GGT Gleit-Technik AG
Postfach 164
Meierskappelstrasse 3
CH–6403 Küssnacht am Rigi

Tel. +41 41 854 15 30
Fax +41 41 854 15 32
E-Mail info@gleitlager.ch
Web www.gleitlager.ch

gleit-technik ag
IHR SPEZIALIST FÜR GLEITLAGER

EPB14A Plastic Bearings

Product Features

- Continuous working temperature: -200°C – +260°C
- Middle load and high surface speed
- Soft material shaft can be used
- High chemical resistance
- Suitable for working in liquid
- Meet FDA standards for contact with food

The Material Data Sheet

Common Capability	Testing Method	Unit	EPB14A
Color			Yellow
Density	ISO 1183	g/cm³	2.20
Dynamic friction /steel (dry)			0.05 - 0.15
Max. PV (dry)		N/mm² x m/s	0.4
Max. rotating velocity		m/s	2.0
Max. oscillating velocity		m/s	3.5
Max. linear velocity		m/s	7.0
Tensile strength	ISO 527	MPa	18
Compressive strength (Axial)		MPa	10
E-Modul	ISO 527	MPa	830
Max. static pressure of the surface, 20°C		MPa	10
Shore hardness	ISO 868	D	67
Continuous work temperature		℃	-200 – +260
Short-time work temperature		℃	-200 – +310
Thermal conductivity	ASTME1461	W/m*k	0.25
Linear coef. ofthermal expansion	ASTMD696	10^{-5} x K^{-1}	13
Maisture absorption RH50 / 23℃	ASTMD570	%	<0.1
Max. water absorption, 23"C		%	<0.1
Flammability	UL94		V0
Volume resistivity	IEC60093	Ωcm	$>10^{15}$
Surface resistivity	IEC60093	Ω	$>10^{15}$

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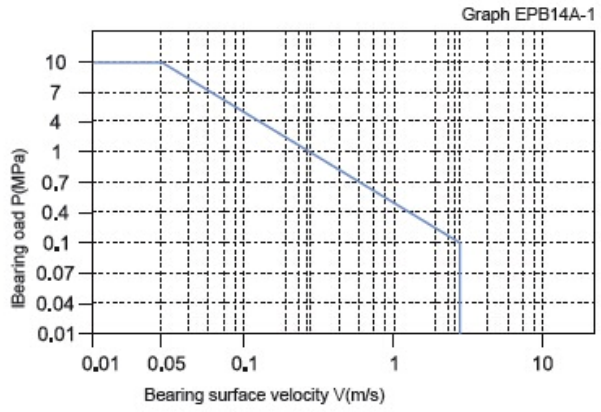
PV Value of Bearings

The max PV value of the EPB14A series bearing is 0.4 N/mm2*m/s which determines the load capacity of bearing is inversely proportional to the speed. Please refer to the chart for more detailed information (Graph EPB14A-1).

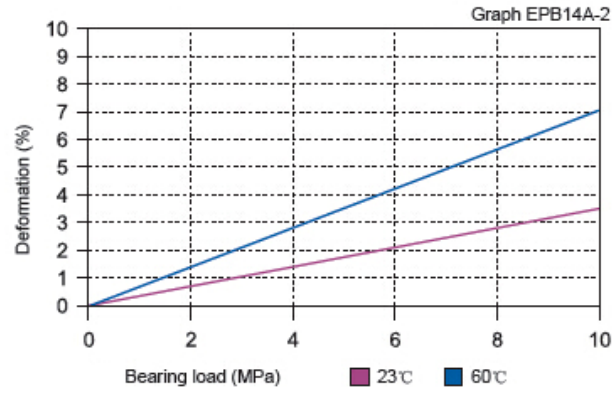
Permissible PV value



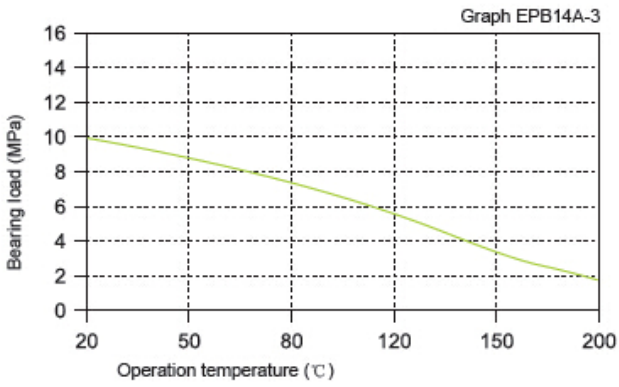
The Relation of Load, Speed and Temperature

EPB14A allows the Max static load of 10 MPa, The max compressive deformation rate under the max load is listed in Graph EPB14A-2, The actual load capacity of bearing is slightly less than 10 MPa, The bearing load is variable against the speed and temperature, Fast speed results into higher temperature (Tmax: 260°C) which decreases the load capacity of the bearing. Please refer to the Graph EPB14A-3 for such variation.

Load-Temperature deformation



Load-Temperature diagrams



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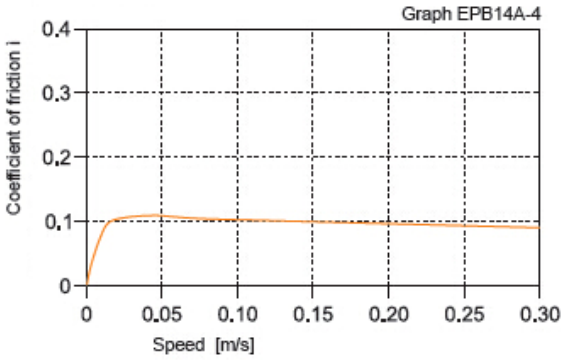
The Relation of Friction Factor, Wearing and shaft material

Friction Factor

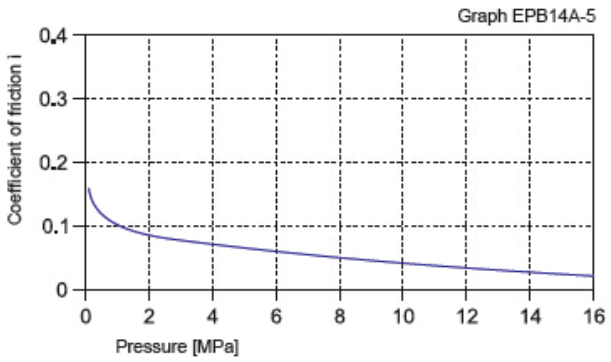
A rapid decrease in friction can be observed as load increases for EPB14A bearings. A higher surface speed has less impact on the coefficient of friction of this bearing. (EPB14A-4 and EPB14A-5) EPB14A is suitable for applications in which high PV values are given mainly through the high surface speed and not as much through the surface pressure. From the figure EPB14A-6, we could see that the friction factor is variable against the changing of shaft roughness. The recommended shaft roughness is Ra 0.3 - 0.5.

EPB14A	Dry	Grease	Oil	Water
Friction coef. μ	0.03 - 0.15	0.09	0.04	0.04

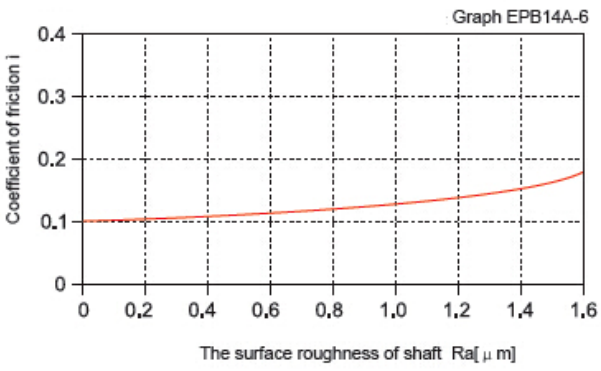
Coefficient of friction & the speed of bearing, p = 2 MPa



Coefficient of friction & the pressure of bearing, v = 0.2 m/s



Coefficient of friction & the surface roughness of shaft



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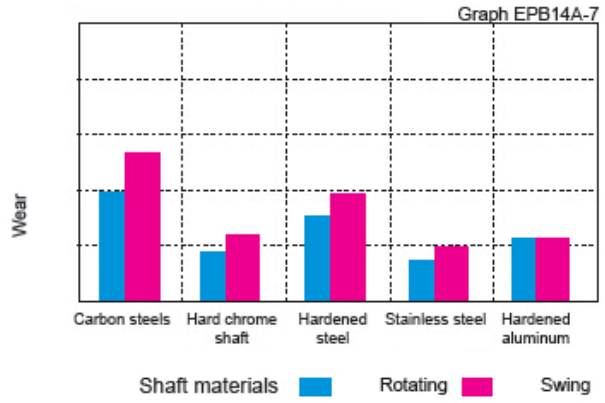
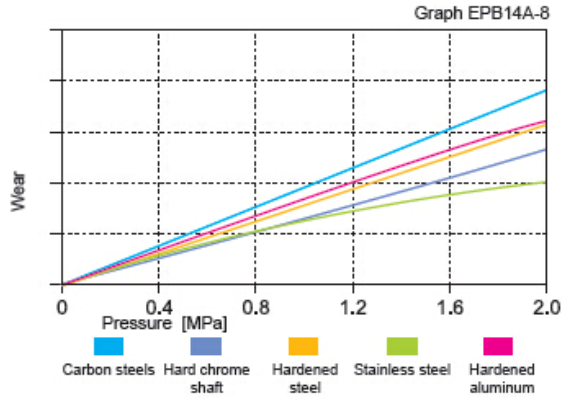
Wearing and shaft material

EPB14A is suitable for almost all kinds of shaft materials. Graph EPB14-7 shows that the wearing feature of EPB14A is excellent when the shaft material is stainless steel, hardened Aluminium or hardened chrome steel. Graph EPB14-7 shows that the material EPB14 is most suitable for the rotation operation. Since start-up friction is extremely low, this makes EPB14A bearings the ideal choice for oscillating or start-stop applications.

The bearing wear under rotating with different shaft materials, p = 2 MPa, v = 0.2 m/s



The bearing wear & pressure under rotating with different shaft materials, v = 0.2 m/s



Chemical Resistance

EPB14A is good at chemical resistance against weak acidic medium and various kinds of lubricants.

UV Resistance

EPB14A can maintain its performance to be stable even exposed in the UV ray for long period.

Water Absorbability

The water absorb rate of EPB14A is less than 0.1% under the atmospheric pressure while it is less than 0.1% when the material is immerged into water. The material performance and dimensions of the material is stabilized for the applications under humid environment or even in the water.

NOTES

Data herein is typical and not the maximum values of the material specifications. Unless otherwise specified, all data listed is for all specification products. We reserve the right to change tech-Data without notice due to the improvement of material technology.