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

# EPB3 Plastic Bearings

## Product Features

Best for middle to high load applications. With the perfect combination of reinforced fibre and good lubrication feature, this material is suitable to be used under the temperature of 130°C.

- Continuous working temperature -40°C – +130°C
- Suitable for medium and high load operation
- Maintenance-free dry operation
- Applicable for various shaft materials
- Good for rotation and oscillating operation

## The Material Data Sheet

| Common Capability | Testing Method | Unit | EPB3 |
|---|---|---|---|
| Color | | | Dark Grey |
| Density | ISO 1183 | g/cm³ | 1.46 |
| Dynamic friction /steel (dry) | | | 0.08 - 0.18 |
| Max. PV (dry) | | N/mm² x m/s | 0.5 |
| Max. rotating velocity | | m/s | 1.0 |
| Max. oscillating velocity | | m/s | 0.7 |
| Max. linear velocity | | m/s | 4.0 |
| Tensile strength | ISO 527 | MPa | 200 |
| Compressive strength (Axial) | | MPa | 80 |
| E-Modul | ISO 527 | MPa | 7'700 |
| Max. static pressure of the surface, 20°C | | MPa | 80 |
| Rockwell hardness | ISO 2039-2 | HRR | 112 |
| Continuous work temperature | | °C | -40 – +130 |
| Short-time work temperature | | °C | -40 – +220 |
| Thermal conductivity | ASTME1461 | W/m*k | 0.25 |
| Linear coef. ofthermal expansion | ASTMD696 | $10^{-5}$ x $K^{-1}$ | 9 |
| Maisture absorption RH50 / 23°C | ASTMD570 | % | 0.7 |
| Max. water absorption, 23"C | | % | 4.0 |
| Flammability | UL94 | | HB |
| Volume resistivity | IEC60093 | Ωcm | $>10^{13}$ |
| Surface resistivity | IEC60093 | Ω | $>10^{11}$ |

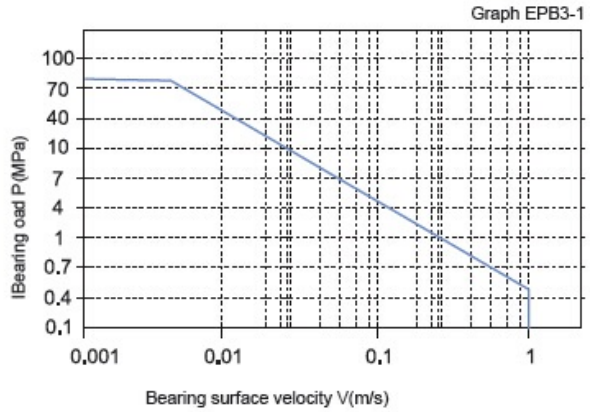
GGT Gleit-Technik AG
Postfach 164
Meierskappelstrasse 3
CH–6403 Küssnacht am Rigi

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

## PV Value of Bearings

The max PV value of the EPB3 series bearing is 0.5 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 EPB3-1).

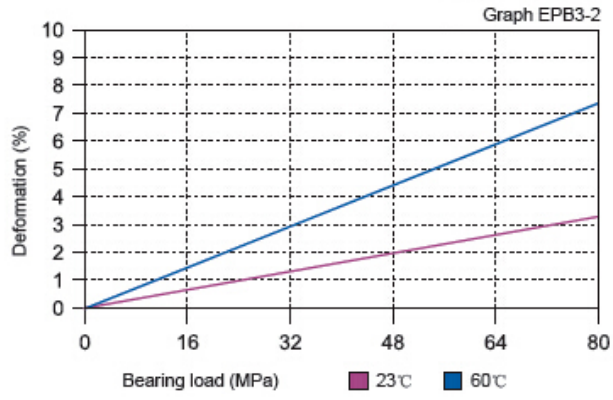
Permissible PV



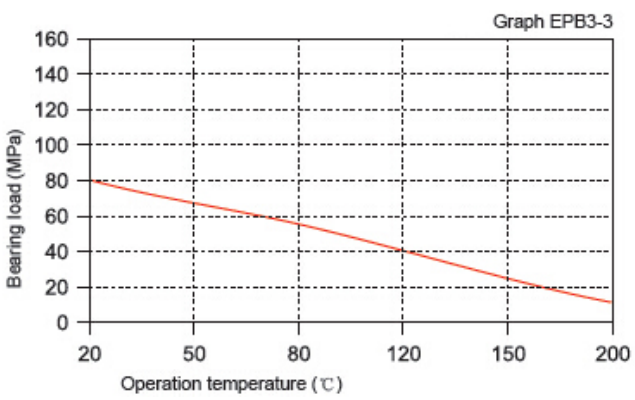

## The Relation of Load, Speed and Temperature

EPB3 allows the max static load of 80 MPa. The max compressive deformation rate under the max load is listed in Graph EPB3-2. The actual load capacity of bearing is slightly less than 80 MPa. The bearing load is variable against the speed and temperature. Fast speed (Vmax: 1.0 m/s) results into higher temperature (Tmax: 130℃) which decreases the load capacity of the bearing. Please refer to the Graph EPB3-3 for such variation.

Load-Temperature deformation




Load-Temperature diagrams



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

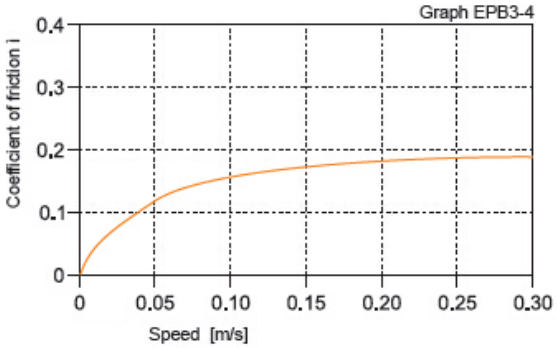
# The Relation of Friction Factor, Wearing and shaft material

### Friction Factor

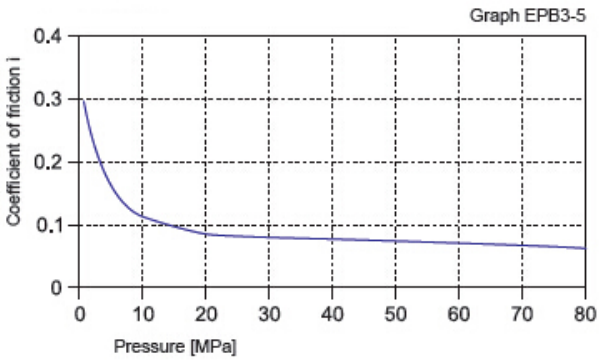
The friction factor of the sliding bearings is relative to the bearing load, operation speed and the roughness of the shaft material. EPB3 Bearing Friction factor decreased along with the increasing of the loading (see Graph EPB3-5) and increased along with the increasing of the operation speed (see Graph EPB3-4). The above feature induces the EPB3 material is applicable for the high load and low speed operation while too smooth and too rough surface may result into the increasing of friction factor. The recommended surface roughness of EPB3 is Ra 0.5 - 0.8 (see Graph EPB3-6).

| **EPB3** | Dry | Grease | Oil | Water |
|---|---|---|---|---|
| **Friction coef. μ** | 0.08 - 0.18 | 0.09 | 0.04 | 0.04 |

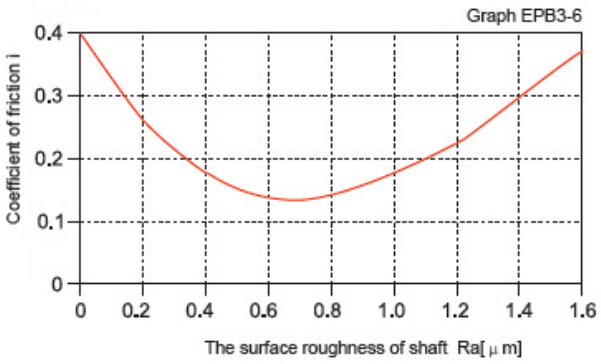
Coefficient of friction & the speed of bearing, p = 2 MPa




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




Coefficient of friction & the surface roughness of shaft



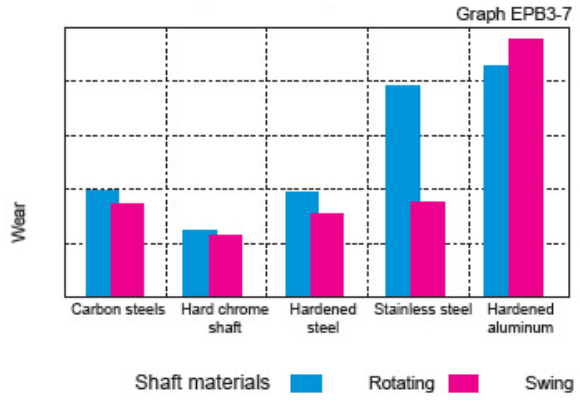
GGT Gleit-Technik AG
Postfach 164
Meierskappelstrasse 3
CH–6403 Küssnacht am Rigi

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

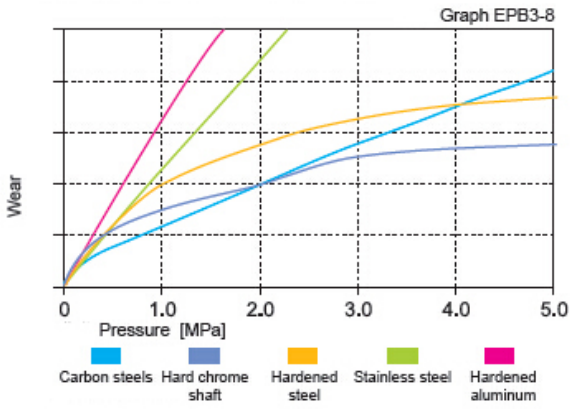
**Wearing and shaft material**

Test of the bearing against various shaft materials shows that the material EPB3 features the best performance where the shaft material is carbon steel and hard chrome steel under low loading. (see Graph EPB3-7 and Graph EPB3-8). Therefore, the higher the load is, the more critical the hardness of the shaft will have to be. The softer shaft will be worn off sooner and as a result, the bearing wearing will be increased. But when the loading is increased over 2 MPa, the wearing of the bearing will be better along with the increasing of the shaft hardness. Refer to Graph EPB3-8. It shows that the material EPB3 is better under the oscillation operation comparing with the rotation operation. Under the same condition, the wearing feature of the oscillation operation is much better than that of the rotation operation. This feature is sharply improved under higher loading.

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**

EPB3 is good at chemical resistance against weak acidic medium and various kinds of lubricants.

**UV Resistance**

EPB3 can maintain its color unchanged when it is exposed into the UV ray. The material performance stays stable.

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

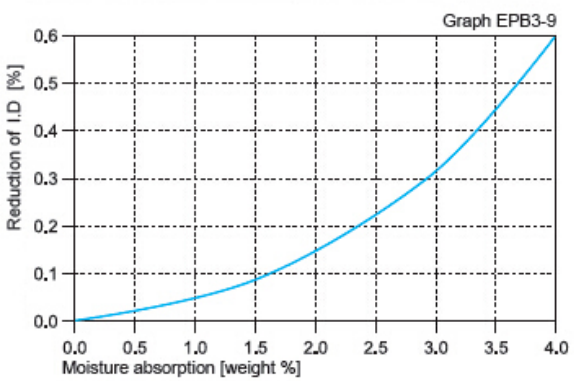
Tel. +41 41 854 15 30
Fax +41 41 854 15 32
E-Mail info@gleitlager.ch
Web www.gleitlager.ch

gleit-technik ag
IHR SPEZIALIST FÜR GLEITLAGER

## Water Absorbability

The water absorb rate of EPB3 is 0.7% under the atmospheric pressure while it is 4.0% when the material is immerged into water. The application environment has to be considered because of its water absorb properties.

Effect of moisture absorption on EPB3 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.