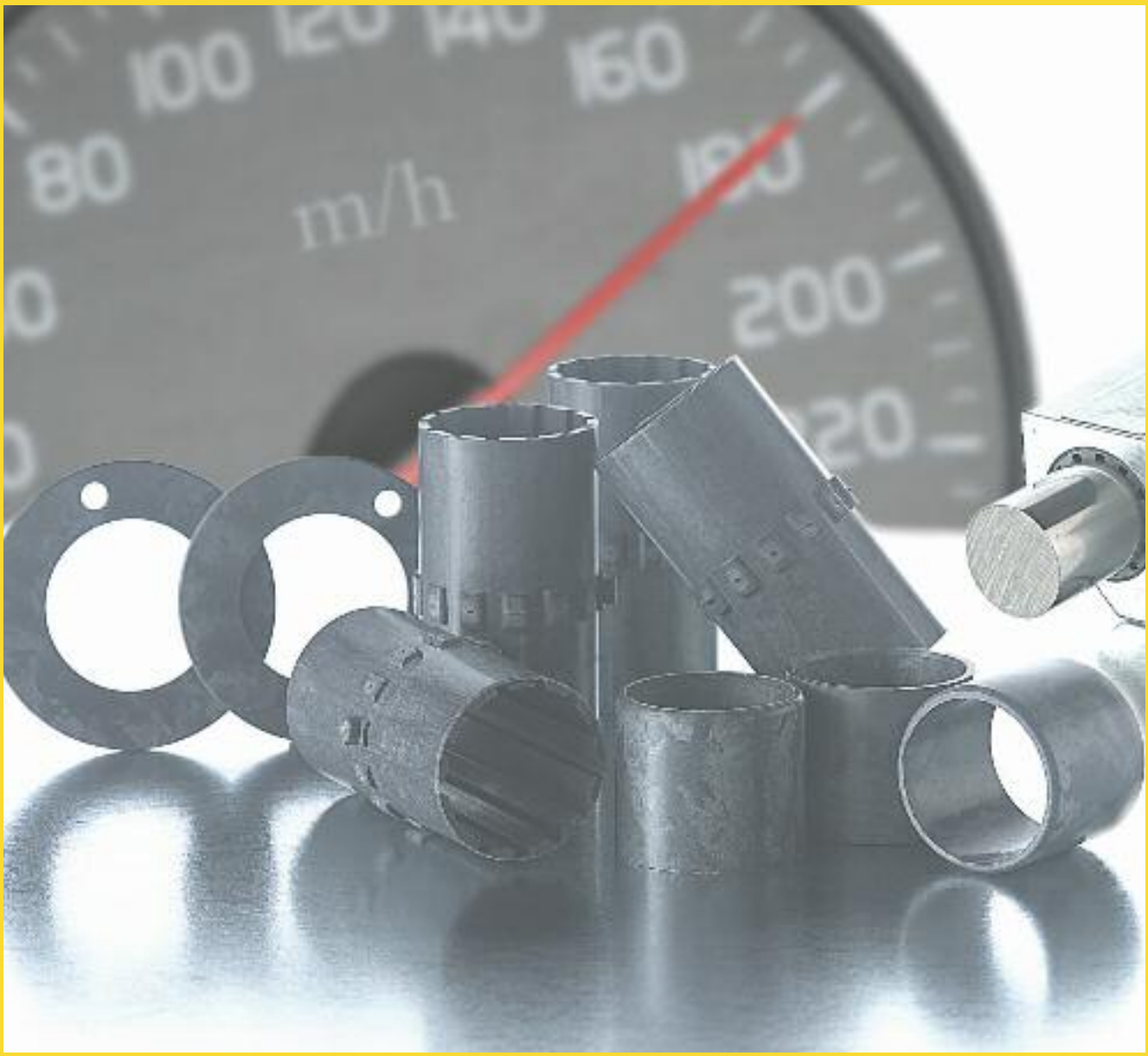
igus®



iglide® J200 Long Distance

iglide® Plain Bearings
J200 - Technical Data

Product Range

- Standard Styles:
  Sleeve, Flange
- Custom shapes and sizes available

Part Number Structure

Part Number Structure

J200 S M - 03 04 - 03

- b1 - Bearings
- d2
- d1
- Dimension:
  I - inch (based on 1/16")
  M - Metric (based on mm)
- Type: S - Sleeve
  F - Flange
- Material

Permissible Surface Speeds

	Continuous fpm	Short Term fpm
Rotating	197	295
Oscillating	137	216
Linear	1969	2953

Usage Guidelines

- For applications with hard anodized aluminum shafts
- When lowest coefficients of friction are required
- If long service life is required
- If a maintenance-free bearing is needed
- For low wear
- For low to medium loads

- When steel shafts are present
  ➤ iglide® J
  ➤ iglide® L280
- When temperatures are continually higher than 194°F
  ➤ iglide® V400
- When a cost-effective universal bearing is required
  ➤ iglide® G300
  ➤ iglide® P

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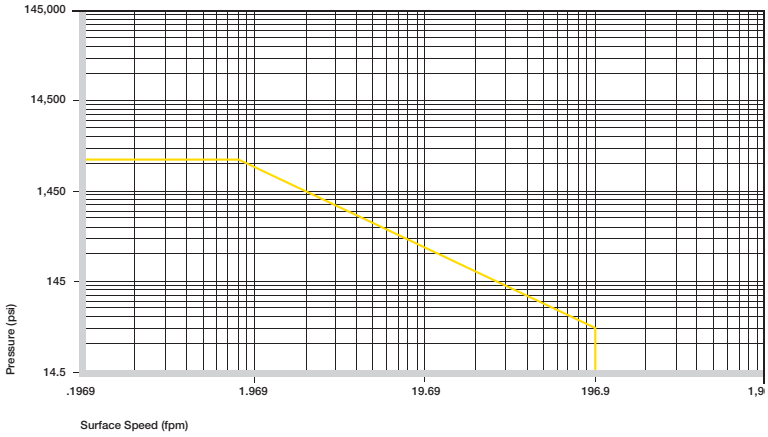
Material Data

General Properties	Unit	iglide® J200	Testing Method
Density	g/cm³	1.72	
Color		dark gray	
Max. moisture absorption at 73°F / 50% r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	0.7	
Coefficient of friction, dynamic against steel	µ	0.11 - 0.17	
p x v value, max. (dry)	psi x fpm	8,600	
Mechanical Properties			
Modulus of elasticity	psi	406,100	DIN 53457
Tensile strength 68°F	psi	8,412	DIN 53452
Compressive strength	psi	6,237	
Permissible static surface pressure (68°F)	psi	3,336	
Shore D-hardness		70	DIN 53505
Physical and Thermal Properties			
Max. long-term application temperature	°F	194	
Max. short-term application temperature	°F	248	
Min. application temperature	°F	-58	
Thermal conductivity	[W/m x K]	0.24	ASTM C 177
Coefficient of thermal expansion (at 73°F)	[K^{-1} x 10 $^{-5}$]	8	DIN 53752
Electrical Properties			
Specific volume resistance	Ωcm	> 10^8	DIN IEC 93
Surface resistance	Ω	> 10^8	DIN 53482



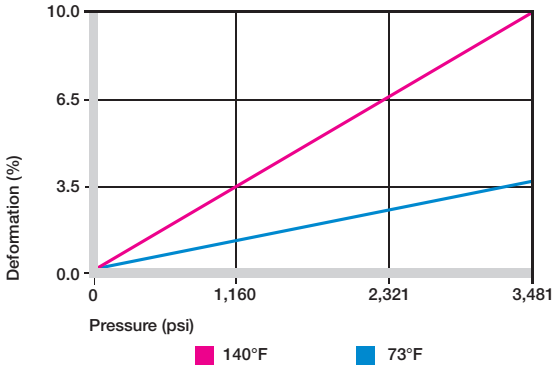
Permissible p x v values for iglide® J200 running dry against a steel shaft, at 68°F

iglide® J200 is a specialist for low friction values and minimal wear with hard anodized aluminum.

Compressive Strength

The comparison to the other iglide® materials reveals that iglide® J200 plain bearings are more suitable for lower loads. The graph shows the deformation of the material at room temperature to the recommended maximum limit. As with all thermoplastics, the compressive strength decreases with increasing temperature.

➤ Compressive Strength, Page 1.3



Deformation under load and temperature

Permissible Surface Speeds

Due to the very good coefficients of friction, iglide® J200 can be used at high surface speeds. Continuous rotational speeds of 197 fpm are possible. The permissible speeds are even higher in linear movements or in short term operation. For linear movements, speeds of over 2,953 fpm have been successfully tested.

➤ Surface Speed, Page 1.5
➤ p x v value, Page 1.6

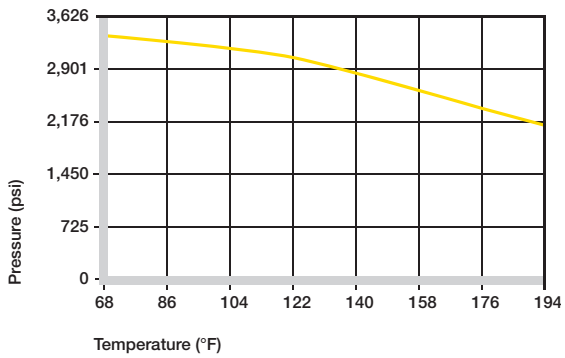
	Continuous fpm	Short Term fpm
Rotating	197	295
Oscillating	137	216
Linear	1969	2953

Maximum surface speeds

Temperatures

Plain bearings made of iglide® J200 were not developed for high temperatures. The maximum permissible temperature of 248°F may not be exceeded. Also, the heat produced by friction has to be added to the ambient temperature. Even from 140°F, the bearings should be secured mechanically, preventing the bearing from moving out of the housing. Also, the wear resistance decreases significantly from 158°F.

➤ Application Temperatures, Page 1.7



Recommended maximum permissible static surface pressure of iglide® J200 as a result of the temperature

iglide® J200	Application Temperature
Minimum	-58°F
Max. long-term	+194°F
Max. short-term	+248°F
Additional axial securing	+140°F

Temperature iglide® J200

iglide® J200

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QuickSpec: http://www.igus.com/iglide-quickspec

Installation Tolerances

iglide® J200 plain bearings are meant to be 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.

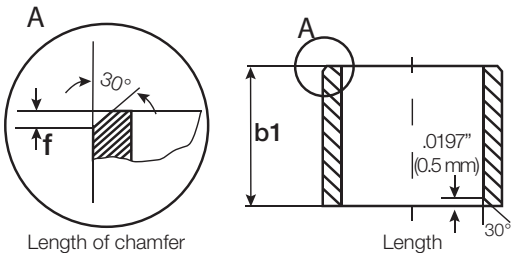
➤ See Tolerance Table, Page 1.14
➤ Testing Methods, Page 1.15

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

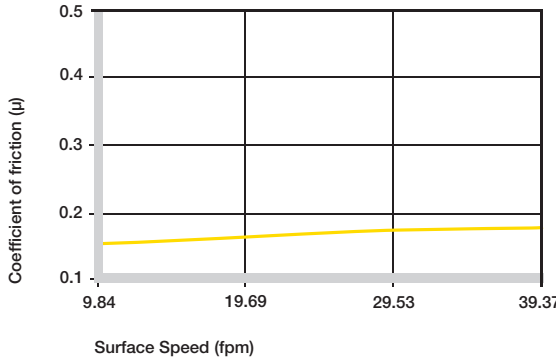
Length Tolerance (b1)				Length of Chamfer (f) Based on d1
Length (mm)			Tolerance (h13) (µm)	
1	to	3	-0 /-140	f = 0.3 → d_1 1 - 6 mm
> 3	to	6	-0 /-180	f = 0.5 → d_1 > 6 - 12 mm
> 6	to	10	-0 /-220	f = 0.8 → d_1 > 12 - 30 mm
>10	to	18	-0 /-270	f = 1.2 → d_1 > 30 mm
>18	to	30	-0 /-330	
>30	to	50	-0 /-390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



Friction and Wear

Friction is the principle reason for the use of iglide® J200 plain bearings. The friction of these bearings is more favorable in combination with many shaft materials than that of an other iglide® bearings.
With regard to wear resistance, however, the effect of the shaft is very great. Even at low loads, it's worthwhile to take a look at the extensive results of the tests carried out. The graphs clarify this statement. Up to the maximum pressure of 3,336 psi, the wear resistance of the plain bearings is extremely good, and the bearings are best suited to rotating movements.

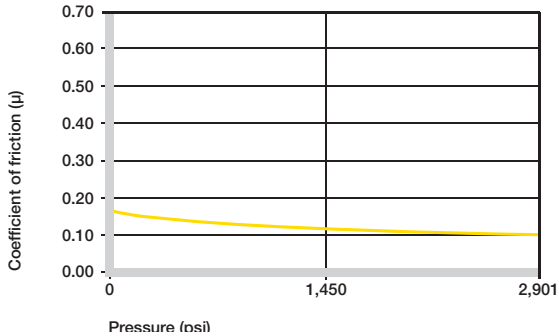
➤ Coefficients of Friction and Surfaces, Page 1.8
➤ Wear Resistance, Page 1.9



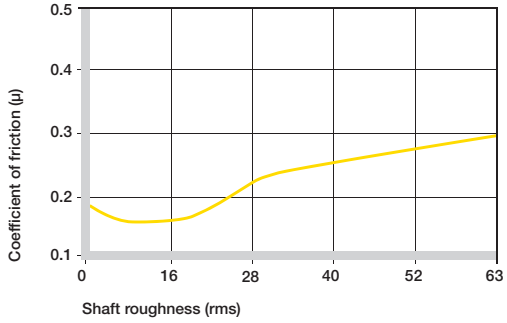
Coefficients of friction of iglide® J200 as a function of the running speed; p = 108 psi

iglide® J200	Coefficient of Friction
Dry	0.11 - 0.17
Grease	0.09
Oil	0.04
Water	0.04

Coefficient of friction of iglide® J200 against steel (Shaft finish = 40 rms, 50 HRC)



Coefficients of friction of iglide® J200 as a function of the load, v = 1.96 fpm

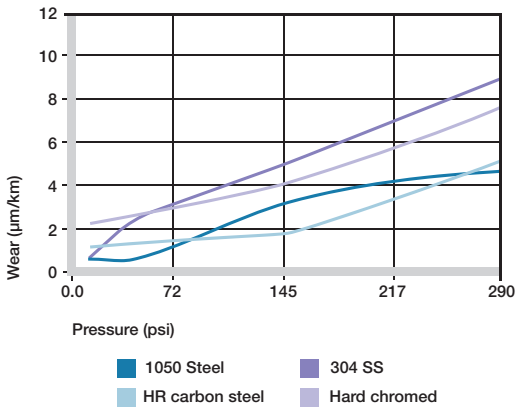


Coefficients of friction of iglide® J200 as a function of the shaft surface (1050 hard chromed)

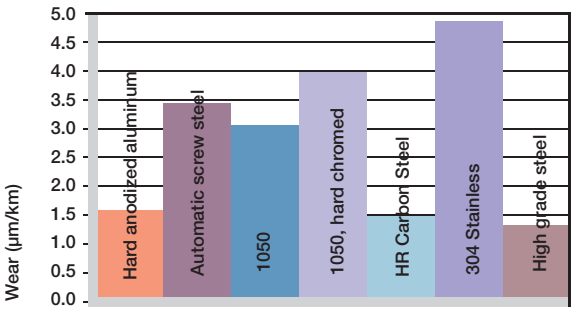
Shaft Materials

The shaft material used has a great impact on the wear resistance. In fact, all shaft materials (smooth or hardened) are suitable for use with iglide® J200. However, the best results are achieved with hard anodized aluminum. In particular when used in linear motion, this running surface has proven its value.

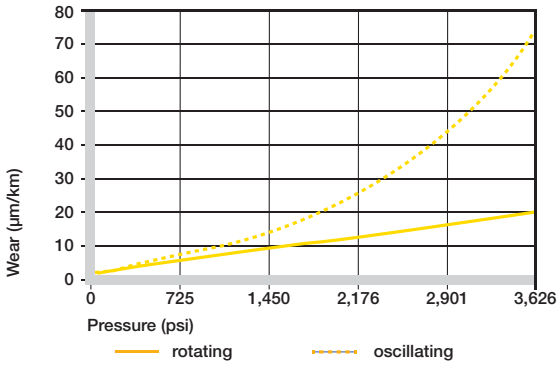
➤ Shaft Materials, Page 1.11



Wear of iglide® J200 with different shaft materials in rotational applications



Wear of iglide® J200, rotating applications with different shaft materials, p=108 psi, v=98 fpm



Wear with different shaft materials, oscillating and rotating movement p = 290 psi

Chemical Resistance

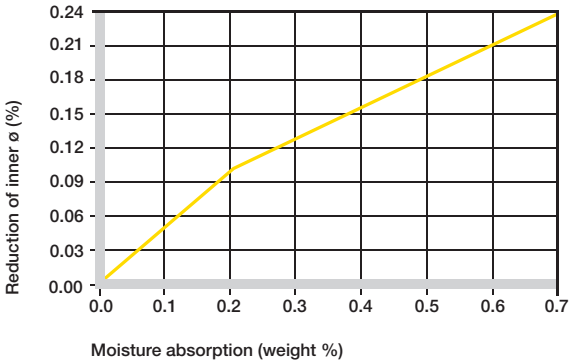
iglide® J200 plain bearings are resistant to diluted alkaline, as well as to solvents and all types of lubricants.
The moisture absorption of iglide® J200 plain bearings in standard atmosphere is approximately 0.2%. The saturation limit in water is 0.7%. Due to these low values considering expansion by moisture absorption is only required in extreme cases.

➤ Chemical Table, Page 1.16

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

+ resistant, 0 conditionally resistant, – not resistant

Chemical resistance of iglide® J200
All data given concerns the chemical resistance at room temperature (68°F). For a complete list, see page 1.16



Effect of moisture absorption on iglide® J200 plain bearings

iglide® Plain Bearings
J200 - Technical Data

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Radiation Resistance

Plain bearings made from iglide® J200 are radiation resistant up to an intensity of 3 x 10^2 Gy.

UV-Resistance

iglide® J200 plain bearings are very resistant to the impact of UV radiation.

Vacuum

Used in a vacuum is only possible to a limited extent. Also, only dehumidified bearings made from iglide® J200 should be tested in vacuum.

Electrical Properties

iglide® J200 plain bearings are electrically insulating.

iglide® J200	
Specific volume resistance	> 10^8 Ωcm
Surface resistance	> 10^8 Ω

Electrical properties of iglide® J200

Availability

iglide® J200 plain bearings are manufactured to special order.

iglide® Plain Bearings
J200 - Notes

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