

● 标准产品规格表 Standard specifications: P124

产品特性 Product features

- 中低载荷和速度的优化组合，不含PTFE；大批量低成本需求
- 连续使用温度：-40℃/+80℃
- 适合多数低载荷场合
- 适合干运行、免维护
- 不同轴材料磨损很小
- 较低的摩擦系数
- The combination of middle to low load and low speed application requirement. It is a material without PTFE embedded for the low cost and big quantity demanding
- Continuous working temperature: -40℃/+80℃
- Very common; suitable for most average and low load
- Maintenance-free dry operation
- Light wear against different shaft materials
- Low friction

材料数据表 Material properties data table

材料性能 Material properties	测试标准 Standard	单位 Unit	CSB-EPB2D
颜色 Color	-	-	绿色 Green
密度 Density	ISO1183	g/cm ³	1.40
最大吸湿率 Max. moisture absorption, 50%RH	ISO62	%	0.3
最大吸水率 Max. water absorption	ISO62	%	1.2
对钢动摩擦系数 Coefficient of sliding friction(steel)	ITS025	μ	0.05-0.25
极限PV值 Max. PV value	ITS026	N/mm ² × m/s	0.25
弯曲模量 Flexural modulus	ISO178	MPa	2000
弯曲强度 Flexural strength	ISO178	MPa	65
最大静载荷 Max. static load	ITS027	MPa	30
最大动载荷 Max. dynamic load	ITS028	MPa	13
邵氏硬度 Shore hardness	ISO868	D	75
连续运行温度 Long-term application temperature	ITS029	℃	+80
短时运行温度 Short-term application temperature	ITS029	℃	+120
最低运行温度 Lowest application temperature	ITS029	℃	-40
导热性 Thermal conductivity	ISO22007	W/m/K	0.25
线性热膨胀系数 Coefficient of thermal expansion	ISO11359	K ⁻¹ × 10 ⁻⁵	11
阻燃等级 Flammability	UL94	Class	HB
体电阻率 Volume resistance	IEC60093	Ω · cm	>10 ¹³
面电阻率 Surface resistance	IEC60093	Ω	>10 ¹²

*ITS: CSB内部测试标准 CSB company's internal test standards.

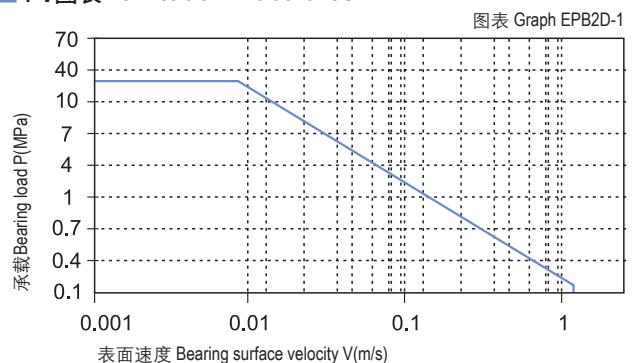
**除非特殊说明测试温度为23℃ Test temperatures are 23℃ unless otherwise stated.

轴承PV值 PV value

CSB-EPB2D塑料轴承最大运行PV值为0.25N/mm² × m/s；由此决定轴承所承受的载荷与速度成反比，详细查阅图表EPB2D-1。

The max PV value of the CSB-EPB2D plastic bearings is 0.25N/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 EPB2D-1).

■ PV图表 Permissible PV value for CSB-EPB2D



轴承的载荷、速度、温度 Load, speed and temperature

CSB-EPB2D塑料轴承可承受最大静载荷为30Mpa，在此载荷下轴承的最大压缩变形量参考图表EPB2D-2，轴承实际工作载荷略小于30Mpa，载荷还受到运行速度以及温度的影响，速度越快（Vmax: 1.2m/s）会导致摩擦温度上升，而温度上升（Tmax: 80℃）会导致轴承的承载能力逐渐减弱，载荷随轴承工作温度变化情况参考图表EPB2D-3。

CSB-EPB2D allows the Max static load of 30Mpa, The max compressive deformation rate under the max load is listed in Graph EPB2D-2, The actual load capacity of bearing is slightly less than 30Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.2m/s) results into higher temperature (Tmax: 80℃) which decreases the load capacity of the bearing. Please refer to the Graph EPB2D-3 for such variation.

轴承的摩擦系数、磨损、轴材料 Friction factor, wear and shaft material

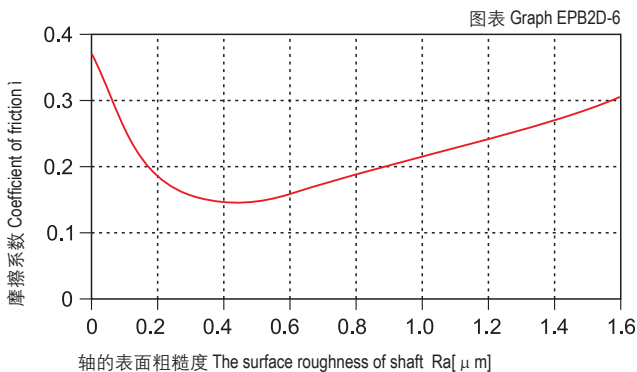
摩擦系数 Friction factor

图表EPB2D-4表明CSB-EPB2D塑料轴承在载荷保持不变的情况下摩擦系数先是随着运行速度的增加而升高，当运行速度超过0.25m/s后摩擦系数反而会随着运动速度的增加而降低；图表EPB2D-5表明CSB-EPB2D塑料轴承在保持速度不变时摩擦系数随着载荷的增加而逐步减低。根据图表EPB2D-6表明CSB-EPB2D塑料轴承的摩擦系数会随着轴表面粗糙度的变化而不同，我们推荐使用轴粗糙度为Ra0.3 ~ 0.6μm；

Graph EPB2D-4 shows that the friction factor of CSB-EPB2D is initially increased along with the operation speed increasing when the loading is stable but when the speed reaches over 0.25m/s, it is decreased along with the operation speed increasing. Graph EPB2D-5 shows that the friction factor of CSB-EPB2D is decreasing along with the loading increasing when the operation speed is stable. Graph EPB2D-6 shows the friction factor of CSB-EPB2D is sensitive to the shaft roughness. The best shaft roughness for this material is Ra0.3-0.6.

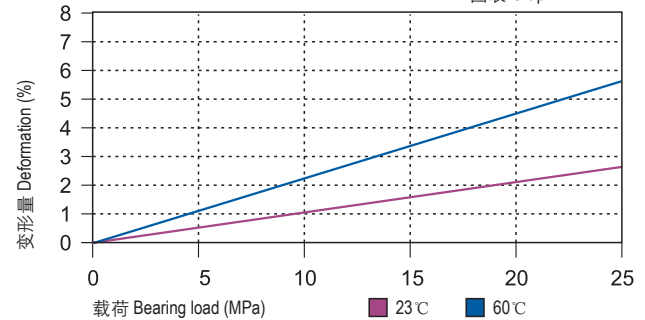
摩擦系数与轴表面粗糙度关系图表

Coefficient of friction & the surface roughness of shaft



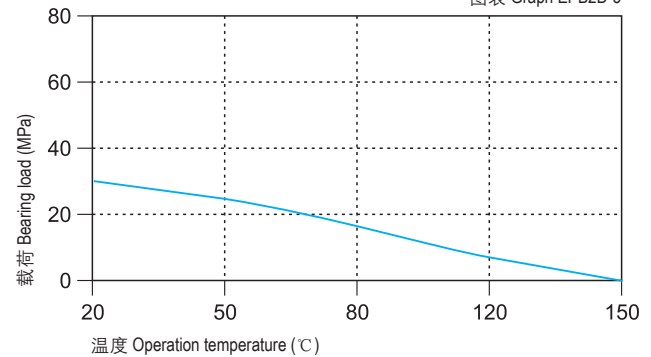
载荷-温度-变形量图表 Load-Temperature deformation

图表 Graph EPB2D-2



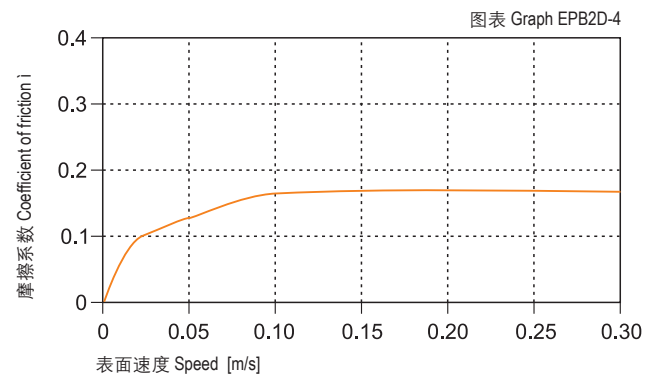
载荷-温度图表 Load-Temperature diagrams

图表 Graph EPB2D-3



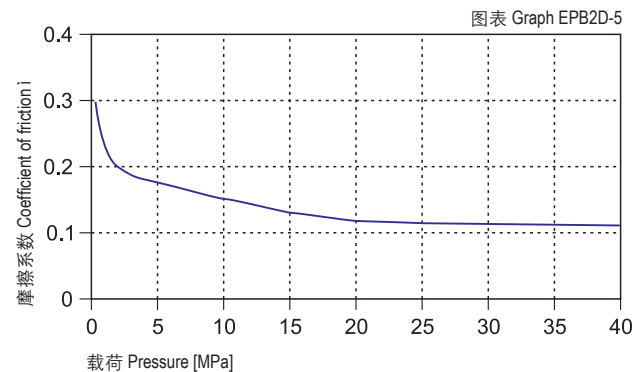
摩擦系数与速度变化关系图表 P=2MPa

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



摩擦系数与载荷变化关系图表 v=0.2m/s

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



CSB-EPB2D	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.05~0.25	0.09	0.04	0.04

磨损与轴材料 Wearing and shaft material

图表EPB2D-7与图表EPB2D-8表明低载时硬铬钢轴比较适合用于CSB-EPB2D塑料轴承，当载荷逐渐增大到1.0Mpa以上时不锈钢轴相对比较合适。CSB-EPB2D塑料轴承在用于旋转运动时采用硬化钢轴比较理想，而在用于摆动运动中采用硬铬钢轴相对比较合适。

Graph EPB2D-7 and Graph EPB2D-8 shows that the hardened chrome steel shaft is good for CSB-EPB2D bearings under lower loading and stainless steel shaft is better when the loading is over 1.0Mpa. Hardened steel shaft is recommended in rotation operation but hardened chrome steel shaft is recommended in oscillation operation.

化学抗性 Chemical resistance

CSB-EPB2D塑料轴承能抵抗弱碱、弱酸以及各类润滑油的腐蚀。

CSB-EPB2D is good at chemical resistance against mild base, weak acidic medium and various kinds of lubricants.

吸水性 Water absorption

CSB-EPB2D塑料轴承在标准大气中的吸湿率为0.3%。浸泡在水中最高吸水率为1.2%。较低的吸水率只有在极端应用中才需要更改轴承设计。

The moisture absorption of CSB-EPB2D plastic bearings is 0.3% in standard atmosphere. The max. water absorption is 1.2% in water. These values are so low that design changes due to absorption are only necessary in extreme applications.

抗UV性能 UV resistance

CSB-EPB2D塑料轴承长久暴露在紫外线下颜色会变浅。材料的硬度，抗压强度和耐磨性都不会改变。

The color of CSB-EPB2D will become lighter when it is exposed into the UV ray. The hardness, Compressive strength and wear resistance of the material is also stable under such condition.

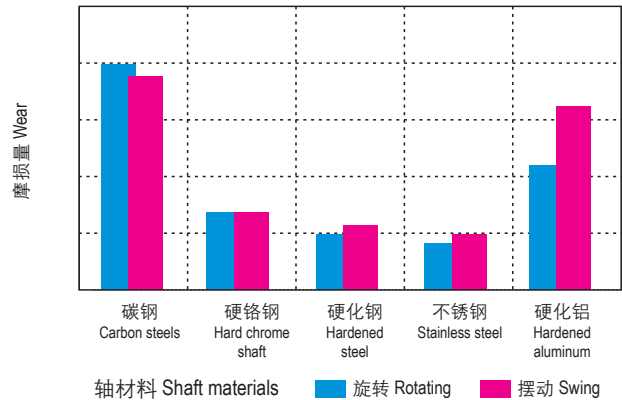
安装公差 Installation tolerances

CSB-EPB2D塑料轴承压装后公差 Tolerances after pressfit

直径 Di. [mm]	CSB-EPB2D E10 [mm]	座孔 Housing H7 [mm]	轴 Shaft h9 [mm]
>0 ~ 3	+0.014 ~ +0.054	0 ~ +0.010	0 ~ -0.025
>3 ~ 6	+0.020 ~ +0.068	0 ~ +0.012	0 ~ -0.030
>6 ~ 10	+0.025 ~ +0.083	0 ~ +0.015	0 ~ -0.036
>10 ~ 18	+0.032 ~ +0.102	0 ~ +0.018	0 ~ -0.043
>18 ~ 30	+0.040 ~ +0.124	0 ~ +0.021	0 ~ -0.052
>30 ~ 50	+0.050 ~ +0.150	0 ~ +0.025	0 ~ -0.062
>50 ~ 80	+0.060 ~ +0.180	0 ~ +0.030	0 ~ -0.074
>80 ~ 120	+0.072 ~ +0.212	0 ~ +0.035	0 ~ -0.087
>120 ~ 180	+0.085 ~ +0.245	0 ~ +0.040	0 ~ -0.100

在不同轴材料上旋转时的磨损量 $p=2\text{MPa}$, $v=0.2\text{m/s}$ Wear under rotating with different shaft materials, $p = 2 \text{ MPa}$, $v = 0.2 \text{ m/s}$

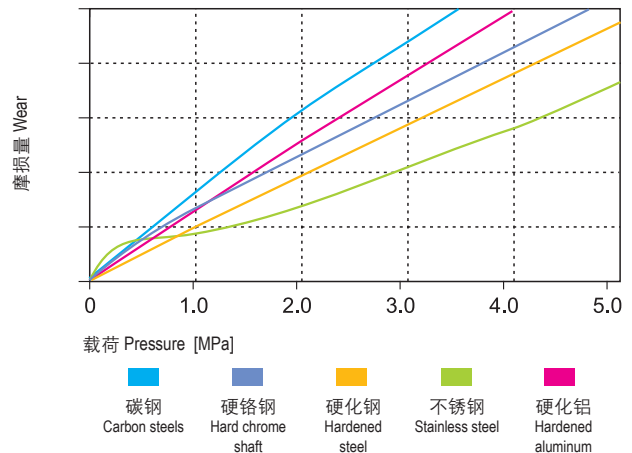
图表 Graph EPB2D-7



旋转磨损随轴材料与压力变化关系 $v=0.2\text{m/s}$ Wear & pressure under rotating with different shaft materials, $v = 0.2 \text{ m/s}$

Wear & pressure under rotating with different shaft materials, $v = 0.2 \text{ m/s}$

图表 Graph EPB2D-8



吸水性的影响 Effect of moisture absorption on EPB2D bearings

Effect of moisture absorption on EPB2D bearings

图表 Graph EPB2D-9

