

产品特性 Product features

- 极高载荷下耐磨性较好的材料。适用于其它CSB塑料轴承在极高载荷下摆动运动无法满足的场合
- 连续使用温度: -40℃/+150℃
- 承受较高载荷
- 适用于摆动场合
- 抗污垢能力强
- Good wear resistance under extremely high load condition. It is suitable for the applications that the other CSB plastic bearing materials are not working properly with the extremely high load and oscillation motion conditions
- Continuous working temperature: -40℃/+150℃
- Suitable for high load operation
- Good for oscillating operation
- Containment prevention ability

● 标准产品规格表 Standard specifications: P128

材料数据表 Material properties data table

材料性能 Material properties	测试标准 Standard	单位 Unit	CSB-EPB22
颜色 Color	-	-	浅棕色 Light brown
密度 Density	ISO1183	g/cm ³	1.49
最大吸湿率 Max. moisture absorption, 50%RH	ISO62	%	1.1
最大吸水率 Max. water absorption	ISO62	%	4.6
对钢动摩擦系数 Coefficient of sliding friction(steel)	ITS025	μ	0.15-0.35
极限PV值 Max. PV value	ITS026	N/mm ² × m/s	0.70
弯曲模量 Flexural modulus	ISO178	MPa	9000
弯曲强度 Flexural strength	ISO178	MPa	240
最大静载荷 Max. static load	ITS027	MPa	95
最大动载荷 Max. dynamic load	ITS028	MPa	49
邵氏硬度 Shore hardness	ISO868	D	80
连续运行温度 Long-term application temperature	ITS029	℃	+150
短时运行温度 Short-term application temperature	ITS029	℃	+220
最低运行温度 Lowest application temperature	ITS029	℃	-40
导热性 Thermal conductivity	ISO22007	W/m/K	0.24
线性热膨胀系数 Coefficient of thermal expansion	ISO11359	K ⁻¹ × 10 ⁻⁵	8
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 ¹¹

*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.

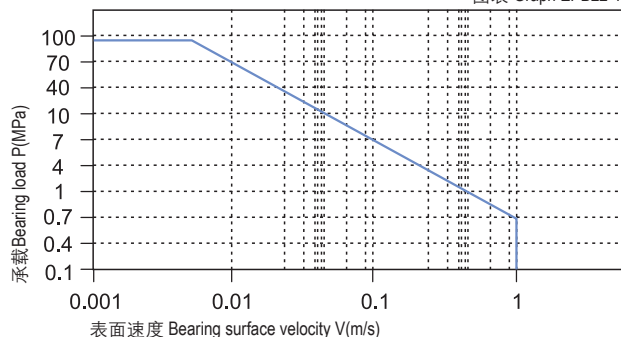
轴承PV值 PV value

CSB-EPB22塑料轴承最大运行PV值为0.7N/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EPB22-1。

The max PV value of the CSB-EPB12 plastic bearings is 0.7N/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 EPB12-1).

■ PV图表 Permissible PV value for CSB-EPB22

图表 Graph EPB22-1



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

CSB-EPB22塑料轴承可承受最大静载荷为95Mpa，在此载荷下轴承的最大压缩变形量参考图表EPB22-2，轴承实际工作载荷略小于95Mpa，载荷还受到运行速度以及温度的影响，速度越快 (Vmax: 1.0m/s) 会导致摩擦温度上升，而温度上升 (Tmax: 150℃) 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EPB22-3。

CSB-EPB22 allows the Max static load of 95Mpa, The max compressive deformation rate under the max load is listed in Graph EPB22-2, The actual load capacity of bearing is slightly less than 95Mpa. The bearing load is variable against the speed and temperature. Fast speed (Vmax: 1.0m/s) results into higher temperature (Tmax: 150℃) which decreases the load capacity of the bearing. Please refer to the Graph EPB22-3 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

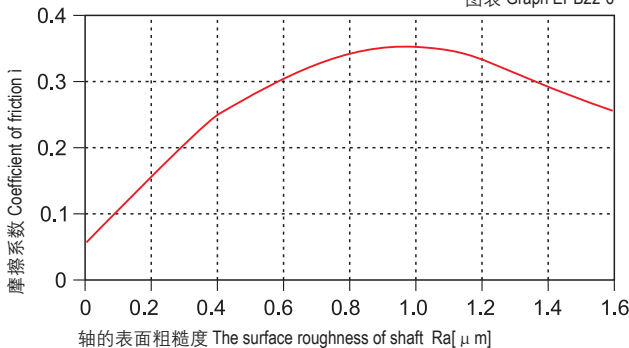
图表EPB22-4表明CSB-EPB22塑料轴承的摩擦系数在载荷保持不变的情况下受速度变化影响比较小；同样在图表EPB22-5表明CSB-EPB22塑料轴承在速度保持不变的情况下受载荷变化的影响相对也比较小；此轴承为所有滑动轴承中摩擦系数不受运行速度以及载荷影响较大的典型轴承。根据图表EPB22-6显示CSB-EPB22塑料轴承的摩擦系数在超过Ra0.4后轴表面粗糙度几乎对轴承的摩擦系数没有任何影响，我们推荐使用轴表面粗糙度为Ra0.1~0.4um。

Graph EPB22-4 shows that the friction factor of CSB-EPB22 is not considerably affected by the operation speed when the loading is stable. At the meantime, Graph EPB22-5 shows that the friction factor of CSB-EPB22 is not considerably affected by the loading when the operation speed is stable. This bearing is the only typical material whose friction factor is not sensitive to the operation speed and loading. Graph EPB22-6 tells that the friction factor of CSB-EPB22 will not be affected by the shaft roughness when the shaft roughness is better than Ra0.4. The recommended Shaft roughness is Ra0.1~0.4.

摩擦系数与轴表面粗糙度关系图表

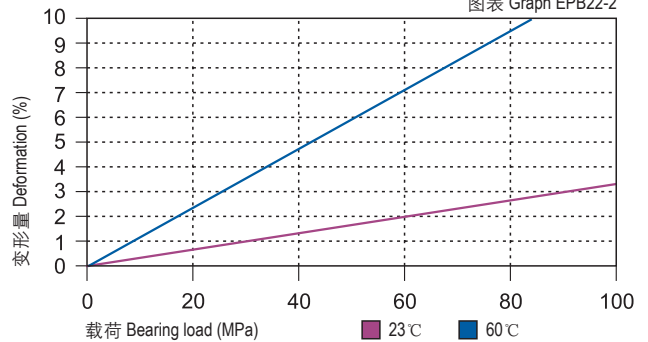
Coefficient of friction & the surface roughness of shaft

图表 Graph EPB22-6



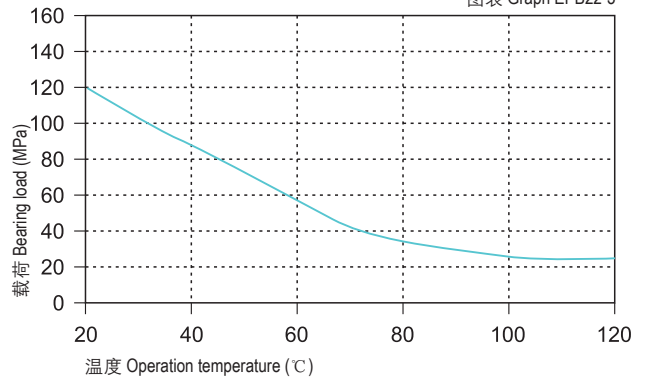
载荷-温度-变形量图表 Load-Temperature deformation

图表 Graph EPB22-2



载荷-温度图表 Load-Temperature diagrams

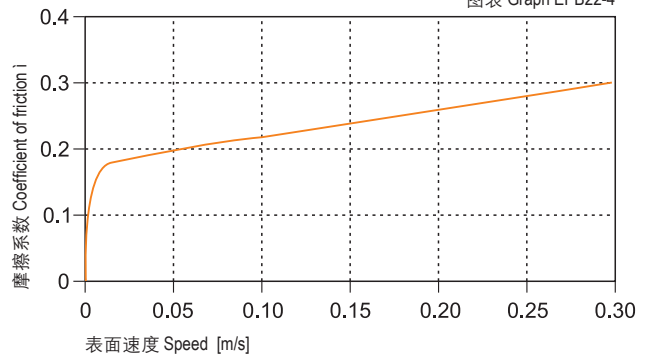
图表 Graph EPB22-3



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

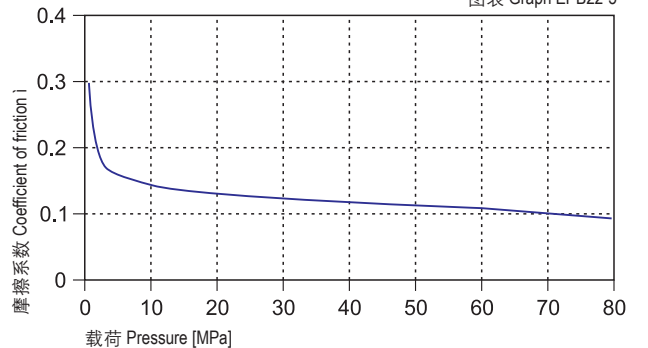
图表 Graph EPB22-4



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 EPB22-5



CSB-EPB22	干运行 Dry	油脂 Grease	油 Oil	水 Water
摩擦系数 μ Friction coef.	0.15~0.35	0.09	0.04	0.04

磨损与轴材料 Wearing and shaft material

图表EPB22-7与图表EPB22-8表明CSB-EPB22塑料轴承比较适合采用硬铬钢轴或硬化钢轴；图表EPB22-7表明CSB-EPB22塑料轴承在做摆动运动下的磨损性能要优越于在旋转运动下的磨损性能。CSB-EPB22塑料轴承在摆动运动时选择硬铬钢轴和硬化钢轴比较适合，在旋转运动中也是选择硬铬钢轴和硬化钢轴比较理想。

Graph EPB22-7 and Graph EPB22-8 tells that CSB-EPB22 is suitable for both hard chrome steel shaft and hardened steel shaft. The wearing feature of CSB-EPB22 is better in oscillation operation than in rotation operation. Hardened steel shaft and hardened aluminum shaft is the better choice under oscillation operation and hardened steel shaft and hardened chrome steel shaft is the better choice under rotation operation.

化学抗性 Chemical resistance

CSB-EPB22塑料轴承能抵抗弱碱以及各类润滑油的腐蚀。CSB-EPB22 is good at chemical resistance against weak acidic medium and various kinds of lubricants.

吸水性 Water absorption

CSB-EPB22塑料轴承在标准大气中的吸湿率为1.1%。浸泡在水中最高吸水率为4.6%。由于高吸水率的特性，我们必须考虑此轴承的应用环境。

The moisture absorption of CSB-EPB22 plastic plain bearings is 1.1% in standard atmosphere. The max. water absorption is 4.6% in water. The application environment has to be considered due to the high water absorption properties.

抗UV性能 UV resistance

CSB-EPB22塑料轴承长久暴露在紫外线下长久后材料可能会变脆，不能承受冲击力。

CSB-EPB22 can become brittle and lost its impact resistance when it is exposed into UV ray for a certain period of time.

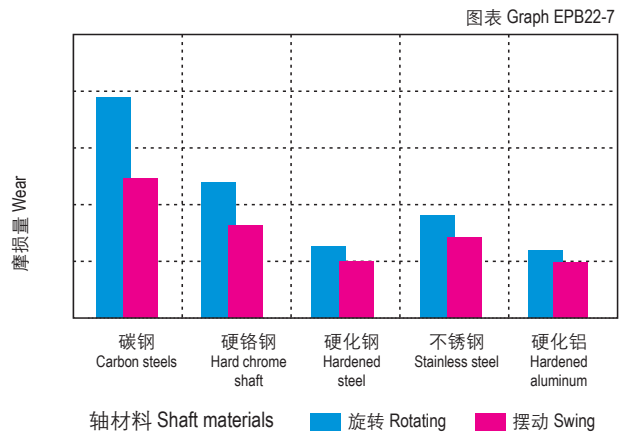
安装公差 Installation tolerances

CSB-EPB22塑料轴承压装后公差 Tolerances after pressfit

直径 Di [mm]	CSB-EPB22 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

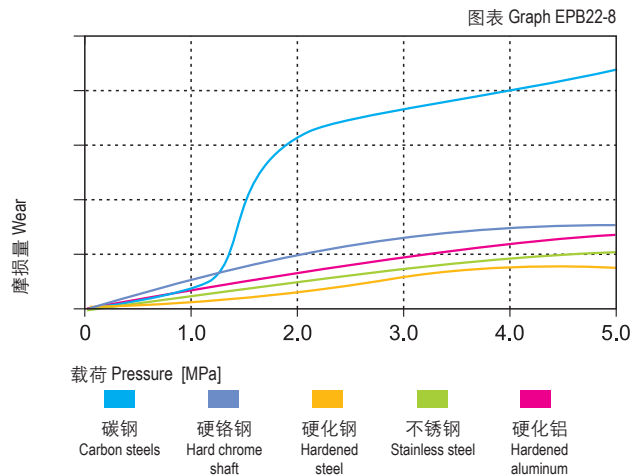
在不同轴材料上旋转时的磨损量 $p=2\text{MPa}$, $v=0.2\text{m/s}$

Wear under rotating with different shaft materials, $p = 2 \text{ MPa}$, $v = 0.2 \text{ m/s}$



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, $v = 0.2 \text{ m/s}$



吸水性的影响

Effect of moisture absorption on EPB22 bearings

