



We provide
self-lubricating bearing
solutions for all
industries

Zhejiang Changsheng Sliding Bearing Co.,Ltd.

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7 Solutions

Sliding Bearings Catalogue

Self-Lubricated

Low Maintenance

Light Weight

Low Cost

Long Life

Low Noise

Eco-friendly



Your strategic global partner
in sliding bearing technology

CSB Bearing
Technologies

Company Introduction

Dec. 2019

Company	Zhejiang Changsheng Sliding Bearings Co., Ltd.
Stock Code	300718
Establish Date	June 1995
Registered Capital	30 Million US Dollars
Address	No. 6 Xinda Road, Jiashan, China
Management Certificates	<ul style="list-style-type: none">• ISO9001:2015• IATF16949:2016• ISO14001:2015• OHSAS18000:2017



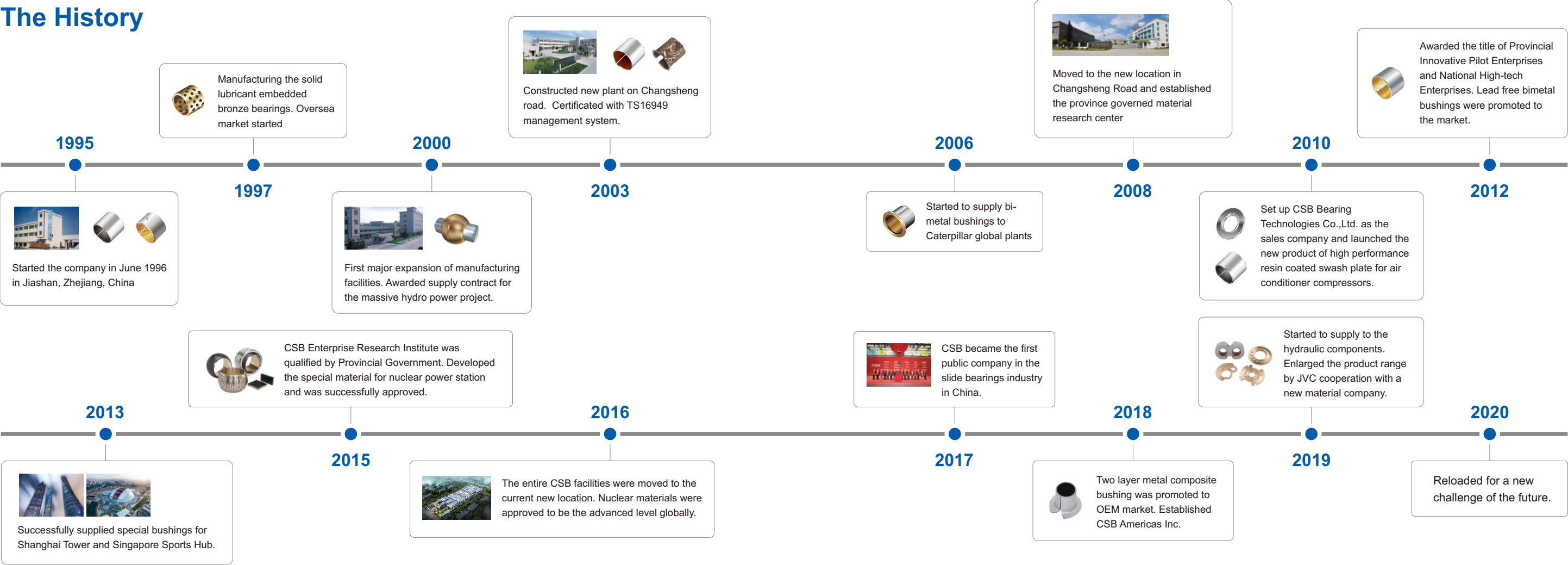
Sliding Bearing Technology Global Strategy Partner

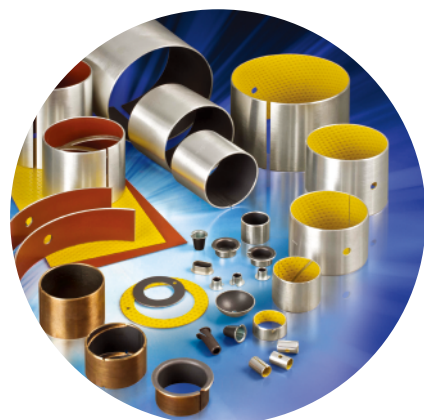
Using more than 20 years of experience on the researching, producing and promotion of self-lubricating bearings, CSB can deliver not only high-performance products but also provide high-quality services, such as material selection, simulation test, engineering design and installation. The self-lubricating bearing and technology is now performing its beneficiary roles in the traditional industry area and further more providing variable solutions in the industry areas related to our daily life such as the public transportation, entertainment, energy, civil construction, environment protection facilities and aerospace industry.

We will continue to create value through high-performance self-lubricating products and protect the earth by using environmentally friendly materials. We believe that our responsibility is to promote enterprise change to create an internal driving force for our society.



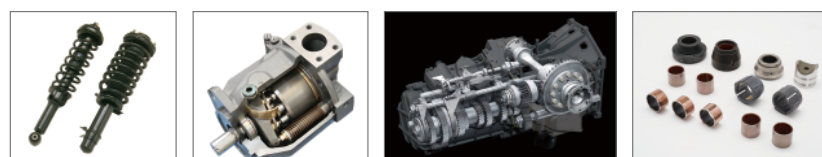
The History





Three-layer metal-polymer self-lubricating bearings

These materials consist of metal backing bonded to a porous bronze sintered layer with PTFE or thermoplastic-based polymer bearing layer. The metal backing provides mechanical strength, while the bronze sintered layer provides a strong mechanical bond between the backing and the bearing lining, the PTFE based polymer offers exceptional low friction even under dry condition and the thermoplastic-based polymer is generally designed for operating with marginal lubrication. This structure promotes dimensional stability and improves thermal conductivity.



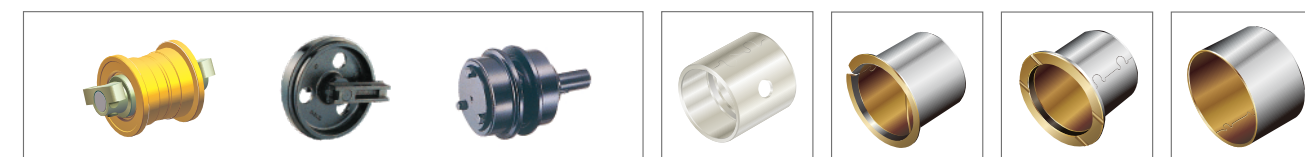
Two-layer metal-polymer self-lubricating bearings

Two-layer metal-polymer self-lubricating bearing consists of metal backing with PTFE compounded on the surface. It is lighter and has better mechanical and load performance. The thicker PTFE layer can improve the installation flexibility and can also match wider designed tolerance range. In addition, the wear resistance and noise absorbing feature is improved while more variable torque range could be fitted.



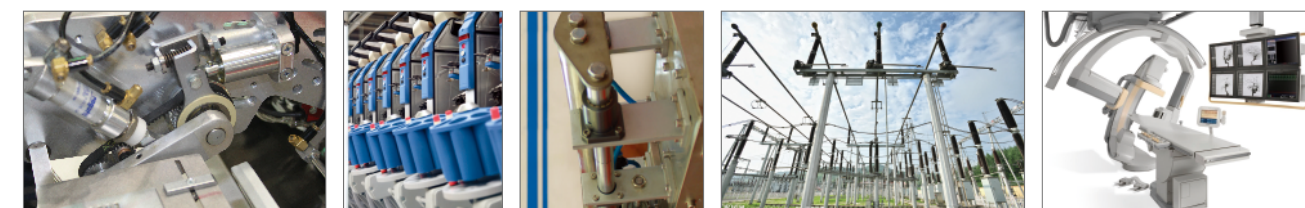
Bi-metal composite self-lubricating bearings

Typical bi-metal materials are steel backed with bronze alloy layer or steel backed with aluminium alloy layer. Bronze alloy layer is sintered bronze alloy which can provide good loading capability and wear resistance feature and it is suitable for grease lubricating and fluid lubricating conditions. Aluminium alloy layer is bonded onto steel back which provides good fatigue resistance and anti-seizure property. It is recommended to be used under fluid lubricating conditions.



Non-metallic self-lubricating bearings

Non-metallic self-lubricating bearings include CSB-EPB[®] thermoplastic molding series and CSB-FWB[®] filament-wound series. They are suitable for dry friction applications. CSB-EPB[®] series are manufactured by high-performance engineering plastics with a mixture of intensifiers and lubricants. It provides the bearing mechanical strength and impact resistance by thermoplastic molding. The added lubricants can improve the self-lubrication performance and reduce the friction coefficient. CSB-FWB[®] series bearings are made of high strength epoxy resin with PTFE and high strength fibers as the bearing lining material. This material provides strong bearing strength.





Metallic self-lubricating bearings

CSB metallic bearing materials consist of high strength metal backing with solid lubricants embedded or dispersed. The lubricating film will be established during the initial running of the components. The embedded lubricants design is suitable for low speed, medium to high load applications, while the dispersed lubricants design is suitable for applications with low friction coefficient and medium to high-speed applications.



High performance steel bearing

By using a special surface treatment and processing technology to the traditional steel sleeves, the wear resistance, anti-seizure feature, impact resistance and corrosion resistance performances are improved. At the same time, the special surface structure reduces the frequency of oiling. Under the suitable sealing conditions, these high precision steel sleeves are even with better performance than the copper alloy self-lubricating bearings for the outdoor applications in construction machinery, agricultural equipment, port machinery and so on.



Copper wrapped boundary lubricating bearings

These bearings are wrapped from a cold formed homogenous bronze alloy. The material has high load and wear resistance properties. The diamond shaped lubrication indent is designed for grease lubrication and the incorporated hole is designed for oil lubrication. We strongly remind to ensure a sufficient preserved grease or oil before the installation of the bushings in order to provide lubrication film during the initial running of the components.



Swash plate for automotive air conditioner compressor

The progressing self-lubricate coating technology brought the opportunity to us to provide not only XP3 type bronze alloy cast type and XP type bi-metal swash plates, but also high performance XP2 type iron based resin coated swash plates for a higher application requirement.



Special bearings for nuclear power plant

This special material meets the critical requirements of radiation resistance, corrosion resistance, acid resistance and dust resistance with the application under extremely high pressure. The materials are fully maintenance free. It is a patented material which has been approved as a state of art invention by the China Nuclear committee. The applications include the steamer support bearing, PRZ support bearing, Damper spherical bearing, Core water supply tank wear plate and Reactor pressure vessel supporting wear plate.



Low friction parts for hydraulic pump

Materials include sintered or casting bi-metal, high strength bronze alloy and metal-polymer composite products used for different hydraulic pump components such as the bearing plate, valve plate, saddle bearing and aluminum block bearing.



Spherical bearing

Taking advantage of our self-lubricating technology, we provide self-lubricating spherical bearings for different applications. In addition to the standard spherical bearings, we can supply engineering plastic spherical bearings, metal backed self-lubricating spherical bearings and customized products.



Polytetrafluoroethylene plastic products

PTFE is a material that offers high and low temperature resistance, anti-corrosion, weather resistance, non-stick, low friction coefficient and excellent electrical performance. The material could be machined to gasket, bar, tube, plate, thin film and belt as well as special customized shape including elastic plates, sealing tape and filters. It is widely used in aerospace industry, chemical industry and environment protection industry.



Other parts

The surface treatment of counterparts is of equal importance as the CSB parts, so the relative treatment of the counterparts is also necessary for the improvement of the performance and the endurance of the whole assembly. We can also supply the whole assembly to the customer in order to make the same necessary treatment to all parts to improve the wear resistance, anti-corrosion and anti-fatigue property.

Metal Polymer Composite Self-lubricating Bearings				
Material	Material Structure	Material Feature	Typical applications	Page
CSB-50	Steel+Porous Bronze+PTFE/Fibre	Self-Lub. Standard	General	P01
CSB-50MP/MB	Steel+Porous Bronze+PTFE/Fluoropolymer	Self-Lub. Machinable	Compressor	P02
CSB-50DH	Steel+Porous Bronze+PTFE/Fibre	Self-Lub. Tight Interference	Door Hinge	P03
CSB-50EC	Steel+Porous Bronze+PTFE/Fibre	Self-Lub. Conductive	Door Hinge	P04
CSB-40	Steel+Porous Bronze+PTFE/Lipophilic Fibre	Self-Lub. Hydraulic Lub.	Hydraulic Parts	P05
CSB-40HL	Steel+Porous Bronze+PTFE/Lipophilic Fibre	Hydraulic Lub. Fatigue Resistance	Hydraulic Parts	P06
CSB-11	Bronze+Porous Bronze+PTFE/Fibre	Self-Lub. Anti-Corrosion	Material Handling Equipment	P07
CSB-12/12EC	Steel+PTFE Compound Tape	Self-Lub. Flexible Torque	Door Hinge,Seat	P08
CSB-25	Aluminum Alloy+PTFE Compound Tape	Self-Lub. Light Weight	Bicycle Shock Absorber	P09
CSB-35	Stainless Steel+PTFE Compound Tape	Self-Lub. Anti-Corrosion	Door Hinge, Wiper	P10
CSB-FR/FRS	Metal Fabric+PTFE Compound Tape	Self-Lub. Light Weight	Door Hinge	P11
CSB-FM/FMS	Stretched Metal Mesh+PTFE/Fibre	Self-Lub. Light Weight	Door Hinge	P12
CSB-12FM	Steel+Bronze Mesh+PTFE/Fibre	Self-Lub. Good Regidity	Door Hinge,Seat	P13
CSB-35FMS	Stainless Steel+Stainless Steel Mesh+PTFE Compound Tape	Self-Lub. Anti-Corrosion	Door Hinge,Seat	P14

Metal Polymer Composite Boundary Lubricating Bearings				
Material	Material Structure	Material Feature	Typical applications	Page
CSB-20	Steel+Porous Bronze+POM	Boundary Lub. Standard	General	P15
CSB-22	Steel+Porous Bronze+POM	Boundary Lub. Low Maintenance	Hydraulic Motor	P16
CSB-80	Steel+Porous Bronze+PEEK/PTFE	Boundary Lub. High Temperature	Hydraulic Motor	P17

Metallic Self-lubricating Bearings				
Material	Material Structure	Material Feature	Typical applications	Page
CSB650	Cast Bronze with Graphite Plugs	Self-Lub. Standard	Plastic Injection Machines	P18
CSB650GT	Steel Backed Cast Bronze with Graphite Plugs	Self-Lub. Economic	Port Machinery	P19
CSB850S	Steel Backed Fe-Ni Sintered Alloy with Solid Lubricants	Self-Lub. Low Friction	Pressor	P20
CSB850BM	Steel Backed Bronze Powder with Solid Lubricants	Self-Lub. Machinable	Tyre Mold	P21
CSB85HF	Powder Metallurgy Sintered with Solid Lubricants	Self-Lub. High Performance	Cylinder Trunnion	P22

Metallic Marginal Lubricating Bearings				
Material	Material Structure	Material Feature	Typical applications	Page
CSB-800/815	Steel+Sintered Bronze Lead Alloy	Wrapped Bearing Continuous Oiling	Undercarriage Roller	P23
CSB-820/827	Steel+Sintered Bronze Alloy Lead free	Lead Free Continuous Oiling	Brake System	P24
CSB-J20	Steel+Sintered Tin Aluminum Alloy	Wrapped Bearing Fluid Lubricate	Crank Shaft Connecting Rod	P25
CSB-090	Bronze Wrapped Bearing with Oil Pockets	Wrapped Bearing Grease Lubricate	Agriculture Machinery	P26
CSB-T90	Bronze Wrapped Bearing with Through Holes	Wrapped Bearing Oil Lubricate	Forest Machinery	P27
CSB600	Solid Bronze Turned Bearings	Continuous Oiling High Precision	General	P28
CSB200C	Hardened Steel Bearings	Continuous Oiling	Construction Machinery	P29
CSB260	Special Treated Hardened Steel Bearings	Marginal Lubricate High Load	Construction Machinery	P30

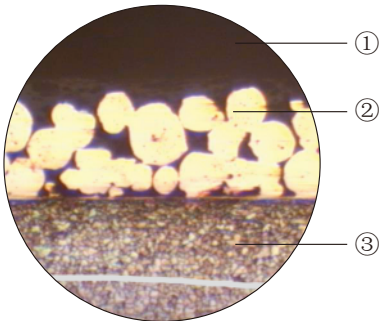
Non-metallic Self-lubricating Bearings				
Material	Material Structure	Material Feature	Typical applications	Page
CSB-EPB®	Engineering Plastic Compound Bearing	Self-Lub. Light Weight	Food Machinery	P31
CSB-FWB®	Filament Wound Self-lubricating Bearings	Self-Lub. High Load	Lifting Machinery	P32

CSB-50 Steel+Porous Bronze+PTFE/Fibre



Structure

1. **PTFE/Fibre mixture thickness 0.01~0.03mm**, provides an excellent initial transferred film, which effectively coats the mating surfaces of the bearing assembly to establish the self-lubricating feature.
2. **Sintered bronze powder thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
3. **Steel backing** Provides mechanical strength.



Features

The material is with good wear resistance, low friction coefficient low noise corrosion resistance and high chemical resistance. It is suitable for the applications where the lubricating is hard or impossible. The machining requirement of the mating parts is not critical so this kind of materials are widely used in general industry.

Tech. Data						
Max. load	Static	250N/mm ²		Friction coefficient		0.03~0.20
	Very low speed	140N/mm ²		Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm ²			Hydrodynamic operation	>2m/s
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s		Thermal conductivity		42 W(m*K) ⁻¹
	Continuous operation	1.8N/mm ² *m/s		Coefficient of thermal expansion		11*10 ⁻⁶ *K ⁻¹
Operation Temperature range		-195°C~+280°C				

Typical Applications

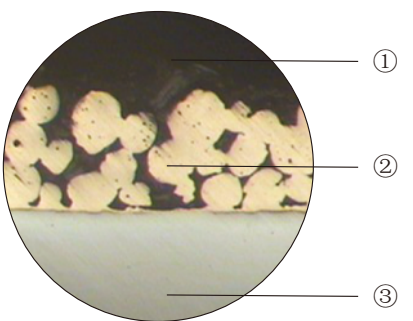
Automotive applications include steering system, shock absorbers, door hinges, seat recliners, seat frames and magnetic valves; It is widely used in the general industry like gear pumps, vane pumps,piston pumps, air cylinders and hydraulic cylinders; The other applications include material handling machinery, packing machines, textile machines, forest machines and the home appliances such as the air conditioners, body fit machines, washing machines and refrigerators, etc.

CSB-50MP/MB Steel+Porous Bronze+PTFE/Fluoropolymer



Structure

1. **PTFE/Fluoropolymer**, provides self-lubricating performance and can establish transferred film to protect the mating parts.
2. **Sintered bronze powder thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
3. **Steel backing** Provides mechanical strength.



Features

CSB-50MP is the material with polymer layer thickness of 0.01~0.05mm. It is designed to be used under dry conditions. It has low friction coefficient and good wear resistance. CSB-50MB is the material with polymer layer thickness of 0.10~0.20mm. It is designed to be used under oil lubricating conditions and the ID is machinable for more critical tolerance requirement.

Tech. Data						
Max. load	Static	250N/mm ²		Friction coefficient		0.03~0.20
	Very low speed	140N/mm ²		Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm ²			Hydrodynamic operation	>2m/s
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s		Thermal conductivity		42 W(m*K) ⁻¹
	Continuous operation	1.8N/mm ² *m/s		Coefficient of thermal expansion		11*10 ⁻⁶ *K ⁻¹
Operation Temperature range		-195°C~+280°C				

Typical Applications

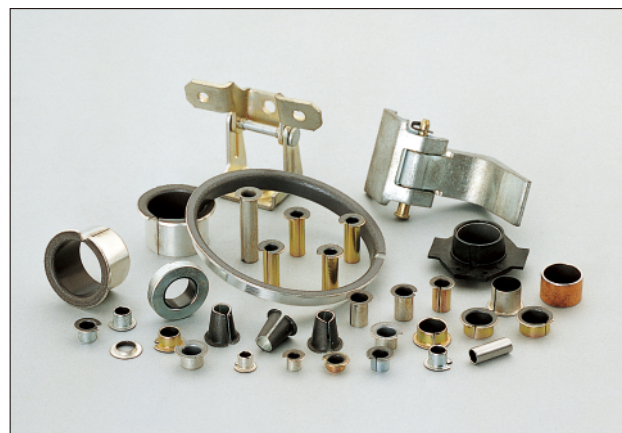
CSB-50MP has outstanding fatigue resistance feature under high temperature and high frequency working condition. It is typically used in engine tensioner wheels and idler wheels. CSB-50MB is typically used in scroll compressors and reciprocating compressors as well as the gear pumps and piston pumps. It has good chemical resistance, fatigue resistance and cavitation corrosion resistance under oil lubricating conditions. Tolerance

could be improved by machining after assembling. Due to the thicker polymer layer,the PTFE lining on the bearing surface could be reserved after machining.

CSB-50DH Steel+Porous Bronze+PTFE/Fibre

Customized

RoHS

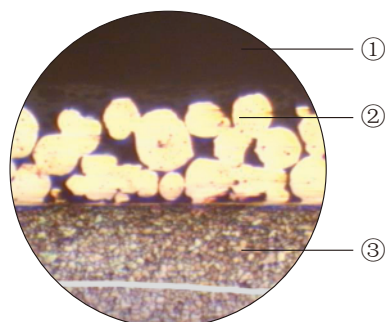


Structure

1. **PTFE/Fibre mixture thickness 0.02~0.06mm**, provides an excellent initial transferred film, which effectively coats the mating surfaces of the bearing assembly to establish the self-lubricating feature.
2. **Sintered bronze powder thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
3. **Steel backing** Provides mechanical strength.

Features

The material is with good wear resistance, low friction coefficient, weather resistance and high temperature resistance. It is suitable for the applications where the stable torque requirement must be satisfied by calibration after assembling of the bearings.



Tech. Data

Max. load	Static	250N/mm ²	Max. speed	Friction coefficient		0.05~0.20
	Very low speed	140N/mm ²		Dry running		2m/s
	Rotating oscillating	60N/mm ²		Hydrodynamic operation		>2m/s
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s	Thermal conductivity			42 W(m*K) ⁻¹
	Continuous operation	1.8N/mm ² *m/s	Coefficient of thermal expansion			11*10 ⁻⁶ *K ⁻¹
Operation Temperature range		-195°C~+280°C				

Typical Applications

The material is suitable for the applications of door hinge, hood hinge, trunk hinge, damper, seat recliner and so on.

CSB-50EC Steel+Porous Bronze+PTFE/Additives

Customized

RoHS

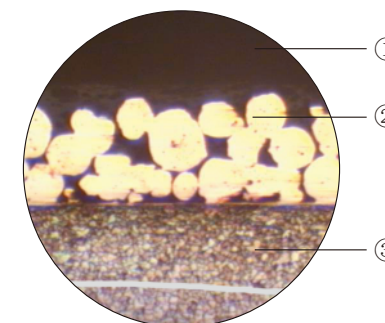


Structure

1. **PTFE/ Conductive additive mixture layer thickness 0.02~0.06mm**, provides a low friction coefficient and good wear resistance feature. It is an electrical conductive material.
2. **Sintered bronze powder thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
3. **Steel backing** Provides mechanical strength.

Features

The mechanical feature of this material is similar with CSB-50DH. The special additives provide the electrical conductivity of the material to ensure the further coating process of the assembly at customer end. The nominated resistance is less than 1000 Ohm.



Tech. Data

Max. load	Static	250N/mm ²	Friction coefficient		0.03~0.20
	Very low speed	140N/mm ²	Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm ²		Hydrodynamic operation	>2m/s
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s	Thermal conductivity		42 W(m*K) ⁻¹
	Continuous operation	1.8N/mm ² *m/s	Coefficient of thermal expansion		11*10 ⁻⁶ *K ⁻¹
Operation Temperature range		-195 °C~+280 °C			

Typical Applications

The material is suitable for the applications of different hinges, seat recliner and so on. While providing the low noise feature, it has the electrical conductivity to meet the coating process for customer assembled parts.

CSB-40 Steel+Porous Bronze+PTFE/Lipophilic Fibre

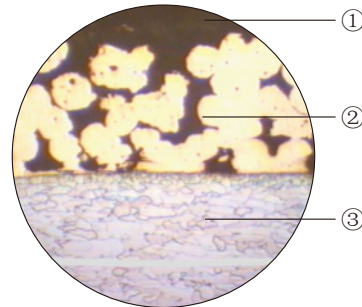


Structure

- 1.PTFE/Lipophilic Fibre mixture layer thickness is 0.01~0.03mm, provides self-lubricating feature with low friction coefficient and good wear resistance.
- 2.Sintered bronze powder thickness 0.20~0.35mm, provides strong mechanical bond and excellent thermal conductivity.
3. Steel backing Provides mechanical strength.

Features

The material is designed for the application conditions of high speed and mid-to-high load. The lipophilic fibre improves the hydrodynamic lubrication performance. It is a material with good resistance of cavitation corrosion and fluid corrosion. It is suitable for high PV requirement.



Tech. Data					
Max. load	Static	250N/mm ²	Max. speed	Operation Temperature Range	
	Very low speed	140N/mm ²		-195°C~+280°C	
	Rotating oscillating	60N/mm ²			
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s	Thermal conductivity	42 W(m*K) ⁻¹	
	Continuous operation	1.8N/mm ² *m/s		Coefficient of thermal expansion	
Max. PV Hydrodynamic Lubricate		30N/mm ² *m/s	Friction coefficient	Dry running	0.08~0.20
				Hydrodynamic operation	0.03~0.08

Typical Applications

The material is suitable for the applications of vehicle suspension system,shock absorber,steering system and gear box. It is also widely used in hydraulic motors, gear pumps,piston pumps, vane pumps, hydraulic cylinders and material handling machines.

CSB-40HL Steel+Porous Bronze+PTFE/Lipophilic Fibre

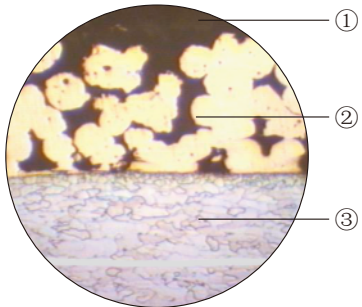


Structure

- 1.PTFE/Lipophilic Fibre mixture layer thickness is 0.01~0.03mm, provides effective transferred lubricating film under hydrodynamic lubricating condition.
- 2.Sintered bronze powder thickness 0.20~0.35mm, provides strong mechanical bond and excellent thermal conductivity.
3. Steel backing Provides mechanical strength.

Features

The material is optimized based on CSB-40 for the applications with high PV value under hydrodynamic lubricating. While providing outstanding low friction and wear resistance performance, it has excellent fatigue resistance and cavitation corrosion resistance feature.



Tech. Data					
Max. load	Static	250N/mm ²	Max. speed	Operation Temperature Range	
	Very low speed	140N/mm ²		-195°C~+280°C	
	Rotating oscillating	60N/mm ²			
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s	Thermal conductivity	42 W(m*K) ⁻¹	
	Continuous operation	1.8N/mm ² *m/s		Coefficient of thermal expansion	
Max. PV Hydrodynamic Lubricate		60N/mm ² *m/s	Friction coefficient	Dry running	0.08~0.20
				Hydrodynamic operation	0.03~0.08

Typical Applications

The material is suitable for the applications under high load conditions with hydrodynamic lubricating. It is suitable for the air conditioner compressor,gear box, shock absorber, high pressure common rail system, booster pump as well as the piston pump,hydraulic motor, hydraulic cylinder and material handling machines.

CSB-11 Bronze+Porous Bronze+PTFE/Fibre

Customized

RoHS

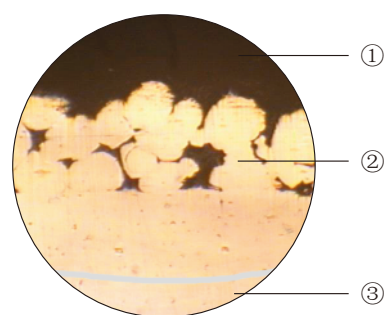


Structure

1. **PTFE/ Fibre mixture layer thickness is 0.01~0.03mm**, provides self-lubricating feature with good wear resistance.
2. **Sintered bronze powder thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
3. **Bronze backing** Provides mechanical strength and good corrosion resistance.

Features

The material has the similar feature with the standard steel backed polymer composite bearings. In addition, the bronze back provides better corrosion resistance and thermal conductivity. Therefore it is easier for the assembling and it has better magnetic resistance feature.



Tech. Data

Max. load	Static	250N/mm ²	Max. speed	Friction coefficient		0.03~0.20
	Very low speed	140N/mm ²		Dry running		2m/s
	Rotating oscillating	60N/mm ²		Hydrodynamic operation		>2m/s
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s	Thermal conductivity		60W(m*K) ⁻¹	
	Continuous operation	1.8N/mm ² *m/s	Coefficient of thermal expansion		18*10 ⁻⁶ *K ⁻¹	
Operation Temperature range		-195℃~+280℃				

Typical Applications

The material is suitable for the applications of door hinges, hood hinges, trunk hinges, screen wiper, trailer couplings, lift machines, marine winch, marine chain, dam shaft sleeves, kiln, textile machines, metallurgical machinery and cylinder rod eyes.

CSB-12/12EC Steel+PTFE Compound Tape

Customized

RoHS

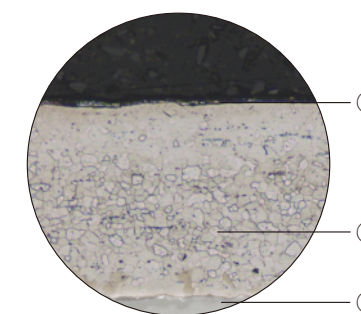


Structure

1. **PTFE Tape Layer**, provides self-lubricating feature .
2. **Metal backing** Provides mechanical strength.
3. **Coating** Provides good corrosion resistance.

Features

CSB-12 is designed for light weight and thin wall bearing, the thicker PTFE layer is suitable for the calibration process after the bearing is assembled. This material also provides low friction and low noise features. CSB-12EC is optimized based on CSB-12 with special additives to achieve the electrical conductivity of the material.



Tech. Data

Standard Wall Thickness mm	0.50		Max. Load	Static	120N/mm ²	
				Dynamic	80N/mm ²	
	Max. Seepd		Dry running	1m/s		
			Oil Lubricated	>1m/s		
	0.75		Operation Temperature range		-65 °C~+260 °C	
			Friction coefficient		0.05~0.20	
CSB-12EC Resistance≤ 10 ⁶ Ωcm ²						

Typical Applications

The material has good wear resistance and self-lubricating feature and is suitable for the applications of chemical equipment, medical equipment, food industry, textile industry, OA machinery and door hinges, trunk hinges, hood hinges and seat recliners.

CSB-25

Aluminum + PTFE Compound Tape

Customized

RoHS

Structure

1. PTFE Compound Tape, provides self-lubricating feature .

2. Aluminum Backing provides mechanical strength and good corrosion resistance.

Features

The relatively thick bearing layer is designed for good wear resistance and with low noise feature, it is suitable for calibration after assembling to improve the precision mating tolerance. The aluminum is a light material with good corrosion resistance feature.

Tech. Data

Max. load	Static	80N/mm ²	Friction coefficient	0.05~0.20	
	Very low speed	40N/mm ²		Max. speed	Dry running
	Rotating oscillating	20N/mm ²			Hydrodynamic operation
Max. PV Dry running	Short-term operation	2.8N/mm ² *m/s	Thermal conductivity		230W(m*K) ⁻¹
	Continuous operation	1.8N/mm ² *m/s	Coefficient of thermal expansion		24*10 ⁻⁶ *K ⁻¹
Operation Temperature range		-65°C~+260°C			

Typical Applications

The material is suitable for the applications of OA machines, body fit machines, bicycles, motorbikes, door hinges and seat recliners.

CSB-35

Stainless Steel + PTFE Compound Tape

Customized

RoHS

Structure

1. PTFE Compound Tape, provides self-lubricating feature .

2. Stainless Steel Backing provides mechanical strength and good corrosion resistance.

Features

This material has the good properties of 2 layer bearings including light weight, good wear resistance, noise absorbing and flexible torque. At the same time, the stainless steel backing provides better corrosion resistance and stable chemical resistance features.

Tech. Data

Standard Wall Thickness mm	0.50	Max. Load	Static	120N/mm ²
			Dynamic	80N/mm ²
		Max. Seepd	Dry running	1m/s
	0.75		Oil Lubricated	>1m/s
	Operation Temperature range		-65°C~+260°C	
	Friction coefficient		0.05~0.20	

Typical Applications

The material is suitable for the applications of door hinges, trunk hinges, hood hinges, seat recliners and valve support bearings.

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CSB-FR/FRS Metal Fabric+PTFE Compound Tape

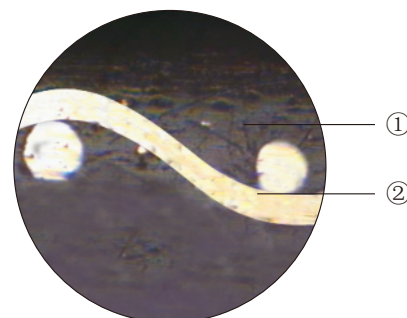
Customized

RoHS



Structure

1. **PTFE Compound Tape**, provides self-lubricating feature .
2. **Metal Fabric** provides mechanical strength and thermal conductive property.



Features

The metal fabric backing provides wear resistance and self-lubricating properties with its light weight feature which is suitable for manual and automatic assembling. The final fitting precision and torque could be adjusted by calibration after installation of the bushing. There are two materials available: CSB-FR is a bronze fabric backing material and CSB-FRS is a stainless steel fabric backing material. The latter has better corrosion resistance feature.

Tech. Data

Standard Wall Thickness mm	CSB-FR Bronze Fabric	CSB-FRS Stainless Steel Fabric	Max. Load	Room Temp	80N/mm ²
0.48	*	*	Max. Speed	Dry Running	1m/s
0.78	*	*	Operation Temperature		-195℃~+260℃
0.98	*	*	Friction Coefficient		0.03~0.20

Typical Applications

The material is suitable for the applications of door hinges, valve components, OA machinery and textile machinery. It is a light weight material.

CSB-FM/FMS Stretched Metal Mesh+PTFE/Fibre

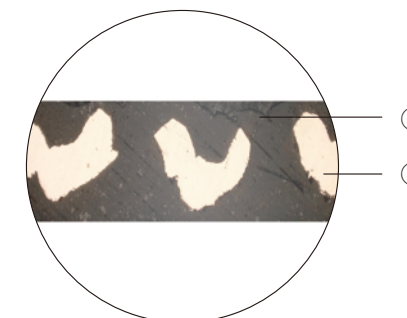
Customized

RoHS



Structure

1. **PTFE Fibre Mixture**, provides wear resistance and self-lubricating feature .
2. **Stretched Metal Mesh**, provides mechanical strength and thermal conductive property.



Features

The stretched metal mesh is a light weight material with low linear expansion coefficients and good thermal conductivity. The PTFE filled in the mesh provides self-lubricating and noise absorbing features. The material could meet the interference fit requirement and could be calibrated after assembling. Among of the two available materials of CSB-FM(stretched bronze mesh) and CSB-FMS(stretched stainless steel mesh), CSB-FMS has better corrosion resistance feature.

Tech. Data

Standard Wall Thickness mm	CSB-FM Bronze Stretched Mesh	CSB-FMS Stainless Steel Stretched Mesh	Max. Load	Room Temp	80N/mm ²
0.48	*	*	Max. Speed (Dry Running)		1m/s
0.78	*	*	Operation Temperature		-195℃~+260℃
0.98	*	*	Friction Coefficient		0.03~0.20

Typical Applications


The material is suitable for the applications of door hinges, valve components, OA machinery and textile machinery. It is a light weight material.

CSB-12FM

Steel+Bronze Mesh+PTFE/Fibre

Customized

RoHS



Structure

- PTFE Fibre Mixture**, provides wear resistance and self-lubricating feature .
- Bronze Mesh**, provides thermal conductive property.
- Steel Backing**, provides mechanical strength and load capacity.

Features

This material has good thermal conductivity and wear resistance. The steel backing improves the mechanical strength of the bearing as well as to allow thicker bearing wall designation requirement.

Tech. Data

Standard Wall Thickness mm	0.75	Max. load	Room Temp.	120N/mm ²
	1.00	Max. speed	Dry running	1m/s
	1.50	Operation Temperature range		-195 °C~+260 °C
		Friction coefficient		0.03~0.20

Typical Applications


The material is suitable for the applications of door hinges, valve components, OA machinery and textile machinery. It is a light weight material.

CSB-35FMS

Stainless Steel+Stainless Steel Mesh+PTFE/Fibre

Customized

RoHS



Structure

- PTFE Fibre Mixture**, provides wear resistance and self-lubricating feature .
- Stainless Steel Mesh**, provides thermal conductive property.
- Stainless Steel Backing**, provides mechanical strength and corrosion resistance.

Features

This material has good thermal conductivity and wear resistance. The stainless steel backing improves the mechanical strength of the bearing as well as to allow thicker bearing wall designation requirement. Stainless steel has good chemical resistance feature.

Tech. Data

Standard Wall Thickness mm	0.75	Max. load	Room Temp.	120N/mm ²
	1.00	Max. speed	Dry running	1m/s
	1.50	Operation Temperature range		-195 °C~+260 °C
		Friction coefficient		0.03~0.20

Typical Applications

The material is suitable for the applications of door hinges, valve components, OA machinery and textile machinery. It is a light weight material.

CSB-20 Steel+Porous Bronze+POM

RoHS

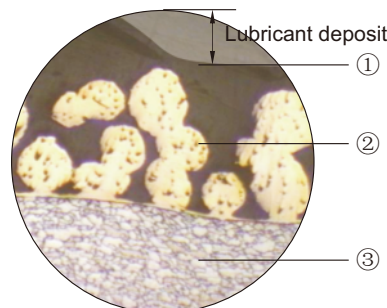


Structure

- POM thickness 0.30~0.50mm**, provides good wear resistance. This bearing surface carries a pattern of circular indents which should be filled with grease on assembly of the bearing.
- Sintered bronze thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
- Low-carbon steel**, provides mechanical strength and thermal conductivity.

Features

It is suitable for boundary lubricating applications. It is recommended to lubricate the components with grease before assembling. The oil indents can hold the lubricant with optimized matrix. Lubricating during the operation helps to prolong the bearing duration. The low friction coefficient, good wear resistance and reliable loading capacity of the bearing ensure a suitable applications under low speed rotating and oscillating motion. CSB-20M is a material with POM thickness of 0.2~0.35mm without oil indents on the surface, it is a machinable material after assembling.



Tech. Data

Max. load	Static	250N/mm ²		Operation Temperature range		-40℃~+110℃
	Very low speed	140N/mm ²		Max. speed	Greased	2m/s
	Rotating oscillating	70N/mm ²			Continuous oiling	>2m/s
Max. PV Grease Lubricated		3N/mm ² *m/s		Thermal conductivity		50W(m*K) ⁻¹
Coefficient of thermal expansion		11*10 ⁻⁶ *K ⁻¹		Friction coefficient		0.05~0.20
The oil indents have to be filled with grease before bearing assembling.						

Typical Applications

The material has good wear resistance and it is suitable for middle to high load applications under the work conditions of impact load and dusty environment. A pre-lubricating is necessary before assembling. The applications of this material include the commercial vehicle axel, brake system, suspension system, agricultural machinery, forest machinery and material handling machinery. It could be used to replace some traditional steel or bronze sleeves.

CSB-22 Steel+Porous Bronze+PVDF

Customized

RoHS

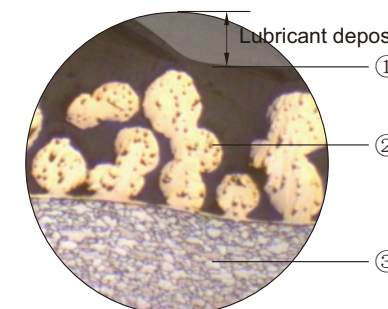


Structure

- PVDF thickness 0.20~0.35mm**, provides good wear resistance and lower friction coefficients even under the poor lubricating conditions.
- Sintered bronze thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
- Low-carbon steel**, provides mechanical strength and thermal conductivity.

Features

It is suitable for boundary lubricating applications. It is recommended to lubricate the components with grease before assembling. CSB-22M is a material with PVDF thickness of 0.1~0.2mm without oil indents on the surface, it is a machinable material after assembling.



Tech. Data

Max. load	Static	250N/mm ²	Max. speed	Operation Temperature range		-50°C~+130°C
	Very low speed	140N/mm ²		Pre-lubricated	2m/s	
	Rotating oscillating	70N/mm ²			Continuous oiling	>3m/s
Max. PV		3.6N/mm ² *m/s	Thermal conductivity		50W(m*K) ⁻¹	
Coefficient of thermal expansion		11*10 ⁻⁶ *K ⁻¹	Friction coefficient		0.03~0.20	
The oil indents have to be pre-lubricated before bearing assembling.						

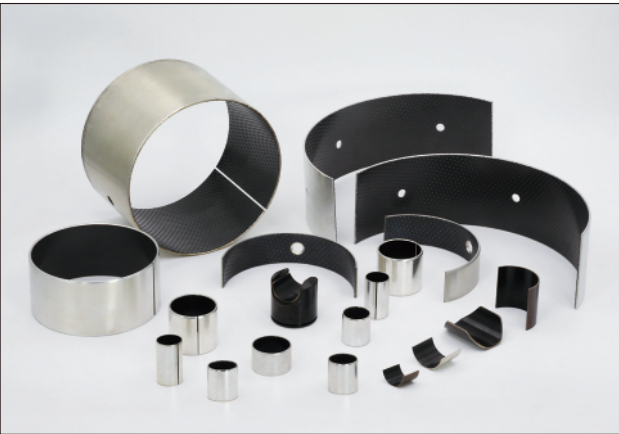
Typical Applications

The material has good wear resistance and it is suitable for middle to high load applications under the work conditions of impact load and dusty environment. A pre-lubricating is necessary before assembling. The applications of this material include the commercial vehicle axel, brake system, suspension system, air compressors, hydraulic piston pumps, motors, as well as agriculture machinery, forest machinery and material handling machinery.

CSB-80 Steel+Porous Bronze+PEEK/PTFE

Customized

RoHS

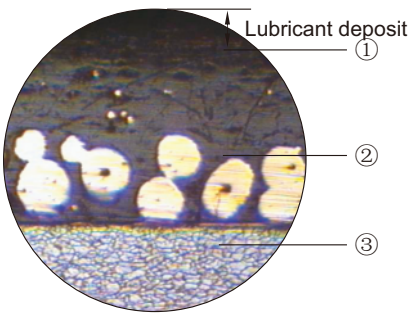


Structure

- 1.PEEK/PTFE thickness 0.20~0.35 mm**, provides good wear resistance. This bearing surface carries a pattern of circular indents which should be filled with grease on assembly of the bearing.
- 2.Sintered bronze thickness 0.20~0.35mm**, provides strong mechanical bond and excellent thermal conductivity.
- 3.Low-carbon steel**, provides mechanical strength and thermal conductivity.

Features

It is suitable for boundary lubricating applications. It is recommended to lubricate the components with grease before assembling. The oil indents can hold the lubricant with optimized matrix and to hold possible incoming containments during the operation. Lubricating during the operation helps to prolong the bearing duration. The wide operation temperature range of -150°C ~ +250°C and the reliable chemical resistance of the bearing ensure a suitable applications under middle to high load conditions. CSB-80M is a material with PEEK/PTFE thickness of 0.1~0.2mm without oil indents on the surface, it is a machinable material after assembling.



Tech. Data						
Max. load	Static	250N/mm ²		Friction coefficient		0.08~0.15
	Very low speed	140N/mm ²		Max. speed	Pre-lubricated	2m/s
	Rotating oscillating	60N/mm ²			Oil/Greased	>2m/s
Max. PV Dry running	Short-term operation	3.6N/mm ² *m/s		Thermal conductivity		50 W(m*K) ⁻¹
	Continuous operation	1.8N/mm ² *m/s		Coefficient of thermal expansion		11*10 ⁻⁶ *K ⁻¹
Operation Temperature range		-150°C~+250°C				

Typical Applications

The material has wide operation temperature range and can be used under high PV value condition. It is used in hydraulic motors, pumps, diesel engine common rail system and heavy truck brake systems.

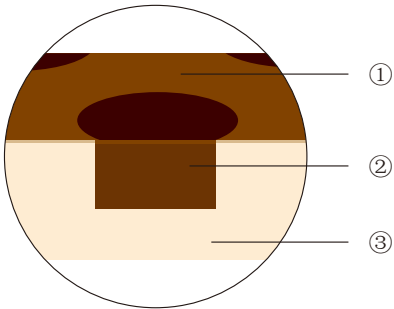
CSB650 Cast Bronze with Graphite Plugs

Customized



Structure

- 1.Initial lubricating film**, provides initial lubricating to reduce the friction.
- 2.Solid Lubricants**, aligned according to the bearing motion direction to form lubricating film improving the friction coefficient and wear resistance feature.
- 3.Bronze alloy**, provides mechanical strength and improve the impact resistance and corrosion resistance.



Features

The bronze alloy provides mechanical strength and loading capacity of the bearing and the solid lubricants provides continuous lubricating source to establish the reliable lubricating system. It is suitable for the application conditions of middle to high load and where the frequent restarting operation is needed. The typical applications include the plastic injection machine toggle, tie bar, port machinery, dam gate and mining machinery.

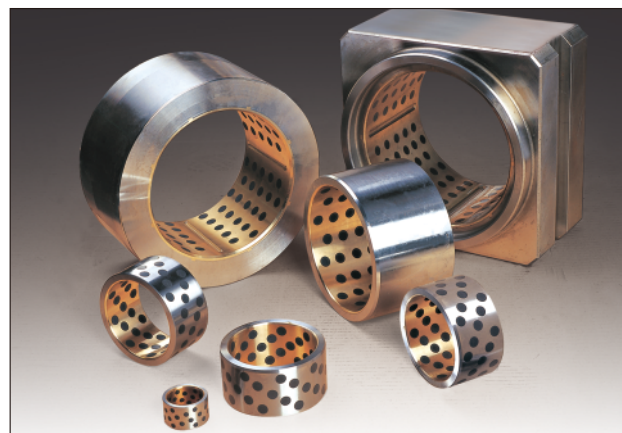
Main Metal Type							
Type	650	650S5	650W1	650W3	650S1	650S2	650S3
Material	CuZn25Al5Mn4Fe3				CuSn5Pb5Zn5	CuAl10Ni5Fe5	CuSn12
Density	7.8				8.9	7.8	8.9
HB Hardness	≥210	≥250	≥210	≥230	≥70	≥150	≥75
Tensile Strength MPa	≥750	≥800	≥755	≥755	≥250	≥500	≥270
Yield Strength MPa	≥450	≥450	≥400	≥400	≥90	≥260	≥150
Elongation %	≥12	≥8	≥12	≥12	≥13	≥10	≥5
Thermal Expansion Coefficient	1.9x10 ⁻⁵ /°C				1.8x10 ⁻⁵ /°C	1.6x10 ⁻⁵ /°C	1.8x10 ⁻⁵ /°C
Max. Operation Temp.	-40~+250°C				-40~+400°C		
Max. load MPa	50	75	75	100	50		
Max. speed m/s	Dry	0.5	0.1	0.5	0.5		
	Lubricated	1	0.25	1	2.5		
Max. PV (N/mm ² *m/s)	Dry	1.65				1	
	Lubricated	3.25				1.65	

The above data is recommended by CSB. The designing data should be evaluated according to the particular application conditions.

Solid Lubricants		
Lubricant	Feature	Typical Applications
SL1 Graphite + Additives	Good Chemical resistance and low friction coefficient. Operation temperature up to +400°C	Suitable for general industry applications exposed to atmosphere.
SL4 PTFE+MoS2+Additives	Low friction coefficient and good water lubricating feature. Operation temperature up to +300°C	Suitable for water lubrication condition. The applications include vessels, hydraulic turbines and steam turbines.

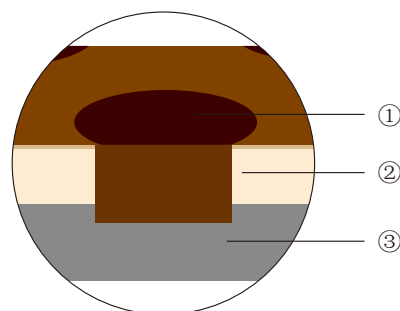
CSB650GT Steel Backed Cast Bronze with Graphite Plugs

Customized



Structure

- Solid Lubricants**, aligned according to the bearing motion direction to establish lubricating film improving the friction coefficient and wear resistance feature.
- Bronze alloy**, provides mechanical strength and improve the impact resistance and corrosion resistance.
- Steel Backing**, reduce the material cost and improve the mechanical strength.



Features

The bronze alloy provides mechanical strength and loading capacity of the bearing and the steel backing reduces the material cost. The solid lubricants provides continuous lubricating source to establish the reliable lubricating system. It is suitable for the application conditions of middle to high load and where the frequent restarting operation is needed.

Tech. Data

Max. load	Static	250N/mm ²	Operation Temperature range	-100°C~+300°C
	Dynamic	100N/mm ²		
Max. speed	Dry	0.5m/s	Friction coefficient	0.03~0.20
	Lubricated	1.0m/s	Thermal conductivity	60W(m*k) ⁻¹
Max. PV		3.25N/mm ² *m/s	Coef. of thermal expansion	19*10 ⁻⁶ *K ⁻¹
Alloy Hardness		HB>210	Alloy Bonding Strength	150N/mm ²

Typical Applications

The material is widely used in the plastic injection machines, port machinery, mining machines, guide bushing for mold and so on. It is suitable for the applications under the work conditions of impact load and dusty environment and the frequent restarting existed.

CSB850S Steel Backed Fe-Ni Sintered Alloy with Solid Lubricants

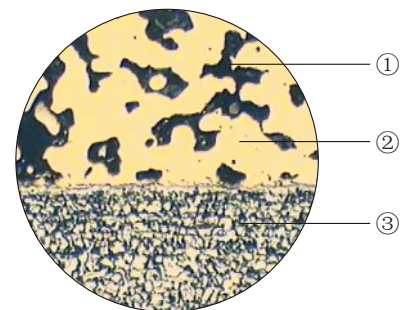
Customized

RoHS



Structure

- Solid Lubricants**, aligned according to the bearing motion direction to form lubricating film improving the friction coefficient and wear resistance feature.
- Fe-Ni alloy**, provides thermal conductivity and good wear resistance feature.
- Steel Backing**, provides mechanical strength.



Features

The alloy layer is designed with proper porous alignment to ensure the uniform dispersing of the solid lubricants. During the operation, a lubricating film can be easily established to provide lower friction coefficient. This material is suitable for the applications under high speed and with micro movement.

Tech. Data

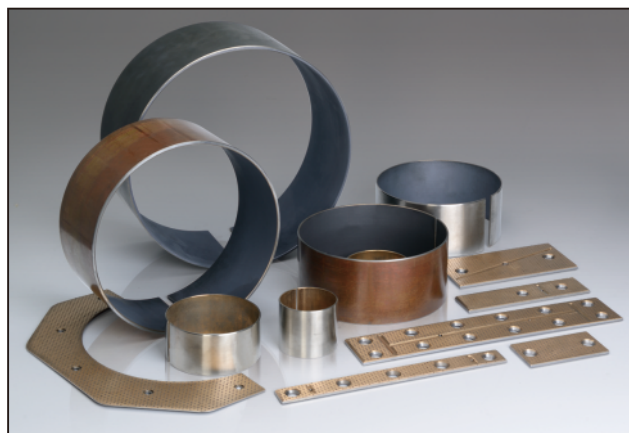
Max. load	Static	100N/mm ²	Operation Temperature range	-40°C~+120°C
	Dynamic	50N/mm ²		
Max. speed	Dry	0.5m/s	Friction coefficient	0.03~0.20
	Lubricated	>1m/s	Alloy Hardness	>45HB
Max. PV	Dry	1.5N/mm ² *m/s	Coefficient of thermal expansion	14*10 ⁻⁶ *K ⁻¹
	Lubricated	2.5N/mm ² *m/s	Oil Volume	>10%

Typical Applications

This material is suitable for the applications with middle to low load. It has low friction coefficient and good wear resistance. Periodically greasing during the operation helps to improve the duration of the bearing. The applications include the guide plates of presser, robots, injection machine guide plates, tie-bar, tyre mold and other wear plates.

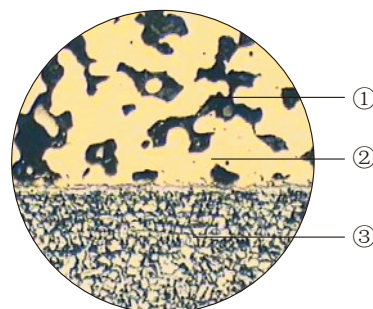
CSB850BM Steel Backed Bronze Powder with Solid Lubricants

Customized



Structure

- Solid Lubricants**, dispersed into the alloy powder to establish lubricating film improving the friction coefficient and wear resistance feature.
- Bronze alloy**, provides mechanical strength and improve the impact resistance and wear resistance.
- Steel Backing**, provides the mechanical strength of the bearing.



Features

The uniform dispersed solid lubricants reduces the static and dynamic friction coefficient difference. This material can work stably even under the micro movement condition. Depending on request, oil indents or grooves could be designed on the bearing surface to hold oil or grease or any possible containments. It is suitable for the applications under middle to low load. Periodically lubricating is recommended for the bearing duration improvement.

Tech. Data

Tech. Data				
CSB Standard Material Type		CSB850BM1	CSB850BM2	CSB850BM1P
Backing metal		Steel	Steel	Steel
Lining Layer	Chemical Composition	CuSn13+SL	CuSn10Pb10+SL	CuSn10Pb10+PTFE
	Solid Lubricants	6%	6%	10~15%
	Hardness	>40HB	>40HB	----
	Compression Deformation under 150MPa	<0.005mm	<0.005mm	<0.005mm
Max. Load	Static	100N/mm ²	100N/mm ²	100N/mm ²
	Dynamic	50N/mm ²	50N/mm ²	50N/mm ²
Max. Speed		0.5m/s	0.5m/s	1m/s
Max. PV		1.5 N/mm ² *m/s	1.5 N/mm ² *m/s	1.5 N/mm ² *m/s
Coefficient of Friction		0.05~0.2	0.03~0.2	0.03~0.15
Operation Temperature Range		-195~+280°C	-195~+280°C	-195~+280°C

Typical Applications

The material is suitable for using under middle to low load conditions. It has low friction coefficient and good wear resistance. Light oil lubricating is recommended and periodically oiling helps to improve the bearing duration.

The typical application of this material include the hydro-turbine, plastic injection machine guide bushings, tyre mold and other wear plates and sliding bearings.

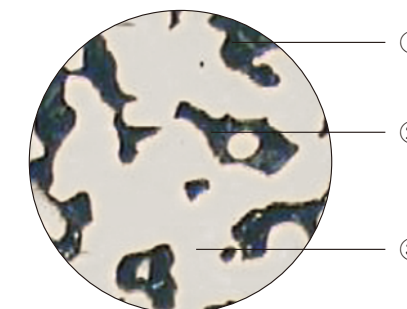
CSB85HF Powder Metallurgy Sintered with Solid Lubricants

Customized



Structure

- Solid Lubricants**, dispersed into the alloy powder to establish lubricating film improving the friction coefficient and wear resistance feature.
- Oil Pore**, properly aligned porous holds oil inside the material.
- Fe-Cu Alloy**, provides mechanical strength and thermal conductivity.



Features

The Fe-Cu alloy backing provides mechanical strength of the bearings. The dispersed solid lubricants can establish lubricating film during the operation and the oil contained inside reduces the friction coefficient. It is recommended to use under the low load and middle to high speed conditions. CSB85HFH is a heat treated material which improves the impact resistance of the bearings and it is suitable for the using under middle to high load application conditions and under dusty environment with impact load and marginal load.

Tech. Data

Tech. Data				
Material Type		Unit	CSB85HFL	CSB85HFH
Crushing Strength		Mpa	≥420	≥550
Surface Hardness		----	≥50 HRB	≥75 HRB
Density		g/cm ³	6~6.5	6~6.5
Oil Impregnate		vol%	16~20%	16~20%
Max. Load	Static	Mpa	50	150
	Dynamic		30	75
Max. Speed	Dry	m/s	0.5	0.5
	Lubricated		>1.5	>1.0
Max. PV	Dry	N/mm ² *m/s	1.5	1.5
	Lubricated		2.5	2.5
Operation Temperature Range		°C	-40~+120	-40~+120

Typical Applications

The high performance Fe-Cu alloy bearing is suitable for the applications under high load and low speed conditions including the excavator arms, hydraulic cylinder rod eyes, robots, plastic injection machines, die-casting machine and other metal work machines.

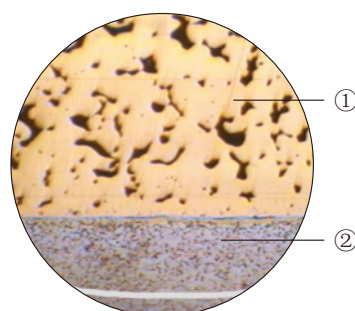
CSB-800/815 Steel+Sintered Bronze Lead Alloy

Customized



Structure

- Bronze Lead Sintered Alloy**, provides good self lubricating feature and has good fatigue resistance and anti-seizure feature.
- Steel Backing**, provides the mechanical strength of the bearing.



Features

The bronze lead alloy of CSB-800 is CuSb10Pb10, the low lead material CSB-815 with the alloy CuSn10Pb5 is also available. These materials have low friction coefficient and good wear resistance and they are suitable for lubricated working conditions. To improve the lubricating performance, oil grooves or oil deposits could be optional designs.

Tech. Data

Max. Load	Static	250N/mm ²	Alloy Hardness	≥HB70		
	Dynamic	140N/mm ²				
Max. Speed (lubricated)		2.5m/s			Operation Temperature range	-40℃~+250℃
Max. PV		2.8N/mm ² *m/s			Friction coefficient	0.05~0.20
Tensile Strength		350N/mm ²			Thermal conductivity	60W(m*k) ⁻¹
					Coefficient of thermal expansion	14*10 ⁻⁶ *K ⁻¹

Typical Applications

These materials are suitable for using under middle load and middle to low speed conditions. The good imbedibility of the alloy provides anti-dust feature of the bearings. The bearings can be used under dust environment and where containments existed. The typical applications include connection rods, undercarriage rollers, hydraulic cylinder rod eyes, material handling machinery, agriculture machinery, forest machinery and so on. These two materials are with lead which is restricted to be used for some special parts according the relative laws or regulations.

CSB-820/827 Steel+Sintered Bronze Alloy Lead free

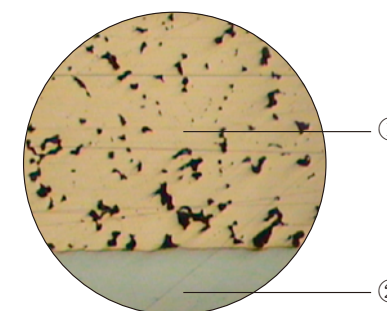
Customized

RoHS



Structure

- Lead Free Sintered Bronze Alloy**, provides good self lubricating feature and has good fatigue resistance and anti-seizure feature.
- Steel Backing**, provides the mechanical strength of the bearing.



Features

The lead free bronze lead alloys include two different materials. CSB-820 is an alloy with Nickle content and CSB-827 is an alloy with Bismuth content. These materials have low friction coefficient and good wear resistance and they are suitable for lubricated working conditions. To improve the lubricating performance, oil grooves or oil deposits could be optional designs.

Tech. Data

Max. Load	Static	250N/mm ²		Alloy Hardness	≥HB70
	Dynamic	140N/mm ²		Operation Temperature range	-40℃~+250℃
Max. Speed (lubricated)		2.5m/s		Friction coefficient	0.05~0.20
Max. PV		2.8N/mm ² *m/s		Thermal conductivity	60W/(m*k) ⁻¹
Tensile Strength		350N/mm ²		Coefficient of thermal expansion	14*10 ⁻⁶ *K ⁻¹

Typical Applications

These materials are suitable for using under middle load and middle to low speed conditions. The good imbedibility of the alloy provides anti-dust feature of the bearings. The bearings can be used under dust environment and where containments existed. The typical applications include connection rods, undercarriage rollers, hydraulic cylinder rod eyes, material handling machinery, agriculture machinery, forest machinery and so on.

CSB-J20 Steel+Sintered Tin Aluminum Alloy

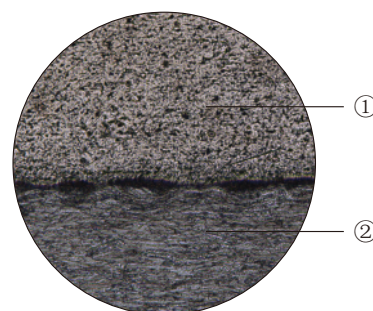
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RoHS



Structure

- Sintered Tin Aluminium Alloy AlSn20Cu1**, thickness **0.2-0.5mm**, provides good self lubricating feature of the bearing
- Steel Backing**, provides the mechanical strength of the bearing.



Features

The material has good oil corrosion resistance feature. It is smooth and has outstanding imbedibility and anti-seizure performance. The working surface is not needed to be coated. It is suitable to be used to mate with soft shaft. The OD of the bearing is machined to a high precision grade and ID is machinable after assembling. This material is conformed to the ROHS regulation 2000/53/EC.

Tech. Data

Tensile Strength	>150Mpa
Yield Point	>90Mpa
Max. Load	50Mpa
Coefficient of thermal expansion	$24 \times 10^{-6} \text{K}^{-1}$
Thermal conductivity	$50 \text{W}(\text{m} \cdot \text{K})^{-1}$
Alloy Hardness	HB 30-50

Typical Applications

The material has good corrosion resistance and the max. load could be 50Mpa. It is suitable for the applications of middle to low load motors, crankshaft of air compressors and so on.

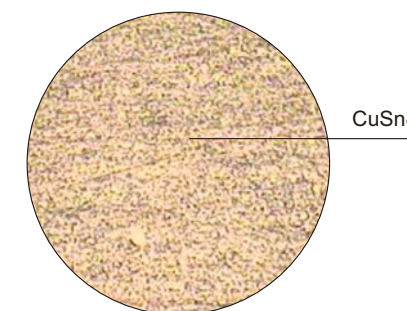
CSB-090 Bronze Wrapped Bearing with Oil Pockets

RoHS



Structure

This is a wrapped bushing with bronze alloy CuSn8. It has the features of high load, good wear resistance. It is an economic design with diamond oil indents to hold oil for establishing lubricating film during the initial running in of the operation.



Features

This is a thin wall wrapped bushing. It is suitable for a cost sensitive solution while the tolerance requirement is not critical. The diamond oil indents holds the grease for the lubricating film establishment during the initial running in of the operation. The ID of the bushing is machinable after assembling. Bronze alloy provides good corrosion resistance and thermal conductivity feature. It is suitable for middle to low load and low speed application and periodically greasing is recommended.

Chemical Composition

Type	Cu%	Sn%	P%	Pb%	Zn%
CSB-090	91.3	8.5	0.2	/	/

Tech. Data

Max. Load	Static	120N/mm ²		Elongation	40%
	Dynamic	40N/mm ²		Operation Temperature range	-100°C~+200°C
Max. Speed (lubricated)		2m/s		Friction coefficient	0.08~0.25
Max. PV		2.8N/mm ² *m/s		Thermal conductivity	58W(m*k) ⁻¹
Tensile Strength		450N/mm ²		Coefficient of thermal expansion	18.5*10 ⁻⁶ *K ⁻¹
Alloy Hardness		HB 110-150			

Typical Applications

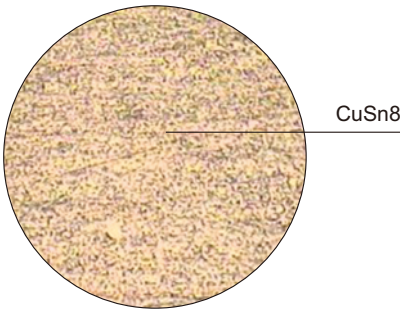
The typical applications of this material include the lifting machinery, construction engineering machinery, automotive industry, tractors, trucks, agriculture machinery and mining machines. The available products include bushings, bearing shelves, flanged bushings and thrust washers.

CSB-T90 Bronze Wrapped Bearing with Through Holes



Structure

This is a wrapped bushing with bronze alloy CuSn8. It has the features of high load, good wear resistance. It is an economic design with oil holes to hold oil for establishing lubricating film during the initial running in of the operation.



Features

This is a thin wall wrapped bushing. It is suitable for a cost sensitive solution while the tolerance requirement is not critical. The through hole design is suitable for oil lubricating. The fast oil film establishment reduces the adhesive wearing of the components. The ID of the bushing is machinable after assembling. Bronze alloy provides good corrosion resistance and thermal conductivity feature. It is suitable for middle to low load and low speed application and periodically light oil lubricating is recommended.

Chemical Composition					
Type	Cu%	Sn%	P%	Pb%	Zn%
CSB-T90	91.3	8.5	0.2	/	/

Tech. Data					
Max. Load	Static	120N/mm ²	Elongation	40%	
	Dynamic	40N/mm ²		Operation Temperature range	
Max. Speed (lubricated)		2.5m/s	Friction coefficient		0.08~0.25
Max. PV		2.8N/mm ² *m/s	Thermal conductivity		58W(m*k) ⁻¹
Tensile Strength		450N/mm ²	Coefficient of thermal expansion		18.5*10 ⁻⁶ *K ⁻¹
Alloy Hardness		HB 110-150			

Typical Applications

The typical applications of this material include the lifting machinery, construction engineering machinery, automotive industry, tractors, trucks, agriculture machinery and mining machines. The available products include bushings, bearing shelves, flanged bushings and thrust washers.

CSB600 Solid Bronze Turned Bearings



Structure

The cast bronze alloy turned bearing provides a perfect self-lubricating solution both from technical and economical aspects. The material has a high load performance and good corrosion resistance feature. Various alloys are available depending on different application requirements.

Main Metal Type							
Type	600	600S5	600W1	600W3	600S1	600S2	600S3
Material	CuZn25Al5Mn4Fe3				CuSn5Pb5Zn5	CuAl10Ni5Fe5	CuSn12
Density	7.8				8.9	7.8	8.9
HB Hardness	≥210	≥250	≥210	≥230	≥70	≥150	≥75
Tensile Strength MPa	≥750	≥800	≥755	≥755	≥250	≥500	≥270
Yield Strength MPa	≥450	≥450	≥400	≥400	≥90	≥260	≥150
Elongation %	≥12	≥8	≥12	≥12	≥13	≥10	≥5
Thermal Expansion Coefficient	1.9x10 ⁻⁵ /°C				1.8x10 ⁻⁵ /°C	1.6x10 ⁻⁵ /°C	1.8x10 ⁻⁵ /°C
Max. Operation Temp.	-40~+250°C				-40~+400°C		
Max. load MPa	50	75	75	100	50		
Max. speed m/s	Dry	0.5	0.1	0.5	0.5		
	Lubricated	1	0.25	1	2.5		
Max. PV (N/mm ² *m/s)	Dry	1.65			1		
	Lubricated	3.25			1.65		

Features

The cast bronze alloy is a high strength material with good impact resistance, corrosion resistance and wear resistance features under the middle to high load working conditions. High precision machining provides good tolerance matching with the counterparts. Oil grooves, oil indents could be designed according to the different application conditions. Dimensions of the bearings could be customized for a better match to the customers existing counterparts.

Typical Applications

The typical applications of this material include the port machinery, construction engineering machinery, plastic injection machinery, axles and material handling machinery. It has a high load capacity and good corrosion resistance feature.

CSB200C Hardened Steel Bearings

Customized

RoHS



Structure

Hardened S45C steel bearings. The heat treatment improves the wear resistance and impact resistance of the material. Oil grooves and deposits are available depending on the requirements. The oil grooves and deposits pattern ensures the oil or grease spread evenly on the bearing surface, combined with self-lubricating technology, the bearing surface could be coated or embedded with solid lubricants to improve its lubricating performance.

Features

This is the most economical solution of slide bearings. It is suitable for high load low speed application where impact and dusty environment working conditions existed. In addition to the initial lubricating, periodically lubricating is necessary because marginal lubricating condition can result into a short duration of the bearings. It is not recommended to be used under dry condition and a proper lubrication system must be considered when use this kind of bearings.

Tech. Data					
Max. Load	Static	250N/mm ²		Coefficient of thermal expansion	1.1x10 ⁻⁵ °C
	Dynamic	100N/mm ²		Friction coefficient	Lubricated0.1-0.25
Max. Speed	Lubricated	10m/s		Operation Temperature range	-40°C~+120°C
Max. PV	Lubricated	1.5N/mm ² *m/s		Mating Shaft	RoughnessRa<0.8
Density	7.8g/cm ³			Hardness	HRC 58-62
Hardness	HRC≥40		Grease lubricating recommended for every 8 hours		

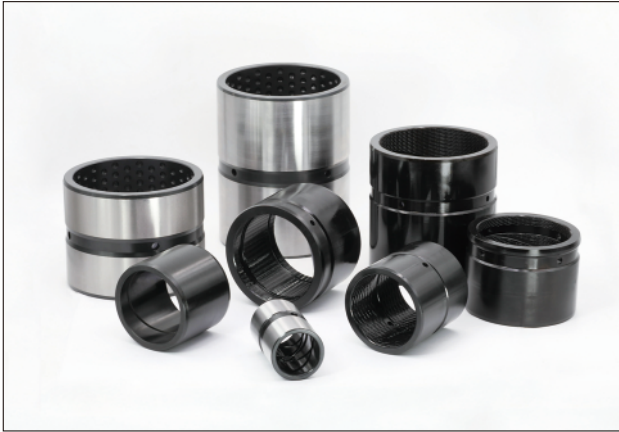
Typical Applications

The typical applications of this material include the port machinery, forest machinery, construction engineering machinery, truck axles and material handling machinery as well as the rod eyes of the hydraulic cylinders and connecting bearings.

CSB260 Special Treated Hardened Steel Bearings

Customized

RoHS

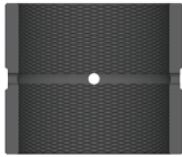


Structure

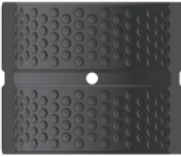
Based on alloyed steel, the bearing surface is specially treated to improve the wear resistance and anti-seizure performance of the material and considerably reduced the friction coefficient of the bearings. The special patterned surface increases the lubricating period.



CSB-260
Standard Oil
Groove



CSB-262
Net patterned
Oil Groove



CSB-265
Patterned Oil
Deposits

Features

Compared with the traditional hardened steel bearings, the special treated material improves the hardness and reduces the friction coefficient. With the good wear resistance performance of the material, the endurance test under high load and with proper sealed and lubricated conditions, the comprehensive performance of this material is even better than the bronze alloy with solid lubricants. It is suitable for high load low speed applications where impact and dusty environment working conditions existed.

Tech. Data				
Material Types		CSB260	CSB262	CSB265
Max. Load	Static	250Mpa	300Mpa	300Mpa
	Dynamic	100Mpa	100Mpa	150Mpa
Max. Speed	Lubricated	10m/min	15m/min	30m/min
Max. PV	Lubricated	1.5N/mm ² *m/s	2.0N/mm ² *m/s	2.5N/mm ² *m/s
Density		7.8g/cm ³	7.8g/cm ³	7.8g/cm ³
Hardness		≥550 HV1	≥550 HV1	≥550 HV1
Coefficient of thermal expansion		1.1x10 ⁻⁵ °C	1.1x10 ⁻⁵ °C	1.1x10 ⁻⁵ °C
Friction coefficient	Lubricated	0.05~0.2	0.05~0.2	0.05~0.2
Operation Temperature range		-40°C~+250°C	-40°C~+250°C	-40°C~+250°C
Mating Shaft	Roughness	Ra<0.8	Ra<0.8	Ra<0.8
	Hardness	HRC 58-62	HRC 58-62	HRC 58-62
Recommended Lubricating Period		<50hr	50-100hr	250hr
Recommended Tolerance Housing: H7, Shaft: f7				

Typical Applications

This kind of bearings are developed to replace the traditional hardened steel bearings to reduce the maintenance cost. The typical applications of this material include the port machinery, forest machinery, construction

engineering machinery, truck axles and material handling machinery as well as the rod eyes of the hydraulic cylinders and connecting bearings.

CSB-EPB® Wear Resistance Compound Plastic Products

Customized

RoHS



Structure and Features

CSB-EPB® Engineering plastic bearing material is based on high performance engineering plastic, by introducing the polymer technology to improve its characteristics, with special additives to achieve good wear resistance and self-lubricating features. These materials are widely used in automotive industry and high speed, underwater, high temperature and corrosion resistance application conditions. The applications for food industry conforms to FDA regulations are also available from CSB solutions.

CSB-EPB® Plastic Plain Bearings



CSB-LIN® Plastic Linear Bearings



CSB-BAL® Plastic Spherical Bearings



CSB-LMS® Linear Motion Systems



CSB-SRB® Slewing Ring Bearings



CSB-ALB® High Speed Sliding Bearings



CSB-PEC® Escalator Rotary Chains



CSB-PCC® Plastic Cable Chains



CSB-SFP® Semi-finished Products



Typical Applications

This kind of materials are designed for the applications of light weight, dry working and with the requirement of chemical resistance conditions. They are widely used in OA machines, textile machines, body fit machines, food industry, packing machines and automotive industry.

CSB-FWB® Filament-wound Bearings

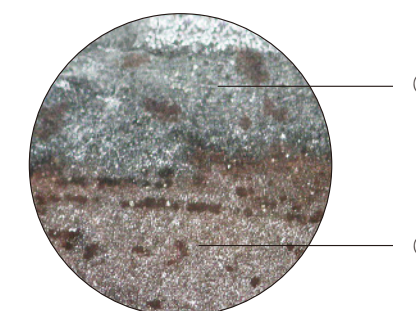
Customized

RoHS



Structure

- 1. Special Fibre and PTFE Fibre Layer**, provides the self-lubricating performance of the bearings
- 2. Strengthen Glass Fibre with Epoxy Resin**, provides mechanical strength and corrosion resistance performance.



Features

The bearing layer with special fibre and PTFE fibre has good wear resistance. It is suitable to be used under the dusty environment with high load conditions. PTFE provides low friction coefficient and self-lubricating feature. The material is good for the application with low speed and high load. The glass fibre and epoxy resin has good chemical resistance.

Tech. Data

Material Type	Standard	Unit	CSB-CRM	CSB-CRB	CSB-CRG	CSB-CRP	CSB-CRW	CSB-CRF
Category			General	Standard	High Load	High Speed	Water type	Economic
Density	ISO1183	g/cm ³	1.95	1.95	1.95	1.95	1.95	1.30
Max. Water Absorption	ISO62	%	0.1	0.1	0.1	0.1	0.1	0.5
Max. PV	ITS026	N/mm ² ×m/s	1.8	1.8	2.0	1.6	1.8	1.2
Friction Coefficient	ITS025	μ	0.05~0.15	0.03~0.12	0.03~0.12	0.02~0.12	0.02~0.10	0.08~0.30
Continuous Working Temp.	ITS029	°C	+160	+160	+160	+160	+100	+130
Instant Working Temp.	ITS029	°C	+180	+180	+180	+180	+160	+160
Lowest Working Temp.	ITS029	°C	-100	-100	-100	-100	-100	-40
Highest Speed	ITS032	m/s	0.20	0.20	0.20	0.40	0.40	0.13
Compressive Strength	ITS033	MPa	420	420	420	420	420	300
Max. Static Load	ITS027	MPa	240	240	240	240	240	150
Max. Dynamic Load	ITS028	MPa	120	140	160	30	120	45
Shore Hardness	ISO868	D	95	95	95	95	95	90
Coefficient of thermal expansion(25~150°C)	ISO11359	10 ⁻⁶ × K ⁻¹	13	13	13	13	13	40
Color			Blue	Coffee	Black	White	Green	Dark grey

Typical Applications

This kind of materials are designed for the applications of rotation, oscillating motion and with the requirement of frequent restarting conditions. They are widely used in agricultural machinery, lift machines, material handling machinery, construction engineering machinery, vessels, hydraulic cylinder connections and rod eyes.

Special Parts

