

EPBH Plastic Bearings



Product Features

This material is developed against the requirement of wear resistance and economic cost for cost effective and big quantity consuming applications.

- Continuous working temperature: -40°C – +80°C
- Suitable for most of average and low load
- Maintenance-free dry operation
- Low cost for high quantities

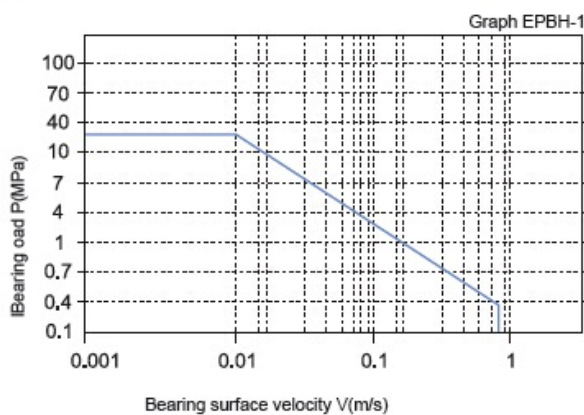
The Material Data Sheet

Common Capability	Testing Method	Unit	EPBH
Color			Black
Density	ISO 1183	g/cm ³	1.45
Dynamic friction /steel (dry)			0.05 - 0.20
Max. PV (dry)		N/mm ² x m/s	0.3
Max. rotating velocity		m/s	0.8
Max. oscillating velocity		m/s	0.6
Max. linear velocity		m/s	2.5
Tensile strength	ISO 527	MPa	75
Compressive strength (Axial)		MPa	60
E-Modul	ISO 527	MPa	2'200
Max. static pressure of the surface, 20°C		MPa	30
Rockwell hardness	ISO 2039-2	HRR	74
Continuous work temperature		°C	-40 – +80
Short-time work temperature		°C	-40 – +120
Thermal conductivity	ASTME1461	W/m*k	0.2
Linear coef. of thermal expansion	ASTMD696	10 ⁻⁵ x K ⁻¹	10
Maisture absorption RH50 / 23°C	ASTMD570	%	0.2
Max. water absorption, 23°C		%	1.2
Flammability	UL94		HB
Volume resistivity	IEC60093	Ωcm	>10 ¹²
Surface resistivity	IEC60093	Ω	>10 ¹⁵

PV Value of Bearings

The max PV value of the EPBH series bearing is 0.3 N/mm*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 below.

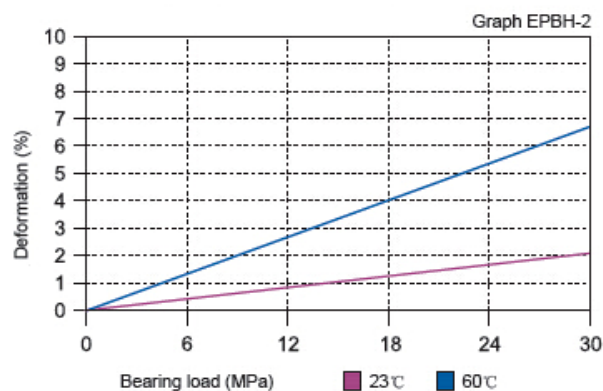
■ Permissible PV



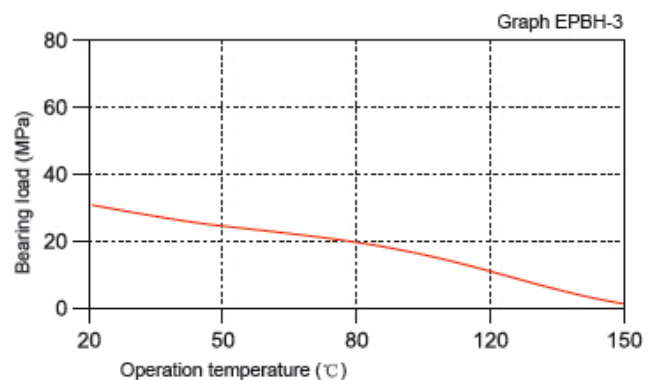
The Relation of Load, Speed and Temperature

EPBH allows the max static load of 30 MPa. The max compressive deformation rate under the max load is listed in Graph EPBH-2. The actual load capacity of bearing is slightly less than 30 MPa. The bearing load is variable against the speed and temperature. Fast speed (Vmax: 0.8 m/s) results into higher temperature (Tmax : 80°C) which decreases the load capacity of the bearing. Please refer to the Graph EPBH-3 for such variation.

■ Load-Temperature deformation



■ Load-Temperature diagrams



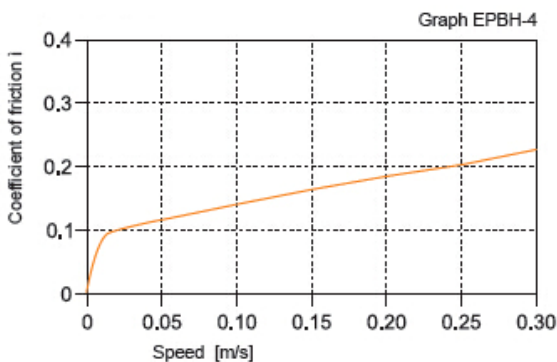
The Relation of Friction Factor, Wearing and shaft material

Friction Factor

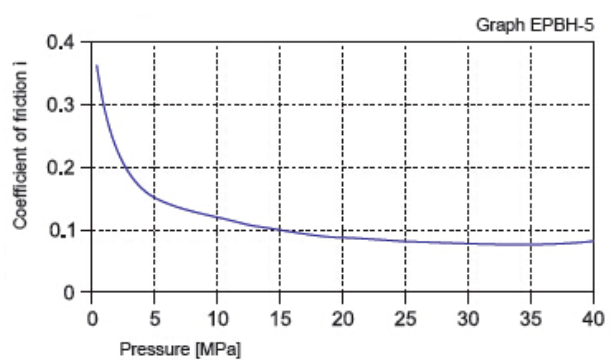
EPBH friction factor is not sensitive to the operation speed and bearing loading (see Graph EPBH-4 and Graph EPBH-5). The above features are the most common considerations for the bearing material selection. The friction of EPBH could be maintained at a relatively lower level so that the good wearing features are guaranteed. From the Graph EPBH-6, we could see that the friction factor is variable against the changing of shaft roughness. The recommended shaft roughness is Ra0.3 - 0.5.

EPBH	Dry	Grease	Oil	Water
Friction coef. μ	0.05 - 0.20	0.09	0.04	0.04

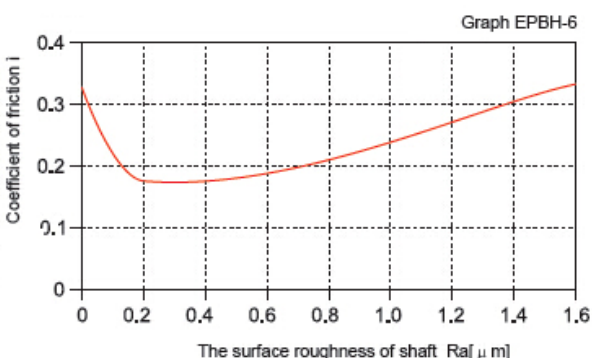
■ Coefficient of friction & the speed of bearing, $p = 2 \text{ MPa}$



■ Coefficient of friction & the pressure of bearing, $v = 0.2 \text{ m/s}$



■ Coefficient of friction & the surface roughness of shaft

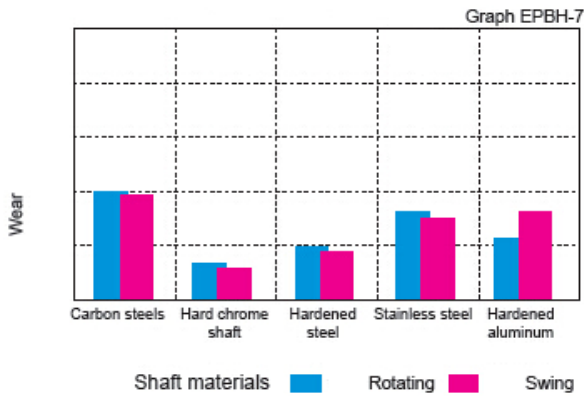


Wearing and shaft material

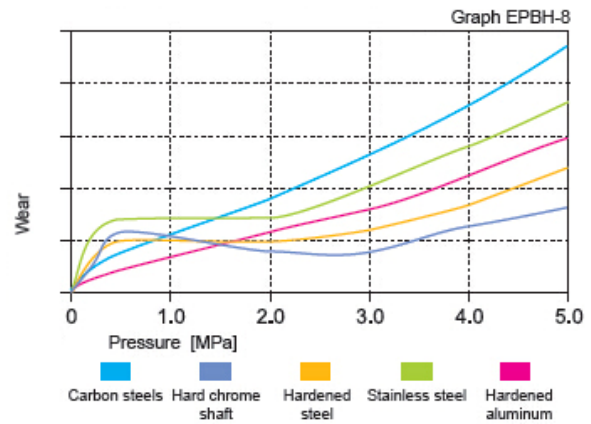
The shaft material is an important media for the bearing wearing but EPBH is suitable for almost all kinds of shaft materials. Graph EPBH-7 and Graph EPBH-8 show that the wearing feature of EPBH is excellent when the shaft material are hardened chrome steel, hardened steel or hardened Aluminium.

v=0.2m/s

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

EPBH is good at chemical resistance against mild base, weak acidic medium and various kinds of lubricants.

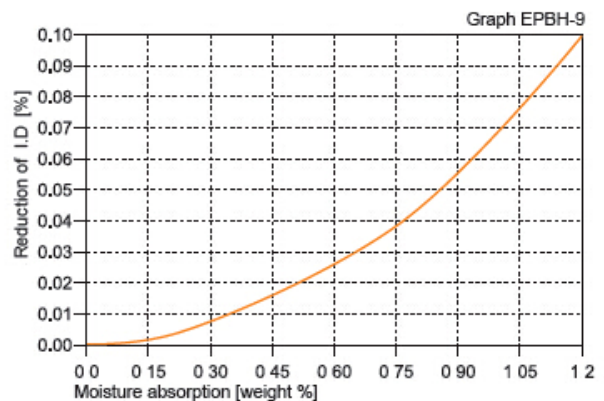
UV Resistance

EPBH can maintain its colour unchanged when it is exposed into the UV ray. The hardness, Compressive strength and wear resistance of the material is also stable under such condition.

Water Absorbability

The water absorb rate of EPBH is 0.2% under the atmospheric pressure while it is 1.2% when the material is immerged into water. With its low water absorbability, the material is suitable for humid environment applications.

Effect of moisture absorption on EPBH bearings



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.