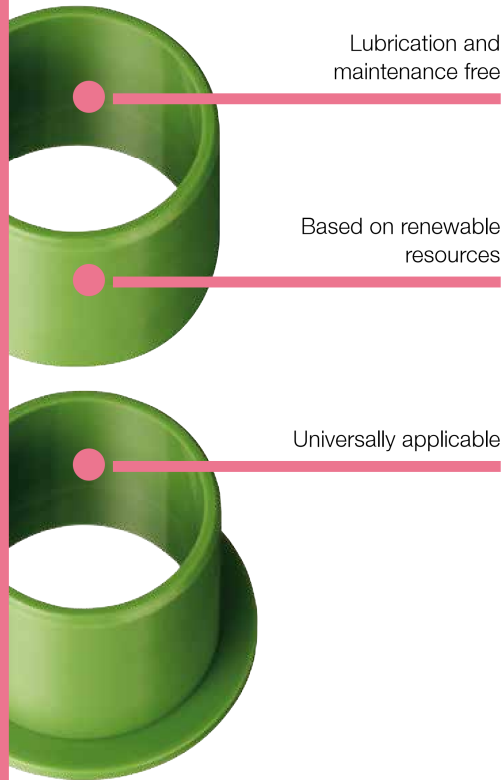


Based on renewable resources



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 <sup>-1</sup> · 10 <sup>-6</sup>	9	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 <sup>13</sup>	DIN IEC 93
Surface resistance	Ω	> 10 <sup>11</sup>	DIN 53482

Table 01: Material properties table

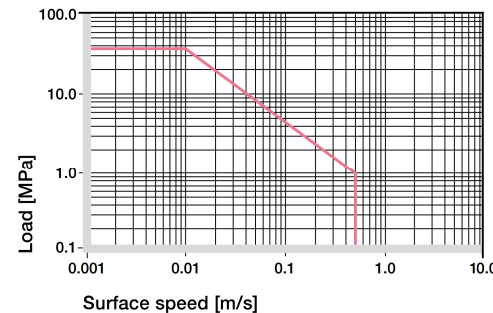


Diagram 01: Permissible pv values for iglidur® N54 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

### 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](http://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 10<sup>4</sup> 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 biopolymers. 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.

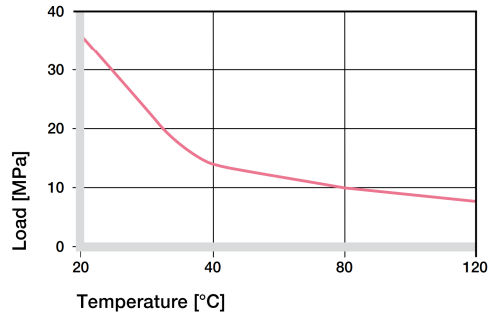


Diagram 02: Recommended maximum surface pressure of as a function of temperature (36 MPa at +20 °C)

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

► Surface pressure, page 63

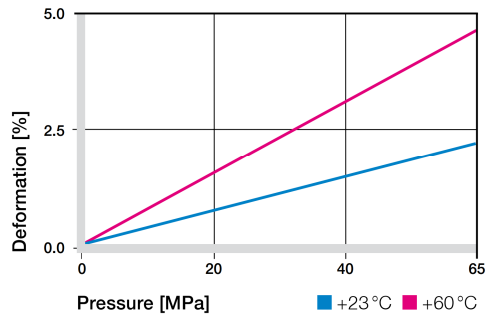


Diagram 03: Deformation under pressure and temperature

### 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

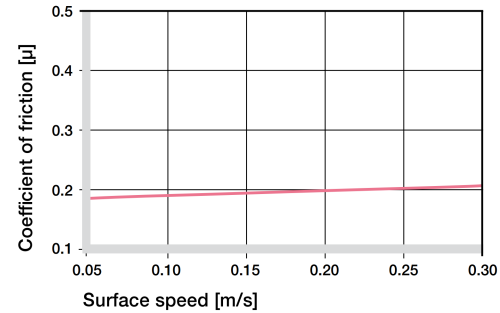


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1 MPa

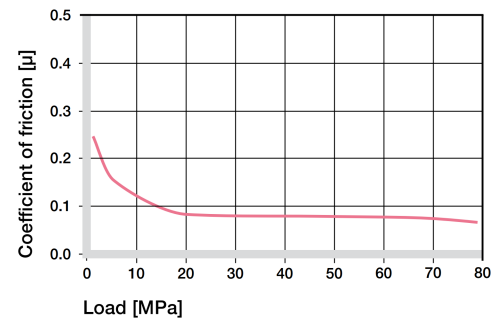


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

### 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)

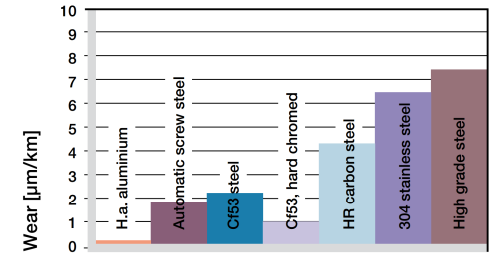


Diagram 06: Wear, rotating with different shaft materials, p = 1 MPa, v = 0.3 m/s

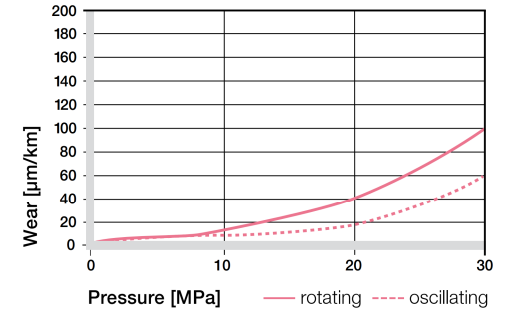


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

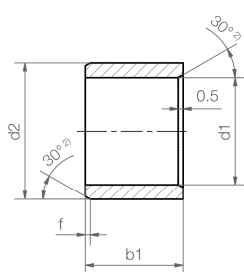
### Installation tolerances

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



Order key

Type Dimensions

N54 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

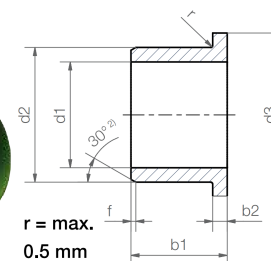
<sup>2)</sup> thickness < 1 mm, chamfer = 20°

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 <sup>3)</sup>	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

<sup>3)</sup> after pressfit. Testing methods ► Page 75

Order key

Type Dimensions

N54 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

<sup>2)</sup> 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 <sup>3)</sup>	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

<sup>3)</sup> 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.