◉ 标准产品规格表 Standard specifications: P147

产品特性 Product Features

- 高温250度、高化学抗性和高载荷的良好结合。同样适用于水下或大部分化学液体下做高速运动
- 连续使用温度: -100℃/+260℃
- 非常耐磨长寿命
- 适合在灰尘中运行
- 对轴表面粗糙度要求低
- 较低的摩擦系数

- It is a material with good high temperature upto 250 ℃, high chemical resistance and high load application. It is suitable for the applications in water or most of chemical liquids.
- Continuous working temperature: -100℃/+260℃
- Good wear resistance with long service life
- Suitable for operation in dusty environment
- No special requirement on the surface roughness
- Low friction coefficient

技术数据表 Technical data tabel

材料性能 Material Properties	试验方法 Testing Method	单位 Unit	CSB-EPB10
密度 Density	ISO1183	g/cm^3	1.40
颜色 Color			黑色Black
对钢的动摩擦系数 Dynamic friction /steel(dry)			0.10-0.25
最大P.V值 Max. PV (dry)		N/mm^2 × m/s	1.8
最大旋转速度值 Max. roatating velocity		m/s	1.5
最大摇摆速度值 Max. oscillating velocity		m/s	1.1
最大直线速度值 Max. linear velocity		m/s	5.0
抗拉强度 Tensile strength	ISO527	MPa	240
抗压强度 (轴向) Compressive strength (Axial)		MPa	105
弹性模量 E-module	ISO527	MPa	12000
允许最大表面静压力(20℃)Max. static pressure of the surface, 20℃		MPa	160
邵氏硬度 Shore hardness	ISO 868	D	86
连续工作温度 Continuous work temperature		℃	-100/+260
短时运行温度 Short-time work temperature		℃	-100/+315
导热性 Thermal conductivity	ASTME1461	W / m × k	0.7
线性热膨胀系数 Linear coef. of thermal expansion	ASTMD696	K^{-1} × 10^{-5}	2
RH50/23℃时的吸湿性 Moisture absorption RH50/23℃	ASTMD570	%	0.1
最大吸水率23℃ Max. water absorption, 23℃		%	0.5
燃烧性能 Flammability	UL94		V0
体电阻率 Volume resistivity	IEC60093	Ω cm	>10^5
面电阻率 Surface resistivity	IEC60093	Ω	>10^5

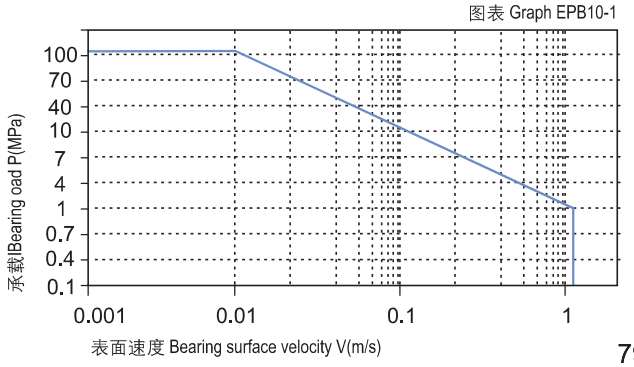
轴承PV值 PV Value

CSB-EPB10塑料轴承最大运行PV值为1.8N/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EPB10-1。

The max PV value of the CSB-EPB10 plastic bearings is 1.8N/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 EPB10-1).

■ PV图表 Permissible PV value for CSB-EPB10

图表 Graph EPB10-1



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轴承的载荷、速度、温度
Load, Speed and Temperature

CSB-EPB10塑料轴承可承受最大静载荷为160Mpa，在此载荷下轴承的最大压缩变形量参考图表EPB10-2，轴承实际工作载荷略小于160Mpa，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: 260℃) 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EPB10-3。

CSB-EPB10 allows the Max static load of 160Mpa, The max compressive deformation rate under the max load is listed in Graph EPB10-2, The actual load capacity of bearing is slightly less than 160Mpa, The bearing load is variable against the speed and temperature, Fast speed (Vmax: 1.5m/s) results into higher temperature (Tmax: 260℃) which decreases the load capacity of the bearing. Please refer to the Graph EPB10-3 for such variation.

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

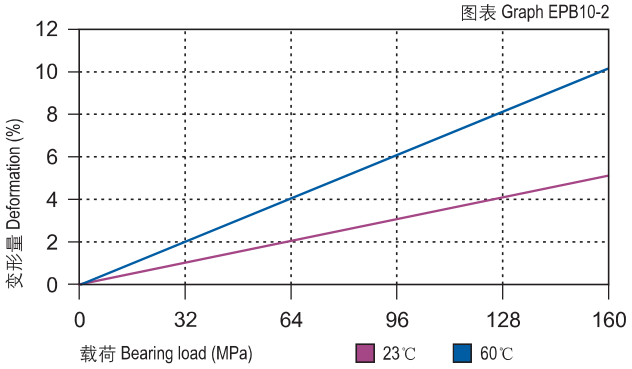
摩擦系数 Friction Factor

图表EPB10-4表明CSB-EPB10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EPB10-5表明CSB-EPB10轴承在速度一定载荷在30Mpa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30Mpa时摩擦系数的变化却比较平缓。图表EPB10-6表明CSB-EPB10轴承比较适合的轴表面粗糙度为Ra0.6 ~ 0.8um。

Graph EPB10-4 shows that the friction factor of CSB-EPB10 is increasing along with the operation speed when the loading is stable within 30 Mpa. When the loading is higher than 30Mpa, the friction factor variation will not be detectable. Graph EPB10-6 describes that CSB-EPB10 is featured best within the shaft surface roughness of Ra0.6~0.8.

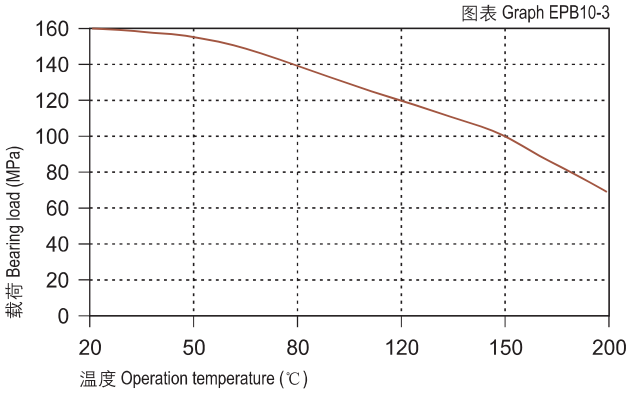
载荷-温度-变形量图表 Load-Temperature deformation

图表 Graph EPB10-2



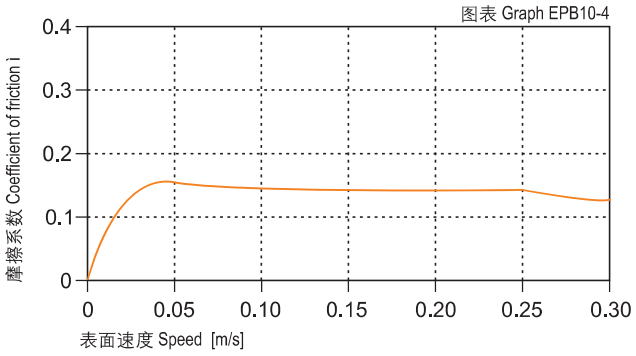
载荷-温度图表 Load-Temperature diagrams

图表 Graph EPB10-3



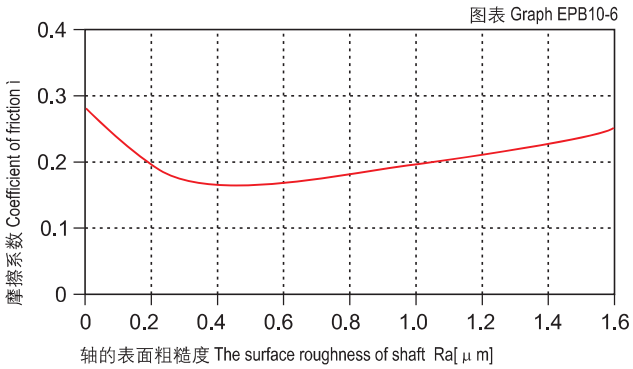
摩擦系数与速度变化关系图表 P=2MPa
Coefficient of friction & the speed of bearing, p = 2 MPa

图表 Graph EPB10-4



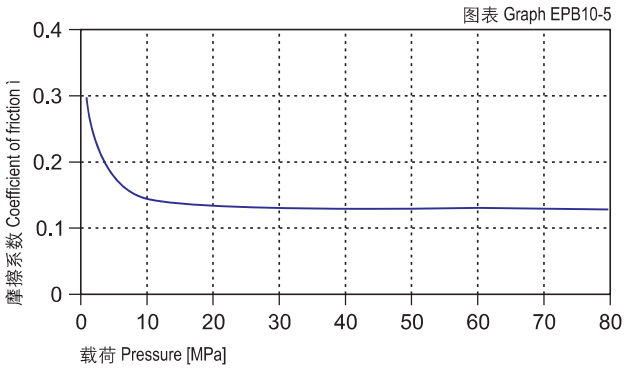
摩擦系数与轴表面粗糙度关系图表
Coefficient of friction & the surface roughness of shaft

图表 Graph EPB10-6



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 EPB10-5



CSB-EPB10	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.10~0.25	0.09	0.04	0.04

磨损与轴材料 Wearing and shaft material

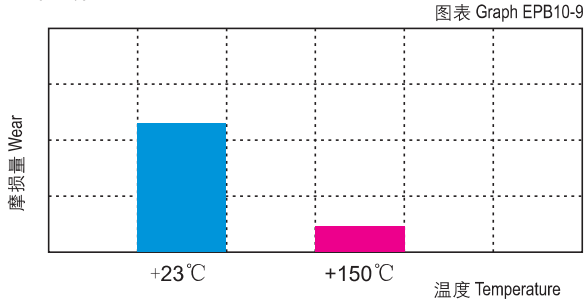
图表EPB10-7和图表EPB10-8测试表明了CSB-EPB10轴承在不同轴材料上的运行磨损对比，在载荷2Mpa以下旋转运动时不锈钢轴和碳钢轴比较适合，而当载荷超过2Mpa时在硬化钢轴和硬铬轴上的运行效果较好。图表EPB10-7表明CSB-EPB10轴承比较适合用于旋转运动；特别值得注意的是图表EPB10-9表明CSB-EPB10轴承在常温23℃下的摩擦磨损性能并没有在高温150℃下优秀。

Graph EPB10-7 and Graph EPB10-8 is the comparing test for the CSB-EPB10 wearing against different shaft materials. Stainless steel and hot-rolled steel shaft is the best shaft material for CSB-EPB10 when the loading is lower than 2Mpa. Graph EPB10-7 shows that CSB-EPB10 is most suitable for rotation operation. Graph EPB10-9 shows a very special feature of CSB-EPB10 that the wearing Features of CSB-EPB10 is much better when the temperature is 150 ℃ than that of the temperature of 23℃.

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 EPB10-9



化学抗性 Chemical Resistance

CSB-EPB10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-EPB10 is very good. It can work well in the heavy acid of 65%.

吸水性 Water Absorbability

在标准大气压中，CSB-EPB10塑料轴承的吸水率极低0.1%，浸泡水中最大平衡吸水率为0.5%；因此材料不会吸水而发生性能和尺寸变化，适合用于潮湿环境。

The water absorb rate of CSB-EPB10 is less than 0.1% under the atmospheric pressure while it is 0.5% when the material is immerged into water. The material performance and dimensions of the material is stabilized for the applications under humid environment.

抗UV性能 UV Resistance

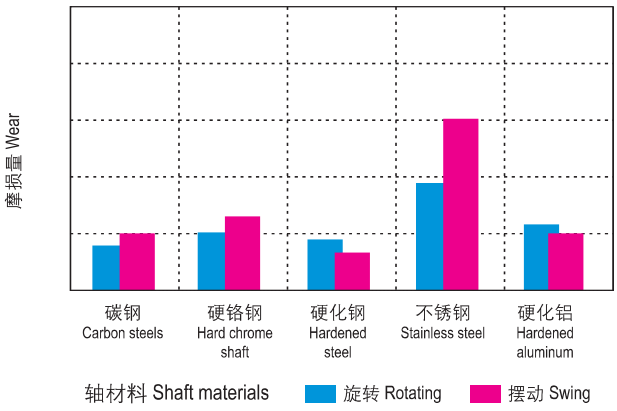
CSB-EPB10长久暴露在紫外线下材料性能不会发生变化。

CSB-EPB10 can maintain its performance to be stable even exposed in the UV ray for long period.

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

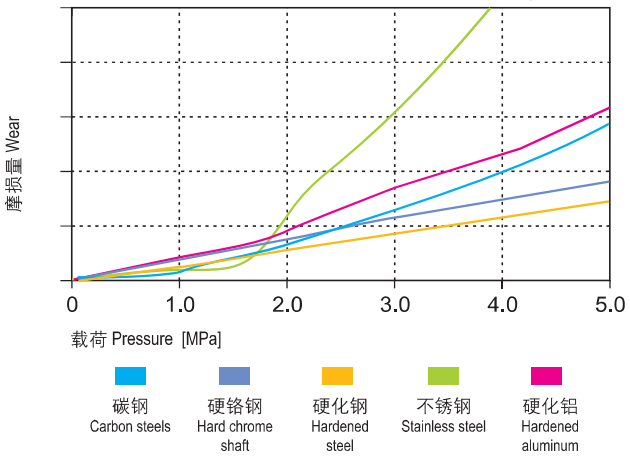
图表 Graph EPB10-7



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

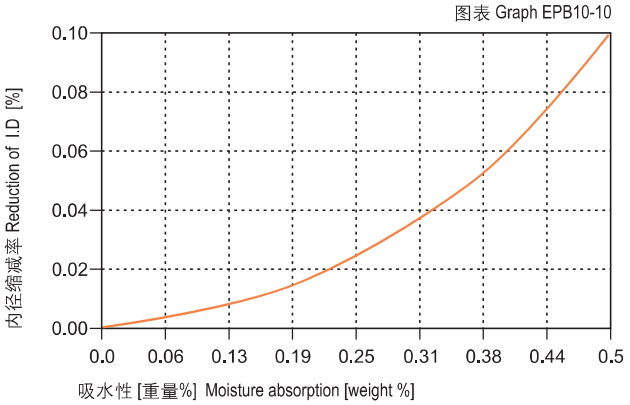
图表 Graph EPB10-8



吸水性的影响

Effect of moisture absorption on EPB10 bearings

图表 Graph EPB10-10



标准产品规格表 Standard specifications: P147

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