iglide® Plastic Plain Bearings

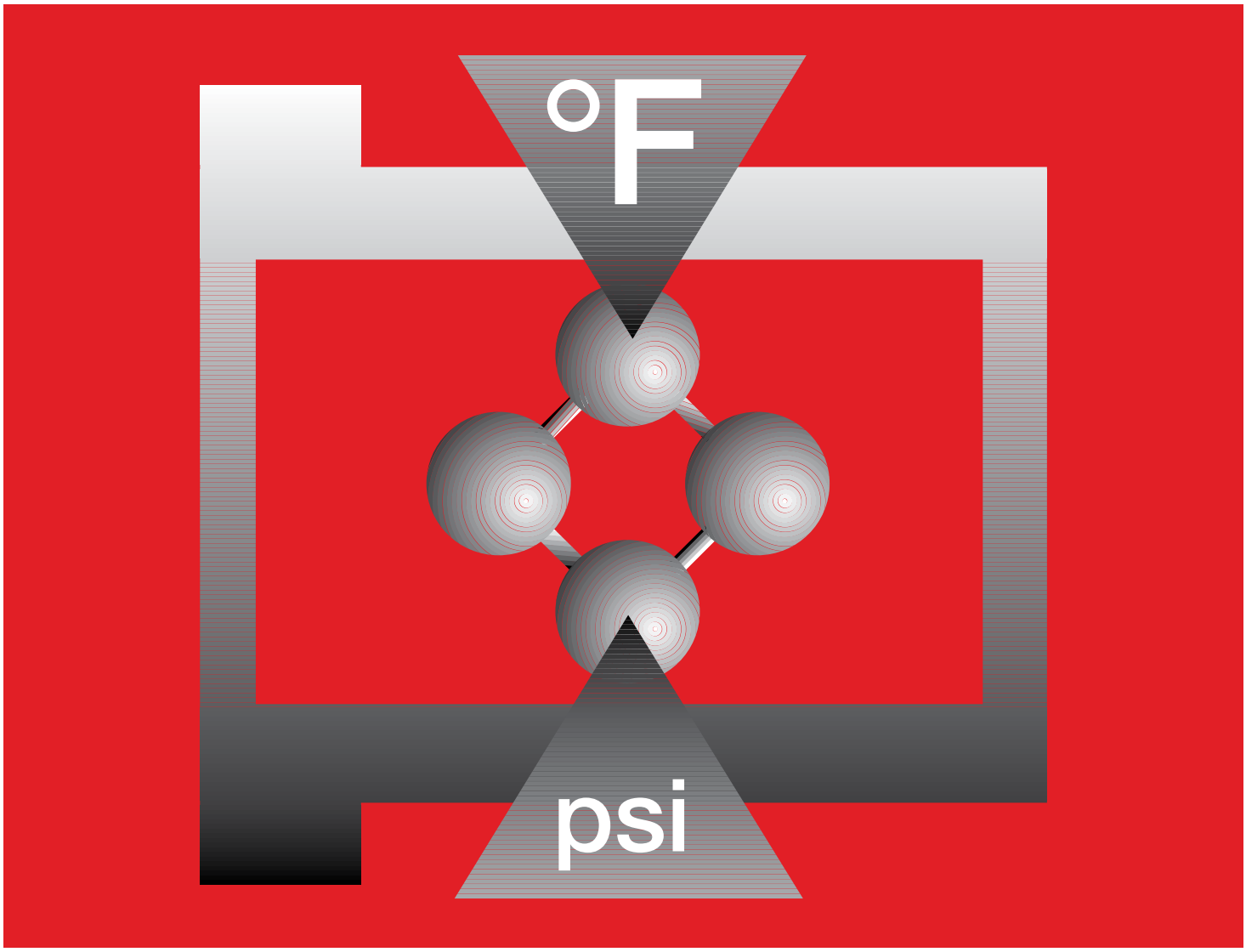
igus® iglide® plastic bearings are economical, dry-running and maintenance-free. Offered in three of the most popular materials with or without flanges, these plain bearings are an excellent choice for a wide range of motion applications.

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		PDF
	A-JSI-0810-08		1/2	5/8		10	0.04		PDF
	A-JSI-1214-12		3/4	7/8		5	0.03		PDF
	A-JSI-1618-16		1	1-1/8		2	0.44		PDF
	A-JFI-0406-04		1/4	3/8	Yes	10	0.02		PDF
	A-JFI-0810-08		1/2	5/8		10	0.49		PDF
	A-JFI-1214-12		3/4	7/8		5	0.49		PDF
	A-JFI-1618-16		1	1-1/8		2	0.04		PDF
	A-GSI-0405-04	G300	1/4	5/16	No	10	0.02		PDF
	A-GSI-0809-08		1/2	9/16		10	0.03		PDF
	A-GSI-1214-12		3/4	7/8		5	0.04		PDF
	A-GSI-1618-16		1	1-1/8		2	0.04		PDF
	A-GFI-0405-04		1/4	5/16	Yes	10	0.02		PDF
	A-GFI-0809-08		1/2	9/16		10	0.04		PDF
	A-GFI-1214-12		3/4	7/8		5	0.05		PDF
	A-GFI-1618-16		1	1-1/8		2	0.03		PDF
	A-TSI-0405-04	T500	1/4	5/16	No	5	0.02		PDF
	A-TSI-0809-08		1/2	9/16		5	0.02		PDF
	A-TSI-1214-12		3/4	7/8		2	0.03		PDF
	A-TSI-1618-16		1	1-1/8		2	0.03		PDF
	A-TFI-0405-04		1/4	5/16	Yes	5	0.01		PDF
	A-TFI-0809-08		1/2	9/16		5	0.02		PDF
	A-TFI-1214-12		3/4	7/8		2	0.02		PDF
	A-TFI-1618-16		1	1-1/8		2	0.04		PDF



iglide® T500

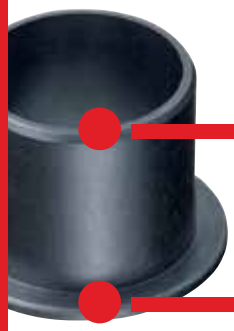
- Temperature resistant from -148°F to 482°F in continuous operation
- Universal resistance to chemicals
- High compressive strength
- Very low moisture absorption
- Excellent wear resistance through the entire temperature range

iglide® T500 - High-Tech Problem Solver

High temperature and chemical resistance

Temperature resistant from -148°F to 482°F in continuous operation

Universal resistance to chemicals



High compressive strength

Very low moisture absorption

Excellent wear resistance through the entire temperature range

iglide® T500 is defined by its combination of high temperature resistance with compressive strength, along with high resistance to chemicals. iglide® T500 is designed for higher speeds than other iglide® bearings.

Best Applications

- When especially high temperature resistance is necessary
- For pressure loads up to 21,760 psi
- For linear movements with a hard stainless steel
- For linear movements especially at high temperatures
- When universal resistance to chemicals is required
- Very low moisture absorption

Not For Use In Applications

- For very low wear at high loads
- For economical underwater applications
- For edge compression

Typical application areas

- Beverage technology
- Woodworking
- Aerospace engineering
- Cleanroom
- Plastic processing industry

max. +482°F
min. –148°F

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

Ø 2 to 75 mm
metric sizes available from igus

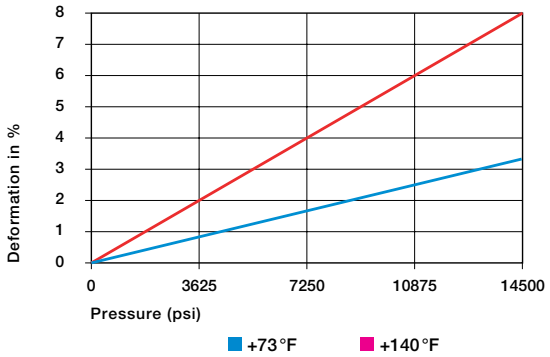
iglide® T500 - Technical Data

Material Properties Table

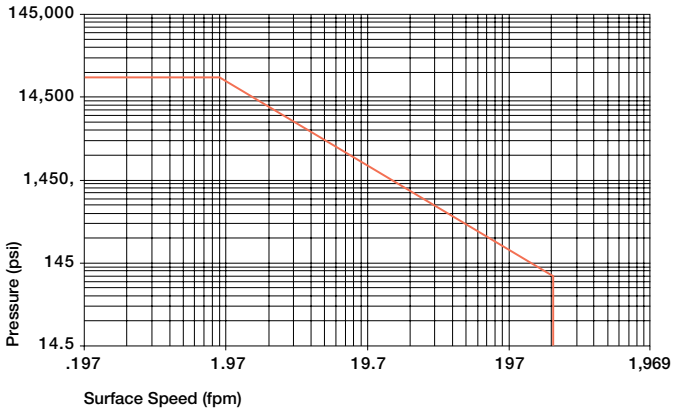
General Properties	Unit	iglide® T500	Testing Method
Density	g/cm³	1.44	
Color		black	
Max. moisture absorption at 73°F / 50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.5	
Coefficient of friction, dynamic against steel	μ	0.09 - 0.27	
pv value, max. (dry)	psi x fpm	37,700	
Mechanical Properties			
Modulus of elasticity	psi	1,174,800	DIN 53457
Tensile strength at 68°F	psi	24,660	DIN 53452
Compressive strength	psi	14,500	
Permissible static surface pressure (68°F)	psi	21,760	
Shore D-hardness		85	DIN 53505
Physical and Thermal Properties			
Max. long-term application temperature	°F	482	
Max. application temperature, short-term	°F	599	
Min. application temperature	°F	-148	
Thermal conductivity	W/m x K	0.6	ASTM C 177
Coefficient of thermal expansion	$K^{-1} \times 10^{-5}$	5	DIN 53752
Electrical Properties			
Specific volume resistance	Ωcm	$< 10^5$	DIN IEC 93
Surface resistance	Ω	$< 10^3$	DIN 53482

Compressive Strength

The graph shows the special compression resistance of iglide® T500 also at very high temperatures. Even at the highest long-term application temperature of 482°F, iglide® T500 plain bearings still withstand a static surface pressure of approximately 4350 psi.



Deformation under load and temperature



Permissible pv values for iglide® T500 running dry against a steel shaft, at 68°F

Permissible Surface Speeds

iglide® T500 is designed for higher speeds than other iglide® bearings. This is due to its high temperature resistance and excellent heat conductivity. These benefits are readily apparent in the pv values of max. 37,700 psi x fpm. However, only the smallest radial loads may act on the bearings. At the given speeds, friction can cause a temperature increase to maximum permissible levels.

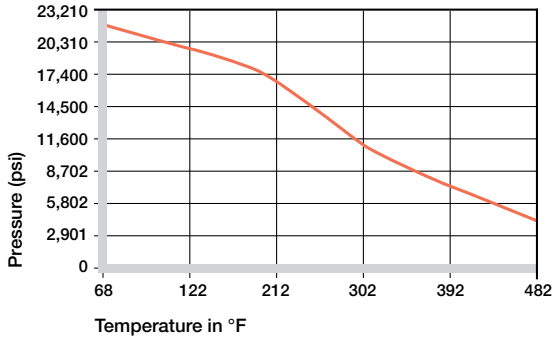
	Continuous fpm	Short Term fpm
Rotating	295	689
Oscillating	216	492
Linear	984	1968

Maximum surface speeds

iglide® T500 - Technical Data

Temperatures

In terms of temperature resistance, iglide® T500 has taken on a leading position. Having a permissible long-term application temperature of 482°F, iglide® T500 will even withstand 599°F for the short-term.
As in all thermoplastics, the compression resistance of T500 decreases with increasED temperature. However, the wear drops considerably when used within the observed temperature range of 73°F to 302°F. In certain cases, relaxation of the bearing can occur at temperatures greater than 275°F. This could lead to the bearing moving out of the housing after re-cooling. At temperatures over 275°F, the axial securing of the bearing in the housing needs to be tested. If necessary, secondary measures must be taken to mechanically secure the bearing. Please contact us if you have questions on bearing use.



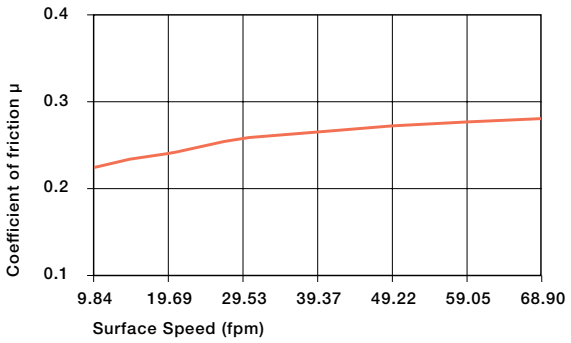
Recommended maximum permissible static surface pressure of iglide® T500 as a result of temperature

iglide® T500	Application Temperature
Minimum	- 148°F
Max. long-term	+482°F
Max. short-term	+599°F
Additional axial securing	+275°F

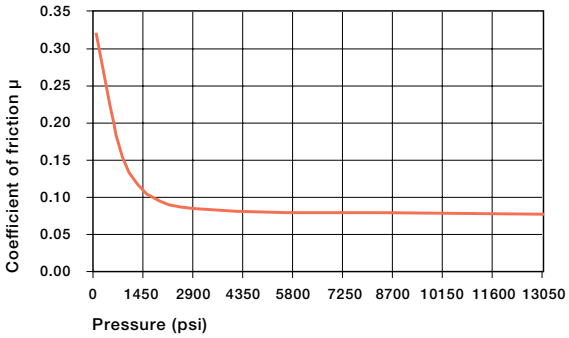
Temperature limits for iglide® T500

Friction and Wear

Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction increases with an increase in surface speed. On the other hand, an increased load has an inverse effect: the coefficient of friction decreases. This explains the excellent performance of iglide® T500 plain bearings for high loads.
Friction and wear are also dependent to a large degree on the shafting partner. Shafts that are too smooth increase the coefficient of friction of the bearing. For iglide® T500, a ground surface with an average roughness range of 24 - 32 rms is recommended for the shaft.



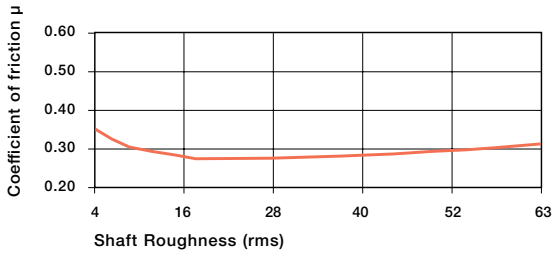
Coefficient of friction for iglide® T500 as a result of the surface speed; p = 108 psi, 1050 hard chromed



Coefficient of friction for iglide® T500 as a result of the load, v = 1.97 fpm

iglide® T500	Coefficient of Friction
Dry	0.09 - 0.27
Grease	0.09
Oil	0.04
Water	0.04

Coefficient of friction for iglide® T500 against steel (Shaft finish = 40 rms, 50 HRC)

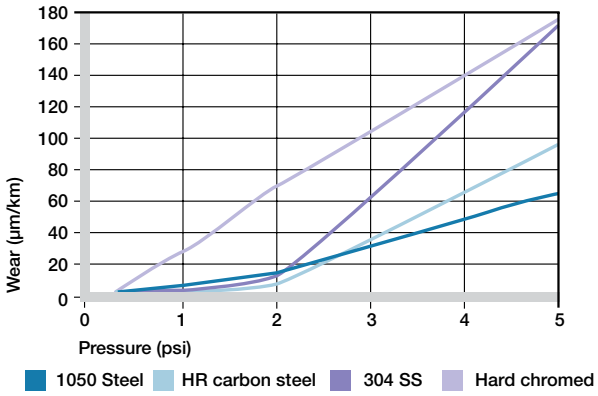


Coefficients of friction as a function of the shaft surface (1050 hard chromed)

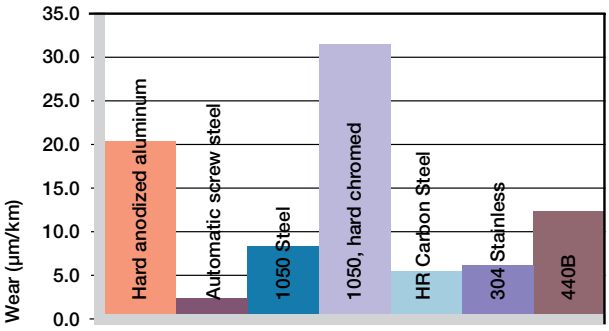
iglide® T500 - Technical Data

Shaft Materials

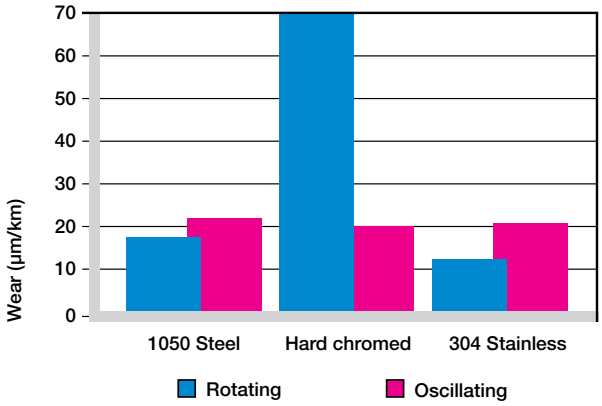
The graphs show results of testing different shaft materials with plain bearings made of iglide® T500. For low loads in rotating operation, the best wear values are found with 303 Stainless and HR Carbon Steel shafts. However, above a load of 290 psi, the bearing wear greatly increases with these two shaft materials. For the higher load range, hard-chromed shafts or Cold Rolled Steel shafts are advantageous. In oscillating operation at low loads, similar wear values for cold rolled steel and 303 stainless steel shafts occur. The wear is somewhat higher than during rotational movements.
If the shaft material you plan to use is not contained in this list, please contact us.



Wear of iglide® T500 with different shaft materials in rotational operation



Wear of iglide® T500 with different shaft materials, p = 108 psi, v = 98 fpm



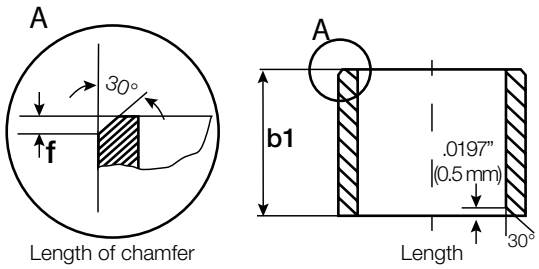
Wear for oscillating and rotating applications with different shaft materials p = 290 psi

Installation Tolerances

iglide® T500 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 (inches)	Tolerance (h13) (inches)	Length of Chamfer (f) Based on d1
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 (mm)	Tolerance (h13) (mm)	Length of Chamfer (f) Based on d1
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	



iglide® T500 - Technical Data

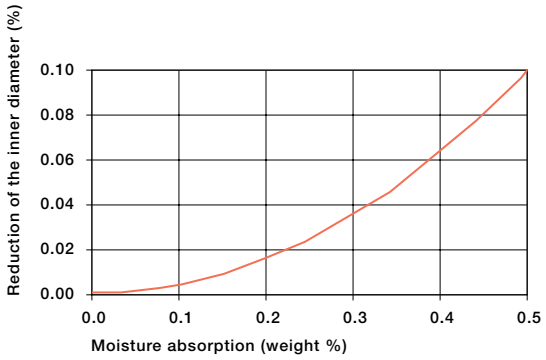
Chemical Resistance

iglide® T500 plain bearings are close to universally resistant to chemicals. They are only attacked by concentrated nitric acid and by sulfuric acid with acidity levels over 65%. The list at the end of this catalog provides more comprehensive detailed information.

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

+ resistant, 0 conditionally resistant, – not resistant

Chemical resistance of iglide® T500
All data given concerns the chemical resistance at room temperature (68°F).



Effect of moisture absorption on iglide® T500 plain bearings

Radiation Resistance

Plain bearings made from iglide® T500 are resistant to radiation up to an intensity of $1x10^5$ Gy. iglide® T500 is the most radioactive-resistant material of the iglide® product line. iglide® T500 is extremely resistant to hard gamma radiation and withstands a radiation dose of 1000 Mrad without detectable change in its properties. The material also withstands an alpha or beta radiation of 10,000 Mrad with practically no damage.

UV Resistance

The excellent material properties of iglide® T500 do not change under UV radiation and other weathering effects.

Vacuum

In a vacuum environment, iglide® T500 plain bearings can be used virtually without restrictions. Outgassing takes place to a very limited extent.

Electrical Properties

iglide® T500 plain bearings are electrically conductive.

iglide® T500	
Specific volume resistance	$< 10^5$ Ωcm
Surface resistance	$< 10^3$ Ω

Electrical properties of iglide® T500