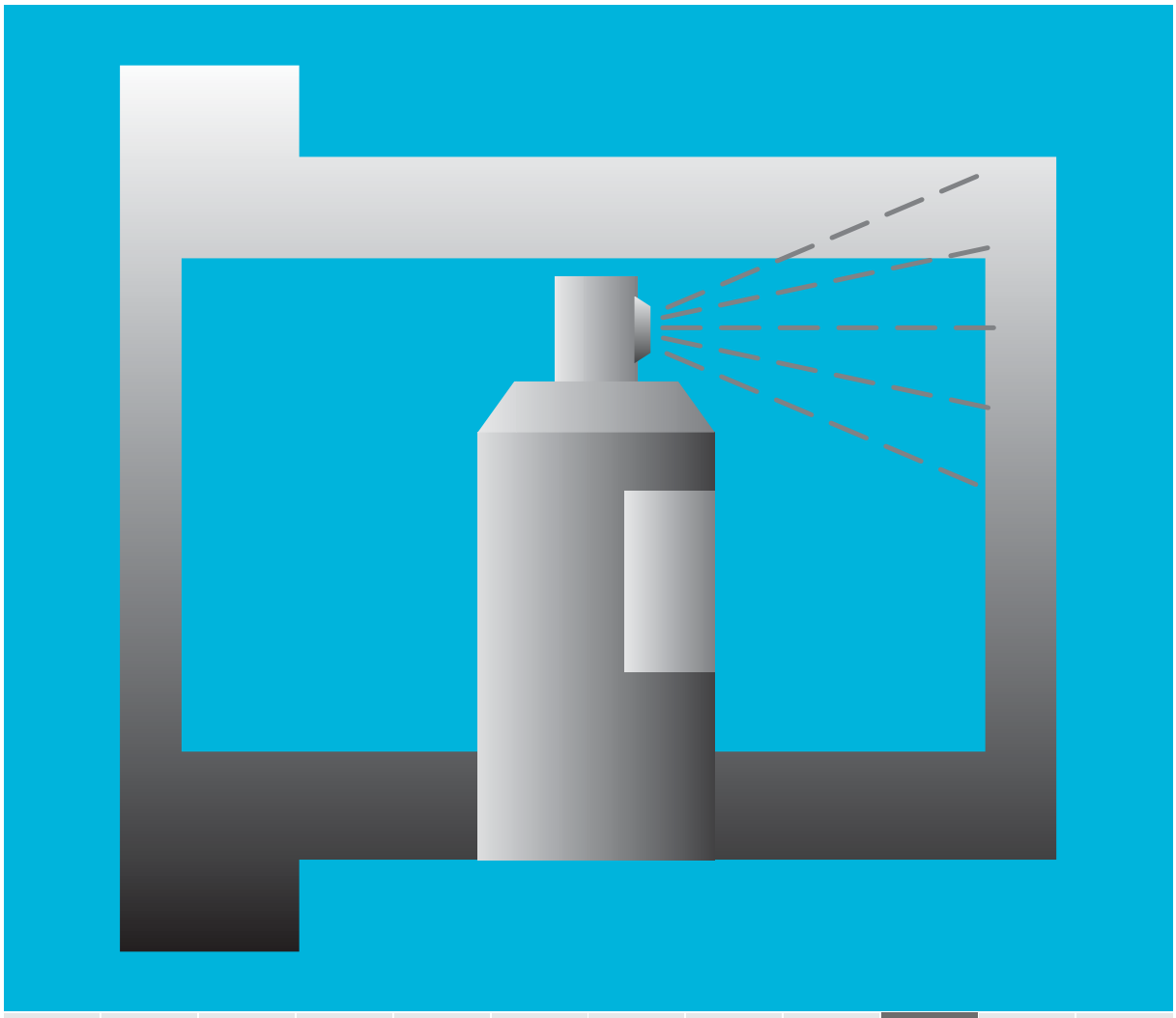

iglidur® C –
PTFE- and Silicone-Free

PTFE- and silicone-free

Good abrasion resistance

Maintenance-free

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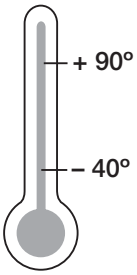
iglidur® C | **PTFE- and Silicone-Free**

Plain bearings made from iglidur® C were specially developed for applications in which the use of PTFE (e.g. Teflon®) and silicone are not approved. Such applications can be found in electrical engineering, the tobacco-industry and in paintshop-equipment.

Product range on request



Price index

PTFE- and Silicone-Free

When to use iglidur® C plain bearings:

- When PTFE and silicone are not allowed in for your application
- For applications with low speeds
- In dirty environments
- Self-lubricating and suitable for dry running

When not to use iglidur® C plain bearings:

- When highest wear resistance is required
  ▶ iglidur® W300 (chapter 5)
- When lowest coefficients of friction are required
  ▶ iglidur® J200 (chapter 28), iglidur® L250 (chapter 16)
- When a cost-effective universal bearing is required
  ▶ iglidur® M250 (chapter 4)
- When low moisture absorption is required
  ▶ iglidur® R (chapter 19)

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E-mail info@igus.de

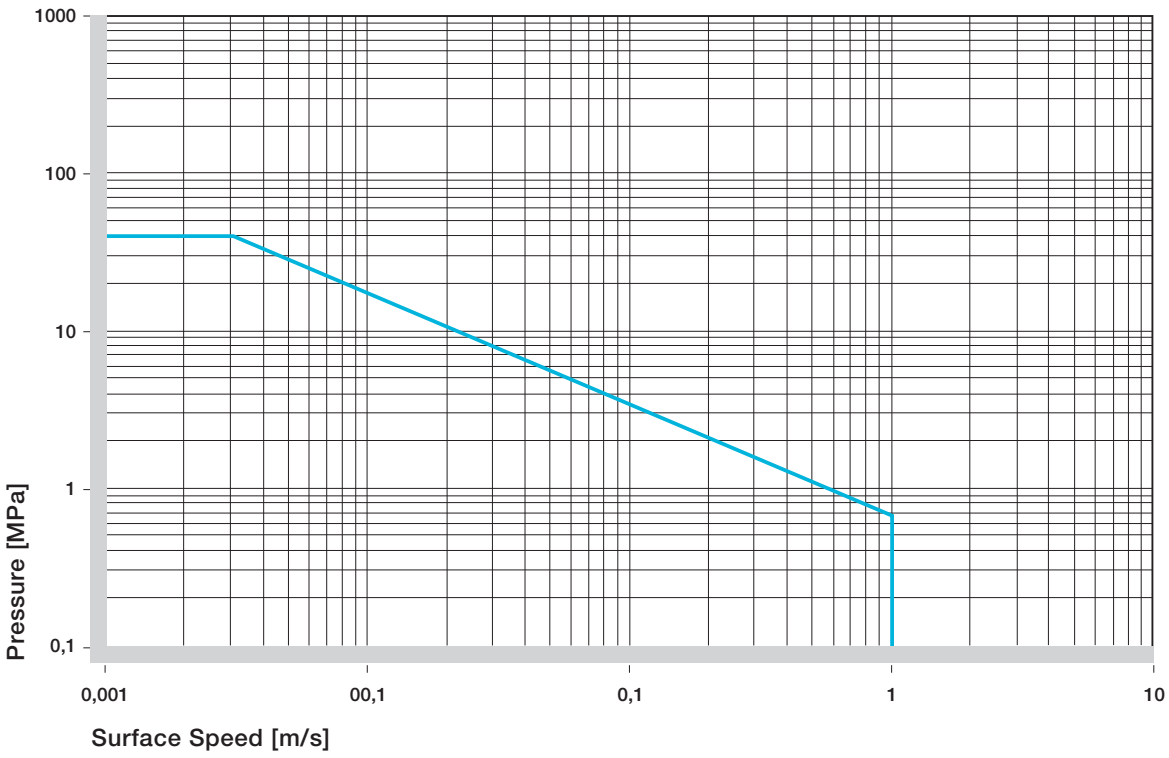
Lifetime calculation, CAD files and much more support ▶ www.igus.de/en/c

Material Table

General Properties	Unit	iglidur® C	Testing Method
Density	g/cm3	1,1	
Colour		White	
Max. moisture absorption at 23°C / 50% r.F.	% weight	1,0	DIN 53495
Max. moisture absorption	% weight	6,9	
Coefficient of friction, dynamic against steel	µ	0,17 - 0,25	
p x v value, max. (dry)	MPa x m/s	0,10	
Mechanical Properties			
Modulus of elasticity	MPa	1.900	DIN 53457
Tensile strength 20°C	MPa	60	DIN 53452
Compressive strength	MPa	30	
Max. recommended surface pressure (20°C)	MPa	40	
Shore D hardness		72	DIN 53505
Physical and Thermal Properties			
Max. long term application temperature	°C	90	
Max. short term application temperature	°C	130	
Maximum short term ambient temperature[1)]	°C	150	
Min. application temperature	°C	-40	
Thermal conductivity	W/m x K	0,24	ASTM C 177
Coefficient of thermal expansion (at 23°C)	$K^{-1} \times 10^{-5}$	15	DIN 53752
Electrical Properties			
Specific volume resistance	Ωcm	$> 10^{10}$	DIN IEC 93
Surface resistance	Ω	$> 10^{9}$	DIN 53482

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

Table 24.1: Material Data



Graph 24.1: Permissible p x v values for iglidur® C with a wall thickness of 1 mm running dry against a steel shaft at 20°C, mounted in a steel housing

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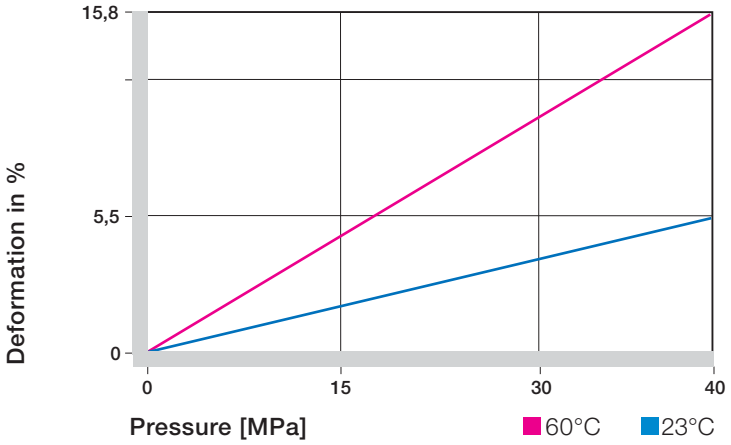


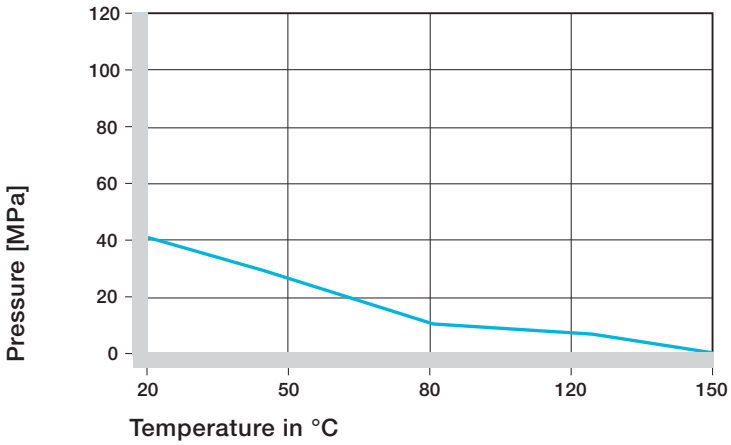
Graph 24.2: Deformation under pressure and temperature

m/s	Rotating	Oscillating	Linear
Continuous	1	0,7	2
Short term	1,5	1,1	3

Table 24.2: Maximum surface speeds

iglidur® C	Application Temperature
Minimum	–40 °C
Max. long term	+90 °C
Max. short term	+130 °C

Table 24.3: Temperature limits of iglidur® C



Graph 24.3: Recommended maximum surface pressure of iglidur® C as a function of temperature

Plain bearings of iglidur® C were specifically developed for applications in which PTFE (eg Teflon) and silicon are forbidden. Applications like these can be found in the fields of electrical engineering, the tobacco and luxury food industry, as well as in applications dealing with painting processes. Keywords like paint compatibility and silicone-free products make it important to deal with this material.

Surface Pressure

Although iglidur® C is a very flexible material, at the same time it features a good maximum permissible surface pressure of 40 MPa. The high flexibility accounts for the suitability of the bearings under oscillations and edge loading. The permissible surface pressure decreases from 25°C, as shown in Graph 24.3.

Graphs 24.2 and 24.3
▶ Surface Pressure, page 1.18

Permissible Surface Speeds

Although solid lubricants were deliberately avoided during the development process of iglidur® C, the plain bearings are very wear resistant, and therefore are also qualified for continuous movements at medium surface speeds. Temporarily, speeds up to 1.5 m/s can be achieved; the main applications, however, are at speeds below 0.5 m/s.

▶ Surface Speed, page 1.20
▶ p x v value, page 1.22

Temperatures

The short term permissible maximum application temperature is 170°C. How-ever, there should be no loads on the bearings at this temperature. A reasonable temperature limit should therefore be approximately 120°C. Observe that the bearings have to be mechanically secured in the housing at temperatures exceeding 70°C.

Graph 24.3
▶ Application Temperatures, page 1.23

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Friction and Wear

The coefficient of friction of the iglidur® C plain bearings depends on the roughness of the shaft. Although PTFE and silicone were not used as solid lubricants, the bearings show extremely low coefficients of friction. Also the wear of the bearings in applications with rotating or oscillating movements at low loads is very good.

Graphs 24.4 to 24.6
▶ Coefficients of Friction and Surfaces, page 1.25
▶ Wear Resistance, page 1.26

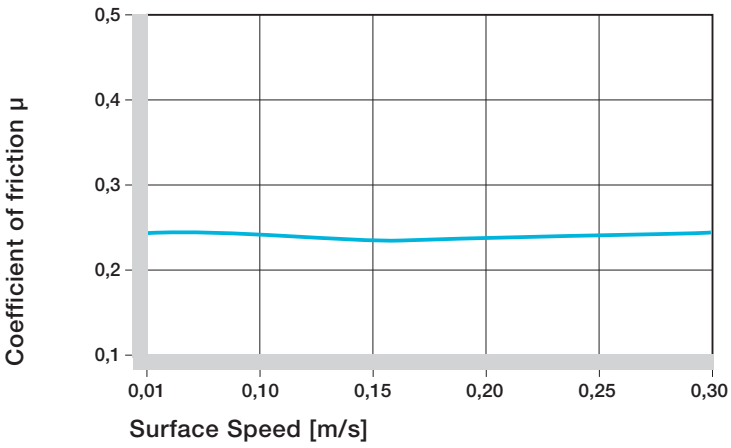
Shaft Materials

Graph 24.7 clearly shows how important the “suitable“ running surface can be. Although all presented results of these rotational tests under the load of 0.75 MPa can be considered as very good, however, great differences are apparent.
Graph 24.8 shows that these differences increase with increasing loads.

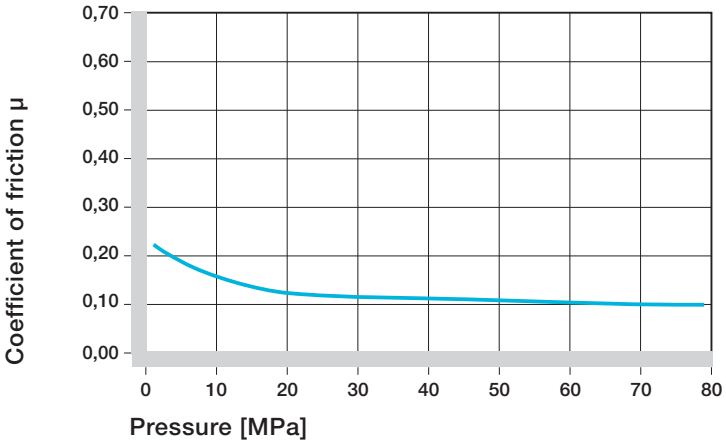
Graphs 24.7 to 24.9
▶ Shaft Materials, page 1.28

iglidur® C	Dry	Grease	Oil	Water
C.o.f. [µ]	0,17–0,25	0,09	0,04	0,04

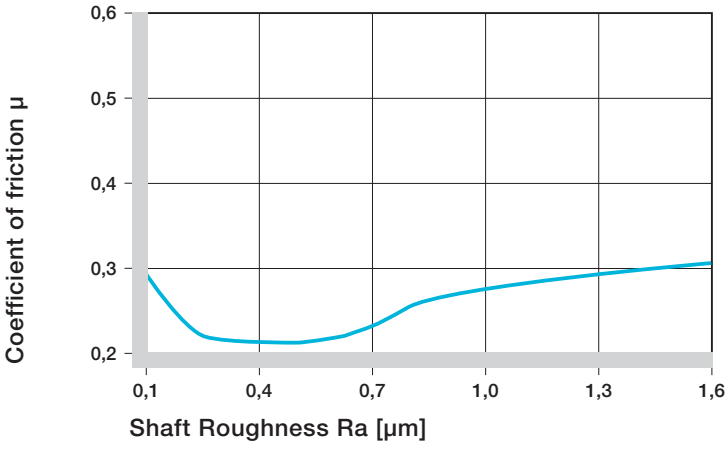
Table 24.4: Coefficient of friction of iglidur® C against steel (Ra = 1 µm, 50 HRC)



Graph 24.4: Coefficients of friction of iglidur® C as a function of the surface speed; p = 0.75 MPa



Graph 24.5: Coefficients of friction of iglidur® C as a function of the pressure, v = 0.01 m/s



Graph 24.6: Coefficients of friction of iglidur® C as a function of the shaft surface (Cf53 hardened and ground steel)

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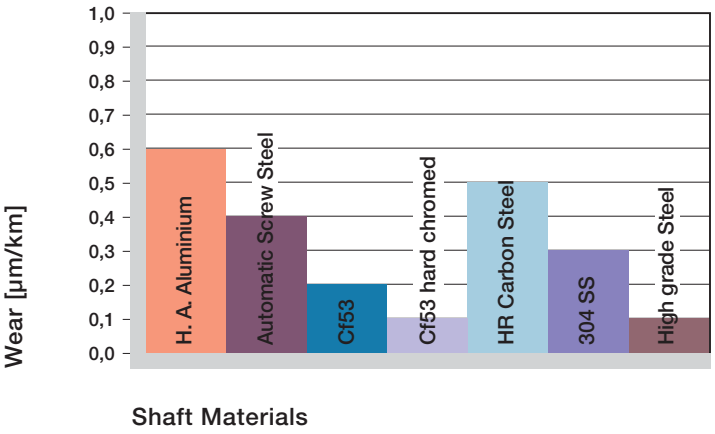
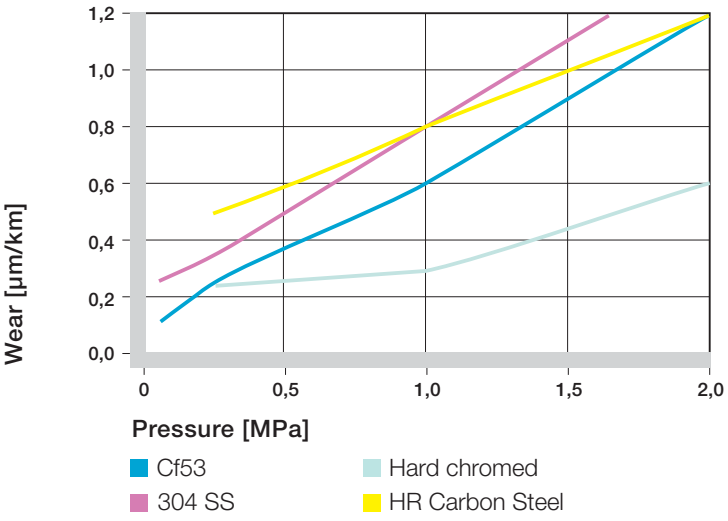
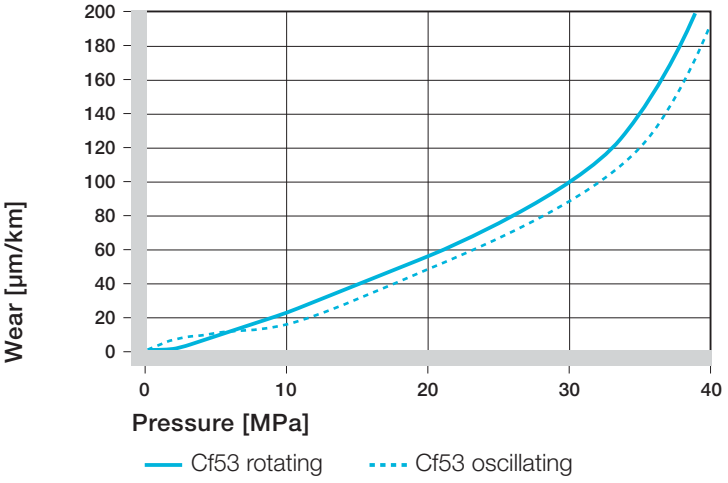


Graph 24.7: Wear of iglidur® C, rotating applications with different shaft materials, p = 0.75 MPa, v = 0.5 m/s



Graph 24.8: Wear of iglidur® C with different shaft materials in rotational applications



Graph 24.9: Wear for rotating and oscilllating applications as a function of the pressure (Cf53 hardened and ground steel shaft)

Installation Tolerances

iglidur® C plain bearings are standard bearings for shafts with h tolerance (h9 recommended at least).
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 of the bearings is automatically adjusted to E10 tolerance.

▶ Testing Methods, page 1.35

Chemical Resistance

iglidur® C plain bearings are resistant to detergents, greases, oils, diluted alkalines and weak acids.
The moisture absorption of iglidur® C plain bearings is approx. 7% when saturated in water, and this needs to be taken into account if this material is to be used in wet enviroments.

Graph 24.10
▶ Chemical Table, pages 70.1

Radiation Resistance

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

UV Resistance

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

Vacuum

iglidur® C plain bearings have limited use in a vacumn, as humidity can out gas.

Electrical Properties

iglidur® C plain bearings are electrically insulating.

Availability

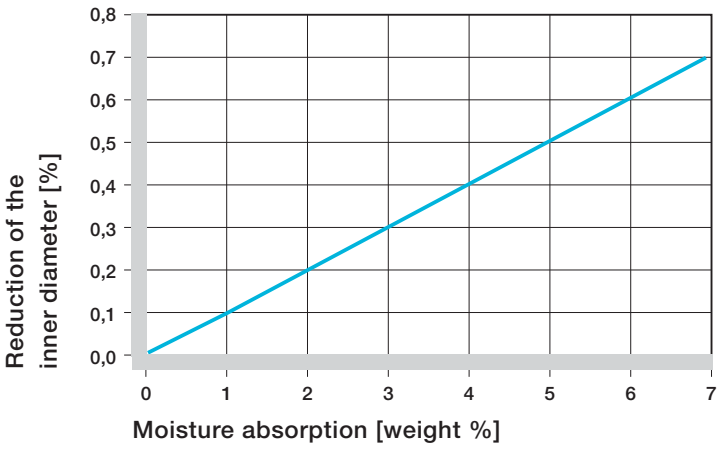
iglidur® C plain bearings are produced to special order.

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® C D11 [mm]
up to 3	0–0,025	+0,020 +0,080
> 3 to 6	0–0,030	+0,030 +0,105
> 6 to 10	0–0,036	+0,040 +0,130
> 10 to 18	0–0,043	+0,050 +0,160
> 18 to 30	0–0,052	+0,065 +0,195
> 30 to 50	0–0,062	+0,080 +0,240

Table 24.5: Essential tolerances for iglidur® C plain bearings according to ISO 3547-1 after pressfit

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

Table 24.6: Chemical resistance of iglidur® C – detailed list, page 70.1
+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [20°C]



Graph 24.10: Effect of moisture absorption on iglidur® C plain bearings

iglidur® C	
Specific volume resistance	> 10^{10} Ωcm
Surface resistance	> 10^{9} Ω

Table 19.7: Electrical Properties of iglidur® C

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