◉ 标准产品规格表 Standard specifications: P135

产品特性 Product features

- 高温250度自润滑材料。高化学抗性可被用于多数腐蚀性液体中。高承载能力，一般用于高温或高化学腐蚀场合
- 连续使用温度：-100℃/+250℃
- 适合高载荷运用
- 高温下保持较高的承载能力
- 较广泛的化学抗性
- 非常低的吸水率
- 较高的抗压强度

- Self-lubricated material for high temperature up to 250 ℃. With its high chemical resistance feature, it coul be used inside most common chemical liquids. It is a high load material for the applications of high temperature and critical chemical environments
- Continuous working temperature: -100℃/+250℃
- Suitable for high load operation
- High load capacity at higher temperature
- Good chemical resistance
- Low water absorption
- High pressure resistance

材料数据表 Material properties data table

材料性能 Material properties	测试标准 Standard	单位 Unit	CSB-EPB5
颜色 Color	-	-	黑色 Black
密度 Density	ISO1183	g/cm^3	1.44
最大吸湿率 Max. moisture absorption, 50%RH	ISO62	%	0.1
最大吸水率 Max. water absorption	ISO62	%	0.5
对钢动摩擦系数 Coefficient of sliding friction(steel)	ITS025	μ	0.09-0.25
极限PV值 Max. PV value	ITS026	N/mm^2 × m/s	1.40
弯曲模量 Flexural modulus	ISO178	MPa	4800
弯曲强度 Flexural strength	ISO178	MPa	165
最大静载荷 Max. static load	ITS027	MPa	110
最大动载荷 Max. dynamic load	ITS028	MPa	61
邵氏硬度 Shore hardness	ISO868	D	82
连续运行温度 Long-term application temperature	ITS029	℃	+250
短时运行温度 Short-term application temperature	ITS029	℃	+315
最低运行温度 Lowest application temperature	ITS029	℃	-100
导热性 Thermal conductivity	ISO22007	W/m/K	0.55
线性热膨胀系数 Coefficient of thermal expansion	ISO11359	K^{-1} × 10^{-5}	6
阻燃等级 Flammability	UL94	Class	V0
体电阻率 Volume resistance	IEC60093	Ω·cm	>10^8
面电阻率 Surface resistance	IEC60093	Ω	>10^7

*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.

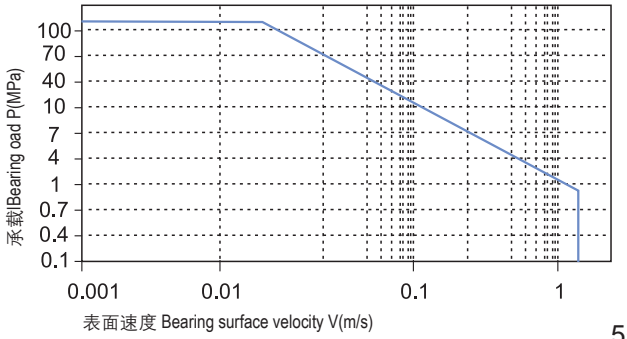
轴承PV值 PV value

CSB-EPB5塑料轴承最大运行PV值为1.4N/mm^2 × 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EPB5-1。

The max PV value of the CSB-EPB5 plastic bearings is 1.4N/mm^2 × 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 EPB5-1).

■ PV图表 Permissible PV value for CSB-EPB5

图表 Graph EPB5-1



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

CSB-EPB5塑料轴承可承受最大静载荷为110Mpa，在此载荷下轴承的最大压缩变形量参考图表EPB5-2，轴承实际工作载荷略小于110Mpa，载荷还受到运行速度以及温度的影响，速度越快 (Vmax：1.5m/s) 会导致摩擦温度上升，而温度上升 (Tmax: 250℃) 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EPB5-3。

CSB-EPB5 allows the Max static load of 110Mpa, The max compressive deformation rate under the max load is listed in Graph EPB5-2, The actual load capacity of bearing is slightly less than 110Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.5m/s) results into higher temperature (Tmax: 250℃) which decreases the load capacity of the bearing. Please refer to the Graph EPB5-3 for such variation.

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

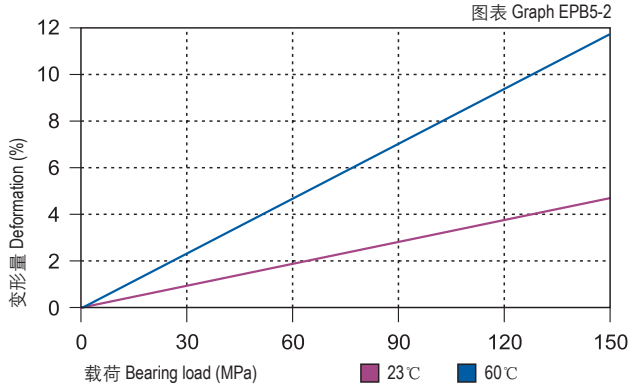
摩擦系数 Friction factor

图表EPB5-4表明CSB-EPB5塑料轴承的摩擦系数数在载荷一定时随着运行速度的增加而逐渐升高；图表EPB5-5表明CSB-EPB5塑料轴承在速度一定载荷在20Mpa以内时摩擦系数会随着载荷的逐步增加而快速降低，而当载荷高于20Mpa时摩擦系数的变化却比较平缓。图表EPB5-6表明CSB-EPB5塑料轴承比较适合的轴表面粗糙度为Ra0.6 ~ 0.8um。

CSB-EPB5 Bearing Friction factor is increased along with the increasing of the operation speed under certain loading (See Graph EPB5-4). The friction factor of CSB-EP5 is decreased along with the loading increasing not over 20Mpa (see Graph EPB5-5). The friction factor will not change much along with the speed when the loading is over 20Mpa. The Graph EPB5-6 shows that the bearing could achieve its best performance when the counter shaft surface roughness is around Ra0.6 to Ra0.8.

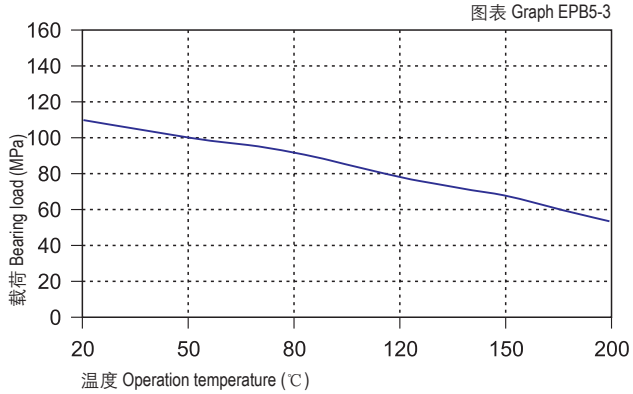
■ 载荷-温度-变形量图表 Load-Temperature deformation

图表 Graph EPB5-2



■ 载荷-温度图表 Load-Temperature diagrams

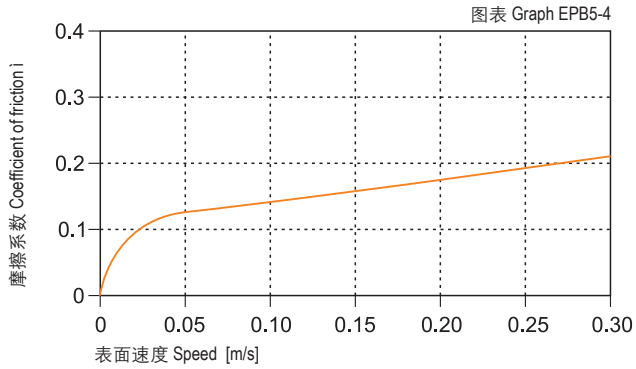
图表 Graph EPB5-3



■ 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

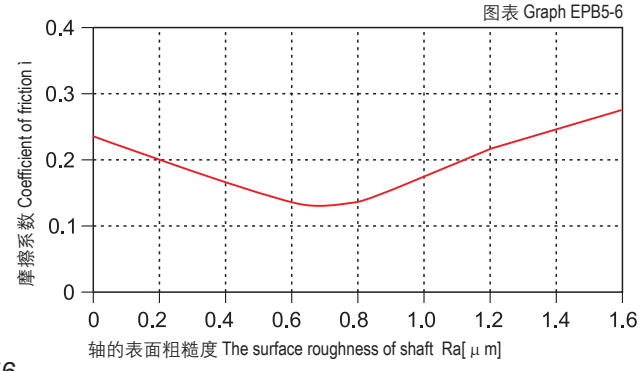
图表 Graph EPB5-4



■ 摩擦系数与轴表面粗糙度关系图表

Coefficient of friction & the surface roughness of shaft

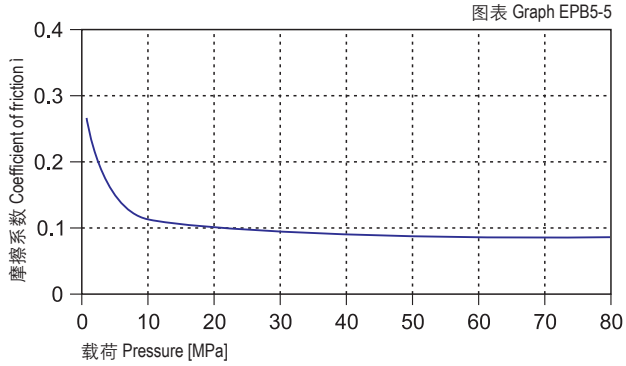
图表 Graph EPB5-6



■ 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

图表 Graph EPB5-5



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CSB-EPB10	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.09~0.25	0.09	0.04	0.04

磨损与轴材料 Wearing and shaft material

图表EPB5-7和图表EPB5-8测试表明了CSB-EPB5塑料轴承在不同轴材料上的运行磨损对比，在载荷2Mpa以下旋转运动时不锈钢轴和碳钢轴比较适合，而当载荷超过2Mpa时在硬化钢轴和碳轴上的运行效果较好。图表EPB5-7表明CSB-EPB5塑料轴承比较适合用于旋转运动；特别值得注意的是图表EPB5-9表明CSB-EPB5塑料轴承在常温23℃下的摩擦磨损性能并没有在高温150℃下优秀。

Graph EPB5-7 and Graph EPB5-8 show the test results of the material CSB-EPB5 running against different shaft materials. It is suitable for stainless steel and hot rolled carbon steel shaft when the loading is less than 2Mpa and it will be more suitable for heat treated steel and carbon steel shaft when the loading is over 2Mpa. Graph EPB5-7 shows CSB-EPB5 is good for rotation operation. Specially, from the Graph EPB5-9, it is read that CSB-EPB5 is with better performance under high temperature around 150℃ comparing with under the ambient temperature of 23℃.

化学抗性 Chemical resistance

CSB-EPB5塑料轴承具有极好的化学抗性，能抵抗浓度65%的强酸。

Chemical Resistance of CSB-EPB5 is very good. It can work well in the heavy acid of 65%.

吸水性 Water absorption

CSB-EPB5塑料轴承在标准大气中的吸湿率为0.1%。浸泡在水中的最高吸水率为0.5%。极低吸水率不会导致轴承发生性能和尺寸变化，非常适合用于潮湿环境。

The moisture absorption of CSB-EPB5 plastic plain bearings is 0.1% in standard atmosphere. The max. water absorption is 0.5% in water . These values are very low, CSB-EPB5 plastic palin bearings is very well suited for used in wet applications.

抗UV性能 UV resistance

CSB-EPB5塑料轴承长久暴露在紫外线下材料性能不会发生变化。

CSB-EPB5 can maintain its performance to be stable even exposed in the UV ray for long period.

安装公差 Installation tolerances

CSB-EPB5 塑料轴承压装后公差 Tolerances after pressfit

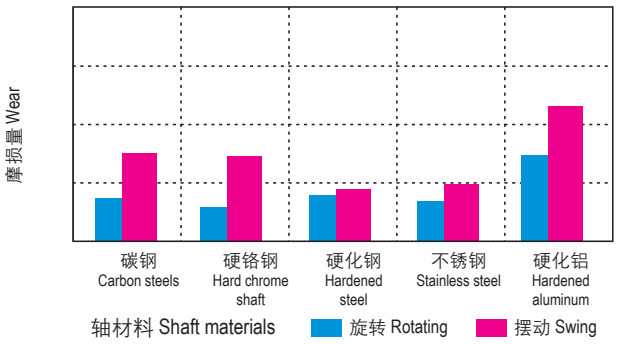
直径 Di. [mm]	CSB-EPB5 F10 [mm]	座孔 Housing H7 [mm]	轴 Shaft h9 [mm]
>0 ~ 3	+0.006 +0.046	0 ~ +0.010	0 ~ -0.025
>3 ~ 6	+0.010 +0.058	0 ~ +0.012	0 ~ -0.030
>6 ~ 10	+0.013 +0.071	0 ~ +0.015	0 ~ -0.036
>10 ~ 18	+0.016 +0.086	0 ~ +0.018	0 ~ -0.043
>18 ~ 30	+0.020 +0.104	0 ~ +0.021	0 ~ -0.052
>30 ~ 50	+0.025 +0.125	0 ~ +0.025	0 ~ -0.062
>50 ~ 80	+0.030 +0.150	0 ~ +0.030	0 ~ -0.074
>80 ~ 120	+0.036 +0.176	0 ~ +0.035	0 ~ -0.087

◉ 标准产品规格表 Standard specifications: P135

在不同轴材料上旋转时的磨损量 p=2MPa, v=0.2m/s

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

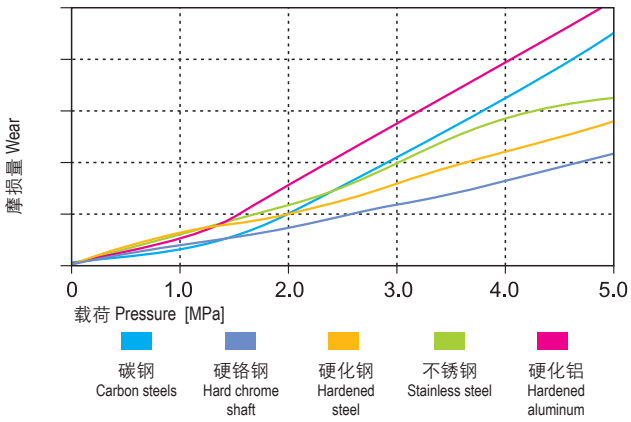
图表 Graph EPB5-7



旋转磨损随轴材料与压力变化关系 v=0.2m/s

Wear & pressure under rotating with different shaft materials, v = 0.2 m/s

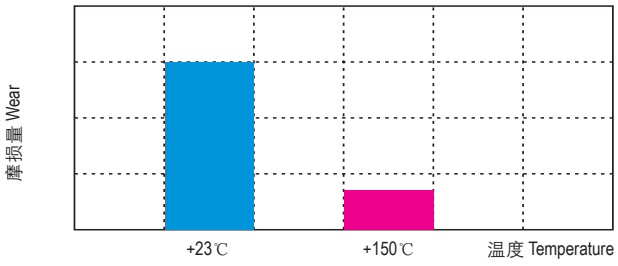
图表 Graph EPB5-8



在不同温度下的磨损量 p=2MPa v=0.2m/s

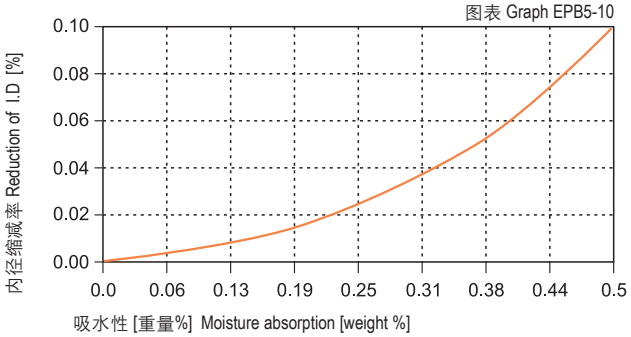
The bearing wear under rotating with different temperature p= 2MPa v= 0.2m/s

图表 Graph EPB5-9



吸水性的影响 Effect of moisture absorption on EPB5 bearings

图表 Graph EPB5-10



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