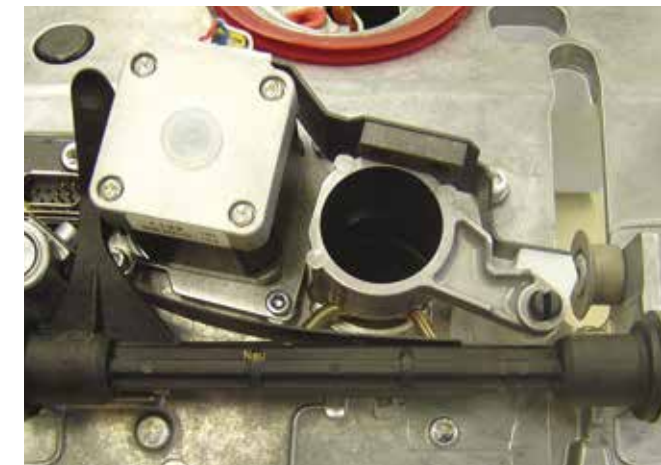
Special applications



The low demand for space and freedom from corrosion of iglidur® plain bearings qualified them for use in this model.



The requirements profile for plain bearings is extremely demanding. They must be resistant to weather for decades, be able to deal with dirt and moisture, and must be easy to assemble.



By modifying the plastic/metal plain bearing partners to the plain bearing partners plastic/plastic, a conversion of the integral design was achievable.











Hand prosthesis: All the axes involved in the movement are supported by plastic bearings.











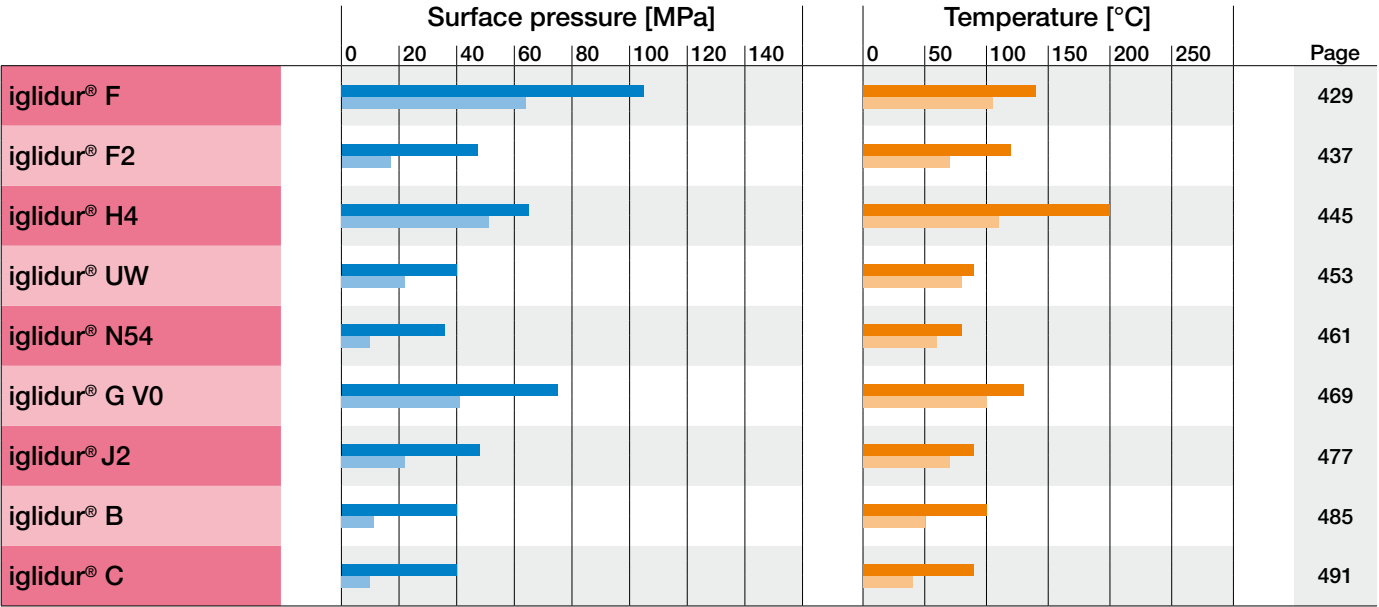
The bearings do not have to be lubricated and they dampen the vibrations in the bearing housings without noticeably wearing down.



igus® plain bearings guarantee smooth valve movement and increase system productivity thanks to reliability and load capacity.

| |  |  |  |  |  |  |  |  |
|---------------|---|---|---|---|---|---|---|---|
| | Standard catalogue range | Bar stock | speedigus® material | Long life in dry operation | For high loads | Dirt resistant | Low coefficient of friction | Chemical resistant |
| iglidur® F | ● | | | | ● | | | |
| iglidur® F2 | ● | ● | | ● | | ● | | |
| iglidur® H4 | ● | | | ● | ● | | ● | ● |
| iglidur® UW | ● | | | | | | | |
| iglidur® N54 | ● | | | | | | | |
| iglidur® G V0 | ● | | | ● | | ● | | |
| iglidur® J2 | ● | ● | | | | | | |
| iglidur® B | | | | | | | | |
| iglidur® C | | | | | | | | |

| |  |  |  |  |  |  |  |  |
|---------------|---|---|---|---|---|---|---|---|
| | Low water absorption | For under water use | Edge pressure | Vibrations dampening | Food suitable | Temperatures up to +90 °C | Temperatures up to +150 °C | Economic |
| iglidur® F | | | | | | ● | | |
| iglidur® F2 | ● | | ● | | | ● | | |
| iglidur® H4 | ● | ● | ● | | | ● | ● | ● |
| iglidur® UW | ● | ● | | | | ● | | ● |
| iglidur® N54 | | | | | | | | |
| iglidur® G V0 | | | | | | ● | | ● |
| iglidur® J2 | ● | | ● | | | ● | | ● |
| iglidur® B | | | ● | ● | | ● | | |
| iglidur® C | | | ● | | | ● | | |

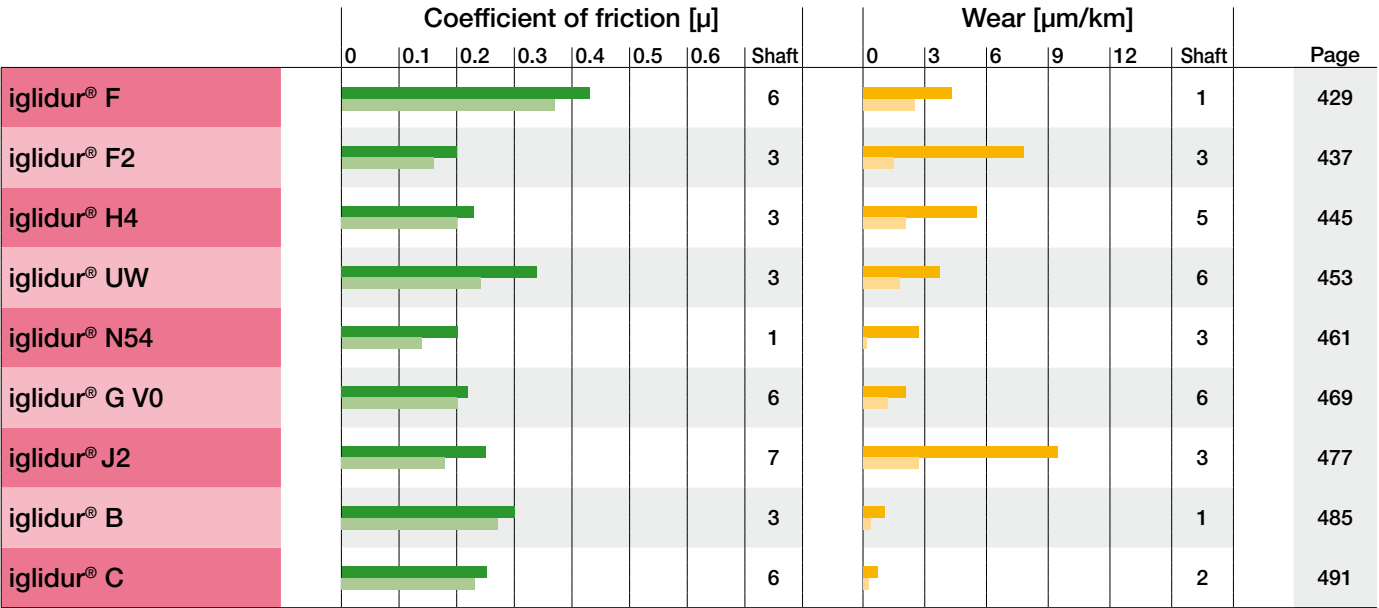


Maximum permissible surface pressure of iglidur® bearings at

- +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



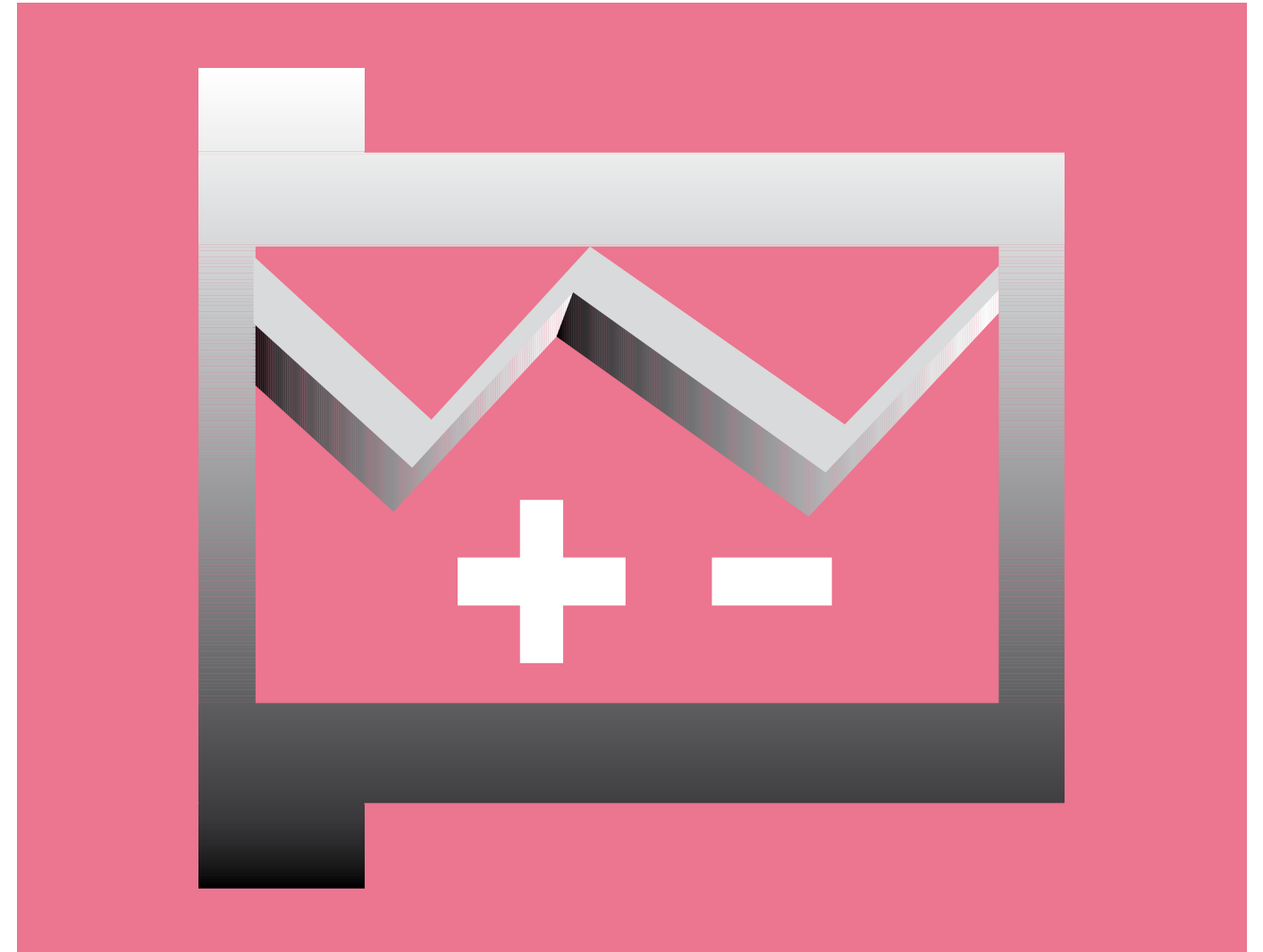
Coefficients of friction of iglidur® bearings against steel rotating, p = 1 MPa, v = 0.3 m/s

- Average of all the seven sliding combinations tested
- Coefficient of friction of best combination

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

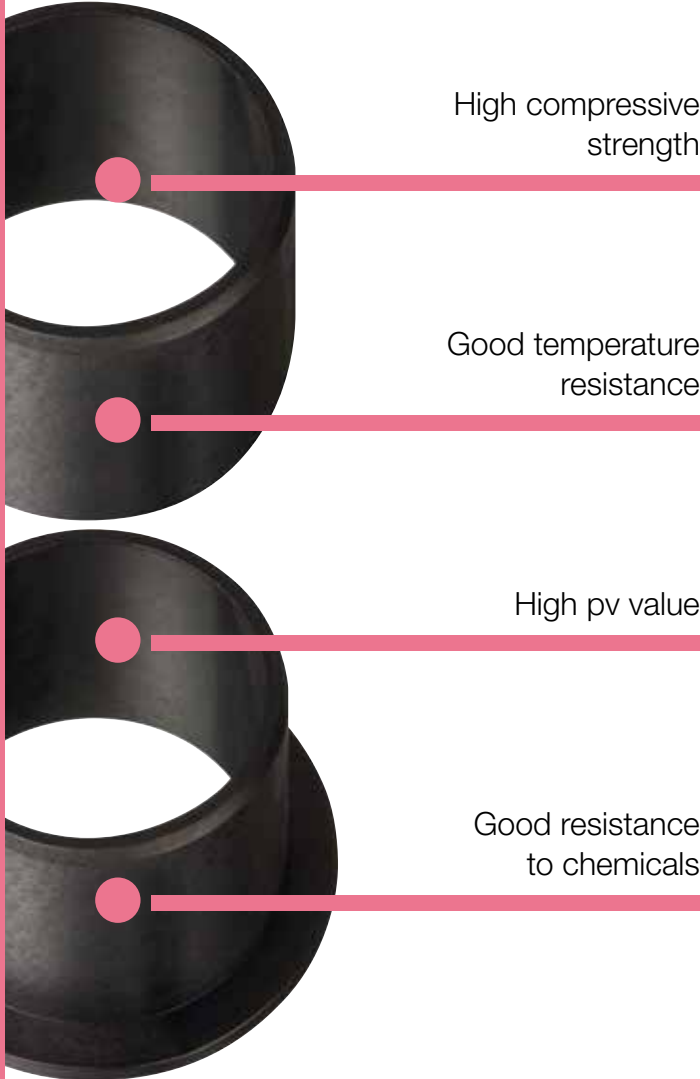
- Average of all the seven sliding combinations tested
- Wear of best combination

| Shaft material: | | | |
|------------------------|------------------------|----------|---------|
| 1 = Cf53 | 3 = Alu. hc | 5 = St37 | 7 = X90 |
| 2 = Cf53, hard chromed | 4 = Free-cutting steel | 6 = V2A | |



Electrically conductive – iglidur® F

- Electrically conductive
- High compressive strength
- Good temperature resistance
- High pv value
- Good chemical resistance
- Lubrication and maintenance free
- Standard range from stock



Outstanding rigidity and hardness as well as high conductivity: iglidur® F bearings can only be used in dry operations to a limited extent, but offer their fully mechanical benefits when lubricated with oil and grease.



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 highest wear resistance is required
 - ▶ iglidur® W300, page 121
- When very low coefficients of friction when running dry are needed
 - ▶ iglidur® J, page 99
 - For underwater applications
 - ▶ iglidur® H370, page 299
- When you need an universal bearing
 - ▶ iglidur® G, page 83



Available from stock

Detailed information about delivery time online.



max. +140 °C
min. -40 °C



Block pricing online

No minimum order value. From batch size 1



Ø 2–70 mm
more dimensions on request



Typical application areas

- Textile technology
- Automotive etc.

Material properties table

| General properties | Unit | iglidur® F | Testing method |
|--|------------------------------------|-------------------|----------------|
| Density | g/cm³ | 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 ⁵⁾ | | | |
| Specific volume resistance | Ωcm | < 10 ³ | DIN IEC 93 |
| Surface resistance | Ω | < 10 ² | DIN 53482 |

⁵⁾ The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact components.

Table 01: Material properties table

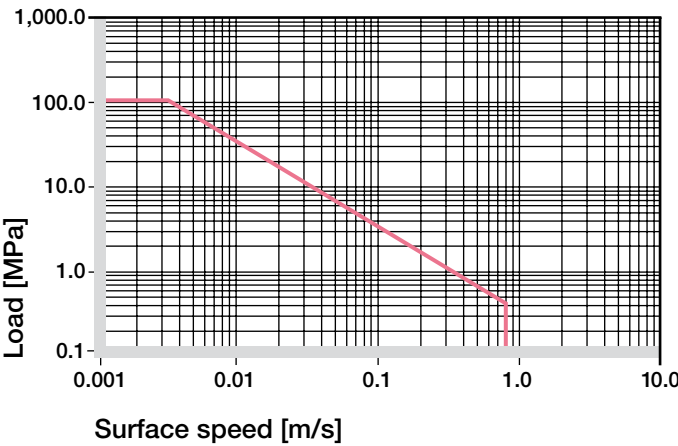


Diagram 01: Permissible pv values for iglidur® F bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

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

▶ Diagram, www.igus.eu/f-moisture

Vacuum

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

Radiation resistance

Plain bearings made from iglidur® F are resistant to radiation up to an intensity of 3 · 10² Gy.

UV resistance

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

| Medium | Resistance |
|---------------------------------|------------|
| Alcohols | + 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 02: Chemical resistance

▶ Chemical table, page 1226

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.

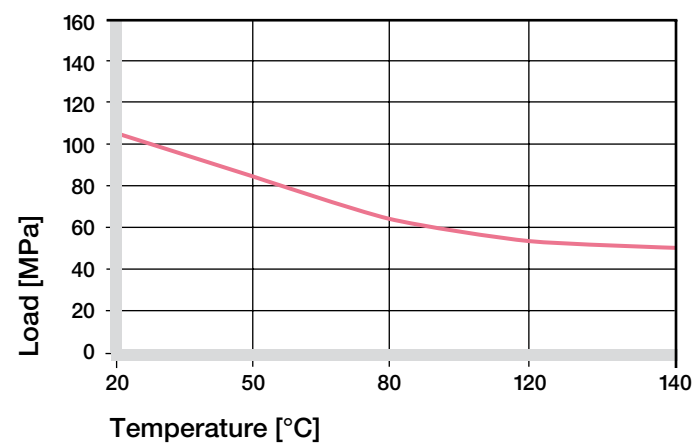


Diagram 02: Recommended maximum surface pressure of as a function of temperature (105 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® F at radial loads. At the recommended maximum surface pressure of 105 MPa the deformation at room temperature is less than 3.0 %.

A plastic deformation can be negligible up to this pressure load. However, it is also dependent on the service time.

► Surface pressure, [page 63](#)

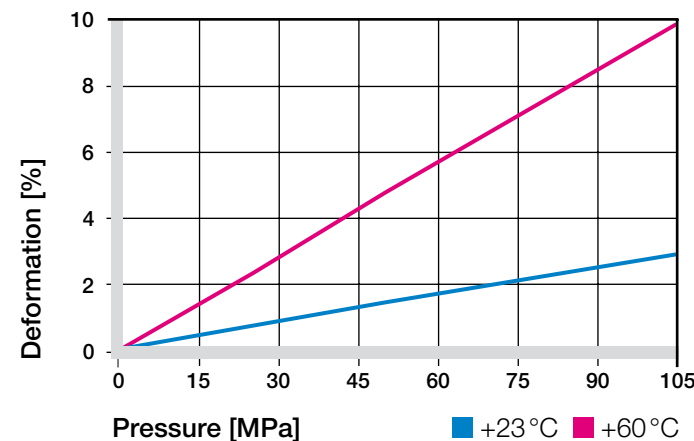


Diagram 03: Deformation under pressure and temperature

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 03 are attained only at minimum pressure loads. In practice these limit values are not often attained due to interactions.

► Surface speed, [page 65](#)

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

Table 03: Maximum surface speeds

Temperatures

The ambient temperatures strongly influence the features of bearings. With increasing temperatures, the compressive strength of iglidur® F plain bearings decreases. The wear also increases. At temperatures over +105 °C an additional securing is required.

► Application temperatures, [page 66](#)

► Additional securing, [page 67](#)

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 68](#)

► Wear resistance, [page 69](#)

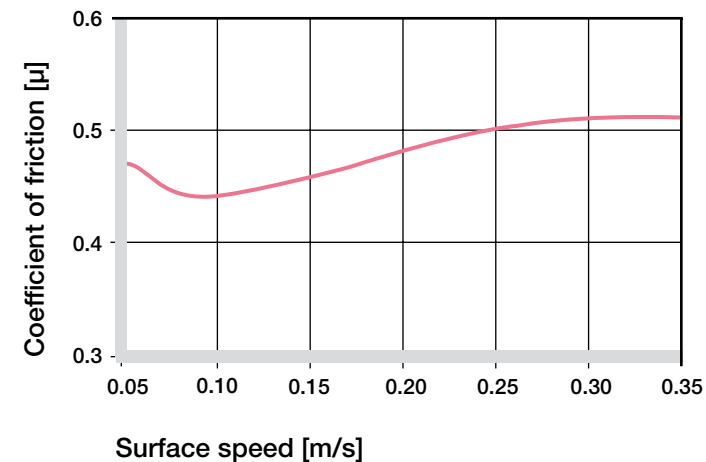


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

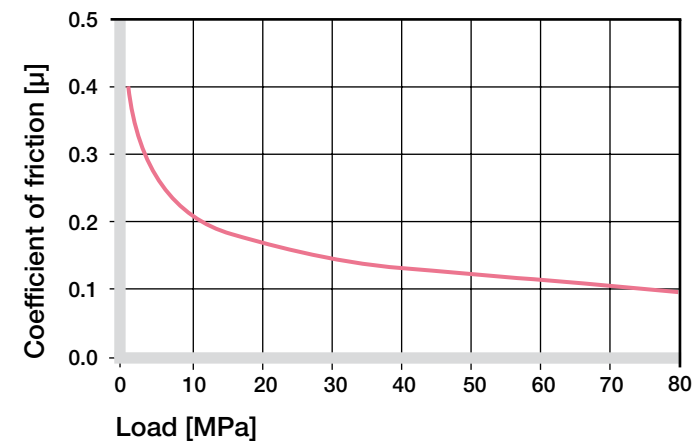


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

Diagrams 06 and 07 display a summary of the results of tests with different shaft materials conducted with bearings made from iglidur® F. In the lowest load range, the hard-chromed shafts prove to be the most suitable in rotating applications with iglidur® F bearings.

► Shaft materials, [page 71](#)

| 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)

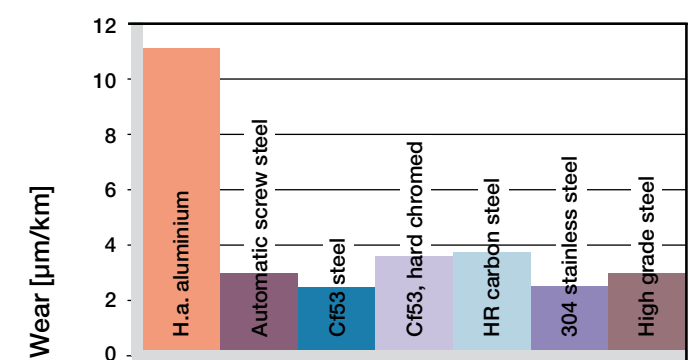


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

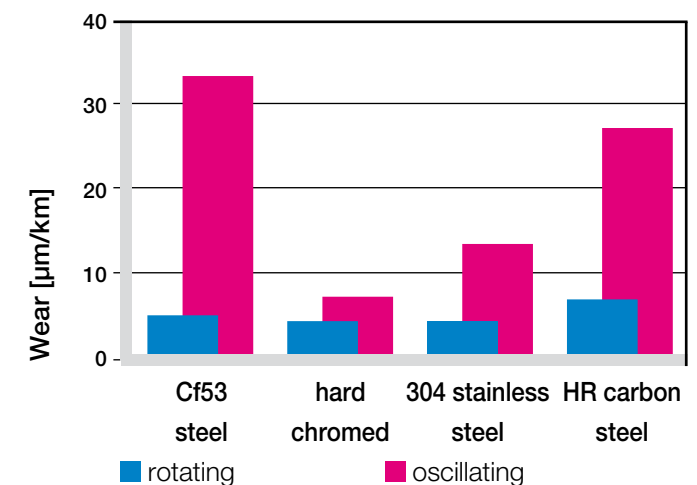


Diagram 07: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

Installation tolerances

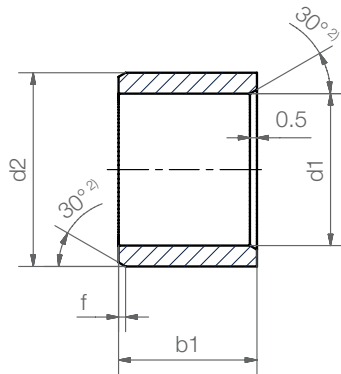
iglidur® F bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the D11 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing methods, [page 75](#)

| 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® F | Product range
Sleeve bearing (Form S)



²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Dimensions [mm]

| d1 | d1- Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|--------------------------------|------|-----------|-------------|
| 2.0 | +0.020 | 3.5 | 3.0 | FSM-0203-03 |
| 3.0 | +0.080 | 4.5 | 3.0 | FSM-0304-03 |
| 4.0 | | 5.5 | 4.0 | FSM-0405-04 |
| 5.0 | | 7.0 | 5.0 | FSM-0507-05 |
| 5.0 | +0.030 | 7.0 | 8.0 | FSM-0507-08 |
| 6.0 | +0.105 | 8.0 | 6.0 | FSM-0608-06 |
| 6.0 | | 8.0 | 8.0 | FSM-0608-08 |
| 6.0 | | 8.0 | 10.0 | FSM-0608-10 |
| 6.0 | | 8.0 | 13.8 | FSM-0608-13 |
| 7.0 | | 9.0 | 10.0 | FSM-0709-10 |
| 7.0 | | 9.0 | 12.0 | FSM-0709-12 |
| 8.0 | | 10.0 | 8.0 | FSM-0810-08 |
| 8.0 | +0.040 | 10.0 | 10.0 | FSM-0810-10 |
| 8.0 | +0.130 | 10.0 | 15.0 | FSM-0810-15 |
| 10.0 | | 12.0 | 6.0 | FSM-1012-06 |
| 10.0 | | 12.0 | 9.0 | FSM-1012-09 |
| 10.0 | | 12.0 | 10.0 | FSM-1012-10 |
| 12.0 | | 14.0 | 10.0 | FSM-1214-10 |
| 12.0 | | 14.0 | 15.0 | FSM-1214-15 |
| 13.0 | +0.050 | 15.0 | 20.0 | FSM-1315-20 |
| 14.0 | +0.160 | 16.0 | 15.0 | FSM-1416-15 |
| 15.0 | | 17.0 | 15.0 | FSM-1517-15 |
| 15.0 | | 17.0 | 20.0 | FSM-1517-20 |
| 16.0 | | 18.0 | 15.0 | FSM-1618-15 |

³⁾ after pressfit. Testing methods ► Page 75



Order key

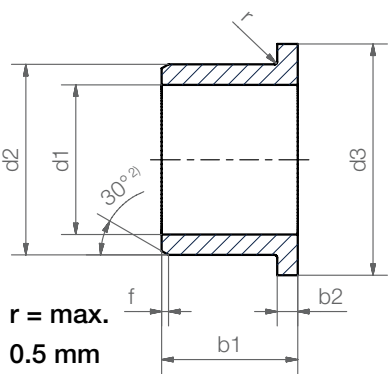
| Type | Dimensions |
|-------------------|-----------------|
| F | S |
| M | -0203-03 |
| iglidur® material | Form S |
| | Metric |
| | Inner-Ø d1 [mm] |
| | Outer-Ø d2 [mm] |
| | Length b1 [mm] |



Dimensions according to ISO 3547-1
and special dimensions

| d1 | d1- Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|--------------------------------|------|-----------|-------------|
| 18.0 | | 20.0 | 12.0 | FSM-1820-12 |
| 18.0 | +0.050 | 20.0 | 15.0 | FSM-1820-15 |
| 18.0 | +0.160 | 20.0 | 20.0 | FSM-1820-20 |
| 20.0 | | 22.0 | 14.5 | FSM-2022-14 |
| 20.0 | | 22.0 | 20.0 | FSM-2022-20 |
| 20.0 | | 23.0 | 15.0 | FSM-2023-15 |
| 20.0 | | 23.0 | 20.0 | FSM-2023-20 |
| 22.0 | +0.065 | 25.0 | 15.0 | FSM-2225-15 |
| 25.0 | +0.195 | 28.0 | 20.0 | FSM-2528-20 |
| 28.0 | | 32.0 | 20.0 | FSM-2832-20 |
| 28.0 | | 32.0 | 30.0 | FSM-2832-30 |
| 30.0 | | 34.0 | 20.0 | FSM-3034-20 |
| 30.0 | | 34.0 | 30.0 | FSM-3034-30 |
| 30.0 | | 34.0 | 40.0 | FSM-3034-40 |
| 32.0 | | 36.0 | 30.0 | FSM-3236-30 |
| 35.0 | | 39.0 | 30.0 | FSM-3539-30 |
| 35.0 | | 39.0 | 40.0 | FSM-3539-40 |
| 40.0 | +0.080 | 44.0 | 30.0 | FSM-4044-30 |
| 40.0 | +0.240 | 44.0 | 50.0 | FSM-4044-50 |
| 45.0 | | 50.0 | 50.0 | FSM-4550-50 |
| 50.0 | | 55.0 | 40.0 | FSM-5055-40 |
| 55.0 | +0.100 | 60.0 | 50.0 | FSM-5560-50 |
| 60.0 | +0.290 | 65.0 | 60.0 | FSM-6065-60 |

iglidur® F | Product range
Flange bearing (Form F)



²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Dimensions [mm]

| d1 | d1- Tolerance ³⁾ | d2 | d3 | b1 h13 | b2 -0.14 | Part No. |
|------|--------------------------------|------|------|-----------|-------------|-------------|
| 4.0 | | 5.5 | 9.5 | 4.0 | 0.75 | FFM-0405-04 |
| 4.0 | +0.030 | 5.5 | 9.5 | 6.0 | 0.75 | FFM-0405-06 |
| 5.0 | +0.105 | 7.0 | 11.0 | 5.0 | 1.0 | FFM-0507-05 |
| 6.0 | | 8.0 | 12.0 | 6.0 | 1.0 | FFM-0608-06 |
| 6.0 | | 8.0 | 12.0 | 8.0 | 1.0 | FFM-0608-08 |
| 8.0 | | 10.0 | 15.0 | 6.0 | 1.0 | FFM-0810-06 |
| 8.0 | | 10.0 | 15.0 | 9.0 | 1.0 | FFM-0810-09 |
| 10.0 | +0.040 | 12.0 | 18.0 | 6.0 | 1.0 | FFM-1012-06 |
| 10.0 | +0.130 | 12.0 | 18.0 | 8.0 | 1.0 | FFM-1012-08 |
| 10.0 | | 12.0 | 18.0 | 9.0 | 1.0 | FFM-1012-09 |
| 10.0 | | 12.0 | 18.0 | 15.0 | 1.0 | FFM-1012-15 |
| 10.0 | | 12.0 | 18.0 | 18.0 | 1.0 | FFM-1012-18 |
| 12.0 | | 14.0 | 20.0 | 9.0 | 1.0 | FFM-1214-09 |
| 12.0 | | 14.0 | 20.0 | 12.0 | 1.0 | FFM-1214-12 |
| 14.0 | +0.050 | 16.0 | 22.0 | 12.0 | 1.0 | FFM-1416-12 |
| 14.0 | +0.160 | 16.0 | 22.0 | 17.0 | 1.0 | FFM-1416-17 |
| 15.0 | | 17.0 | 23.0 | 12.0 | 1.0 | FFM-1517-12 |
| 15.0 | | 17.0 | 23.0 | 17.0 | 1.0 | FFM-1517-17 |

³⁾ after pressfit. Testing methods ► Page 75



Don't find your size?

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



Even more dimensions from stock

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

► www.igus.eu/iglidur-specialbearings



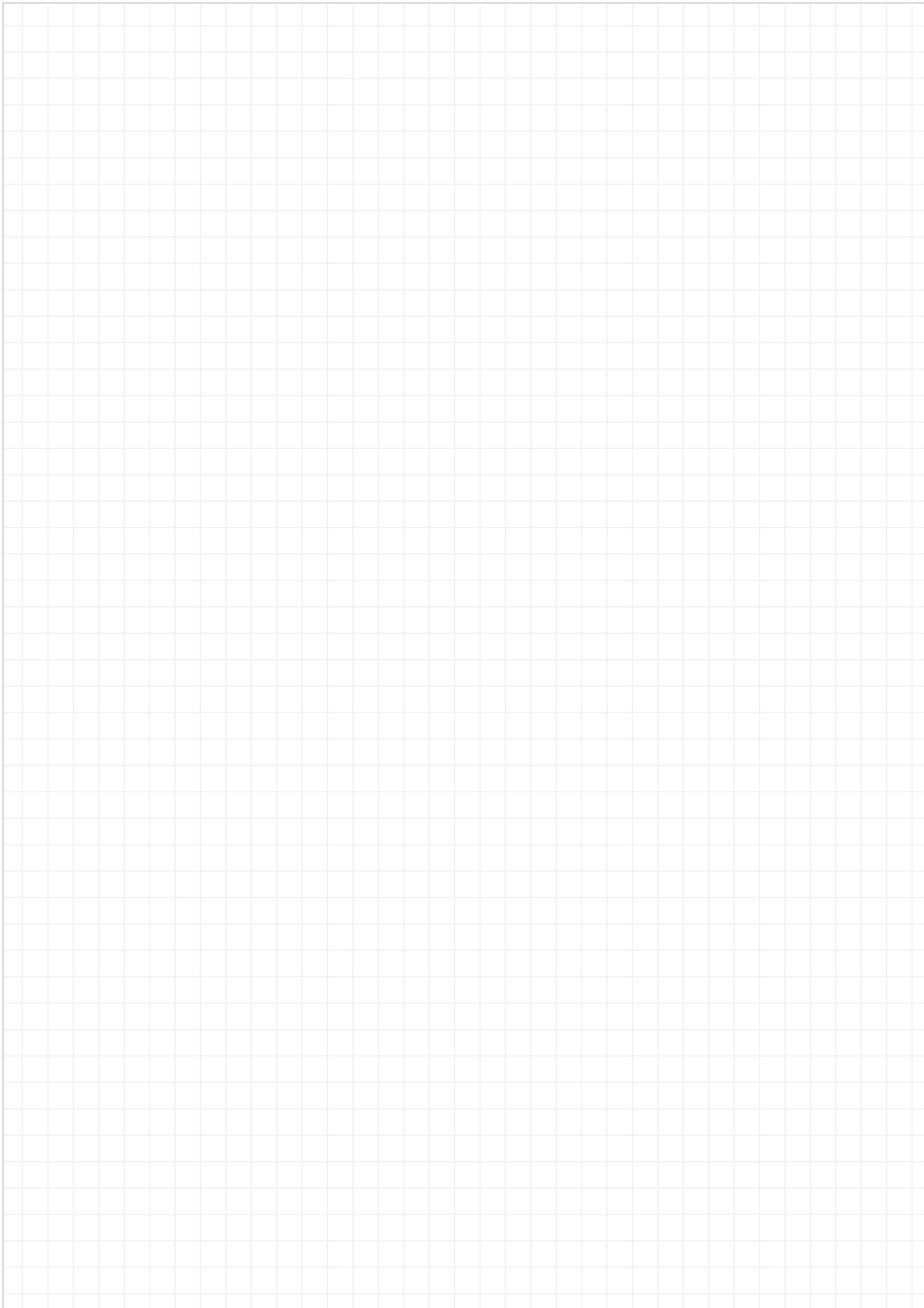
Order key

| Type | Dimensions |
|-------------------|-----------------|
| F | F |
| M | -0405-04 |
| iglidur® material | Form F |
| | Metric |
| | Inner-Ø d1 [mm] |
| | Outer-Ø d2 [mm] |
| | Length b1 [mm] |



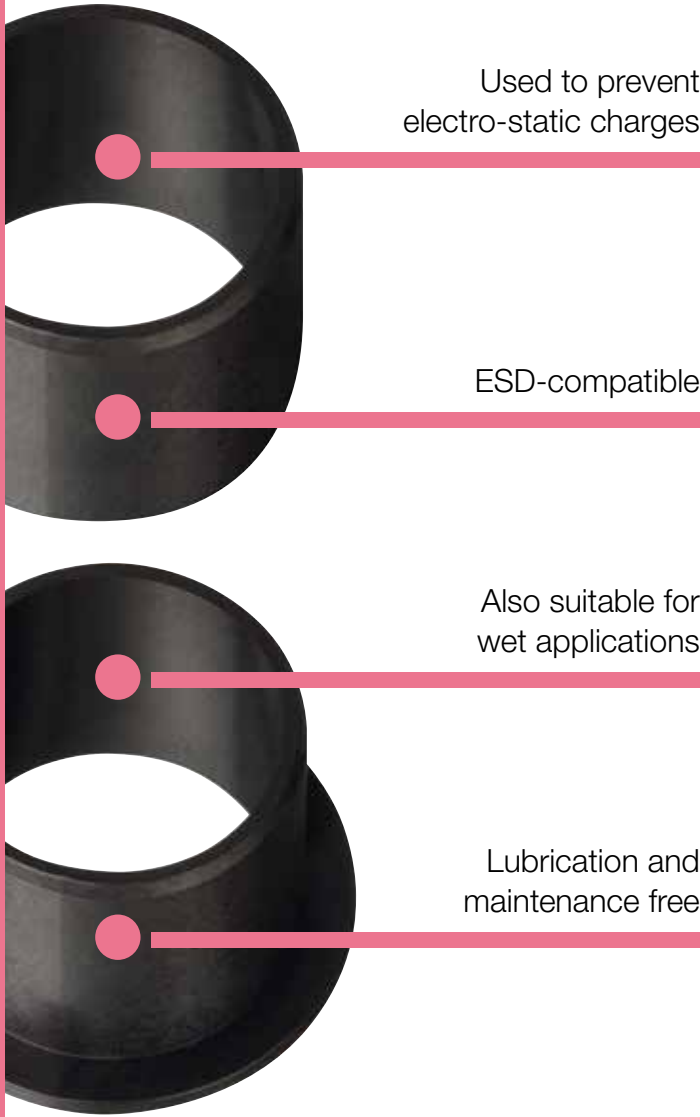
Dimensions according to ISO 3547-1
and special dimensions

| d1 | d1- Tolerance ³⁾ | d2 | d3 | b1 h13 | b2 -0.14 | Part No. |
|------|--------------------------------|------|------|-----------|-------------|-------------|
| 16.0 | | 18.0 | 24.0 | 17.0 | 1.0 | FFM-1618-17 |
| 18.0 | +0.050 | 20.0 | 26.0 | 12.0 | 1.0 | FFM-1820-12 |
| 18.0 | +0.160 | 20.0 | 26.0 | 17.0 | 1.0 | FFM-1820-17 |
| 20.0 | +0.065 | 23.0 | 30.0 | 21.0 | 1.5 | FFM-2023-21 |
| 25.0 | +0.195 | 28.0 | 35.0 | 21.0 | 1.5 | FFM-2528-21 |
| 30.0 | | 34.0 | 42.0 | 26.0 | 2.0 | FFM-3034-26 |
| 32.0 | | 36.0 | 45.0 | 26.0 | 2.0 | FFM-3236-26 |
| 35.0 | | 39.0 | 47.0 | 6.0 | 2.0 | FFM-3539-06 |
| 35.0 | | 39.0 | 47.0 | 16.0 | 2.0 | FFM-3539-16 |
| 35.0 | +0.080 | 39.0 | 47.0 | 26.0 | 2.0 | FFM-3539-26 |
| 40.0 | +0.240 | 44.0 | 52.0 | 30.0 | 2.0 | FFM-4044-30 |
| 40.0 | | 44.0 | 52.0 | 40.0 | 2.0 | FFM-4044-40 |
| 45.0 | | 50.0 | 58.0 | 50.0 | 2.0 | FFM-4550-50 |
| 50.0 | | 55.0 | 63.0 | 10.0 | 2.0 | FFM-5055-10 |
| 50.0 | | 55.0 | 63.0 | 40.0 | 2.0 | FFM-5055-40 |
| 60.0 | +0.100 | 65.0 | 73.0 | 40.0 | 2.0 | FFM-6065-40 |
| 70.0 | +0.290 | 75.0 | 83.0 | 40.0 | 2.0 | FFM-7075-40 |



ESD-compatible – iglidur® F2

- Used to prevent electro-static charges
- Also suitable for wet applications
- Lubrication and maintenance free
- Standard range from stock



iglidur® F2 helps to prevent electrostatic charging. Good resistance to media and temperature, suitable even in wet conditions due to low moisture absorption and good universal wear values pave the way for a wide range of applications.



When to use it?

- When the bearing should be electrically discharging
- When a universal bearing is required for a broad application range



When not to use it?

- When a universal bearing without static discharge capacity is required
 - ▶ iglidur® G, page 83
 - ▶ iglidur® P, page 149
- For underwater application
 - ▶ iglidur® H370, page 299
- When extremely high wear resistance is required
 - ▶ iglidur® J, page 99
 - ▶ iglidur® W300, page 121



Available from stock

Detailed information about delivery time online.



max. +120 °C
min. -40 °C



Block pricing online

No minimum order value. From batch size 1



Ø 6–20 mm
more dimensions on request



Typical application areas

- Mechanical engineering
- Jig construction
- Material handling, etc.

Material properties table

| General properties | Unit | iglidur® F2 | Testing method |
|--|------------------------------------|-------------------|----------------|
| Density | g/cm³ | 1.52 | |
| Colour | | black | |
| Max. moisture absorption at +23 °C/50 % r.h. | % weight | 0.2 | DIN 53495 |
| Max. water absorption | % weight | 0.4 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.16–0.22 | |
| pv value, max. (dry) | MPa · m/s | 0.31 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 7,418 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 93 | DIN 53452 |
| Compressive strength | MPa | 61 | |
| Max. recommended surface pressure (+20 °C) | MPa | 47 | |
| Shore-D hardness | | 72 | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +120 | |
| Max. short term application temperature | °C | +165 | |
| Min. application temperature | °C | -40 | |
| Thermal conductivity | W/m · K | 0.61 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 5 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | < 10 ⁹ | DIN IEC 93 |
| Surface resistance | Ω | < 10 ⁹ | DIN 53482 |

Table 01: Material properties table

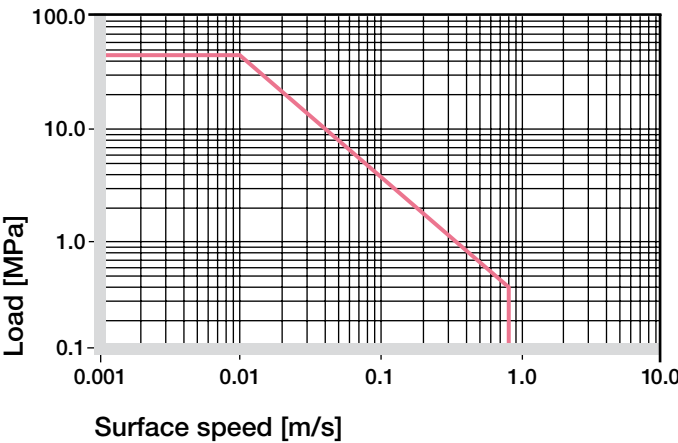


Diagram 01: Permissible pv values for iglidur® F2 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The humidity absorption of iglidur® F2 bearings amounts to about 0.2 % in standard climatic conditions. The saturation limit in water is 0.4 %.

▶ Diagram, www.igus.eu/f2-moisture

Vacuum

iglidur® F2 plain bearings outgas in a vacuum. Use in vacuum is only possible with dehumidified bearings.

Radiation resistance

Plain bearings made from iglidur® F2 are resistant to radiation up to an intensity of applications 3 · 10² Gy.

UV resistance

iglidur® F2 plain bearings are partially resistant to UV radiation.

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

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 02: Chemical resistance

▶ Chemical table, page 1226

The prevention of electrostatic charge is an important requirement in many application areas. At the same time other technical application parameters such as wear resistance, media and temperature resistance, suitability in a wet environment, etc., cannot be neglected. iglidur® F2 with its wide range of properties constitutes another universal bearing for numerous "ESD-compatible" applications.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® F2 bearings decreases. The diagram 02 shows this inverse relationship. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

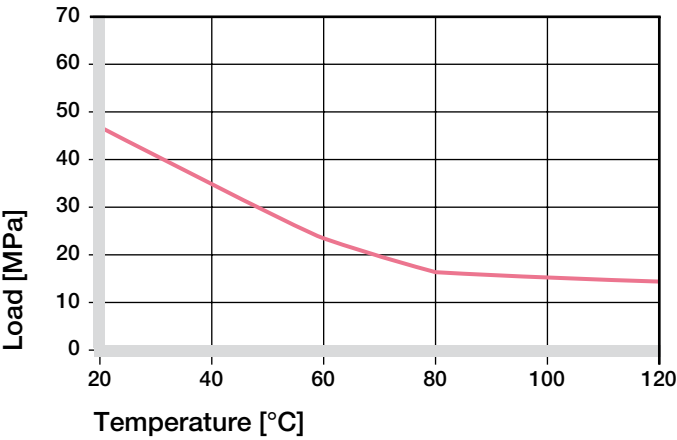


Diagram 02: Recommended maximum surface pressure of as a function of temperature (47 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® F2 at radial loads. A plastic deformation can be negligible up to this value. However, it is also dependent on the service time.

► Surface pressure, page 63

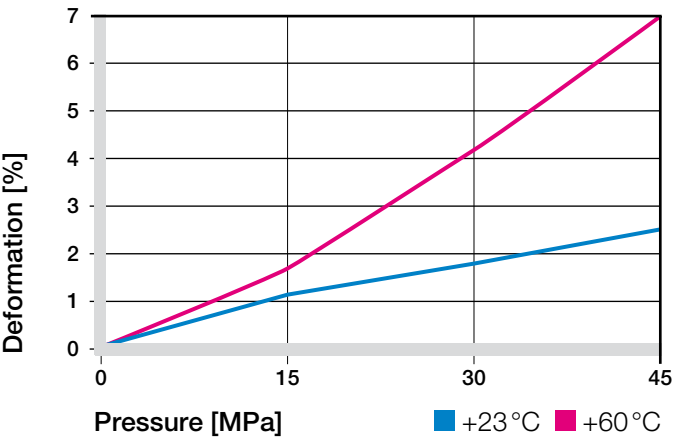


Diagram 03: Deformation under pressure and temperature

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® F2 bearing is 0.8 m/s. The maximum values specified in table 03 are not often attained in practice.

► Surface speed, page 65

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8 | 0.7 | 3 |
| Short term | 1.4 | 1.1 | 5 |

Table 03: Maximum surface speeds

Temperatures

The ambient temperatures strongly influence the features of bearings. With increasing temperatures, the compressive strength of iglidur® F2 bearings decreases. The diagram 02 shows this inverse relationship. At temperatures over +70 °C an additional securing is required.

► Application temperatures, page 66

► Additional securing, page 67

Friction and wear

Coefficient of friction and wear resistance alter with the application parameters (diagrams 04 and 05).

► Coefficients of friction and surfaces, page 68

► Wear resistance, page 69

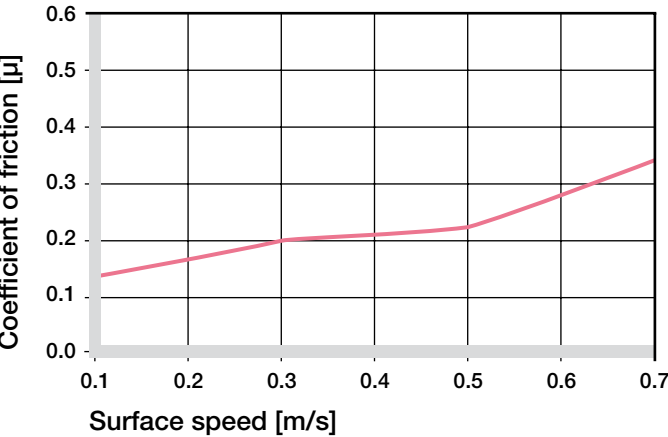


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1.0 MPa

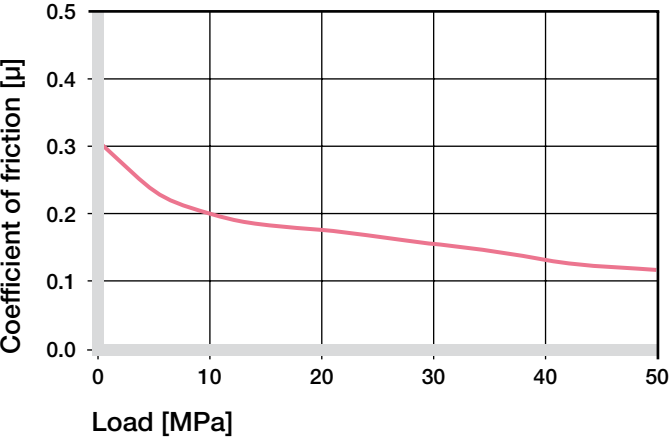


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® F2.

In the lower region of the load, cutting steel and hard anodised aluminium shafts, as well as St37 and hard-chromed steel shafts prove to be the most favourable in rotating applications with iglidur® F2 plain bearings with respect to wear.

Diagram 07 shows a significantly less wear in rotation compared to pivoting movements over the entire load range.

► Shaft materials, page 71

| iglidur® F2 | Dry | Greases | Oil | Water |
|-------------|-----------|---------|------|-------|
| C. o. f. μ | 0.16–0.22 | 0.1 | 0.05 | 0.03 |

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

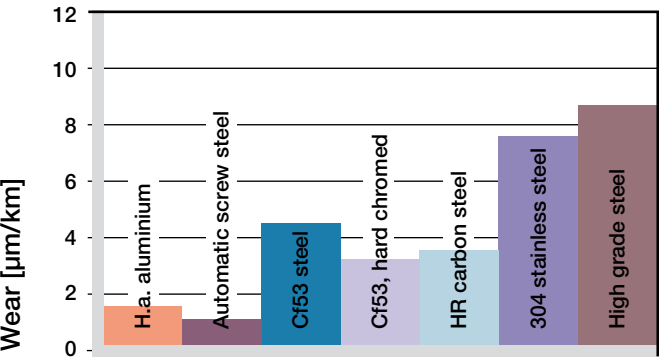


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

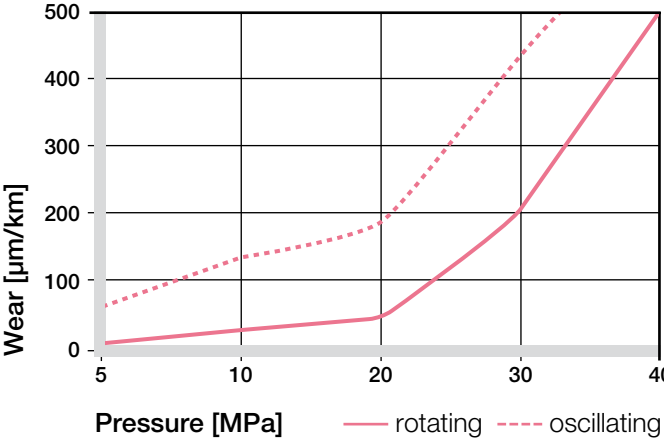


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Installation tolerances

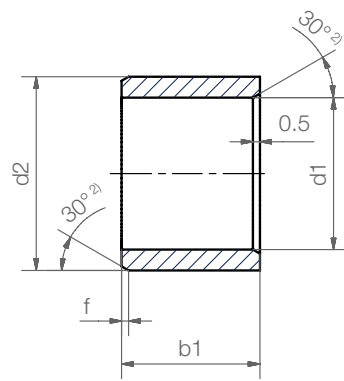
iglidur® H2 bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance.

After being assembled into a nominal size housing, the inner diameter automatically adjusts to the E10 tolerances.

► Testing methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® F2 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Order key

Type Dimensions

F2 S M-0608-06

| | | | | | |
|-------------------|--------|--------|-----------------|-----------------|----------------|
| iglidur® material | Form S | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |
|-------------------|--------|--------|-----------------|-----------------|----------------|



Dimensions according to ISO 3547-1 and special dimensions

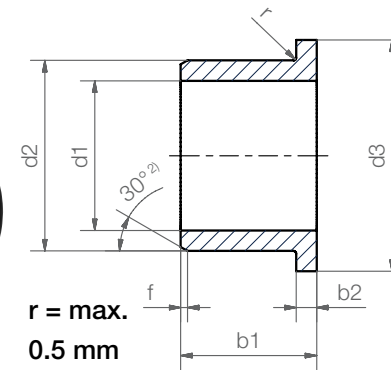
²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|----------------------------|------|-----------|---------------------|
| 5.0 | +0.020 +0.068 | 7.0 | 10.0 | F2SM-0507-10 |
| 6.0 | +0.020 +0.068 | 8.0 | 6.0 | F2SM-0608-06 |
| 7.0 | +0.025 +0.083 | 9.0 | 10.0 | F2SM-0709-10 |
| 8.0 | +0.025 +0.083 | 10.0 | 10.0 | F2SM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 10.0 | F2SM-1012-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 15.0 | F2SM-1012-15 |
| 12.0 | +0.032 +0.102 | 14.0 | 12.0 | F2SM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 15.0 | F2SM-1618-15 |
| 20.0 | +0.040 +0.124 | 23.0 | 20.0 | F2SM-2023-20 |

³⁾ after pressfit. Testing methods ► Page 75

Order key

Type Dimensions

F2 F M-0608-06

| | | | | | |
|-------------------|--------|--------|-----------------|-----------------|----------------|
| iglidur® material | Form F | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |
|-------------------|--------|--------|-----------------|-----------------|----------------|



Dimensions according to ISO 3547-1 and special dimensions

²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | d3 d13 | b1 h13 | b2 -0.14 | Part No. |
|------|----------------------------|------|-----------|-----------|-------------|---------------------|
| 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 | F2FM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 | F2FM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 | F2FM-1012-10 |
| 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 | F2FM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 | F2FM-1618-17 |
| 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 | F2FM-2023-21 |

³⁾ after pressfit. Testing methods ► Page 75

Don't find your size?

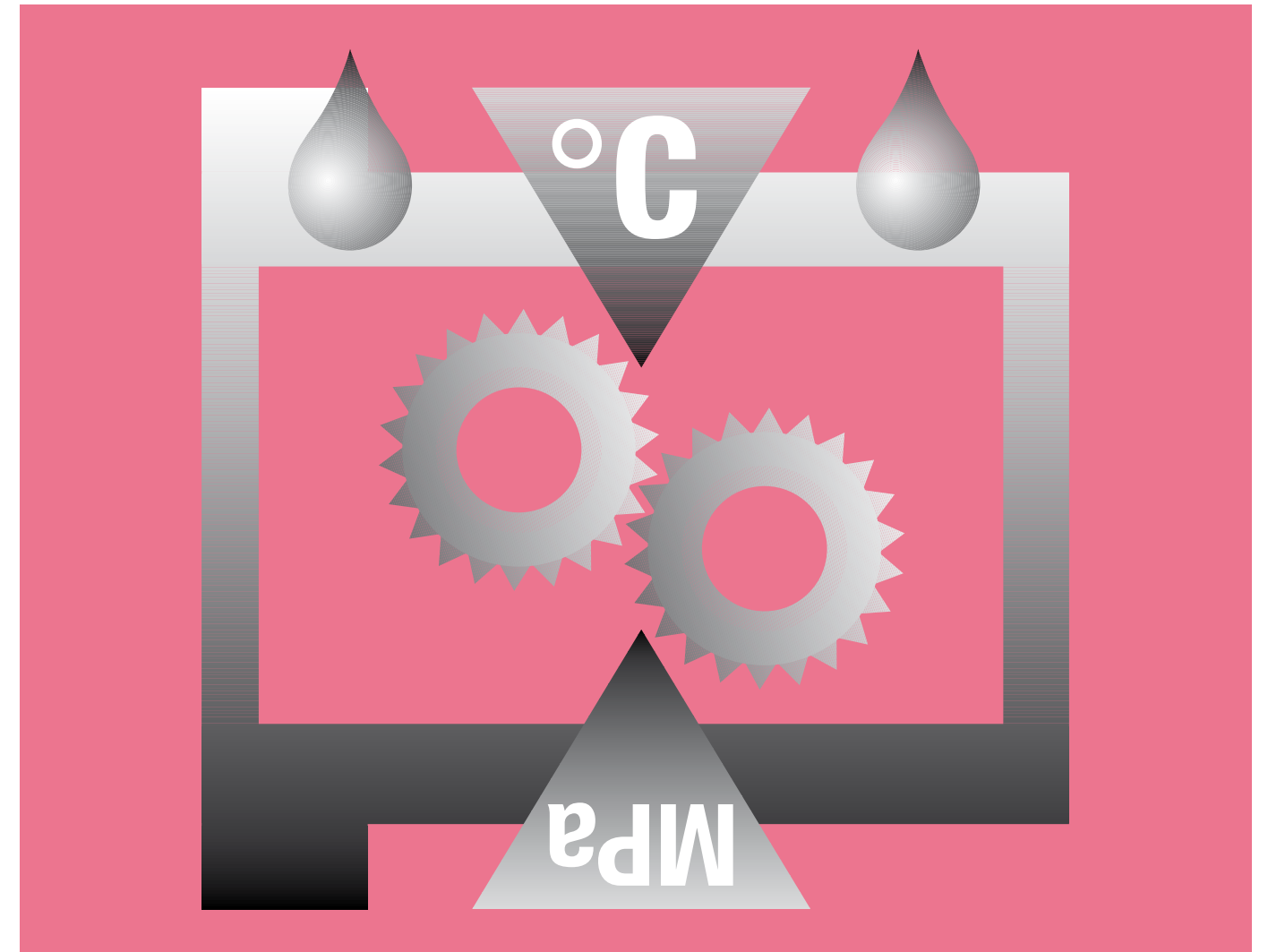
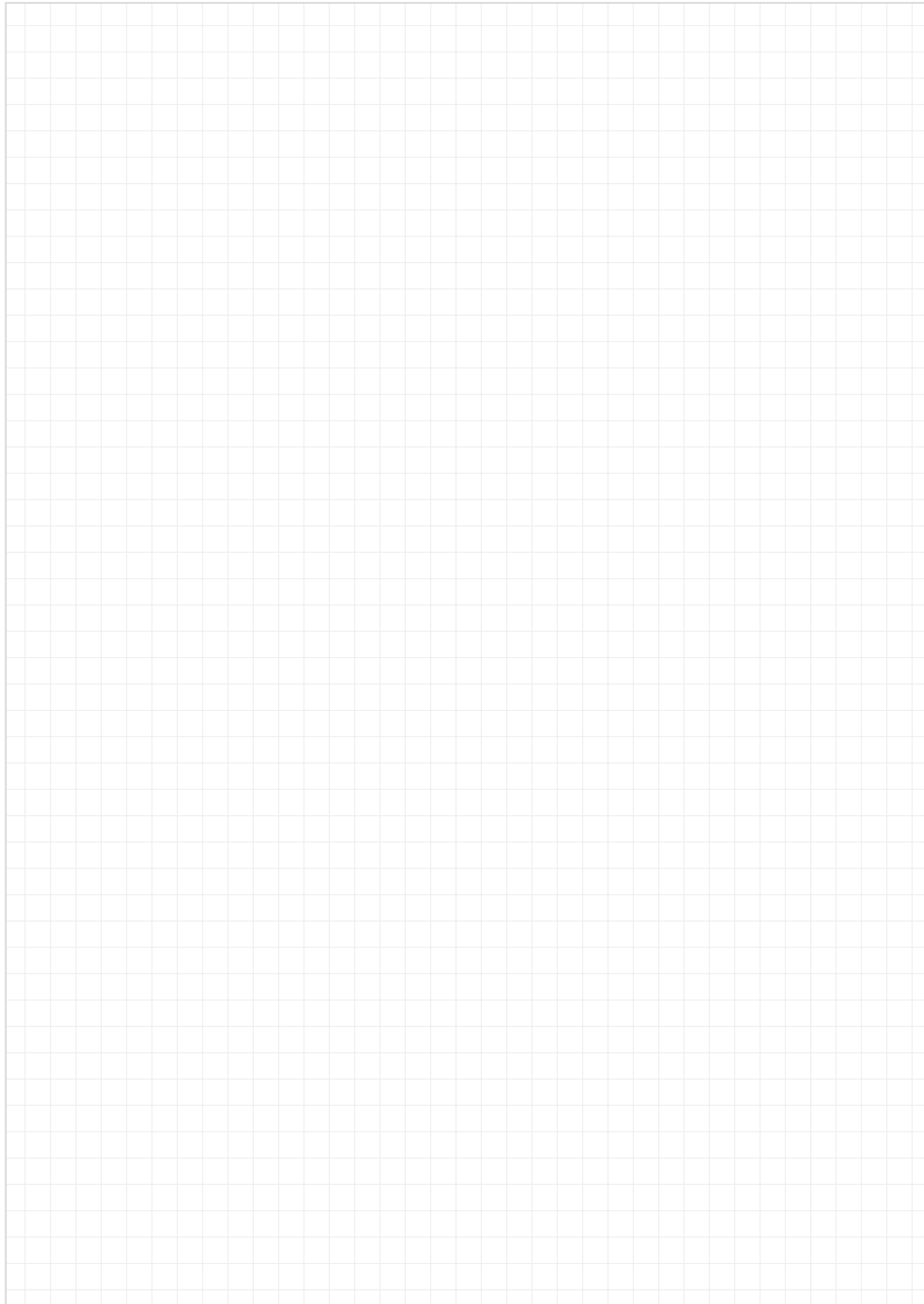
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

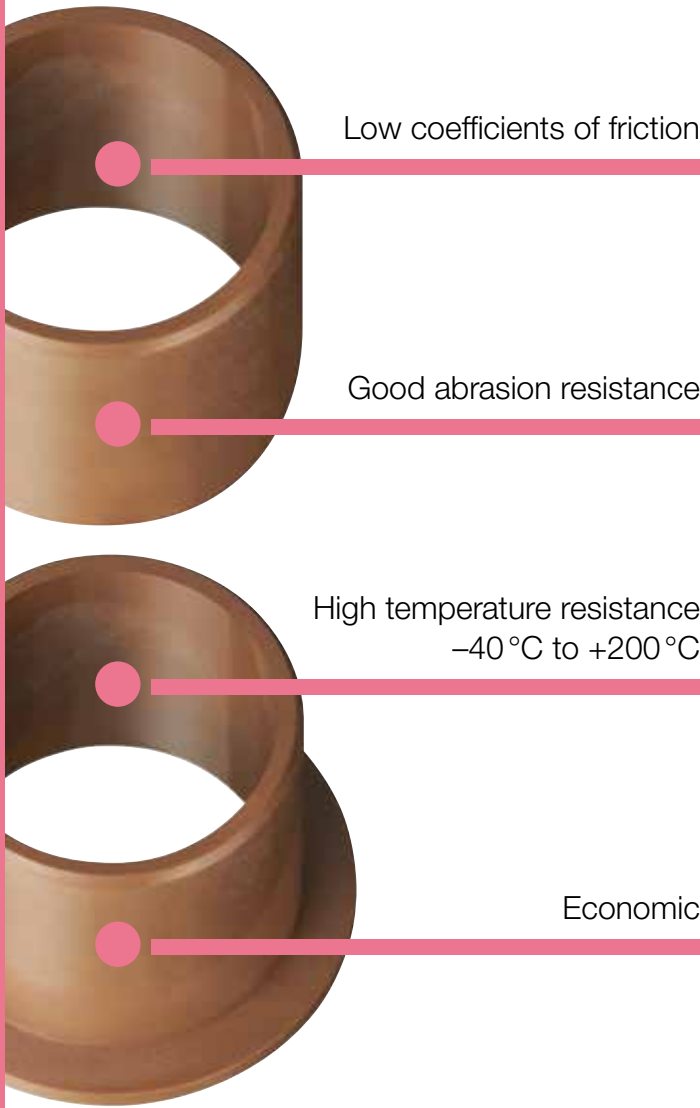
More than 300 dimensions are now available. Search online for your required bearing.

► www.igus.eu/iglidur-specialbearings



The automotive standard – iglidur® H4

- Low coefficients of friction
- High wear resistance
- High temperature resistance -40°C to $+200^{\circ}\text{C}$
- High chemical resistance
- Lubrication and maintenance free
- Standard range from stock



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 299
- When a cost-effective universal bearing is required
 - ▶ iglidur® G, page 83
- When you need a temperature- and media-resistant bearing for static applications
 - ▶ iglidur® H2, page 315



Available from stock

Detailed information about delivery time online.



max. +200 °C
min. -40 °C



Block pricing online

No minimum order value. From batch size 1



Ø 4–40 mm
more dimensions on request



Typical application areas

- Automotive ● Automation ● Packaging etc.

Material properties table

| General properties | Unit | iglidur® H4 | Testing method |
|--|------------|-------------|----------------|
| Density | g/cm³ | 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 | |
| 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 | > 10¹³ | DIN IEC 93 |
| Surface resistance | Ω | > 10¹² | DIN 53482 |

Table 01: Material properties table

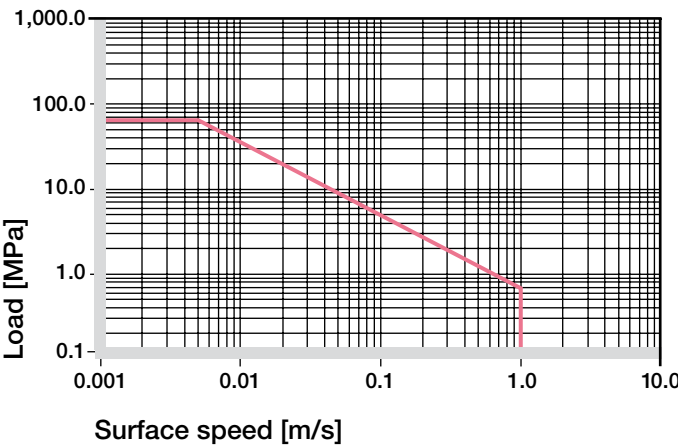


Diagram 01: Permissible pv values for iglidur® H4 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

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

▶ Diagram, www.igus.eu/h4-moisture

Vacuum

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

Radiation resistance

Plain bearings of iglidur® H4 are radiation resistant up to a radiation intensity of 2 · 10² Gy.

UV resistance

iglidur® H4 plain bearings change under the influence of UV radiation and other climatic influences.

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

Table 02: Chemical resistance

▶ Chemical table, page 1226

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. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

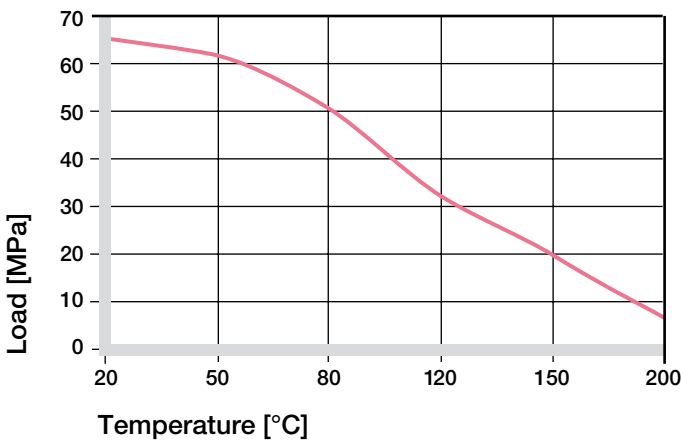


Diagram 02: Recommended maximum surface pressure of as a function of temperature (65 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® H4 at radial loads.

► Surface pressure, page 63

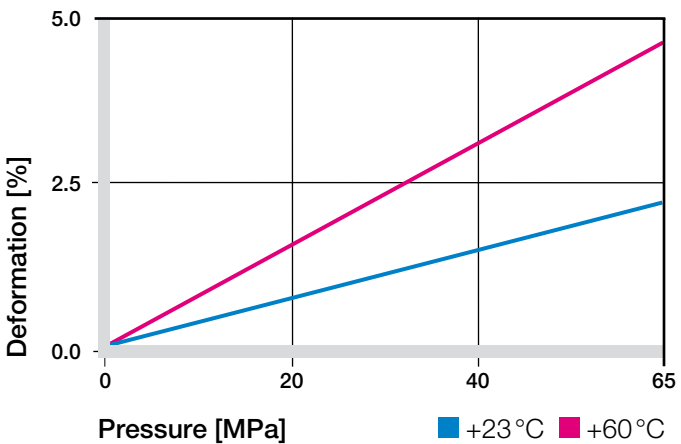


Diagram 03: Deformation under pressure and temperature

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. The speeds stated in table 03 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 65

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

Table 03: Maximum surface speeds

Temperatures

iglidur® H4 is a temperature resistant material and therefore iglidur® H4 plain bearings can be used 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. At temperatures over +110 °C an additional securing is required.

► Application temperatures, page 66

► Additional securing, page 67

Friction and wear

The coefficient of friction of the iglidur® H4 bearing is very low (diagrams 04 and 05). However, it must be noted that an extremely coarse sliding surface can increase the friction.

► Coefficients of friction and surfaces, page 68

► Wear resistance, page 69

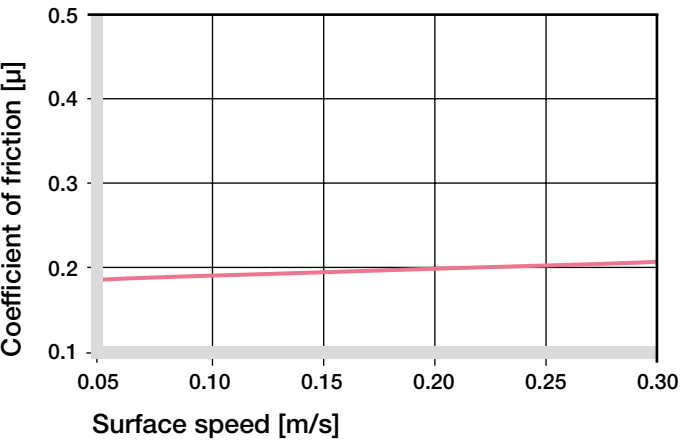


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

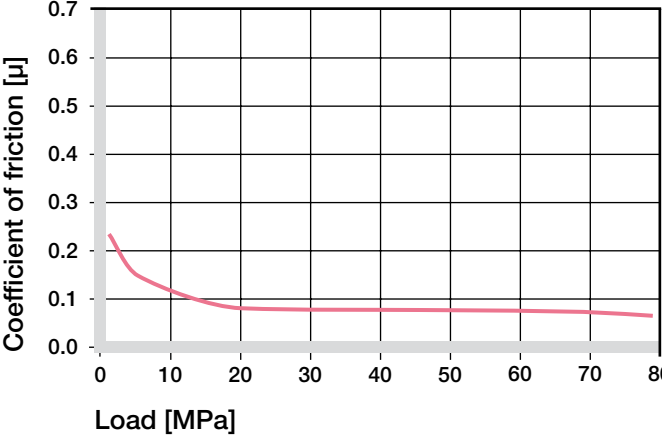


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

With many of the suitable 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 suitable for use with hard or soft shafts. Tests have however shown that pivoting applications yield better wear data. In rotating applications, the wear increases markedly from 10 MPa.

► Shaft materials, page 71

| 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 (Ra = 1 μm, 50 HRC)

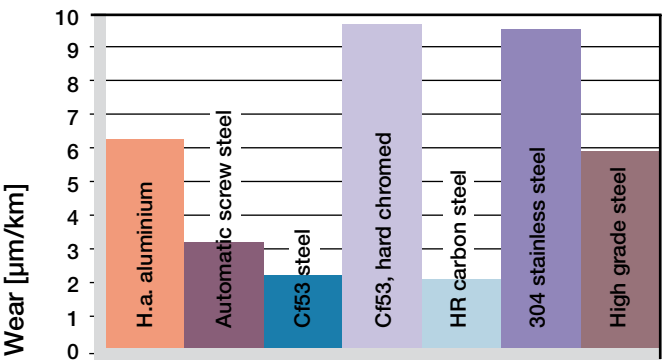


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

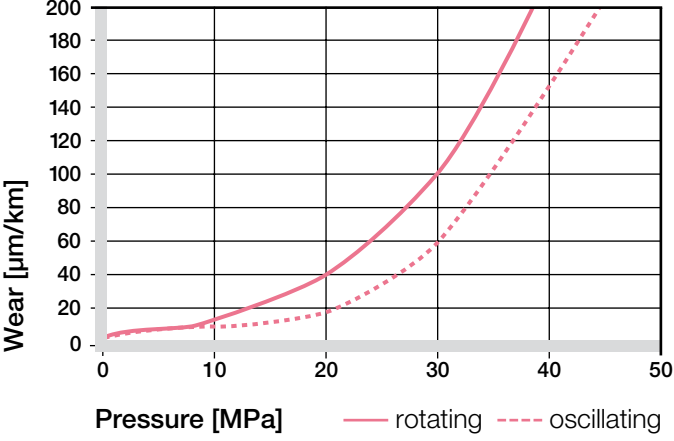


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Installation tolerances

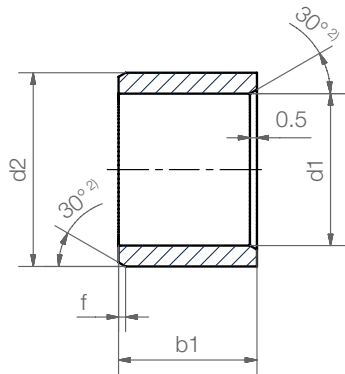
iglidur® H4 bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing methods, page 75

| 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® H4 | Product range
Sleeve bearing (Form S)



Order key

Type

Dimensions

H4 S M -04 05-04

iglidur® material

Form S

Metric

Inner-Ø d1 [mm]

Outer-Ø d2 [mm]

Length b1 [mm]



Dimensions according to ISO 3547-1
and special dimensions

²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

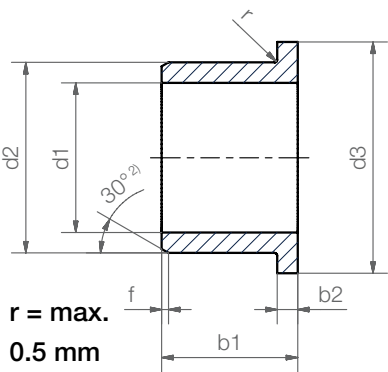
| | | | | |
|----------|-------|--------|---------|--------|
| d1 [mm]: | Ø 1-6 | Ø 6-12 | Ø 12-30 | Ø > 30 |
| f [mm]: | 0.3 | 0.5 | 0.8 | 1.2 |

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|----------------------------|------|-----------|--------------|
| 4.0 | +0.010 +0.058 | 5.5 | 4.0 | H4SM-0405-04 |
| 6.0 | +0.010 +0.058 | 8.0 | 8.0 | H4SM-0608-08 |
| 8.0 | +0.013 +0.071 | 10.0 | 10.0 | H4SM-0810-10 |
| 8.0 | +0.013 +0.071 | 10.0 | 20.0 | H4SM-0810-20 |
| 16.0 | +0.016 +0.086 | 18.0 | 20.0 | H4SM-1618-20 |
| 18.0 | +0.016 +0.086 | 20.0 | 15.0 | H4SM-1820-15 |
| 20.0 | +0.020 +0.104 | 22.0 | 15.0 | H4SM-2022-15 |
| 39.0 | +0.025 +0.125 | 43.0 | 40.0 | H4SM-3943-40 |

³⁾ after pressfit. Testing methods ► Page 75

iglidur® H4 | Product range
Flange bearing (Form F)



Order key

Type

Dimensions

H4 F M -04 05-04

iglidur® material

Form F

Metric

Inner-Ø d1 [mm]

Outer-Ø d2 [mm]

Length b1 [mm]



Dimensions according to ISO 3547-1
and special dimensions

²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | d3 d13 | b1 h13 | b2 -0.14 | Part No. |
|------|----------------------------|------|-----------|-----------|-------------|----------------|
| 4.0 | +0.010 +0.058 | 5.5 | 9.5 | 4.0 | 0.75 | H4FM-0405-04 |
| 6.0 | +0.010 +0.058 | 8.0 | 12.0 | 8.0 | 1.0 | H4FM-0608-08 |
| 6.0 | +0.010 +0.058 | 10.0 | 12.0 | 20.0 | 1.0 | H4FM-060810-20 |
| 8.0 | +0.013 +0.071 | 10.0 | 15.0 | 10.0 | 1.0 | H4FM-0810-10 |
| 10.0 | +0.013 +0.071 | 12.0 | 18.0 | 5.0 | 1.0 | H4FM-1012-05 |
| 10.0 | +0.013 +0.071 | 12.0 | 18.0 | 12.0 | 1.0 | H4FM-1012-12 |
| 10.0 | +0.013 +0.071 | 12.0 | 18.0 | 25.0 | 1.0 | H4FM-101218-25 |
| 12.0 | +0.016 +0.086 | 14.0 | 20.0 | 12.0 | 1.0 | H4FM-1214-12 |
| 15.0 | +0.016 +0.086 | 17.0 | 23.0 | 12.0 | 1.0 | H4FM-1517-12 |
| 16.0 | +0.016 +0.086 | 18.0 | 24.0 | 17.0 | 1.0 | H4FM-1618-17 |
| 18.0 | +0.016 +0.086 | 20.0 | 26.0 | 17.0 | 1.0 | H4FM-1820-17 |
| 20.0 | +0.020 +0.104 | 23.0 | 30.0 | 21.5 | 1.5 | H4FM-2023-21 |
| 25.0 | +0.020 +0.104 | 28.0 | 35.0 | 21.5 | 1.5 | H4FM-2528-21 |
| 30.0 | +0.020 +0.104 | 34.0 | 40.0 | 30.0 | 2.0 | H4FM-3034-30 |
| 40.0 | +0.030 +0.150 | 44.0 | 52.0 | 40.0 | 2.0 | H4FM-4044-40 |

³⁾ after pressfit. Testing methods ► Page 75



Don't find your size?

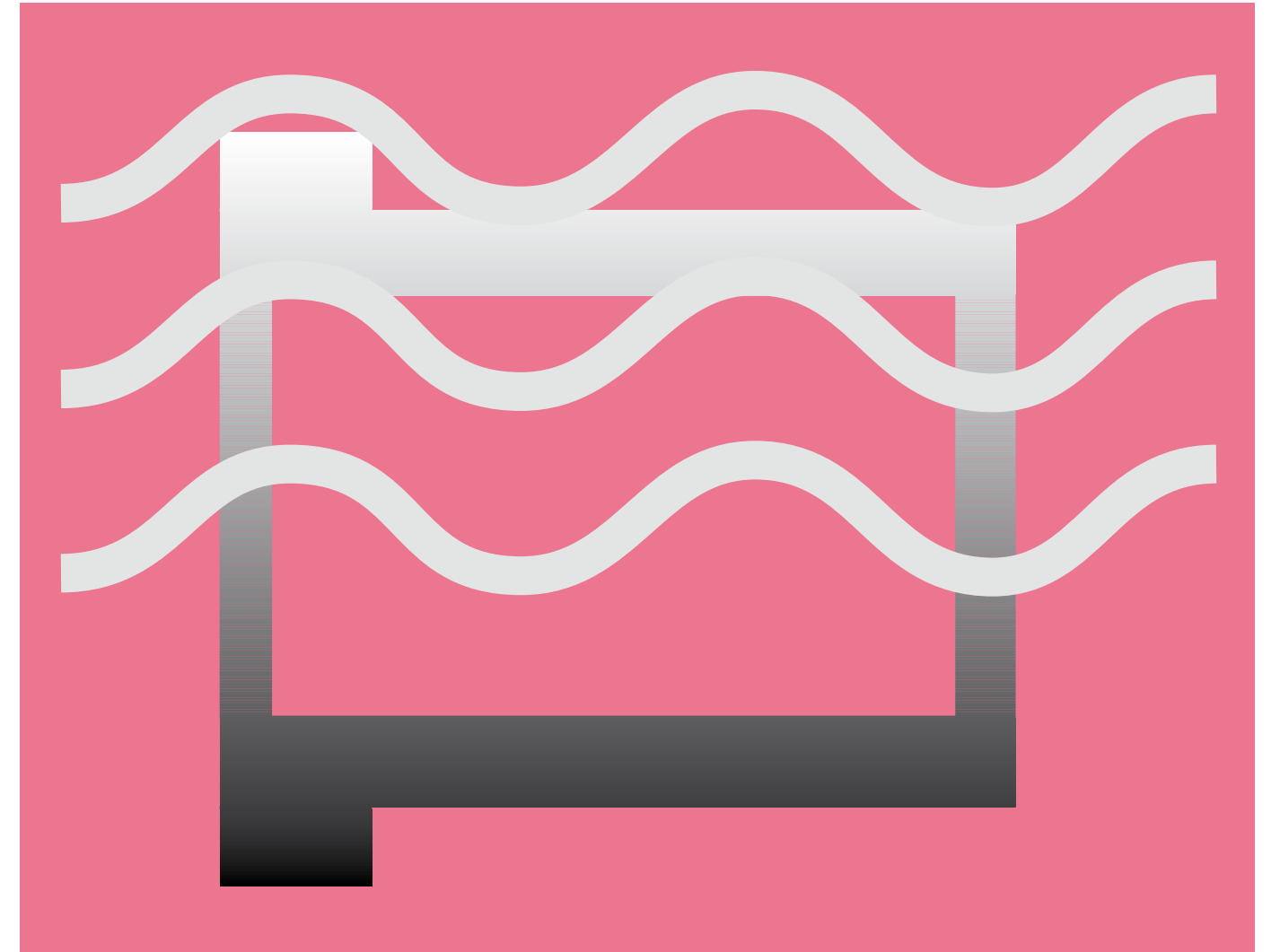
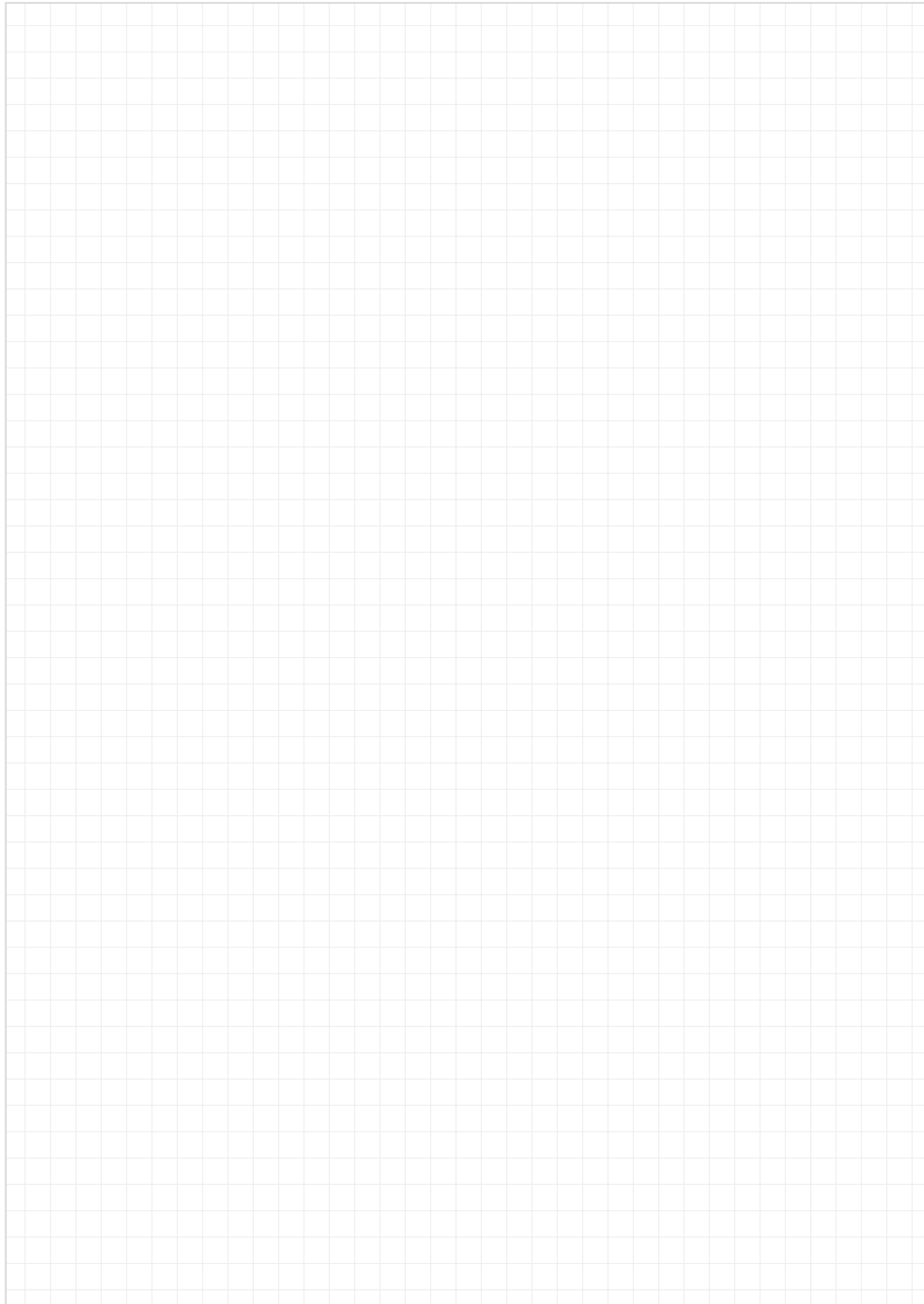
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

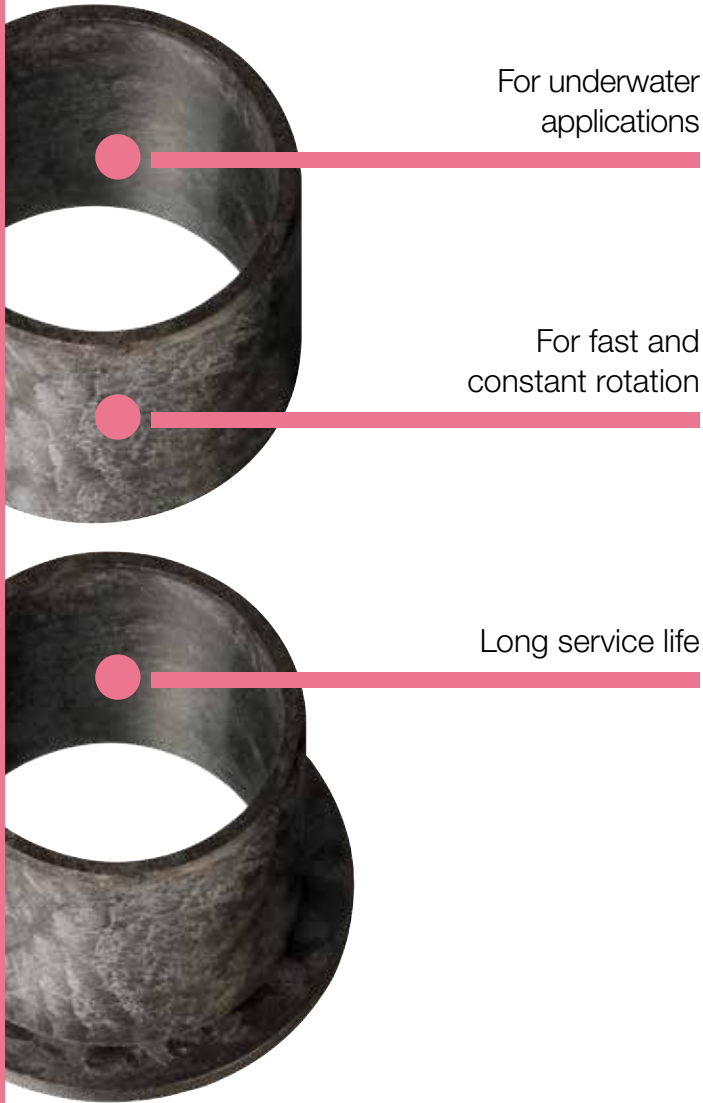
More than 300 dimensions are now available. Search online for your required bearing.

► www.igus.eu/iglidur-specialbearings



For fast rotation under water – iglidur® UW

- For underwater applications
- For fast and constant motion
- Long service life
- Lubrication and maintenance free
- Standard range from stock



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



When to use it?

- For underwater applications and in liquid media
- For low loads
- For high rotational 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 273
- When high loads are required
 - ▶ iglidur® H370, page 299
 - ▶ iglidur® UW500, page 273
 - ▶ iglidur® X, page 133
- When only dry operation is feasible
 - ▶ iglidur® J, page 99



Available from stock

Detailed information about delivery time online.



max. +90 °C
min. -50 °C



Block pricing online

No minimum order value. From batch size 1



Ø 3–20 mm
more dimensions on request



Typical application areas

- Fluid technology
- Pumps, etc.

Material properties table

| General properties | Unit | iglidur® UW | Testing method |
|--|------------------------------------|-------------------|----------------|
| Density | g/cm³ | 1.52 | |
| Colour | | black | |
| Max. moisture absorption at +23 °C/50 % r.h. | % weight | 0.2 | DIN 53495 |
| Max. water absorption ⁶⁾ | % 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 | |
| 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 ⁵⁾ | | | |
| Specific volume resistance | Ωcm | < 10 ⁵ | DIN IEC 93 |
| Surface resistance | Ω | < 10 ⁵ | DIN 53482 |

⁵⁾ The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact components.

⁶⁾ 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 (fully demineralised water). We therefore recommend custom-designed tests under real application conditions.

Table 01: Material properties table

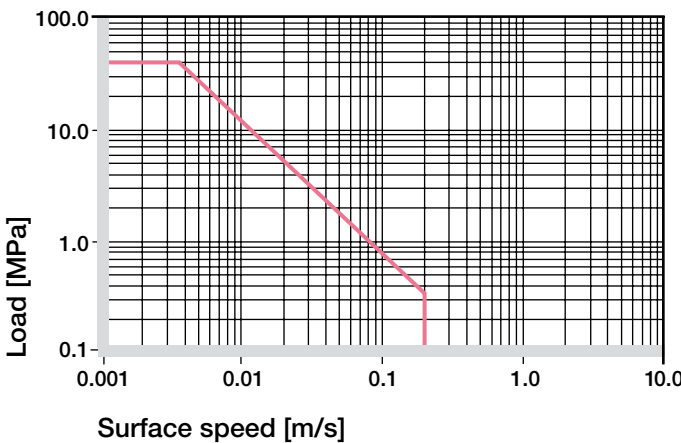


Diagram 01: Permissible pv values for iglidur® UW bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

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.

▶ Diagram, www.igus.eu/uw-moisture

Vacuum

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

| Medium | Resistance |
|---------------------------------|------------|
| Alcohols | + |
| 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 02: Chemical resistance

▶ Chemical table, [page 1226](#)

Radiation resistance

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

UV resistance

iglidur® UW plain bearings are resistant to UV radiation.

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 from iglidur® UW500 (► [page 273](#)) 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 from 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. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

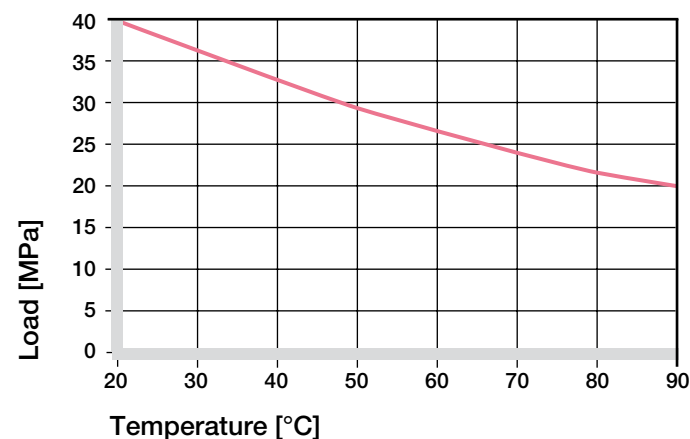


Diagram 02: Recommended maximum surface pressure of as a function of temperature (40 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® UW as a function of radial pressure. At the recommended maximum surface pressure of 40 MPa the deformation is less than 1 %.

► Surface pressure, [page 63](#)

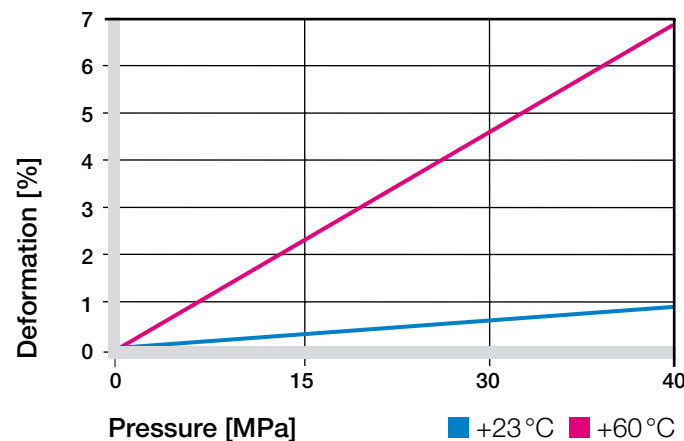


Diagram 03: Deformation under pressure and temperature

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 65](#)

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

Table 03: Maximum surface speeds

Temperatures

As stated earlier, iglidur® UW plain bearings are required for the low temperature range. In underwater applications, the fluid helps support the heat dissipation, so the temperature of the fluid itself is more important. At temperatures over +80 °C an additional securing is required.

► Application temperatures, [page 66](#)

► Additional securing, [page 67](#)

Friction and wear

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 68](#)

► Wear resistance, [page 69](#)

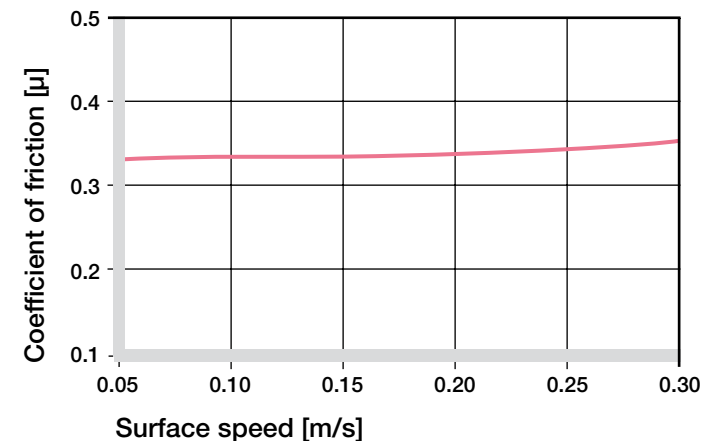


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

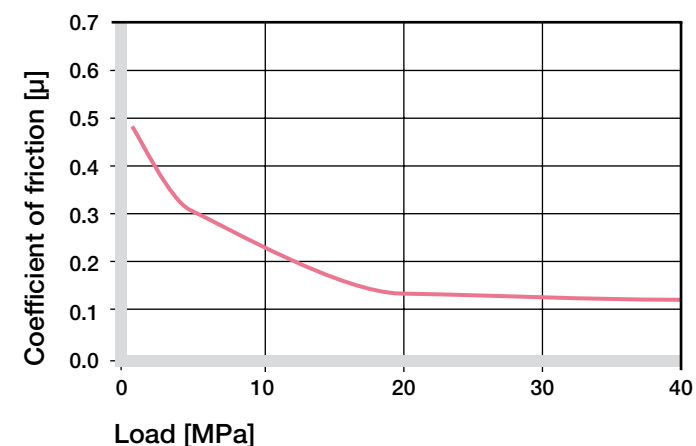


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

Diagrams 06 and 07 display a summary of the results of tests with different shaft materials conducted with bearings made from iglidur® UW. 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 > 5 MPa.

► Shaft materials, [page 71](#)

| 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 (Ra = 1 μm, 50 HRC)

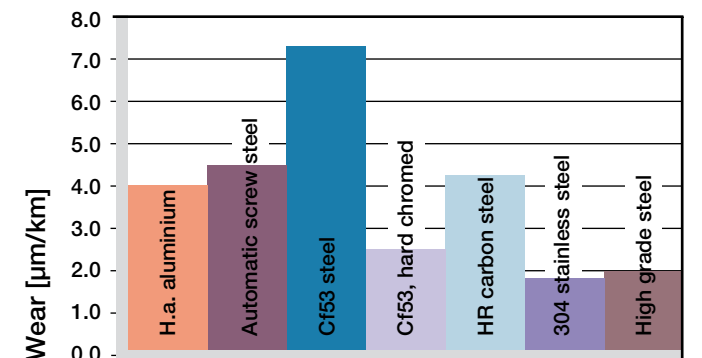


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

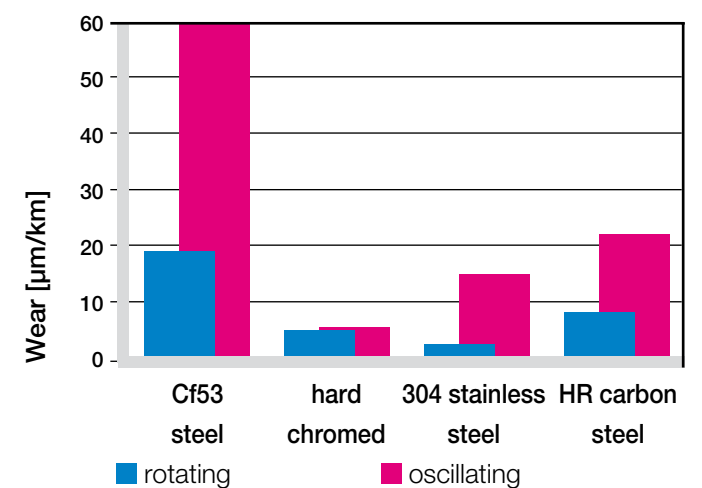


Diagram 07: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

Installation tolerances

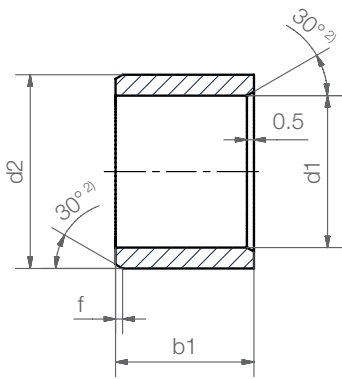
iglidur® UW bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing methods, [page 75](#)

| 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® UW | Product range
Sleeve bearing (Form S)



²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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



Order key

| Type | Dimensions | | | | |
|-------------------|------------|--------|-----------------|-----------------|----------------|
| UW S M -03 04-05 | | | | | |
| iglidur® material | Form S | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |



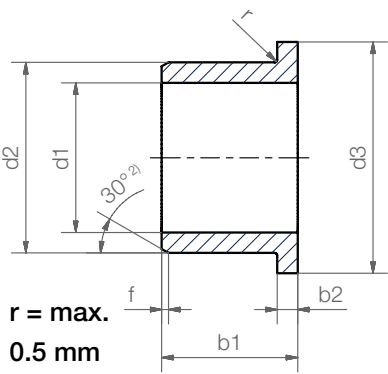
Dimensions according to ISO 3547-1
and special dimensions

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|----------------------------|------|-----------|--------------|
| 3.0 | +0.014 +0.054 | 4.5 | 5.0 | UWSM-0304-05 |
| 4.0 | +0.020 +0.068 | 5.5 | 6.0 | UWSM-0405-06 |
| 5.0 | +0.020 +0.068 | 7.0 | 8.0 | UWSM-0507-08 |
| 6.0 | +0.020 +0.068 | 8.0 | 8.0 | UWSM-0608-08 |
| 8.0 | +0.025 +0.083 | 10.0 | 10.0 | UWSM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 10.0 | UWSM-1012-10 |
| 12.0 | +0.032 +0.102 | 14.0 | 12.0 | UWSM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 12.0 | UWSM-1618-12 |
| 18.0 | +0.032 +0.102 | 20.0 | 15.0 | UWSM-1820-15 |

³⁾ after pressfit. Testing methods ► Page 75

iglidur® UW | Product range
Flange bearing (Form F)



²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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



Order key

| Type | Dimensions | | | | |
|-------------------|------------|--------|-----------------|-----------------|----------------|
| UW F M -03 04-05 | | | | | |
| iglidur® material | Form F | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |



Dimensions according to ISO 3547-1
and special dimensions

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | d3 d13 | b1 h13 | b2 -0.14 | Part No. |
|------|----------------------------|------|-----------|-----------|-------------|--------------|
| 3.0 | +0.014 +0.054 | 4.5 | 7.5 | 5.0 | 0.75 | UWFM-0304-05 |
| 4.0 | +0.020 +0.068 | 5.5 | 9.5 | 6.0 | 0.75 | UWFM-0405-06 |
| 5.0 | +0.020 +0.068 | 7.0 | 11.0 | 5.0 | 1.0 | UWFM-0507-05 |
| 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 | UWFM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 | UWFM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 | UWFM-1012-10 |
| 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 | UWFM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 | UWFM-1618-17 |
| 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 | UWFM-2023-21 |

³⁾ after pressfit. Testing methods ► Page 75



Don't find your size?

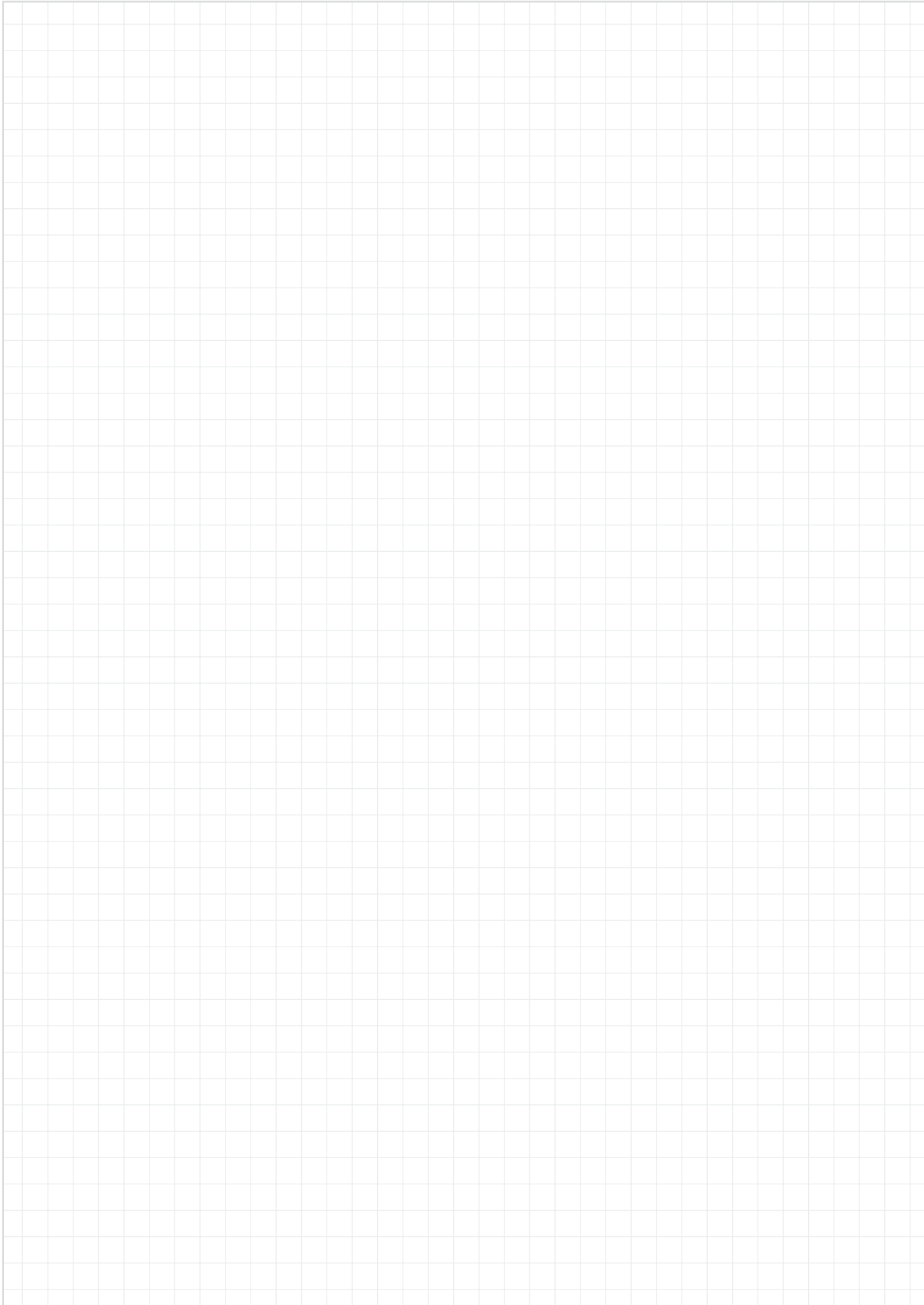
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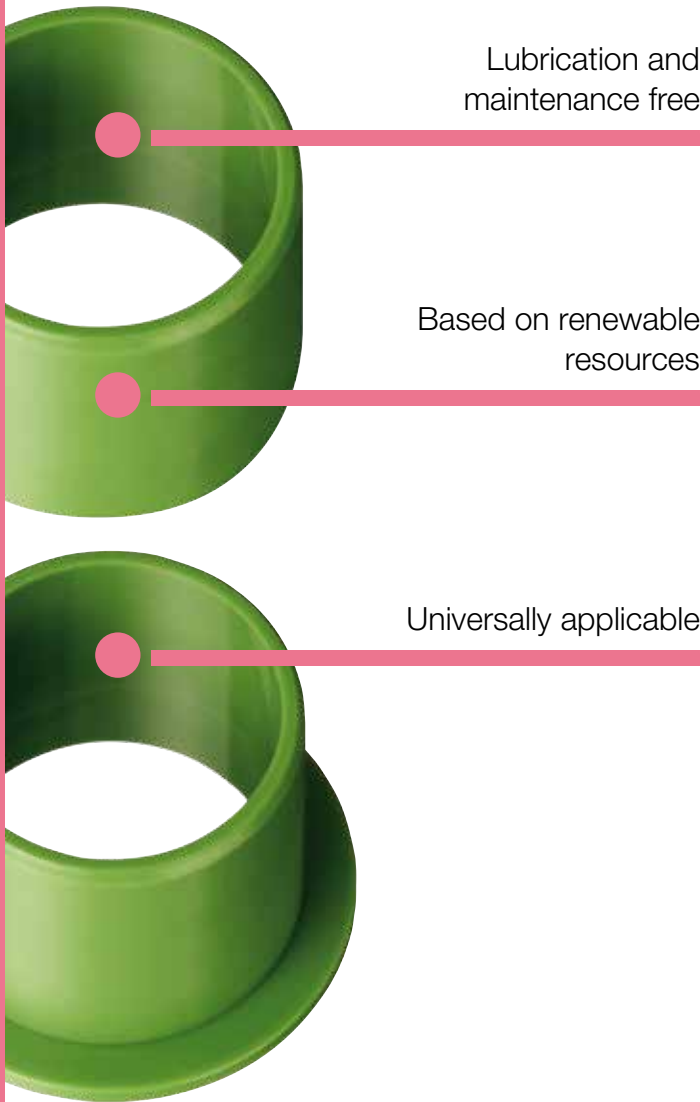
More than 300 dimensions are now available. Search online for your required bearing.

► www.igus.eu/iglidur-specialbearings



The biopolymer – iglidur® N54

- Based on renewable resources
- Universally applicable
- Lubrication and maintenance free
- Standard range from stock



Based on 54 % renewable resources, technically this 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 optimised



When not to use it?

- When looking for a universal standard bearing
 - ▶ iglidur® G, page 83
- When dealing with high motion frequencies and continuous operation
 - ▶ iglidur® J, page 99
- When dealing with high temperatures
 - ▶ iglidur® J350, page 199



Available from stock

Detailed information about delivery time online.



max. +80 °C
min. -40 °C



Block pricing online

No minimum order value. From batch size 1



Ø 6–20 mm
more dimensions on request



Typical application areas

● Consumer products ● General mechanical engineering ● Furniture industry ● Industrial design, etc.

Material properties table

| General properties | Unit | iglidur® N54 | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm³ | 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 | |
| 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 |

Table 01: Material properties table

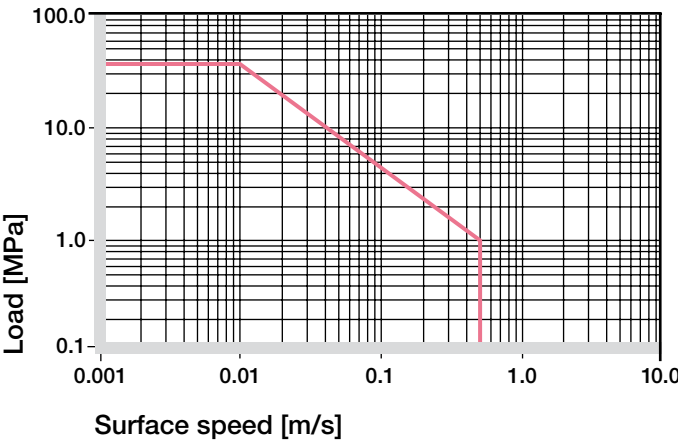


Diagram 01: Permissible pv values for iglidur® N54 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® N54 plain bearings is below 1.6 % in ambient conditions. The saturation limit in water is 3.6 %.

▶ Diagram, www.igus.eu/n54-moisture

Vacuum

In a vacuum, any moisture content will outgas. Applications under vacuum conditions are possible to a limited extent.

Radiation resistance

Bearings made from iglidur® N54 are conditionally usable under radioactive radiation. They are resistant up to a radiation intensity of 1 x 10⁴ Gy.

UV resistance

iglidur® N54 bearings are resistant to UV radiation.

| Medium | Resistance |
|---------------------------------|------------|
| Alcohols | + 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 02: Chemical resistance

▶ Chemical table, **page 1226**

iglidur® N54 is the first iglidur® material based largely on bio-polymers. In addition to the proven lubrication 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 this material has a permanent place in the iglidur® product range.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® N54 bearings decreases. The diagram 02 shows this inverse relationship. With the long-term permitted application temperature of +120°C the permitted surface pressure is less than 10 MPa. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

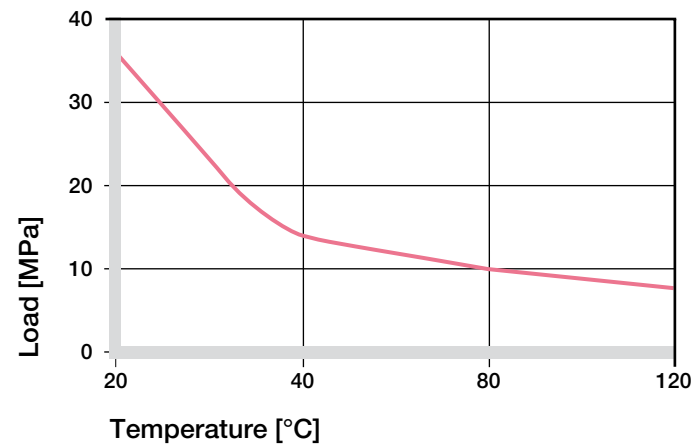


Diagram 02: Recommended maximum surface pressure of as a function of temperature (36 MPa at +20°C)

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

► Surface pressure, page 63

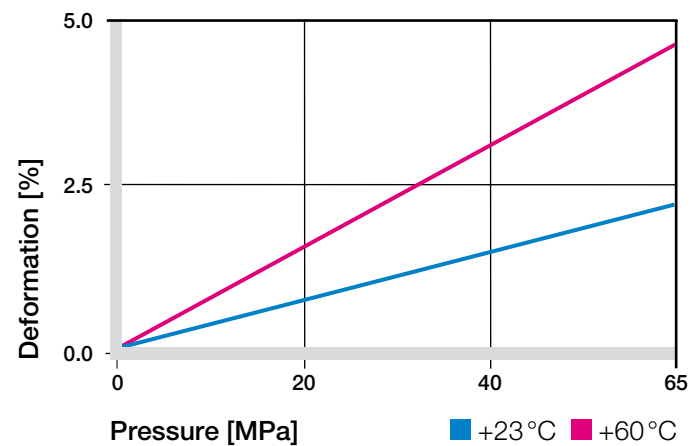


Diagram 03: Deformation under pressure and temperature

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 stated in table 03 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 65

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

Table 03: Maximum surface speeds

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. At temperatures over +60°C an additional securing is required.

► Application temperatures, page 66

► Additional securing, page 67

Friction and wear

iglidur® N54 has a low coefficient of friction. However, it must be noted that an extremely coarse sliding surface can increase 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 0.8.

► Coefficients of friction and surfaces, page 68

► Wear resistance, page 69

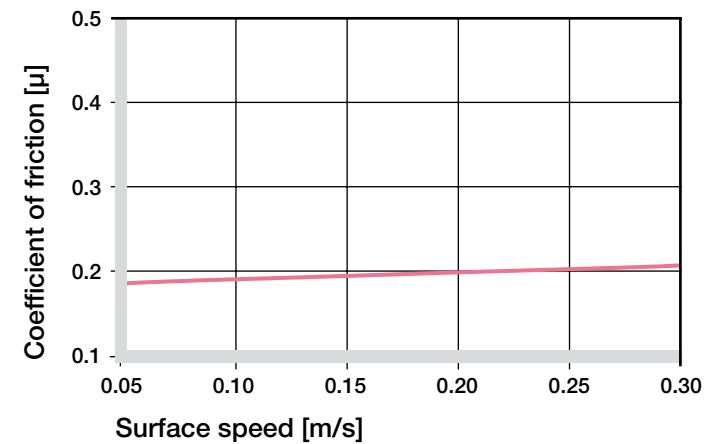


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1 MPa

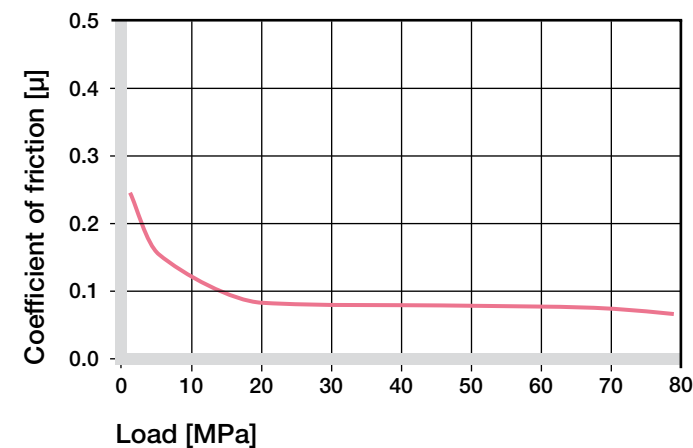


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

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. If the shaft material you plan to use is not contained in this list, please contact us.

► Shaft materials, page 71

| 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 (Ra = 1 µm, 50 HRC)

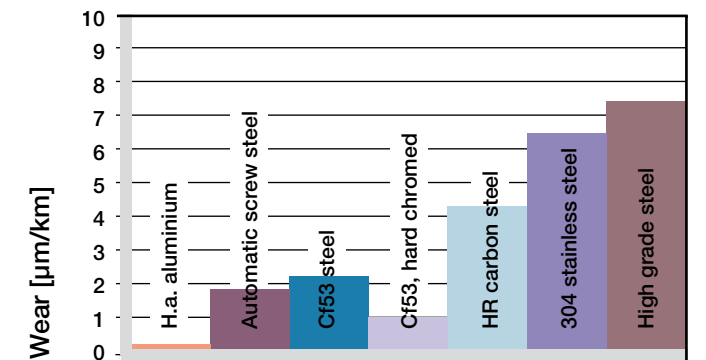


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

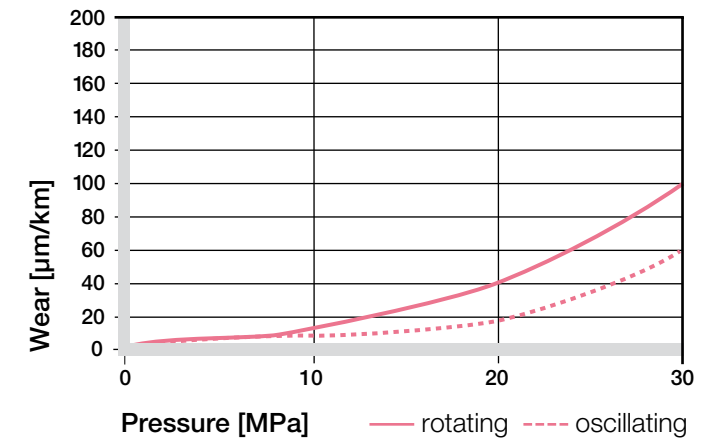


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Installation tolerances

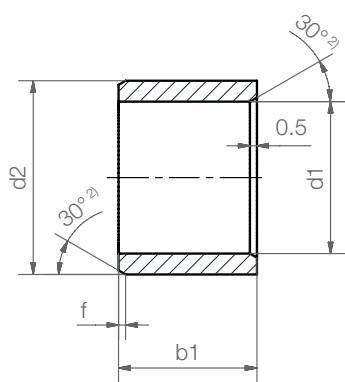
iglidur® N54 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

► Testing methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® N54 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 |

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

iglidur® N54 | Product range
Sleeve bearing (Form S)



²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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



Order key

| Type | Dimensions | | | | |
|-------------------|------------|--------|-----------------|-----------------|----------------|
| N54 S M | -06 08-06 | | | | |
| iglidur® material | Form S | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |



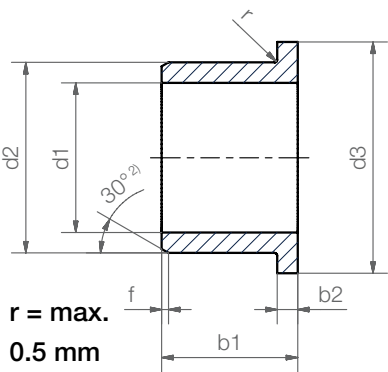
Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|----------------------------|------|-----------|---------------|
| 6.0 | +0.020 +0.068 | 8.0 | 6.0 | N54SM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 10.0 | N54SM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 10.0 | N54SM-1012-10 |
| 12.0 | +0.032 +0.102 | 14.0 | 12.0 | N54SM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 15.0 | N54SM-1618-15 |
| 20.0 | +0.040 +0.124 | 23.0 | 20.0 | N54SM-2023-20 |

³⁾ after pressfit. Testing methods ► Page 75

iglidur® N54 | Product range
Flange bearing (Form F)



²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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



Order key

| Type | Dimensions | | | | |
|-------------------|------------|--------|-----------------|-----------------|----------------|
| N54 F M | -06 08-06 | | | | |
| iglidur® material | Form F | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |



Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

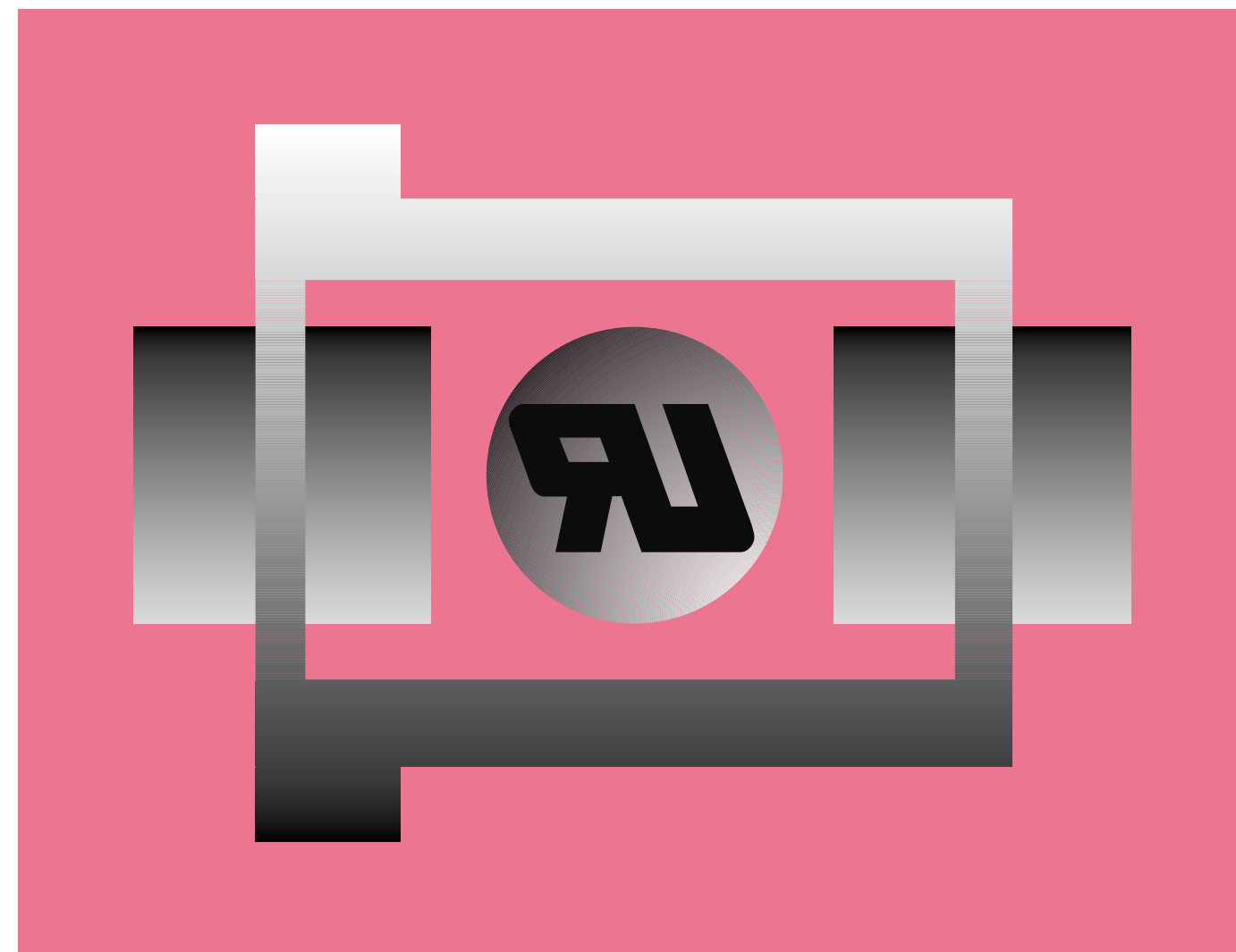
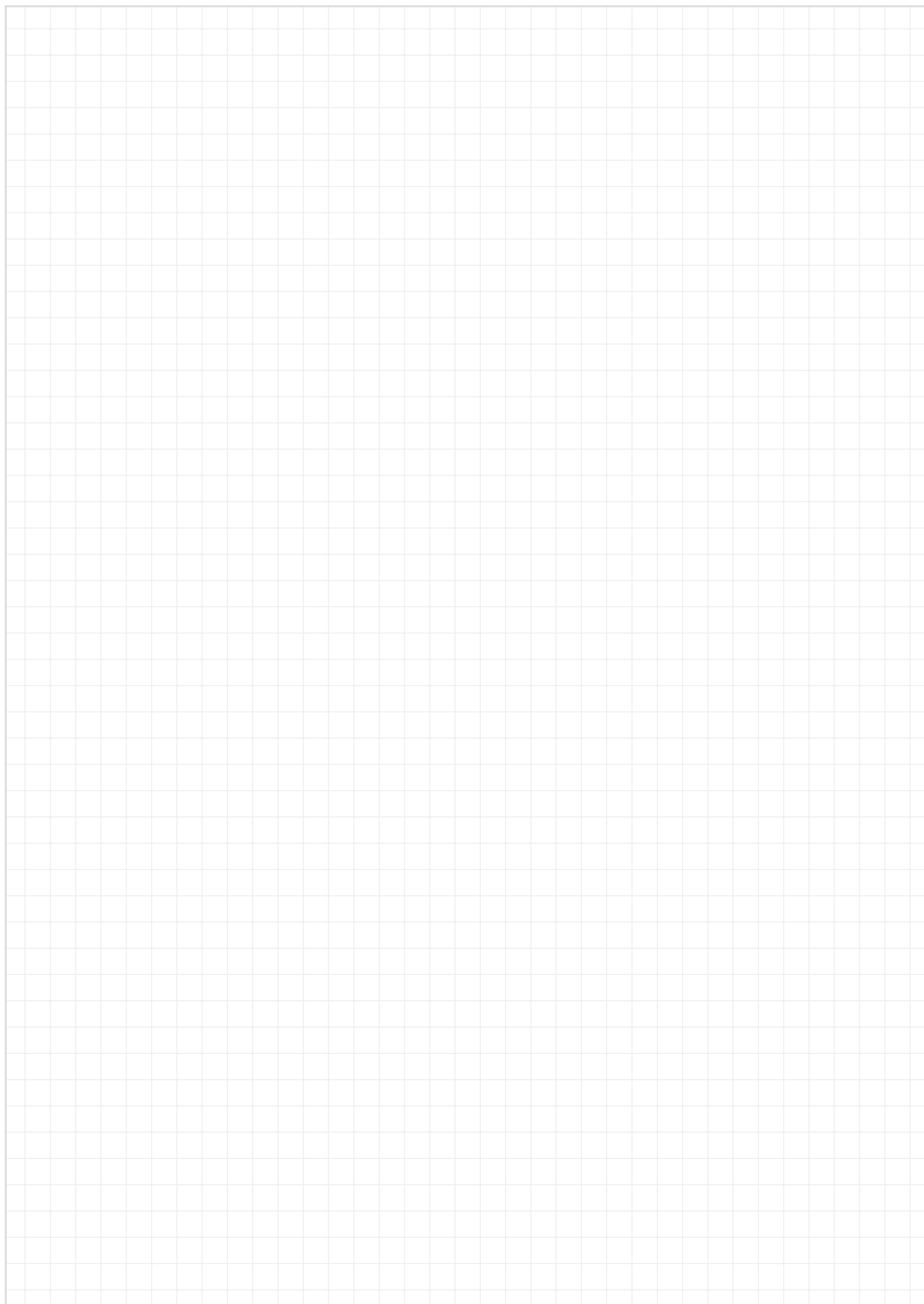
| d1 | d1-Tolerance ³⁾ | d2 | d3 d13 | b1 h13 | b2 -0.14 | Part No. |
|------|----------------------------|------|-----------|-----------|-------------|---------------|
| 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 | N54FM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 | N54FM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 | N54FM-1012-10 |
| 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 | N54FM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 | N54FM-1618-17 |
| 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 | N54FM-2023-21 |

³⁾ after pressfit. Testing methods ► Page 75



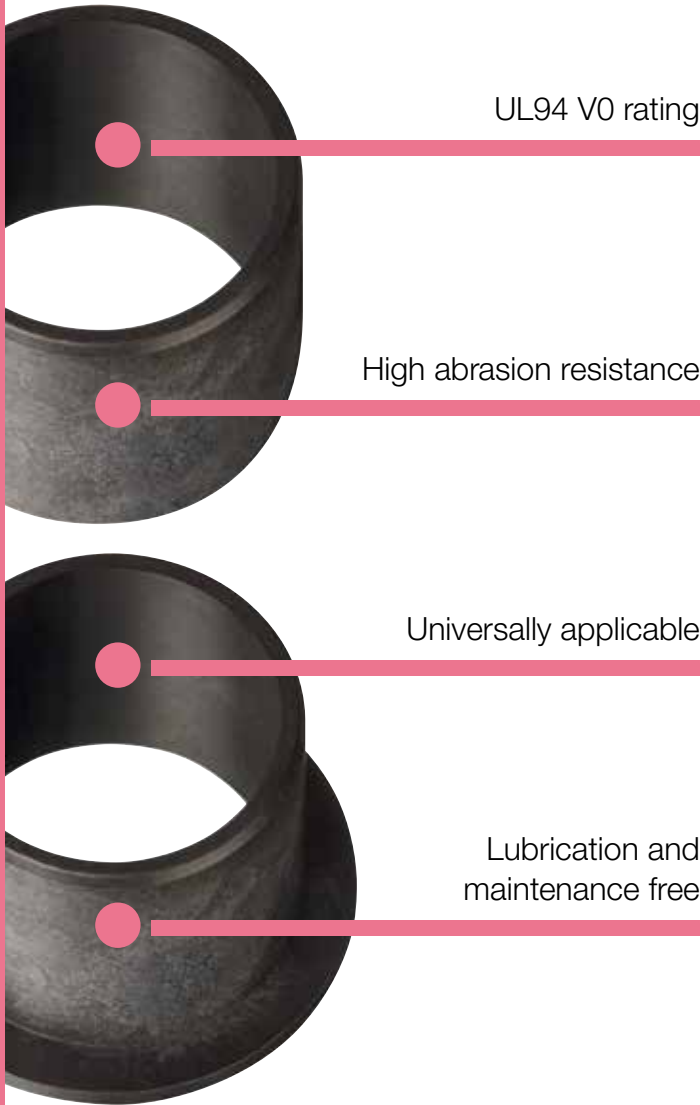
Don't find your size?

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



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

- UL94 V0 rating
- High abrasion resistance
- Universally applicable
- Lubrication and maintenance free
- Standard range from stock



The material achieves the UL94 V0 rating and is therefore ideally suited for applications with stringent fire protection regulations (vehicle and aircraft interiors, building interior systems, etc.). Other properties are similar to the 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 133
- When you need a standard bearing without having to meet special fire codes
▶ iglidur® G, page 83



Available from stock
Detailed information about delivery time online.



max. +130 °C
min. -40 °C



Block pricing online
No minimum order value. From batch size 1



Ø 6–40 mm
more dimensions on request



Typical application areas
● Passenger seats ● Elevators ● Escalators ● Switch cabinets ● Hinges

Material properties table

| General properties | Unit | iglidur® G V0 | Testing method |
|--|------------|---------------|----------------|
| Density | g/cm³ | 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 | > 10¹² | DIN IEC 93 |
| Surface resistance | Ω | > 10¹¹ | DIN 53482 |

Table 01: Material properties table

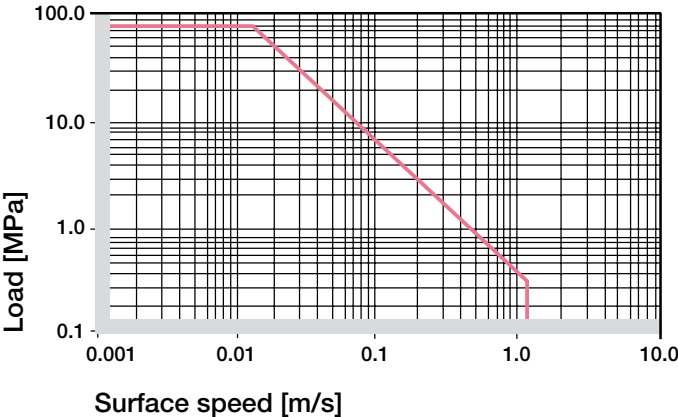


Diagram 01: Permissible pv values for iglidur® G V0 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® G V0 plain bearings is approximately 0.7 % in ambient conditions. The saturation limit submerged in water is 4 %. This must be taken into account along with other environmental influences.

▶ **Diagram, www.igus.eu/gv0-moisture**

Vacuum

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

Radiation resistance

Plain bearings made from iglidur® G V0 are resistant to radiation up to an intensity of 3 · 10² Gy.

UV resistance

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

| Medium | Resistance |
|---------------------------------|------------|
| Alcohols | + 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 02: Chemical resistance

▶ **Chemical table, page 1226**

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.

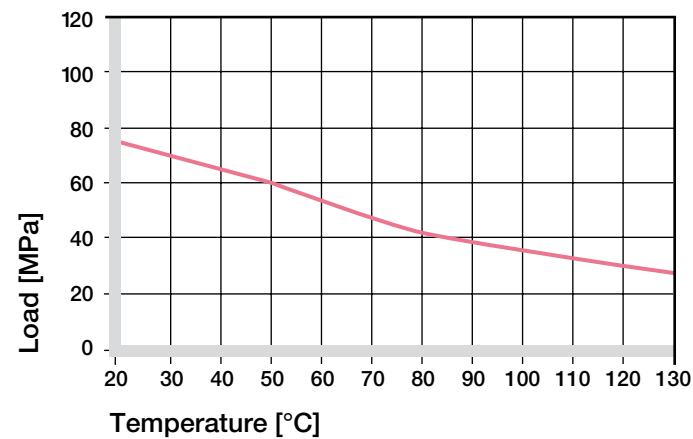


Diagram 02: Recommended maximum surface pressure of as a function of temperature (75 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® G V0 during radial loading. The plastic deformation is minimal up to a pressure of approximately 100 MPa. However, it is also dependent on the service time.

► Surface pressure, page 63

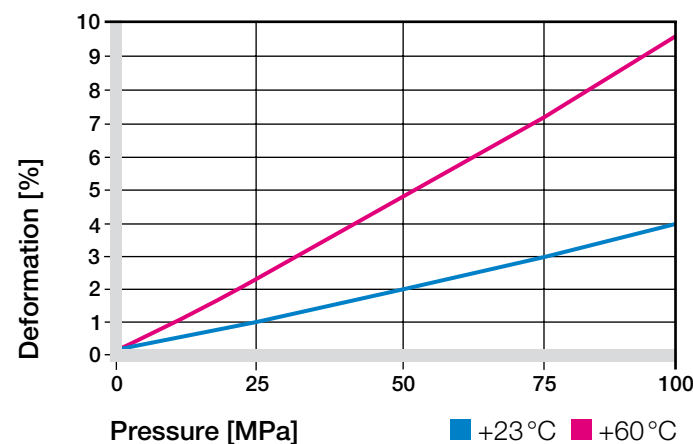


Diagram 03: Deformation under pressure and temperature

Permissible surface speeds

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

► Surface speed, page 65

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

Table 03: Maximum surface speeds

Temperatures

The ambient temperatures greatly influence the wear performance of plastic 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 ambient application temperature has a direct impact on bearing wear, an increase in temperature results in an increase in wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +120°C. At temperatures over +100°C an additional securing is required.

► Application temperatures, page 66

► Additional securing, page 67

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).

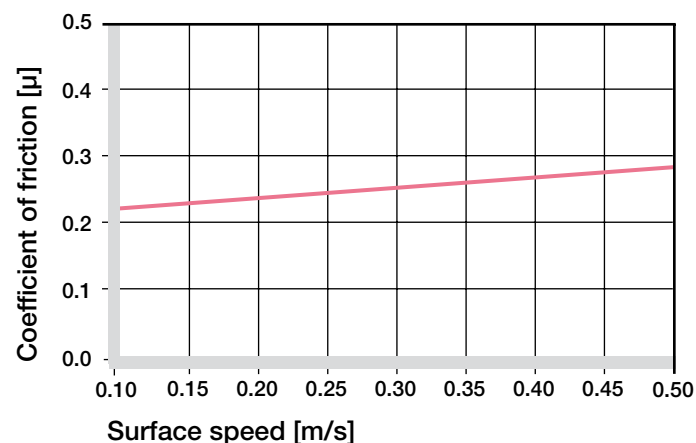


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1 MPa

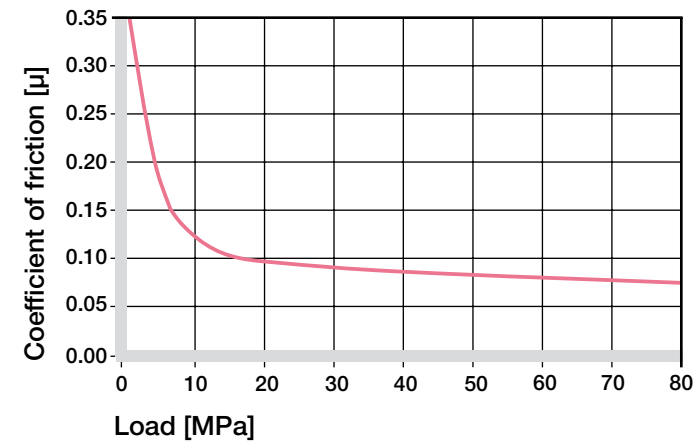


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

► Coefficients of friction and surfaces, page 68

► Wear resistance, page 69

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 μm is recommended. Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® G V0. It is important to notice that with increasing loads, the recommended hardness of the shaft increases. The "soft" shafts tend to wear more easily and thus affect the clearance of the overall system. If the loads exceed 2 MPa it is important to recognise that the wear rate (the gradient of the curves) clearly decreases with the hard shaft materials. The comparison of rotational movements to oscillating movements shows that iglidur® G V0 provides advantages in oscillating movements (diagram 07). If the shaft material you plan to use is not contained in this list, please contact us.

► Shaft materials, page 71

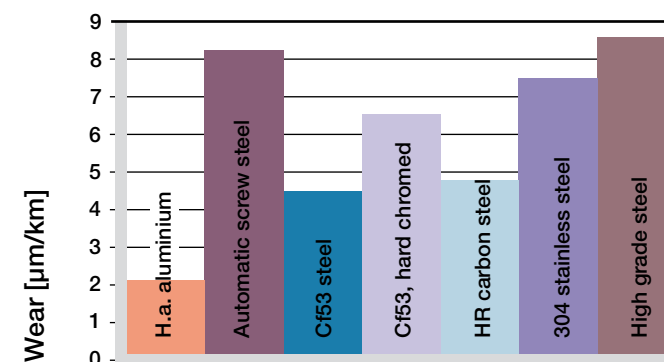


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

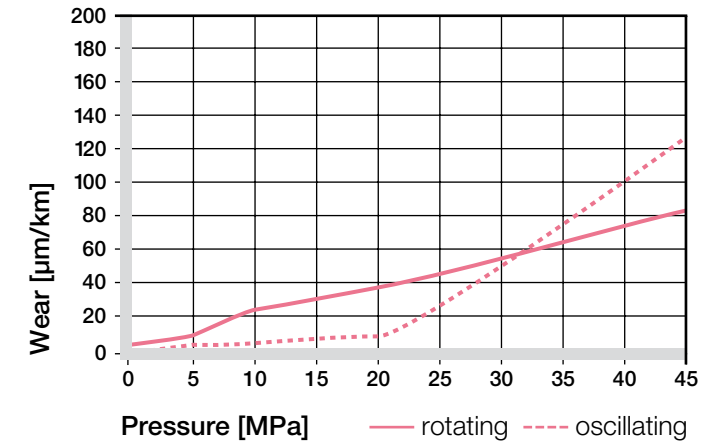


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

| 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 (Ra = 1 μm , 50 HRC)

Installation tolerances

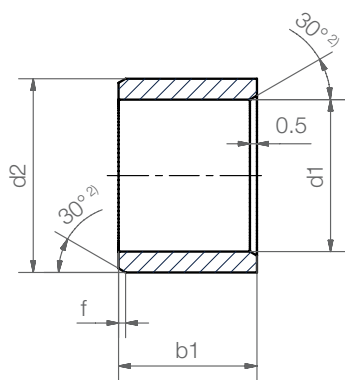
iglidur® G V0 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the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

► Testing methods, page 75

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

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

iglidur® G V0 | Product range
Sleeve bearing (Form S)



2) thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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



Order key

| Type | Dimensions | | | | |
|-------------------|------------|--------|-----------------|-----------------|----------------|
| GV0 S M -06 08-06 | | | | | |
| iglidur® material | Form S | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |



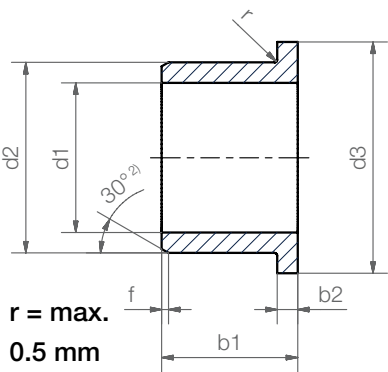
Dimensions according to ISO 3547-1
and special dimensions

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|----------------------------|------|-----------|---------------|
| 6.0 | +0.020 +0.068 | 8.0 | 6.0 | GV0SM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 10.0 | GV0SM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 8.0 | GV0SM-1012-08 |
| 10.0 | +0.025 +0.083 | 12.0 | 9.0 | GV0SM-1012-09 |
| 10.0 | +0.025 +0.083 | 12.0 | 10.0 | GV0SM-1012-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 15.0 | GV0SM-1012-15 |
| 10.0 | +0.025 +0.083 | 12.0 | 17.0 | GV0SM-1012-17 |
| 12.0 | +0.032 +0.102 | 14.0 | 12.0 | GV0SM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 15.0 | GV0SM-1618-15 |
| 20.0 | +0.040 +0.124 | 23.0 | 20.0 | GV0SM-2023-20 |
| 25.0 | +0.040 +0.124 | 28.0 | 20.0 | GV0SM-2528-20 |
| 30.0 | +0.040 +0.124 | 34.0 | 30.0 | GV0SM-3034-30 |
| 35.0 | +0.050 +0.150 | 39.0 | 40.0 | GV0SM-3539-40 |
| 40.0 | +0.050 +0.150 | 44.0 | 40.0 | GV0SM-4044-40 |

3) after pressfit. Testing methods ► Page 75

iglidur® G V0 | Product range
Flange bearing (Form F)



2) thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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



Order key

| Type | Dimensions | | | | |
|-------------------|------------|--------|-----------------|-----------------|----------------|
| GV0 F M -06 08-06 | | | | | |
| iglidur® material | Form F | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |



Dimensions according to ISO 3547-1
and special dimensions

Dimensions [mm]

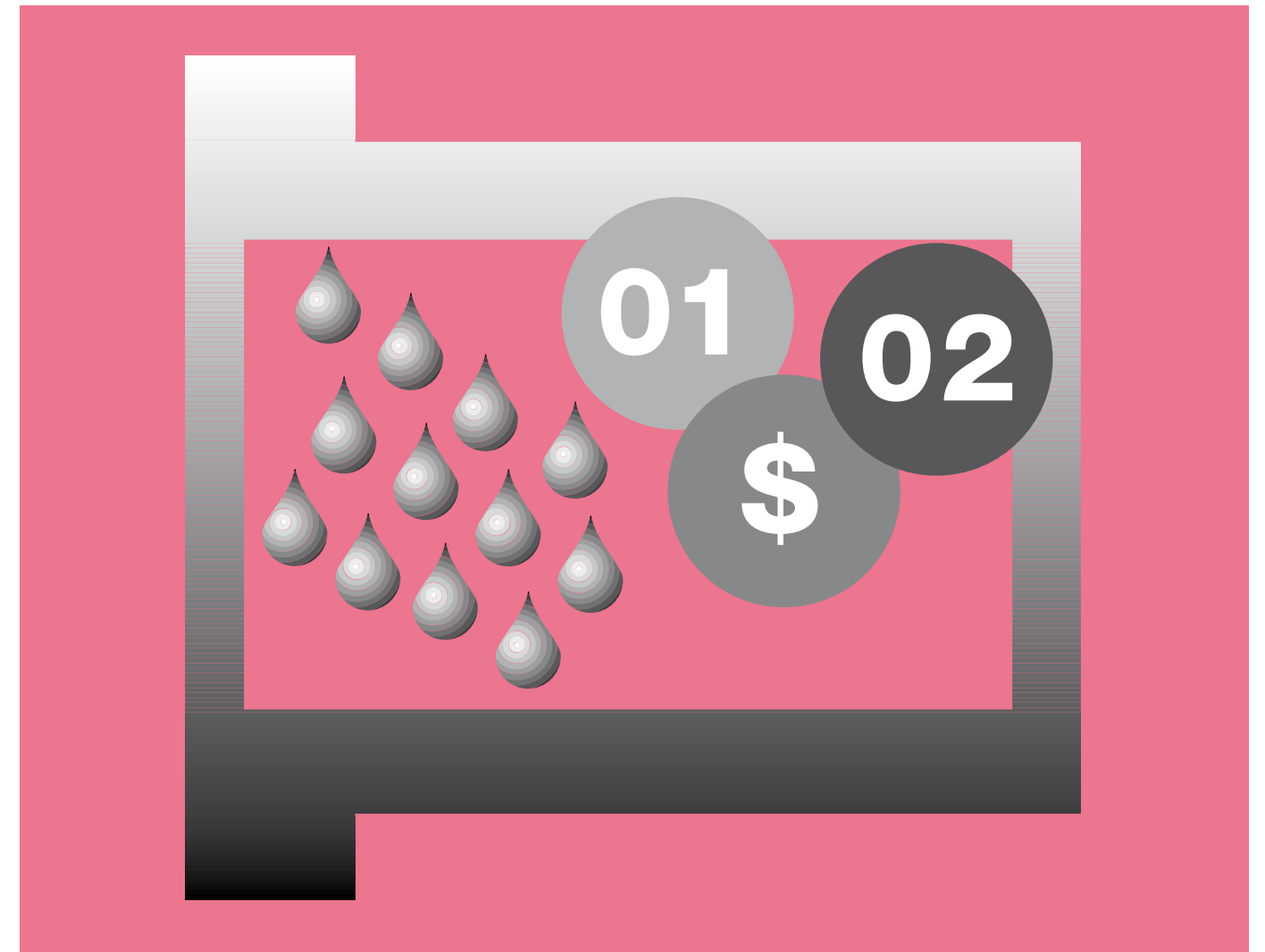
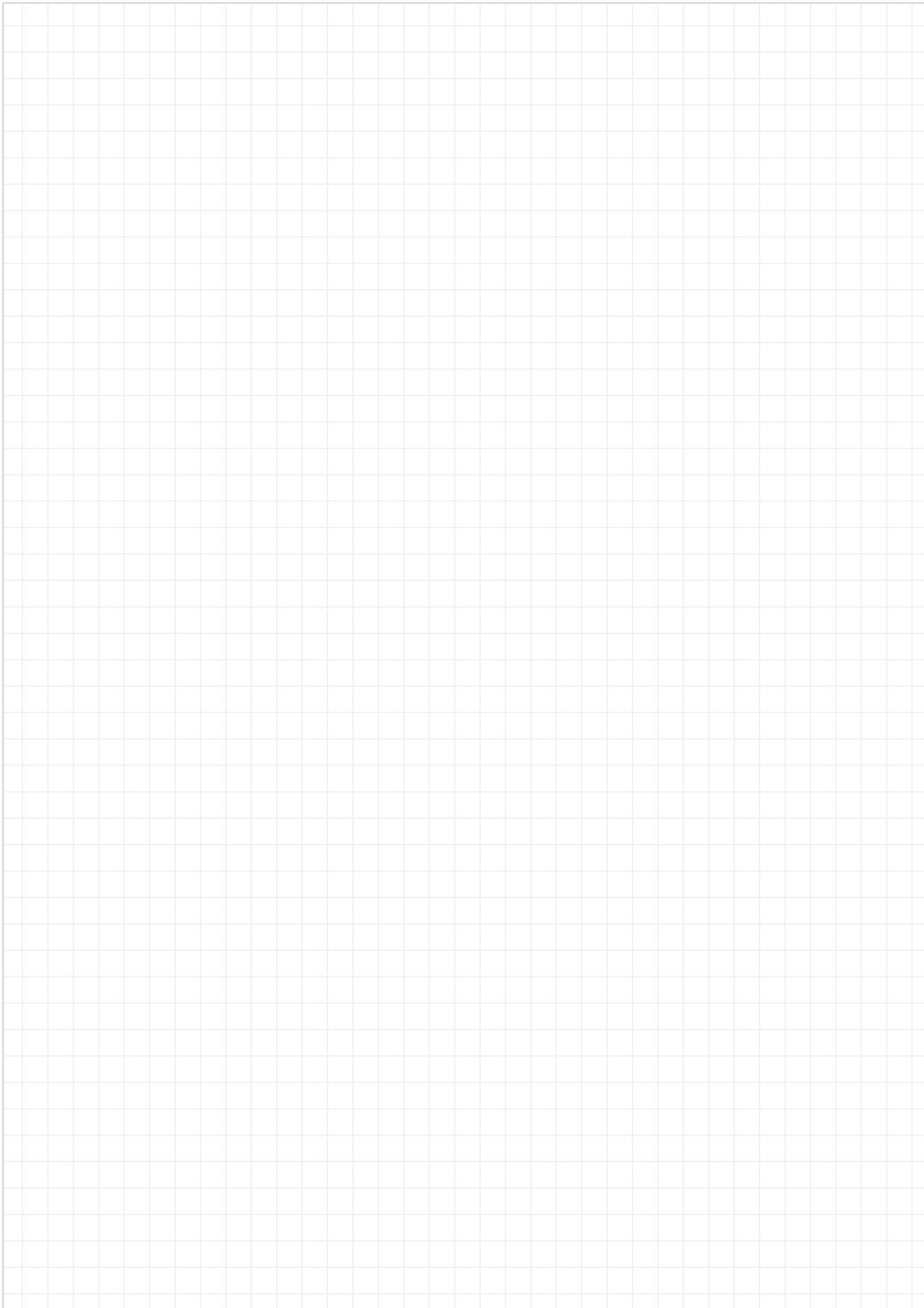
| d1 | d1-Tolerance ³⁾ | d2 | d3 d13 | b1 h13 | b2 -0.14 | Part No. |
|------|----------------------------|------|-----------|-----------|-------------|-----------------|
| 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 | GV0FM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 | GV0FM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 | GV0FM-1012-10 |
| 11.0 | +0.032 +0.102 | 13.0 | 20.0 | 20.0 | 0.5 | GV0FM-111320-20 |
| 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 | GV0FM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 | GV0FM-1618-17 |
| 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 | GV0FM-2023-21 |
| 25.0 | +0.040 +0.124 | 28.0 | 35.0 | 21.0 | 1.5 | GV0FM-2528-21 |
| 30.0 | +0.040 +0.124 | 34.0 | 42.0 | 37.0 | 2.0 | GV0FM-3034-37 |
| 35.0 | +0.050 +0.150 | 39.0 | 47.0 | 36.0 | 2.0 | GV0FM-3539-36 |
| 40.0 | +0.050 +0.150 | 44.0 | 52.0 | 40.0 | 2.0 | GV0FM-4044-40 |

3) after pressfit. Testing methods ► Page 75



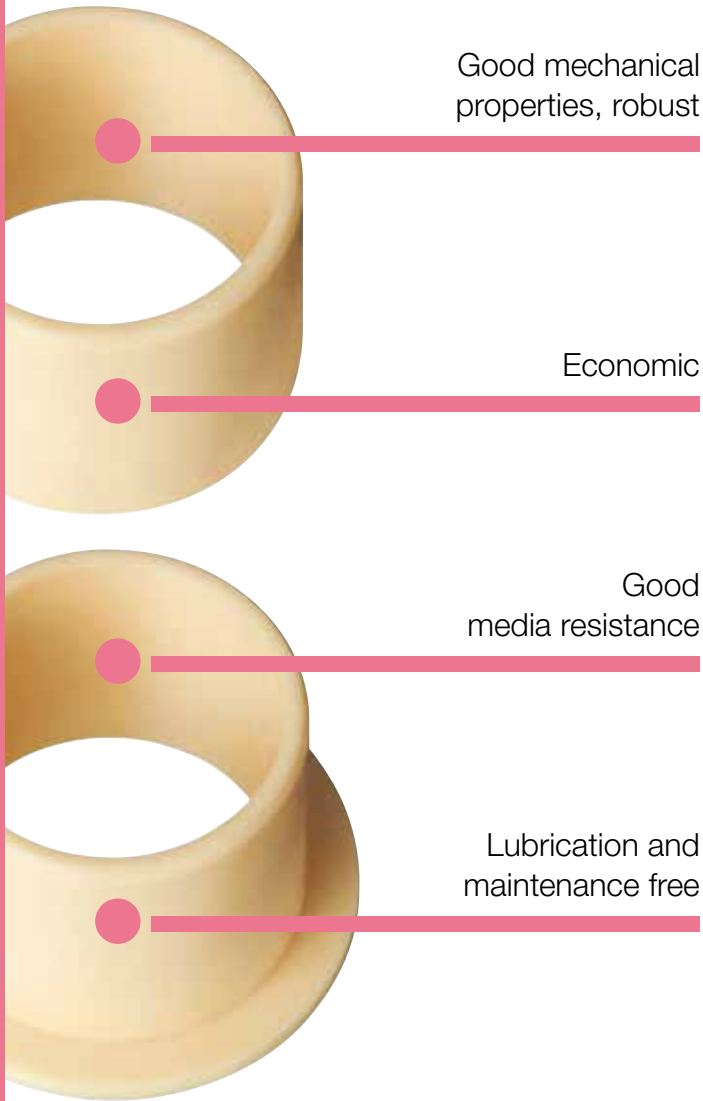
Don't find your size?

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



Versatile and cost-effective – iglidur® J2

- Good mechanical properties, robust
- Economic
- Good media resistance
- Lubrication and maintenance free
- Standard range from stock



iglidur® J2 has good universal media resistance, comparable to that of iglidur® J and similar materials. The mechanical specifications in sporadically moved applications are better although, in comparison, clear compromises have to be made with regard to friction and wear. Like all iglidur® materials, iglidur® J2 is PFOA-free.



When to use it?

- When low moisture absorption and good chemical resistance is required for primarily static load
- When a low-priced bearing is required for use in a wet environment with low p x v values
- When there is a basic lubrication of the bearing



When not to use it?

- When a highly wear-resistant bearing is required for continuous operation in dry running
 - ▶ iglidur® J3, page 191
- When low moisture absorption and media resistance play a minor role
 - ▶ iglidur® M250, page 111
- When a resistance to high temperatures and chemicals is required
 - ▶ iglidur® X, page 133



Available from stock

Detailed information about delivery time online.



max. +90 °C

min. -50 °C



Block pricing online

No minimum order value. From batch size 1



Ø 6–25 mm

more dimensions on request



Typical application areas

- Jig construction
- Material handling, etc.

Material properties table

| General properties | Unit | iglidur® J2 | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm³ | 1.44 | |
| Colour | | light yellow | |
| Max. moisture absorption at +23 °C/50 % r.h. | % weight | 0.2 | DIN 53495 |
| Max. water absorption | % weight | 1.3 | |
| Coefficient of sliding friction, dynamic against steel | μ | 0.11–0.27 | |
| pv value, max. (dry) | MPa · m/s | 0.23 | |
| Mechanical properties | | | |
| Modulus of elasticity | MPa | 3,605 | DIN 53457 |
| Tensile strength at +20 °C | MPa | 101 | DIN 53452 |
| Compressive strength | MPa | 77 | |
| Max. recommended surface pressure (+20 °C) | MPa | 46 | |
| Shore-D hardness | | n.b. | DIN 53505 |
| Physical and thermal properties | | | |
| Max. long term application temperature | °C | +90 | |
| Max. short term application temperature | °C | +110 | |
| Min. application temperature | °C | -50 | |
| Thermal conductivity | W/m · K | 0.25 | ASTM C 177 |
| Coefficient of thermal expansion (at +23 °C) | K ⁻¹ · 10 ⁻⁵ | 7 | DIN 53752 |
| Electrical properties | | | |
| Specific volume resistance | Ωcm | > 10 ¹³ | DIN IEC 93 |
| Surface resistance | Ω | > 10 ¹² | DIN 53482 |

Table 01: Material properties table

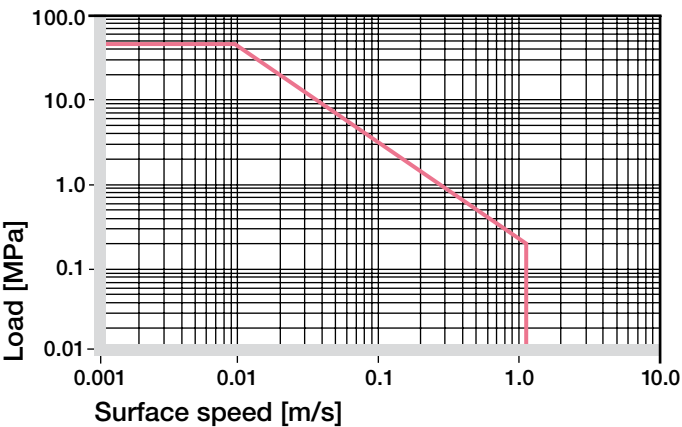


Diagram 01: Permissible pv values for iglidur® J2 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® J2 plain bearings is approximately 0.2 % in ambient conditions. The saturation limit submerged in water is 1.3 %. Due to these low values considering expansion by moisture absorption is only required in extreme cases.

▶ Diagram, www.igus.eu/j2-moisture

Vacuum

In vacuum applications, any absorbed moisture content is outgassed. Use in vacuum is only possible with dehumidified bearings.

3D-CAD files, prices and delivery time ▶ www.igus.eu/j2

Radiation resistance

Plain bearings made from iglidur® J2 are resistant to radiation up to an intensity of applications 3 · 10² Gy.

UV resistance

iglidur® J2 plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

| Medium | Resistance |
|---------------------------------|------------|
| Alcohols | + |
| 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 02: Chemical resistance

▶ Chemical table, page 1226

With respect to its general mechanical and thermal specifications, iglidur® J2 is directly comparable to our classic, iglidur® J. Therefore the iglidur® J2 is superior to iglidur® J with respect to the mechanical properties, such as maximum recommended surface pressure. However, wear resistance is reduced when running dry.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® J2 plain bearings decreases. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

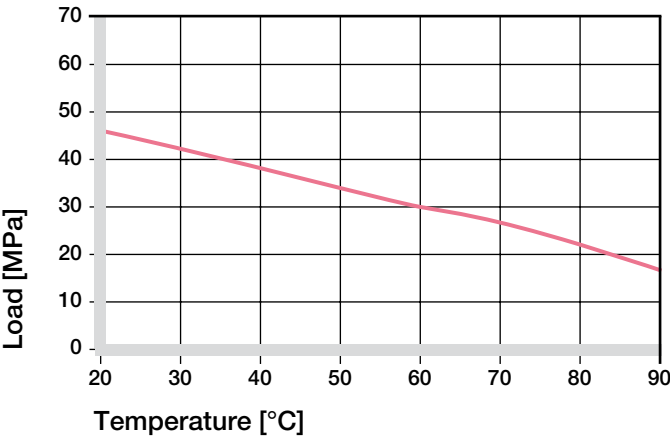


Diagram 02: Recommended maximum surface pressure of as a function of temperature (46 MPa at +20°C)

Diagram 03 shows the elastic deformation of iglidur® J2 under different loads. A possible deformation could be, among others, dependant on the duty cycle of the load.

► Surface pressure, page 63

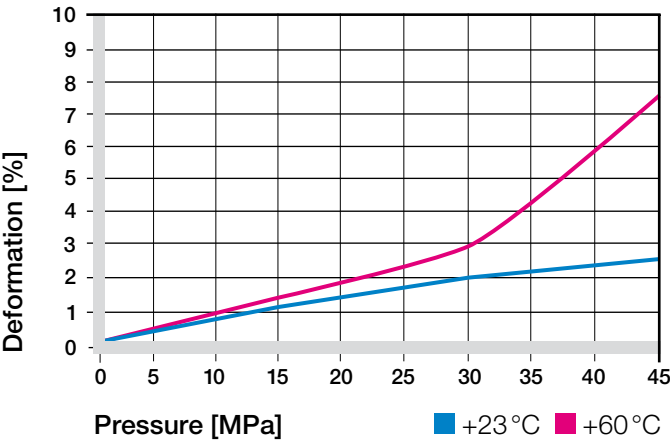


Diagram 03: Deformation under pressure and temperature

Permissible surface speeds

iglidur® J2 is mainly suitable for low speeds in dry running, but the specified values shown in table 03 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached due to varying application conditions.

► Surface speed, page 65

| m/s | Rotating | Oscillating | Linear |
|------------|----------|-------------|--------|
| Continuous | 0.8 | 0.7 | 3 |
| Short term | 1.9 | 1.1 | 5 |

Table 03: Maximum surface speeds

Temperatures

The ambient application temperature has a direct impact on bearing wear, an increase in temperature results in an increase in wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +90 °C. At temperatures over +60 °C an additional securing is required.

► Application temperatures, page 66

► Additional securing, page 67

Friction and wear

Coefficient of friction and wear resistance are dependent on the application parameters (diagrams 04 and 05).

► Coefficients of friction and surfaces, page 68

► Wear resistance, page 69

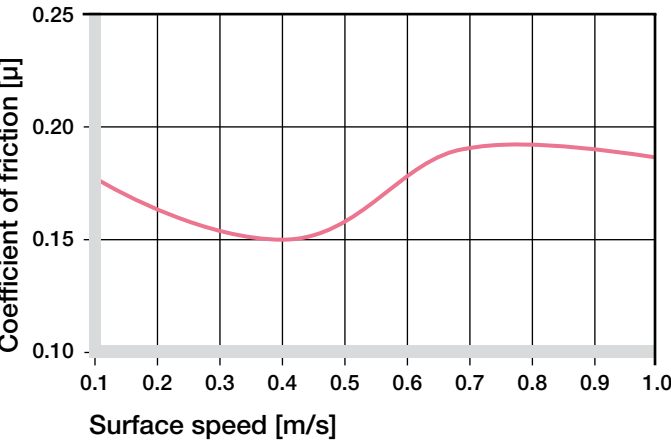


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1.0 MPa

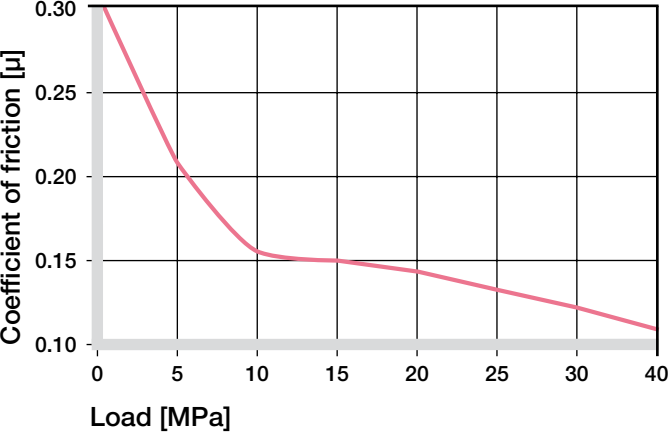


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

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. Diagram 06 shows a summary of the results of tests with different shaft materials. Diagram 06 shows that iglidur® J2 delivers good wear values especially with cutting steel in rotation at 1 MPa. When running dry, the wear values are sometimes significantly higher on other shafts. Unlike many other iglidur® materials, the wear rate in pivoting is slightly higher compared to the rate in rotation with otherwise identical parameters (diagram 07).

► Shaft materials, page 71

| iglidur® J2 | Dry | Greases | Oil | Water |
|-------------|-----------|---------|------|-------|
| C.o.f. μ | 0.11–0.27 | 0.08 | 0.07 | 0.04 |

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

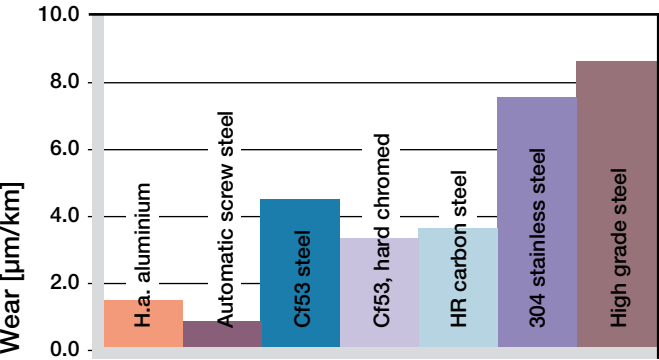


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

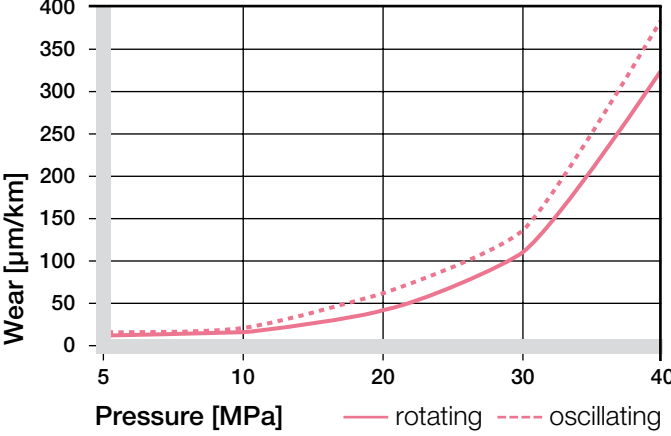


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

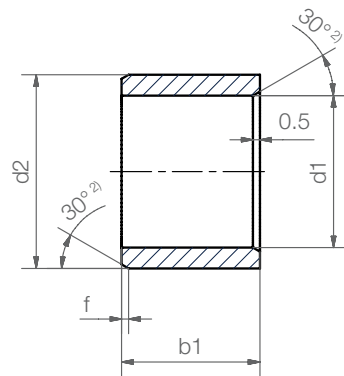
Installation tolerances

iglidur® J2 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. In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

► Testing methods, page 75

| Diameter d1 [mm] | Shaft h9 [mm] | iglidur® J2 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Order key

Type Dimensions

J2 S M-0608-06

| | | | | | |
|-------------------|--------|--------|-----------------|-----------------|----------------|
| iglidur® material | Form S | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |
|-------------------|--------|--------|-----------------|-----------------|----------------|



Dimensions according to ISO 3547-1 and special dimensions

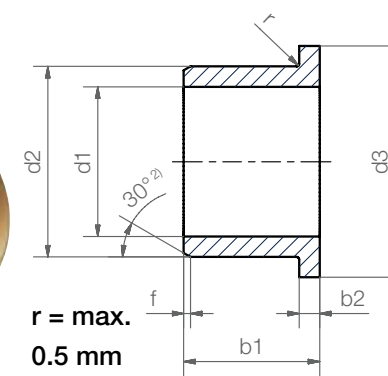
²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | b1 h13 | Part No. |
|------|----------------------------|------|-----------|---------------------|
| 6.0 | +0.020 +0.068 | 8.0 | 6.0 | J2SM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 10.0 | J2SM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 10.0 | J2SM-1012-10 |
| 12.0 | +0.032 +0.102 | 14.0 | 12.0 | J2SM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 15.0 | J2SM-1618-15 |
| 20.0 | +0.040 +0.124 | 23.0 | 20.0 | J2SM-2023-20 |
| 25.0 | +0.040 +0.124 | 28.0 | 20.0 | J2SM-2528-20 |

³⁾ after pressfit. Testing methods ► Page 75

Order key

Type Dimensions

J2 F M-0608-06

| | | | | | |
|-------------------|--------|--------|-----------------|-----------------|----------------|
| iglidur® material | Form F | Metric | Inner-Ø d1 [mm] | Outer-Ø d2 [mm] | Length b1 [mm] |
|-------------------|--------|--------|-----------------|-----------------|----------------|



Dimensions according to ISO 3547-1 and special dimensions

²⁾ thickness < 1 mm, chamfer = 20°

Chamfer in relation to the d1

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

Dimensions [mm]

| d1 | d1-Tolerance ³⁾ | d2 | d3 d13 | b1 h13 | b2 -0.14 | Part No. |
|------|----------------------------|------|-----------|-----------|-------------|---------------------|
| 6.0 | +0.020 +0.068 | 8.0 | 12.0 | 6.0 | 1.0 | J2FM-0608-06 |
| 8.0 | +0.025 +0.083 | 10.0 | 15.0 | 10.0 | 1.0 | J2FM-0810-10 |
| 10.0 | +0.025 +0.083 | 12.0 | 18.0 | 10.0 | 1.0 | J2FM-1012-10 |
| 12.0 | +0.032 +0.102 | 14.0 | 20.0 | 12.0 | 1.0 | J2FM-1214-12 |
| 16.0 | +0.032 +0.102 | 18.0 | 24.0 | 17.0 | 1.0 | J2FM-1618-17 |
| 20.0 | +0.040 +0.124 | 23.0 | 30.0 | 21.5 | 1.5 | J2FM-2023-21 |

³⁾ after pressfit. Testing methods ► Page 75

Don't find your size?

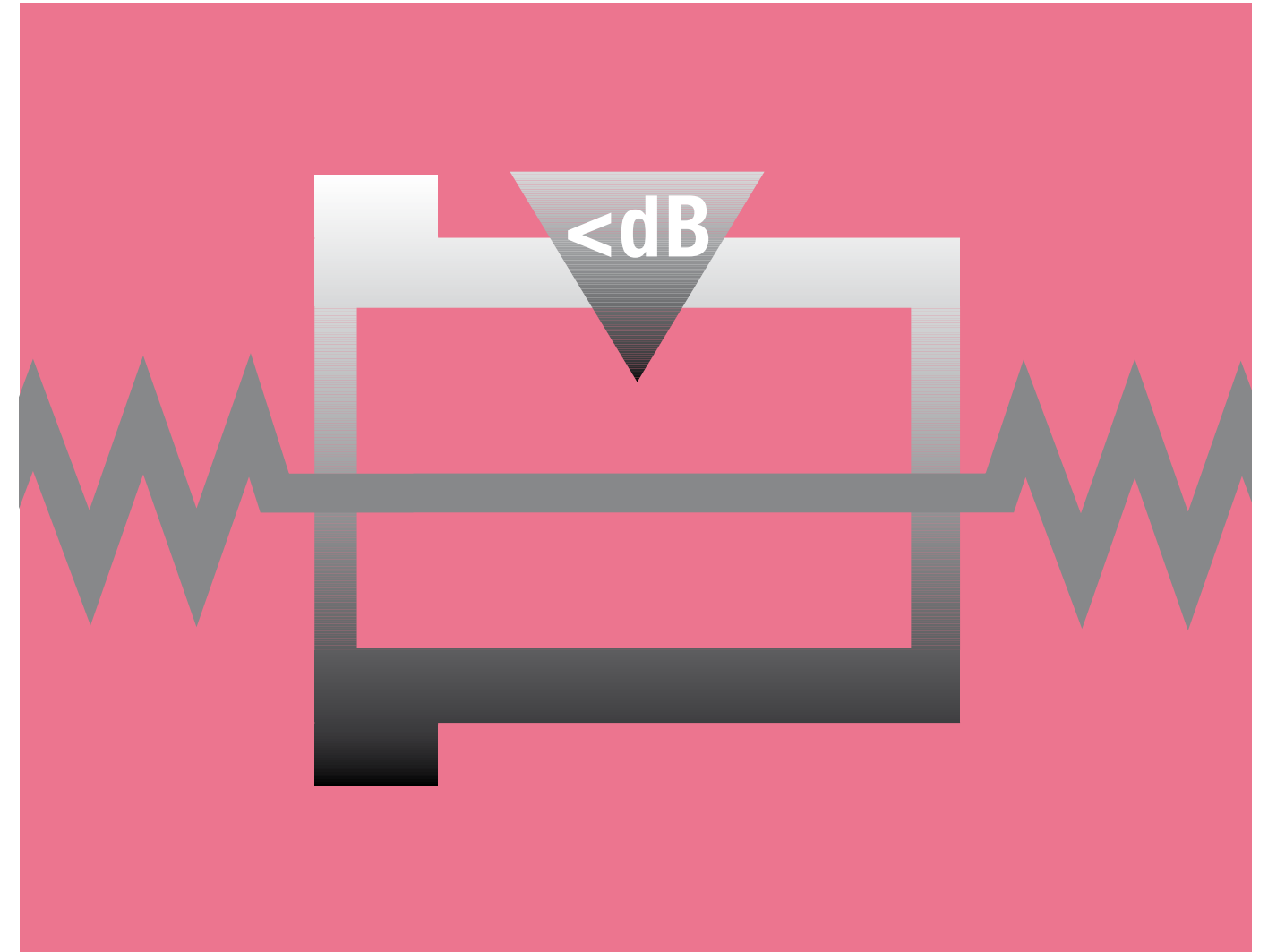
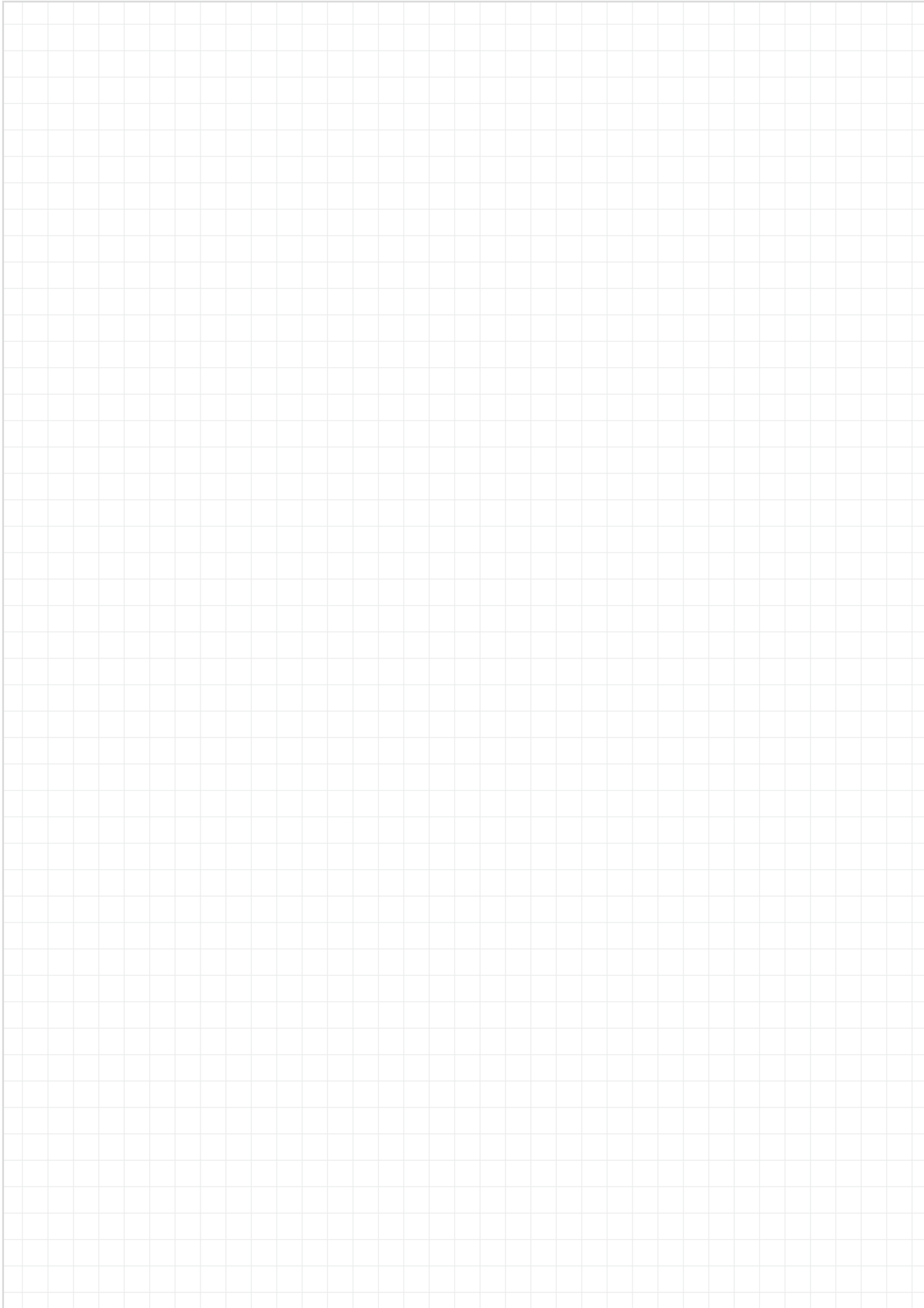
Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution in a very short time.



Even more dimensions from stock

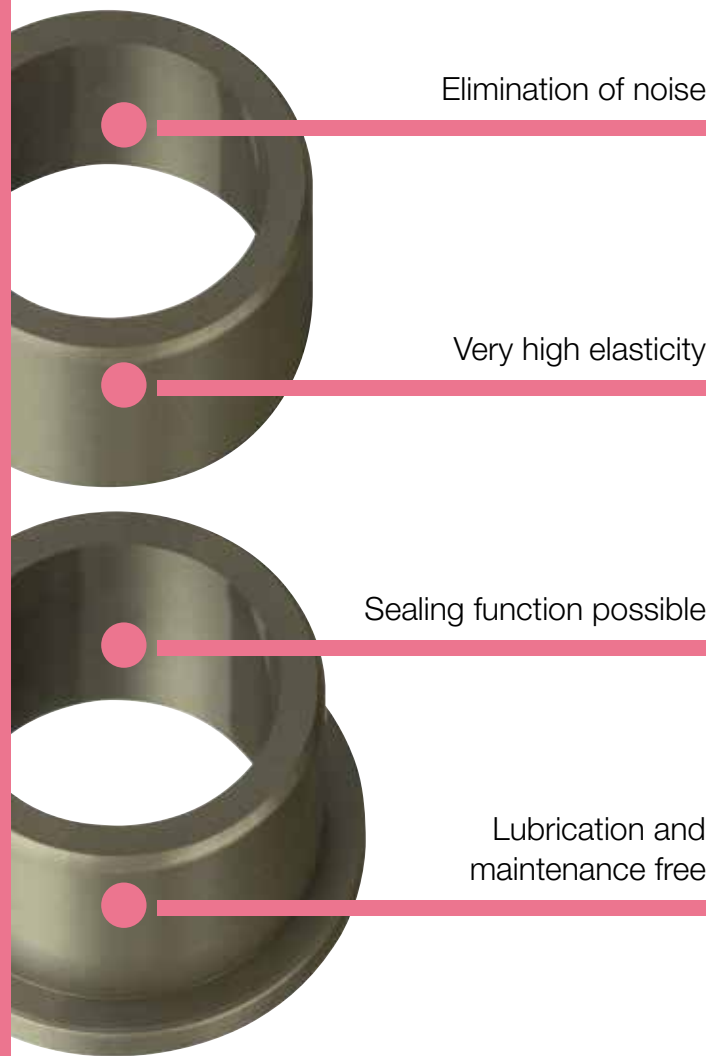
More than 300 dimensions are now available. Search online for your required bearing.

► www.igus.eu/iglidur-specialbearings



High elasticity – iglidur® B

- Elimination of noise
- Very high elasticity
- Sealing function possible
- Lubrication and maintenance free



Vibration dampening is the predominant feature of the iglidur® B material, which are 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 99
- When a cost-effective universal bearing is required
▶ iglidur® R, page 223
- When the highest wear resistance is required
▶ iglidur® J, page 99



Available on request

Detailed information about delivery time online.



max. +100 °C
min. -40 °C



Order-related



Order-related



Material properties table

| General properties | Unit | iglidur® B | Testing method |
|--|------------------------------------|--------------------|----------------|
| Density | g/cm³ | 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 | |
| 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 |

Table 01: Material properties table

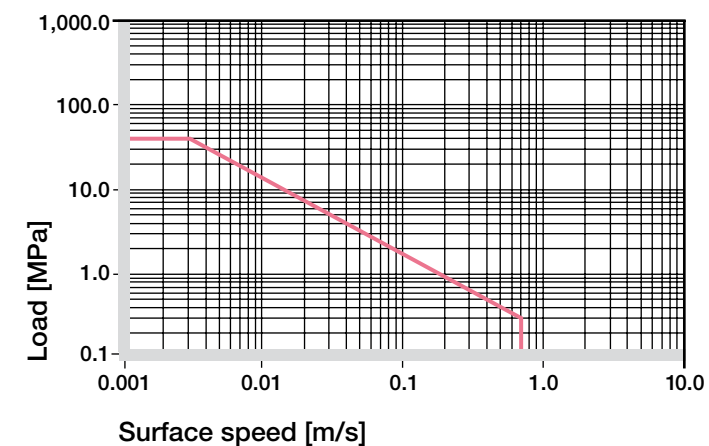


Diagram 01: Permissible pv values for iglidur® B bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® B plain bearings is approximately 1 % in standard atmosphere. The saturation limit submerged in water is 6.3 %. This must be taken into account along with other environmental influences.

▶ Diagram, www.igus.eu/b-moisture

Vacuum

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

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

UV resistance

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

| Medium | Resistance |
|---------------------------------|------------|
| Alcohols | + 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 02: Chemical resistance

▶ Chemical table, page 1226

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. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

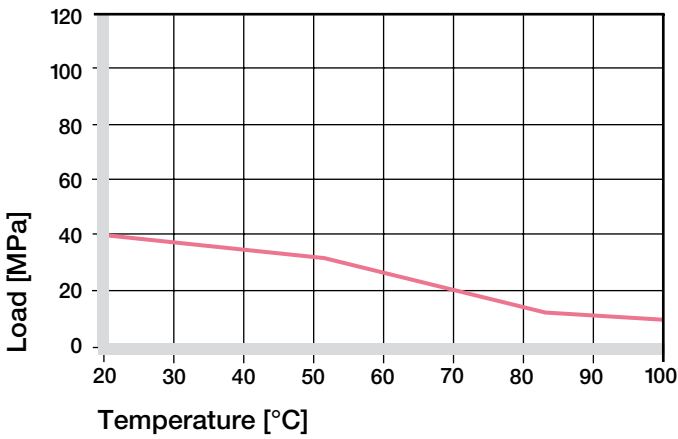


Diagram 02: Recommended maximum surface pressure of as a function of temperature (40 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® B at radial loads. The elastic deformation at 40 MPa at room temperature is 5.3 %.

► Surface pressure, page 63

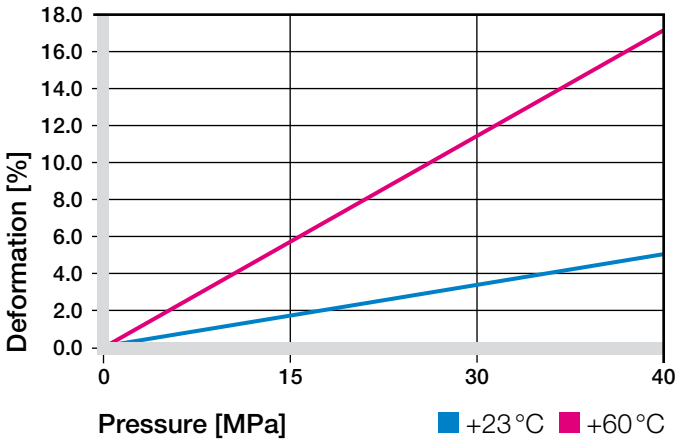


Diagram 03: Deformation under pressure and temperature

Permissible surface speeds

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

► Surface speed, page 65

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

Table 03: Maximum surface speeds

Temperatures

The operating temperature of the iglidur® B bearings is limited to +100 °C. At temperatures over +50 °C an additional securing is required. The wear resistance too declines disproportionately from +70 °C.

► Application temperatures, page 66

► Additional securing, page 67

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. 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 68

► Wear resistance, page 69

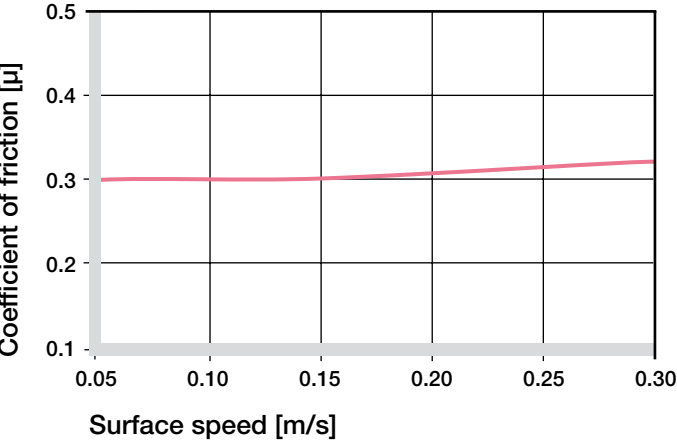


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

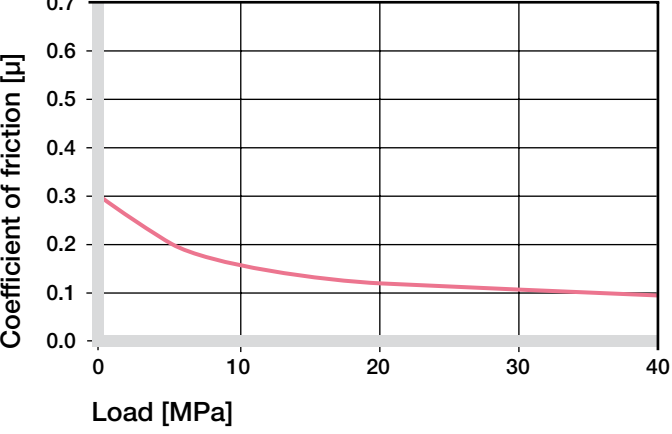


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

The influence of the shaft is not very large on the wear resistance. Diagrams 06 and 07 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 71

| 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 (Ra = 1 μm, 50 HRC)

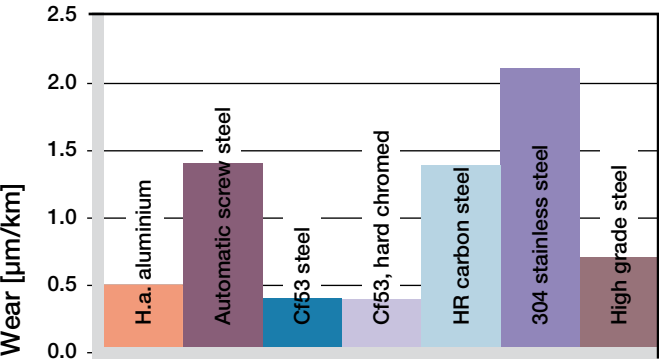


Diagram 07: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

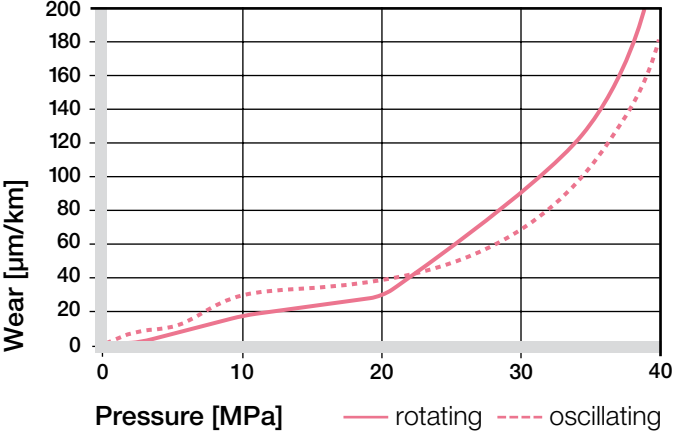


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Installation tolerances

iglidur® B 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).

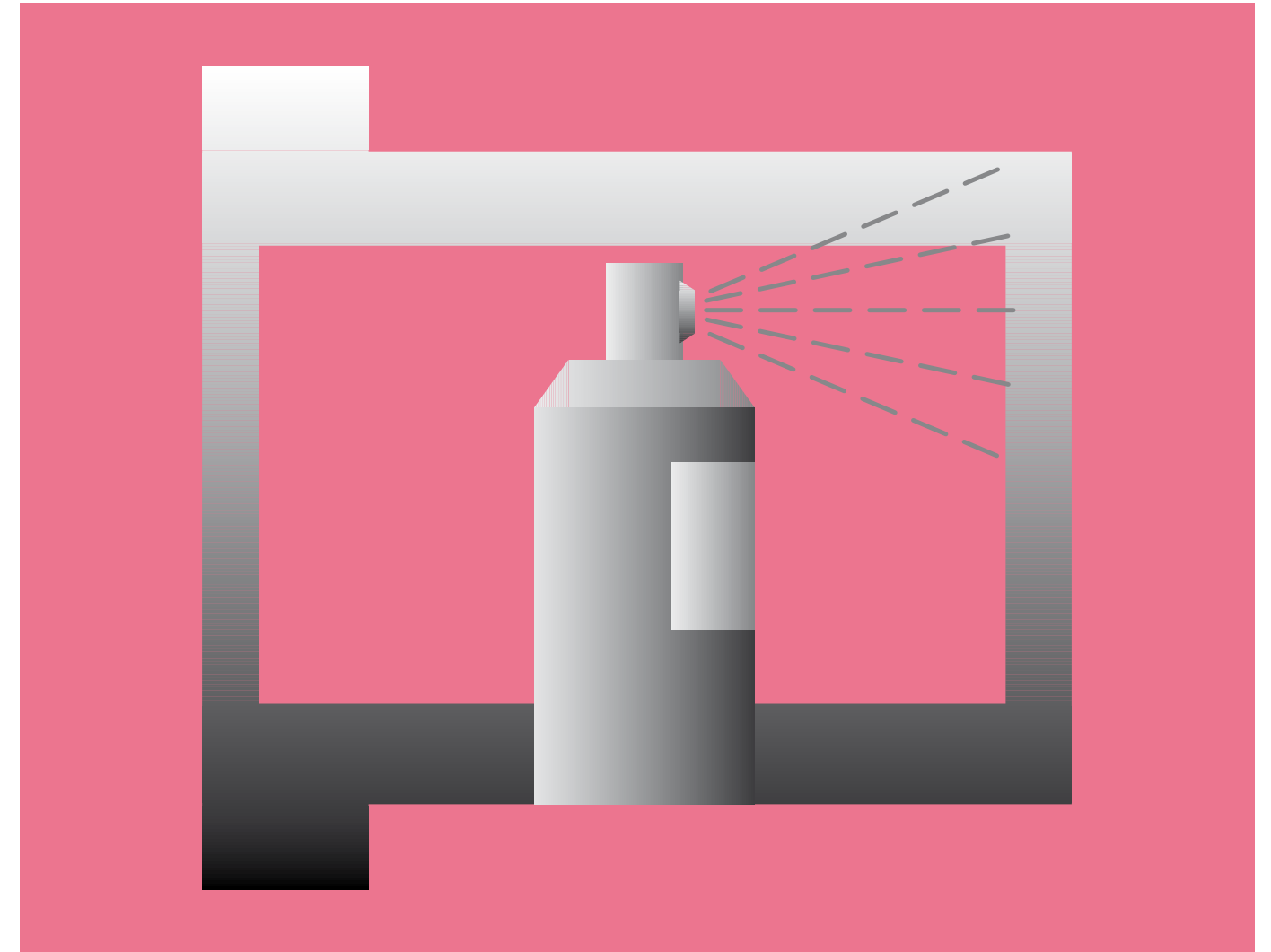
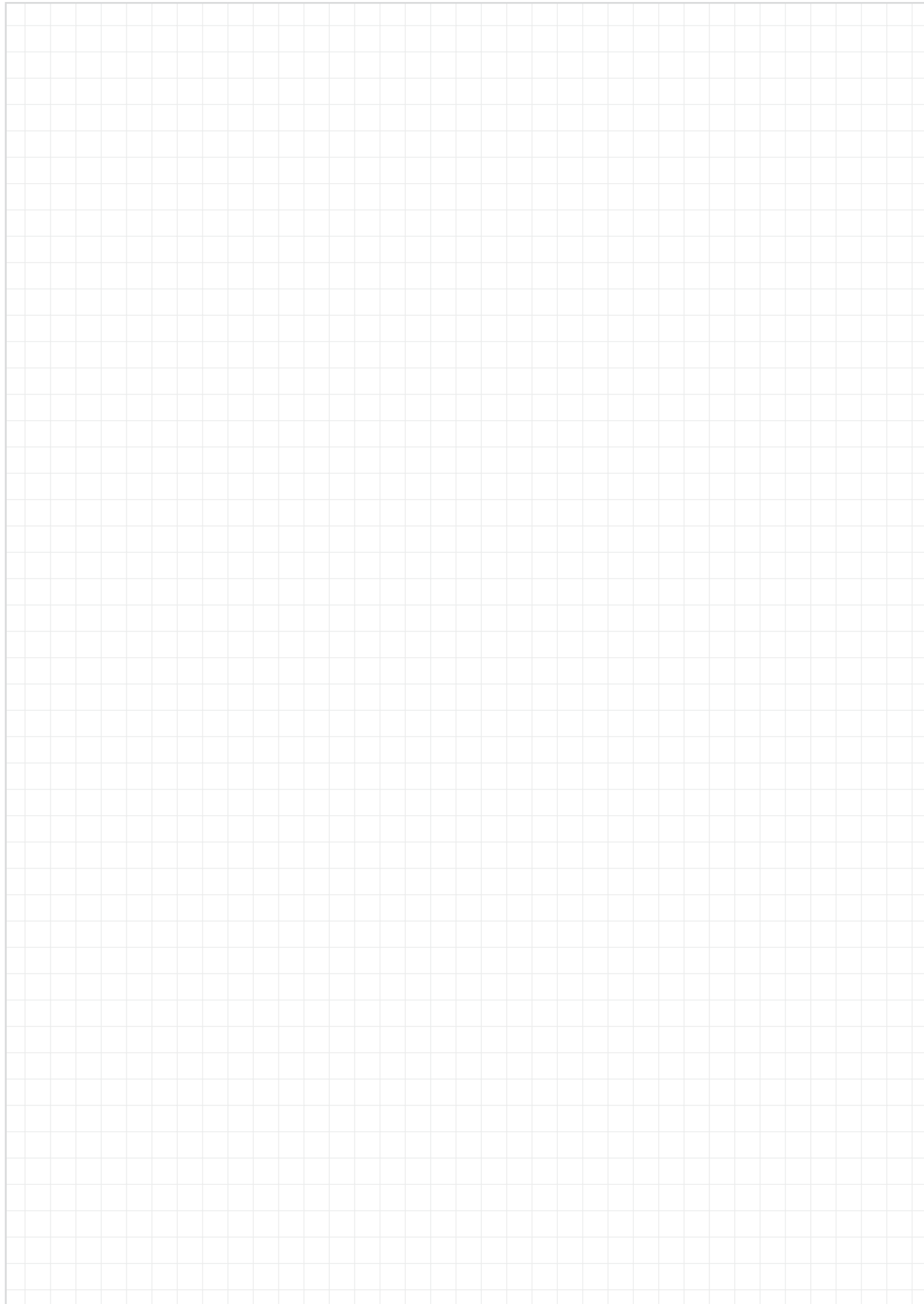
► Testing methods, page 75

| 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

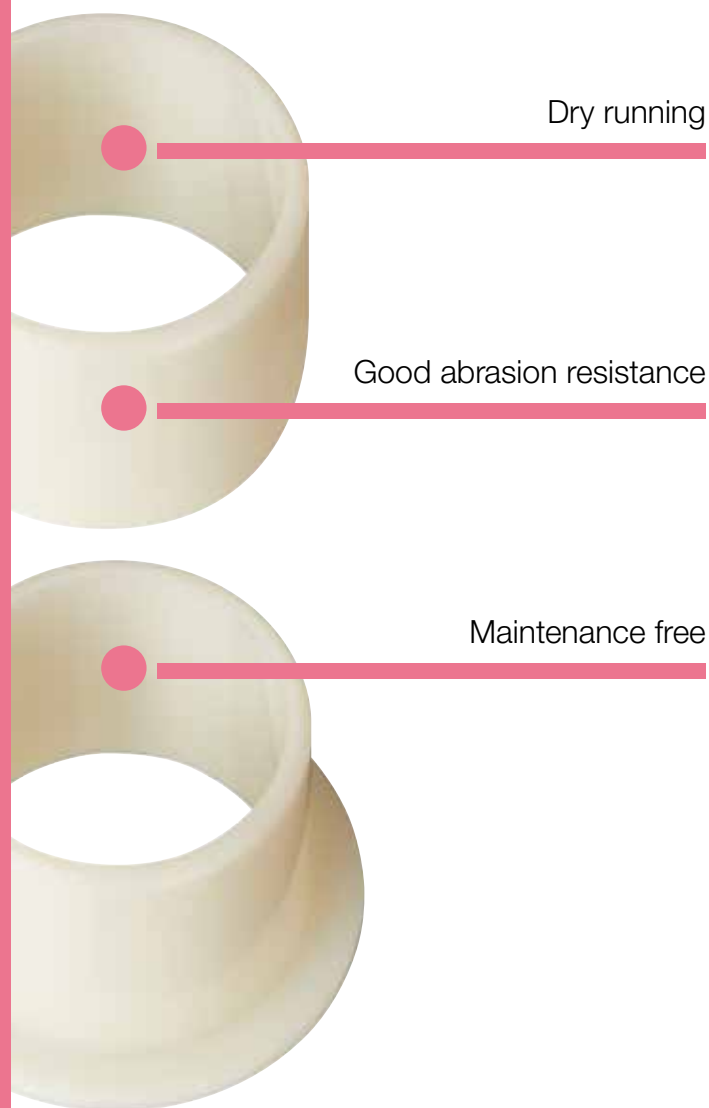
Product range

iglidur® B plain bearings are manufactured to special order.



Free of PTFE and silicone – iglidur® C

- Dry running
- Good abrasion resistance
- Lubrication and maintenance free



Although iglidur® C intentionally dispenses with the use of PTFE and silicone as lubricants, the bearings still have excellent wear resistance under 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 121
- When low coefficients of friction are required
▶ iglidur® J, page 99
▶ iglidur® L250, page 215
- If a cost-effective option is requested
▶ iglidur® M250, page 111
- When low moisture absorption is required
▶ iglidur® R, page 223



Available on request

Detailed information about delivery time online.



max. +90 °C
min. -40 °C



Order-related



Order-related



Material properties table

| General properties | Unit | iglidur® C | Testing method |
|--|------------|------------|----------------|
| Density | g/cm³ | 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 | |
| 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 | > 10¹⁰ | DIN IEC 93 |
| Surface resistance | Ω | > 10⁹ | DIN 53482 |

Table 01: Material properties table

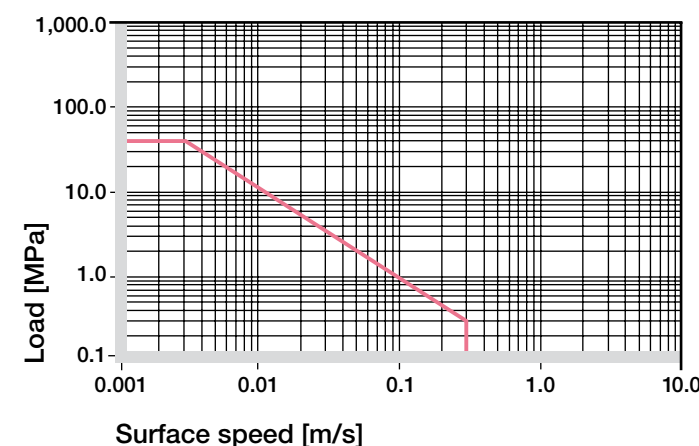


Diagram 01: Permissible pv values for iglidur® C bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® C plain bearings is approx. 7 % when saturated in water. This must be taken into account for these types of applications.

▶ Diagram, www.igus.eu/c-moisture

Vacuum

iglidur® C plain bearings outgas in a vacuum. Applications in vacuum are only possible to a limited extent.

Radiation resistance

Plain bearings of iglidur® C are radiation resistant up to a radiation intensity of $2 \cdot 10^4$ Gy.

UV resistance

iglidur® C plain bearings are not resistant to UV radiation.

| Medium | Resistance |
|---------------------------------|------------|
| Alcohols | + 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 02: Chemical resistance

▶ Chemical table, page 1226

Bearings made from iglidur® C were developed especially for applications where the use of PTFE and silicon is not possible. Such applications can be found in electronics, tobacco and beverages industry and in many painting processes. Keywords like paint compatibility and silicon-free make the further employment of this material reasonable.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® C plain bearings decreases. The diagram 02 shows this inverse relationship. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

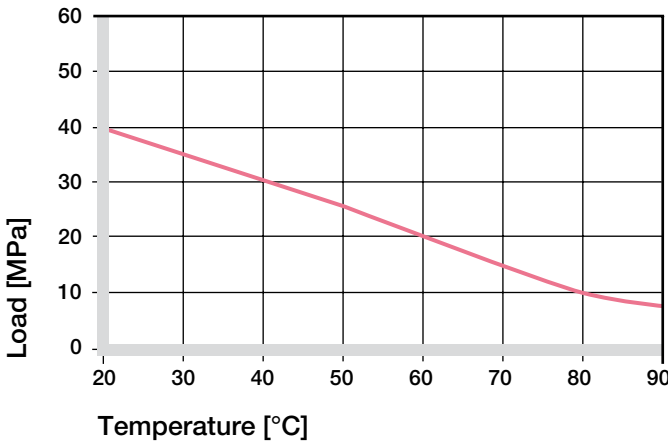


Diagram 02: Recommended maximum surface pressure of as a function of temperature (40 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® C at radial loads. The high flexibility makes the bearing suitable for vibrations and edge loads.

► Surface pressure, page 63

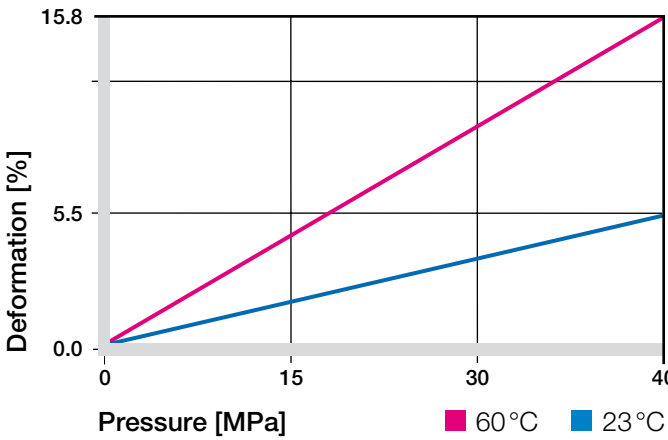


Diagram 03: Deformation under pressure and temperature

Permissible surface speeds

Although important solid lubricants have been deliberately avoided in the development of iglidur® C, the bearings are very wear resistant and therefore even suitable for continuous movements at medium surface speeds. Despite it being possible to temporarily attain rotating speeds of up to 1.5 m/s, the main applications should be undertaken with speeds of less than 0.5 m/s.

► Surface speed, page 65

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

Table 03: Maximum surface speeds

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 temperature to about +80 °C to +90 °C. At temperatures over +40 °C an additional securing is required.

► Application temperatures, page 66

► Additional securing, page 67

Friction and wear

The coefficient of friction of the iglidur® C bearing is dependent to a large degree on the coarseness of the shaft. The wear of the bearing is very good in applications with rotating or pivoting motions with low loads.

► Coefficients of friction and surfaces, page 68

► Wear resistance, page 69

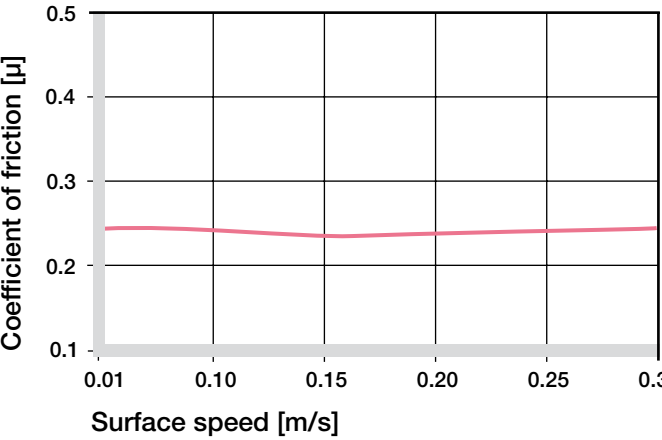


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

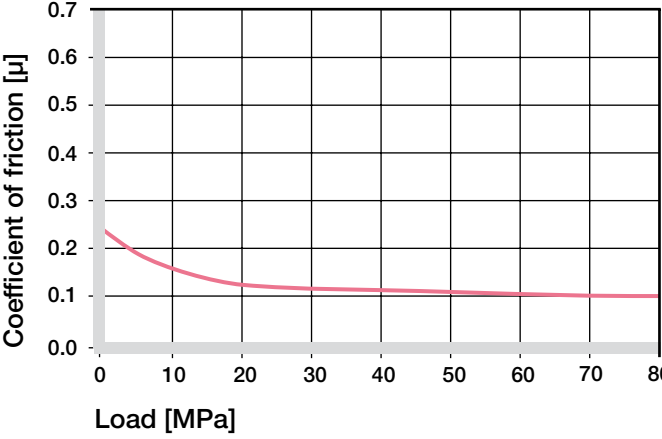


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

Diagram 06 clearly shows how important the "suitable" counter partner could be. Although all shown results of these rotation experiments can be understood as very good, the difference is sometimes significant. This difference rises still further with increasing pressures.

► Shaft materials, page 71

| 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)

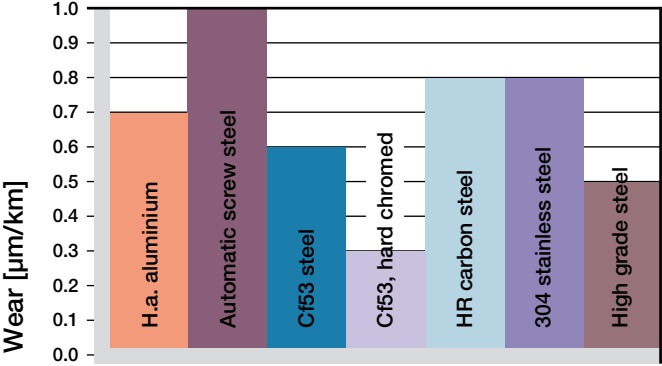


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

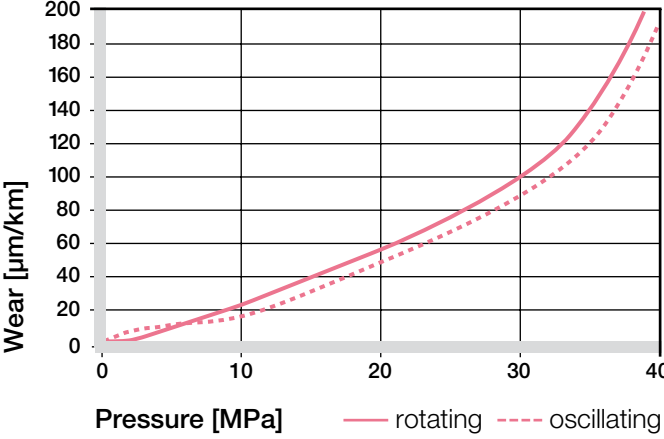


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Installation tolerances

iglidur® C 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.

► Testing methods, page 75

| 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 05: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product range

iglidur® C plain bearings are produced to special order.