iglide® Plastic Plain Bearings

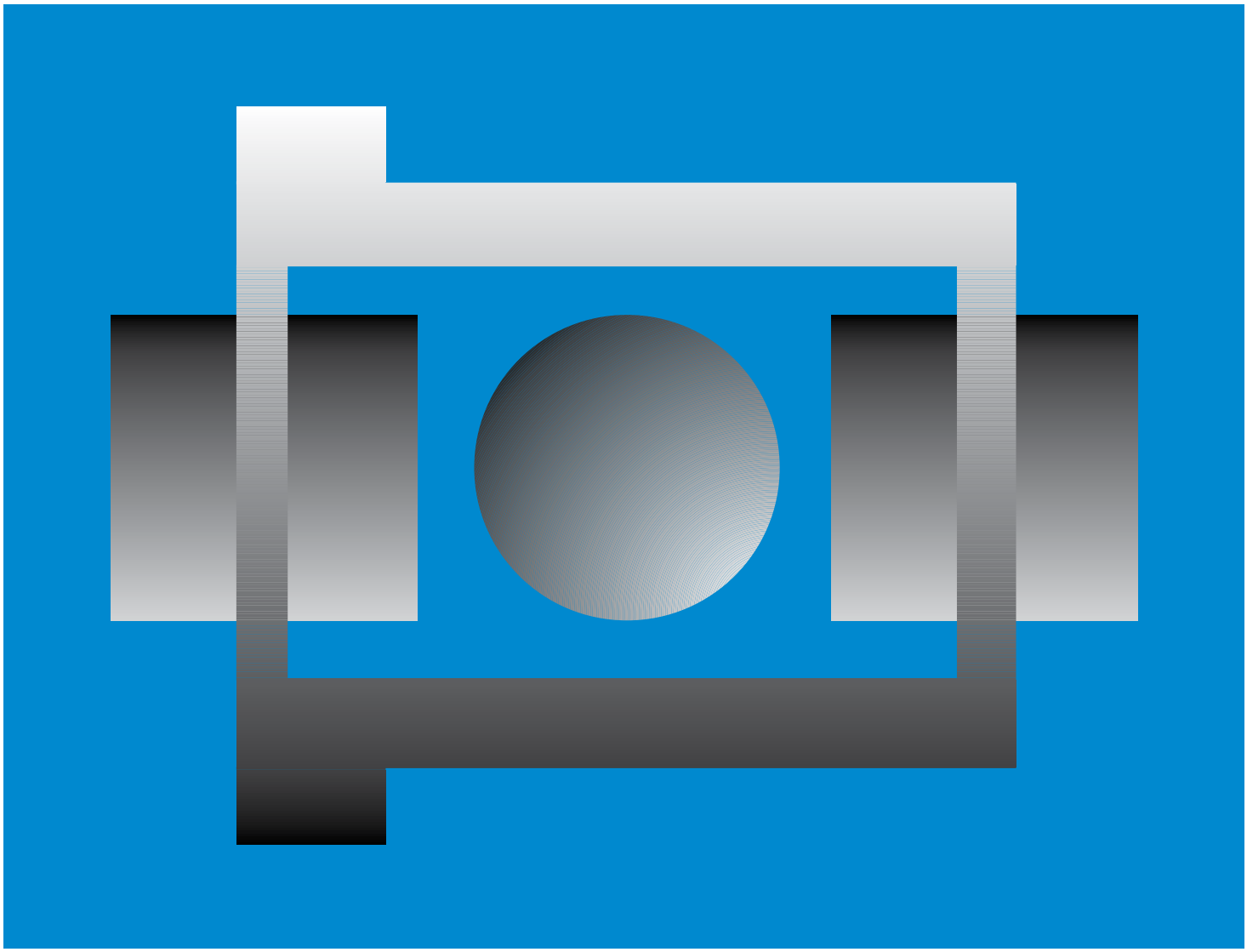
igus® iglide® plastic bearings are economical, dry-running and maintenance-free. Offered in three of the most popular materials with or without flanges, these plain bearings are an excellent choice for a wide range of motion applications.

Features

- 3 popular materials - J (low friction), G300 (general purpose), T500 (high temp)
- Sleeve and flange bearings
- Fits shafts from 1/4" to 1"
- Good chemical resistance
- Link to selection guide materials

CE

igus® iglide® Plain Bearings									
Item Photo	Part Number	Material	Size I.D. (inch)	Size O.D. (inch)	Flange	Qty. per Package	Weight (lb)	Price	Drawing Link
	A-JSI-0406-04	J	1/4	3/8	No	10	0.19	$8.50	PDF
	A-JSI-0810-08		1/2	5/8		10	0.04	$11.00	PDF
	A-JSI-1214-12		3/4	7/8		5	0.03	$10.00	PDF
	A-JSI-1618-16		1	1-1/8		2	0.44	$6.50	PDF
	A-JFI-0406-04		1/4	3/8	Yes	10	0.02	$8.75	PDF
	A-JFI-0810-08		1/2	5/8		10	0.49	$13.50	PDF
	A-JFI-1214-12		3/4	7/8		5	0.49	$10.50	PDF
	A-JFI-1618-16		1	1-1/8		2	0.04	$6.50	PDF
	A-GSI-0405-04	G300	1/4	5/16	No	10	0.02	$8.00	PDF
	A-GSI-0809-08		1/2	9/16		10	0.03	$8.75	PDF
	A-GSI-1214-12		3/4	7/8		5	0.04	$10.50	PDF
	A-GSI-1618-16		1	1-1/8		2	0.04	$7.25	PDF
	A-GFI-0405-04		1/4	5/16	Yes	10	0.02	$8.00	PDF
	A-GFI-0809-08		1/2	9/16		10	0.04	$9.50	PDF
	A-GFI-1214-12		3/4	7/8		5	0.05	$12.00	PDF
	A-GFI-1618-16		1	1-1/8		2	0.03	$7.25	PDF
	A-TSI-0405-04	T500	1/4	5/16	No	5	0.02	$15.00	PDF
	A-TSI-0809-08		1/2	9/16		5	0.02	$16.50	PDF
	A-TSI-1214-12		3/4	7/8		2	0.03	$19.00	PDF
	A-TSI-1618-16		1	1-1/8		2	0.03	$25.00	PDF
	A-TFI-0405-04		1/4	5/16	Yes	5	0.01	$16.00	PDF
	A-TFI-0809-08		1/2	9/16		5	0.02	$25.50	PDF
	A-TFI-1214-12		3/4	7/8		2	0.02	$21.00	PDF
	A-TFI-1618-16		1	1-1/8		2	0.04	$26.50	PDF



iglide® G300

- High wear resistance
- Resistance to dust and dirt
- Economic
- Self-lubricating and maintenance free

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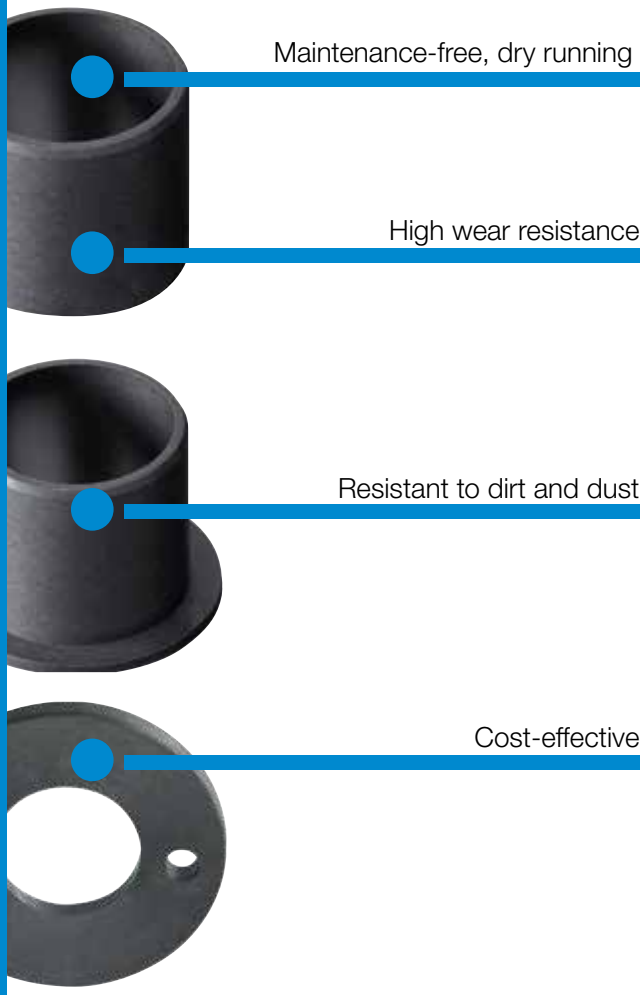
iglide® G300 - General Purpose

Most popular iglide® material worldwide



iglide® G300 bearings cover an extremely wide range of different requirements. Typical applications include medium to high loads, medium sliding speeds and medium temperatures. Typical applications include medium to high loads, medium sliding speeds and medium temperatures.

Best Applications

- When you need an economical all-around performance bearing
- For low to average surface speeds
- When the bearing needs to run on different shaft materials
- For oscillating and rotating movements

Not For Use In Applications

- When mechanical reaming of the wall surface is necessary
- When the highest wear resistance is necessary
- When universal chemical resistance is required
  ➤ iglide® T500
- If temperatures are constantly greater than +266°F
  ➤ iglide® T500
- For underwater use

Typical application areas

- Agricultural machines
- Machine building
- Sports and leisure
- Automotive
- Mechatronics
- Construction machinery

max. +266°F
min. –40°F

Ø 1/4 to 1 inch
more sizes available from igus

Ø 1.5 to 150 mm
metric sizes available from igus

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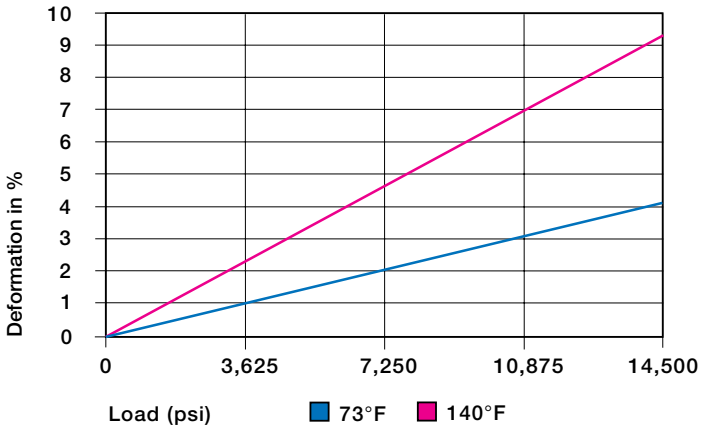
iglide® G300 - Technical Data

Material Properties Table

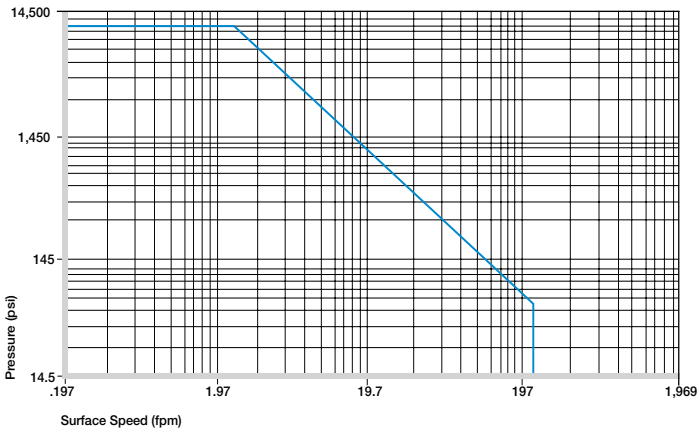
General Properties	Unit	iglide® G300	Testing Method
Density	g/cm³	1.46	
Color		dark gray	
Max. moisture absorption at 73°F / 50% r.h.	% weight	0.7	DIN 53495
Max. moisture absorption	% weight	4.0	
Coefficient of friction, dynamic against steel	μ	0.08 - 0.15	
pv value, max. (dry)	psi x fpm	12,000	
Mechanical Properties			
Modulus of elasticity	psi	1,131,000	DIN 53457
Tensile strength at 68°F	psi	30,460	DIN 53452
Compressive strength	psi	11,310	
Permissible static surface pressure (68°F)	psi	11,600	
Shore D-hardness		81	DIN 53505
Physical and Thermal Properties			
Max. long-term application temperature	°F	266	
Max. application temperature, short-term	°F	428	
Min. application temperature	°F	-40	
Thermal conductivity	W/m x K	0.24	ASTM C 177
Coefficient of thermal expansion	$K^{-1} \times 10^{-5}$	9	DIN 53752
Electrical Properties			
Specific volume resistance	Ωcm	$> 10^{13}$	DIN IEC 93
Surface resistance	Ω	$> 10^{11}$	DIN 53482

Compressive Strength

The graph shows the elastic deformation of iglide® G300 during radial loading. At the maximum permissible load of 11,600 psi, the deformation is less than 5%. The plastic deformation is minimal up to a pressure of approximately 14,500 psi. However, it is also a result of the cycle time.



Deformation under load and temperature



Permissible pv value for iglide® G300 running dry against a steel shaft, at 68°F

Permissible Surface Speeds

iglide® G300 has been developed for low to medium surface speeds. The maximum values shown in the table can only be achieved at low pressure loads. 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.

	Continuous fpm	Short Term fpm
Rotating	196	393
Oscillating	137	275
Linear	787	984

Maximum surface speeds

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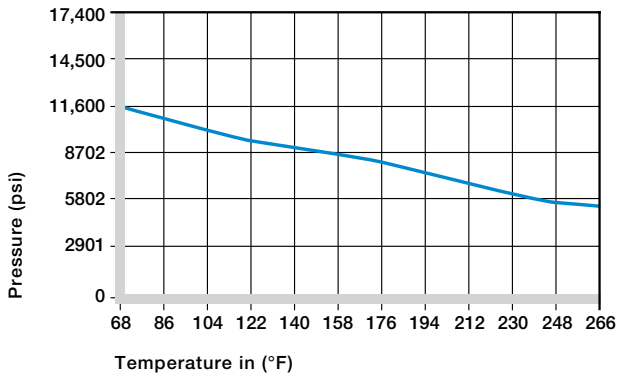
iglide® G300 - Technical Data

Temperatures

Application temperatures affect the properties of plain bearings greatly. The short-term maximum temperature is 428°F, this allows the use of iglide® G300 plain bearings in heat treating applications in which the bearings are not subjected to additional loading.

With increasing temperatures, the compressive strength of iglide® G300 plain bearings decreases. The graph shows this inverse relationship. However, at the long-term maximum temperature of 266°F, the permissible surface pressure is still above 5,800 psi.
The ambient temperatures that are prevalent in applications also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is notable starting at the temperature of 248°F.



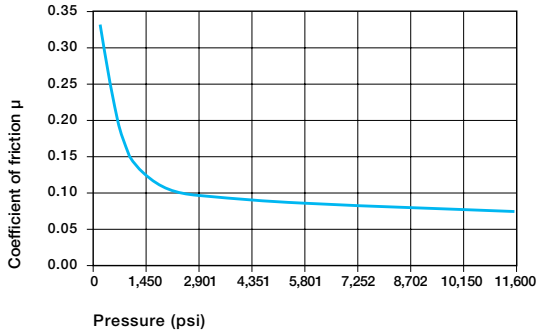
Recommended maximum permissible static surface pressure of iglide® G300 as a result of temperature

iglide® G300	Application Temperature
Minimum	- 40°F
Max. long-term	+266°F
Max. short-term	+428°F
Additional axial securing	+176°F

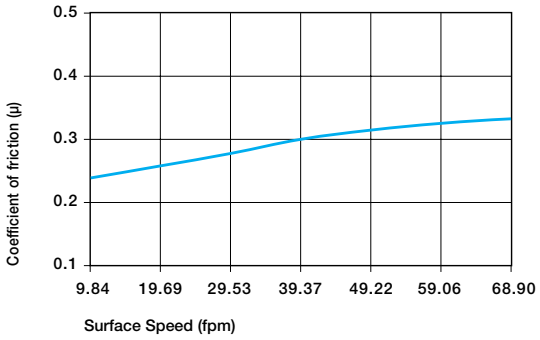
Temperature limits for iglide® G300

Friction and Wear

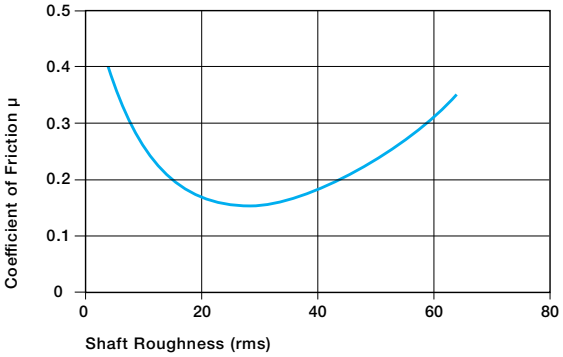
Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction decreases with increasing loads, whereas an increase in surface speed causes an increase of the coefficient of friction. This relationship explains the excellent results of iglide® G300 plain bearings for high loads and low speeds.
The friction and wear are also dependent, to a large degree, on the shaft partner. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglide® G300, a ground surface with an average roughness Ra= 32 rms is recommended.



Coefficient of friction of iglide® G300 as a result of the load, v = 1.96 fpm



Coefficient of friction of iglide® G300 as a result of the running speed; p = 108 psi



Coefficient of friction as result of the shaft surface (Shaft - 1050 hard chromed)

iglide® G300	Coefficient of Friction
Dry	0.08 - 0.15
Grease	0.09
Oil	0.04
Water	0.04

Coefficient of friction for iglide® G300 against steel (Shaft finish = 40 rms, 50 HRC)

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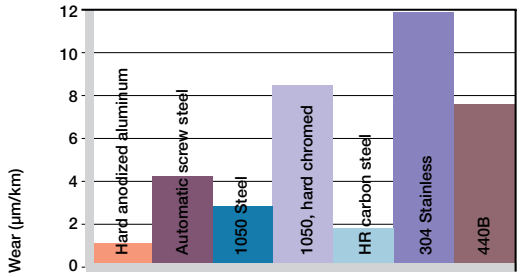
iglide® G300 - Technical Data

Shaft Materials

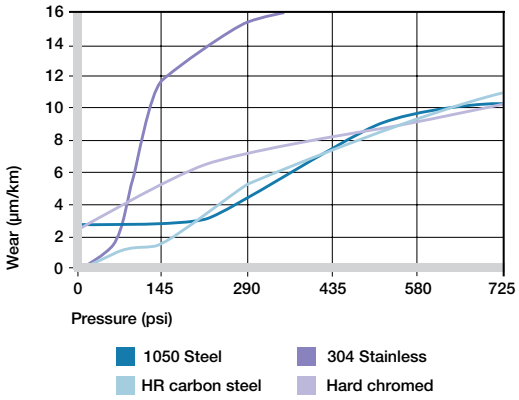
The graphs show results of testing different shaft materials with plain bearings made of iglide® G300. In the graph below it is observed that iglide® G300 can be combined with various shaft materials. The simple shaft materials of free-cutting steel and HR Carbon Steel have proven best at low loads. This helps to design cost-effective systems, since both iglide® G300 and the sliding partner are economically priced.

It is important to note that with increasing loads, the recommended hardness of the shaft increases. The "soft" shafts tend to wear more easily and thus increase the wear of the overall system. If the loads exceed 290 psi, it is important to recognize that the wear rate (the slope of the curves) clearly decreases with the hard shaft materials.

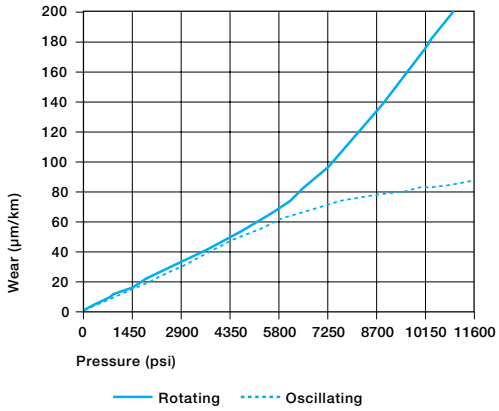
The comparison of rotational movements to oscillating movements shows that iglide® G300 can provide advantages in oscillating movements. The wear of the bearing is smaller for equivalent conditions. The higher the load, the larger the difference. This means that iglide® G300 can be used for oscillating movements that are well above the given maximum load of 11,600 psi. For these loads, the use of hardened shafts is recommended. In addition to the shaft materials presented here, many others have been tested. If the shaft material you plan on using is not contained in the test results presented here, please contact us.



Wear of iglide® G300, rotating with different shaft materials, load p = 145 psi, v = 59 fpm



Wear with different shaft materials in rotational operation, as a result of the load



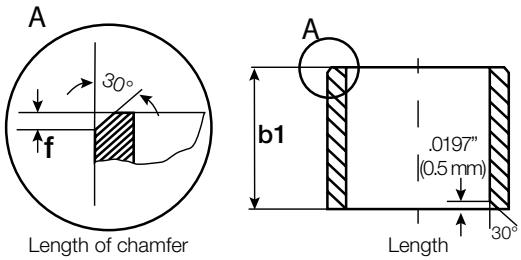
Wear for pivoting and rotating applications with shaft material 1050 hard chromed, as a result of the load

Installation Tolerances

iglide® G300 plain bearings are oversized before being pressfit. After proper installation into a recommended housing bore, the inner diameter adjusts to meet our specified tolerances. Please adhere to the catalog specifications for housing bore and recommended shaft sizes. This will help to ensure optimal performance of iglide® plain bearings.

For Inch Size Bearings		
Length Tolerance (b1)		Length of Chamfer (f) Based on d1
Length (inches)	Tolerance (h13) (inches)	
0.1181 to 0.2362	-0.0000 /-0.0071	f = .012 → d_1 .040" - .236"
0.2362 to 0.3937	-0.0000 /-0.0087	f = .019 → d_1 > .236" - .472"
0.3937 to 0.7086	-0.0000 /-0.0106	f = .031 → d_1 > .472" - 1.18"
0.7086 to 1.1811	-0.0000 /-0.0130	f = .047 → d_1 > 1.18"
1.1811 to 1.9685	-0.0000 /-0.0154	
1.9685 to 3.1496	-0.0000 /-0.0181	

For Metric Size Bearings		
Length Tolerance (b1)		Length of Chamfer (f) Based on d1
Length (mm)	Tolerance (h13) (mm)	
1 to 3	-0 /-140	f = 0.3 → d_1 1 - 6 mm
> 3 to 6	-0 /-180	f = 0.5 → d_1 > 6 - 12 mm
> 6 to 10	-0 /-220	f = 0.8 → d_1 > 12 - 30 mm
>10 to 18	-0 /-270	f = 1.2 → d_1 > 30 mm
>18 to 30	-0 /-330	
>30 to 50	-0 /-390	
>50 to 80	-0 /-460	



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iglide® G300 - Technical Data

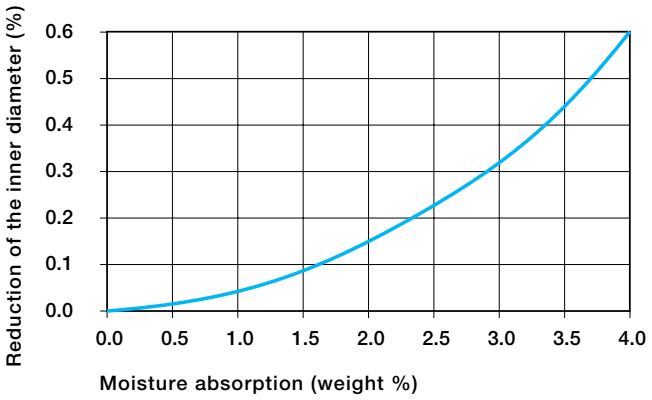
Chemical & Moisture Resistance

iglide® G300 plain bearings have strong resistance to chemicals. They are also resistant to most lubricants.
iglide® G300 plain bearings are not affected by most weak organic and inorganic acids.
The moisture absorption of iglide® G300 plain bearings is approximately 1% in the standard atmosphere. The saturation limit submerged in water is 4%. This must be taken into account for these types of applications.
➤ Chemical table, Page 1364

Medium	Resistance
Alcohol	+ to 0
Hydrocarbon	+
Greases, oils without additives	+
Fuels	+
Weak acids	0 to –
Strong acids	–
Weak alkaline	+
Strong alkaline	0

+ resistant, 0 conditionally resistant, – not resistant

Chemical resistance of iglide® G300
All data given concerns the chemical resistance at room temperature (68°F).



Effect of moisture absorption on iglide® G300 plain bearings

Radiation Resistance

Plain bearings made from iglide® G300 are resistant to radiation up to an intensity of 3 x 10^2 Gy.

UV-Resistance

iglide® G300 plain bearings are permanently resistant to UV-radiation.

Vacuum

iglide® G300 plain bearings outgas in a vacuum. Use in a vacuum environment is only possible for dehumidified bearings.

Electrical Properties

iglide® G300 plain bearings are electrically insulating.

iglide® G300	
Specific volume resistance	> 10^{13} Ωcm
Surface resistance	> 10^{11} Ω

Electrical properties of iglide® G300

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