

Mechanical Carbon Graphite Catalog

2023



Welcome to

XURAN New Materials

Xuran New Materials Limited is a production-based trading company specializing in the production and sales of graphite materials and products. Located in Hebei Province, China, this company was established in 2010 and has been focused on the production and development of high quality graphite products to meet the needs of chemical, mechanical, semiconductor, new energy, metallurgy and other fields for inorganic nonmetallic materials.

Currently, our main products include special graphite, mechanical carbon graphite parts, carbon-carbon composites, graphite felts, graphite crucibles, graphite dies & molds, vacuum furnace graphite parts for heat treatment, photovoltaic thermal field graphite parts, etc. We are committed to providing our customers with effective, comprehensive

solutions as well as technical consulting and product customization services.

Professional service team, strict product factory inspection and timely tracking throughout the transportation process guarantee we can provide our customers with high quality, accurate, convenient and fast services. We aim to be the most trustworthy graphite solution provider for our customers and provide strong support for the development of our customers!



Chapter 6

Mechanical Carbon Graphite

Mechanical carbon graphite has unique self-lubrication, wear reduction, thermal conductivity and corrosion resistance properties. These properties give it strong vitality in the mechanical industry, especially in mechanical equipment operating at high temperatures (or ultra low temperatures) and strongly corrosive media, the use of mechanical carbon graphite parts has successfully solved the problems of lubrication and corrosion.

It develops rapidly and in just a few decades, carbon graphite has become one of the most commonly materials used in the mechanical manufacturing industry. Currently, it is widely used to manufacture bearings, piston rings, sealing rings, pump & valve parts, protective sleeves, supports, explosion-proof devices and adsorption plates in paper machines, etc.



Graphite Sealing Ring

Graphite sealing ring is a component used for mechanical seals. Its high strength, low friction, high temperature and high pressure resistance and self-lubrication make it an ideal choice for dynamic and static sealing ring materials. It is made from high purity graphite or impregnated resin/metal graphite to achieve superior performance.

Graphite sealing rings are divided into static and dynamic sealing rings, with static sealing rings installed on fixed components and dynamic sealing rings installed on rotating shafts. These sealing rings are usually used in applications such as pumps, compressors, and turbines to form a sealing interface that prevents liquid or gas leakage. Therefore, it puts high requirements on the performance of sealing rings, including strength, hardness, porosity, lubrication, and heat resistance.

Features

- Self-lubrication, low friction
- High tensile strength and good thermal shock resistance.
- High conductivity, low coefficient of thermal expansion
- Good chemical & corrosion resistance
- Excellent high temperature stability



Specifications of Graphite Sealing Ring

Grade	Density (g/cc)	Porosity	Shore Hardness	Compressive Strength (Mpa)	Flexural Strength (Mpa)	CTE ($\times 10^{-6} \text{ }^{\circ}\text{C}^{-1}$)	Max Working Temperature	Application
M105K(Resin Impregnation Vanes)	1.8	2%	60	110	65	–	200 °C	Carbon Vanes
M106K(Resin Impregnation)	1.8	2%	65	180	60	4	200 °C	Seal rings, bush
M106D(Antimony Impregnation)	2.3	3%	80	230	80	4	550 °C	Seal rings, bush
M254A(Copper Impregnation)	2.4	2.5%	70	170	65	–	500 °C	Seal rings, bush

Notes :
 1 MPa = 10.2 kgf/cm²; 1 W/m.k = 0.86 °cal/cm.h.°C
 These properties are typical values and not guaranteed.

Graphite Liner

Graphite liners are parts and components used outside of mechanical parts to achieve the purpose of sealing and wear protection. Generally, they are rings that act as liners. For example, in valve applications, liners are used inside valve covers and are made of high purity graphite material for sealing purposes. We enhance the performance of graphite liners by impregnating them with resin or metal for better wear resistance and high temperature resistance properties.

Graphite liners can be used flexibly and can serve many purposes. In general, it is a component that protects equipment. The use of graphite liners can reduce the wear, vibration and noise of the equipment. Besides, it has excellent corrosion resistance and is convenient for repairing mechanical equipment, simplifying equipment structure and manufacturing process.



Features

- **Good corrosion resistance:** Graphite has good corrosion resistance and can be used in acids, bases, salts and other corrosive media for a long time.
- **Excellent high temperature resistance:** Graphite maintains stable performance under high temperature conditions.
- **Outstanding sealing performance:** Graphite liner has good sealing performance and can effectively prevent media leakage.
- **Good thermal conductivity:** Graphite liner transfers heat quickly and helps to maintain the stable operation of the equipment.

Specifications of Graphite Liner

Grade	Density (g/cc)	Porosity	Shore Hardness	Compressive Strength (Mpa)	Flexural Strength (Mpa)	CTE ($\times 10^{-6} \text{ }^{\circ}\text{C}^{-1}$)	Max Working Temperature	Application
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What's the Function of Graphite Liner?

The role of graphite bearing in practical applications is closely related to its working environment and purpose. In the field of valve applications, a liner is installed inside the valve cover to encircle the valve stem, thereby reducing valve leakage and achieving a sealing effect. In the field of bearing applications, the use of a liner can reduce the wear between the bearing and the axle seat, and prevent an increase in clearance between the shaft and the hole.



Graphite Bearing

Graphite bearing, also known as carbon graphite bearing, is a commonly used lubricant part in the industrial machinery and is divided into radial bearing and thrust bearing. Bearing materials include metal, nonmetal and composite materials. Graphite bearing is a sliding bearing with high mechanical equipment performance requirements.

Unlike metal bearings, graphite bearing has self-lubrication, qualitative light, high temperature resistance, corrosion resistance and other superior properties. It can not only be used in high temperature, low temperature, high speed and low speed sliding conditions, but also can be used in strongly corrosive gas and liquid media conditions. It is widely used in centrifugal pumps, submersible pumps, liquid pumps, and other mechanical equipment.

Features

- Excellent self-lubrication
- High thermal conductivity and thermal stability
- Good chemical corrosion resistance
- Good wear resistance and high mechanical strength



Specifications of Graphite Bearing

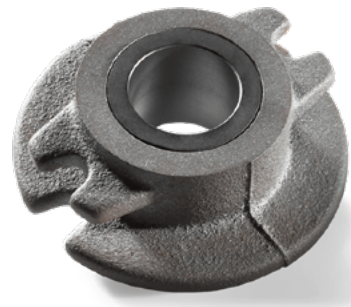
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Application of Graphite Bearing

Graphite bearings are a kind of bearing that does not require grease lubricants. They are mainly used in the following 3 types of applications.

- In applications where the use of grease lubricants is prohibited, such as in the equipment of food, beverage, textile, chemical and other industrial sectors;
- In applications where ordinary bearing cannot be used due to high temperatures, such as high temperature material handling machine and flue valve regulating machines;
- In applications where corrosive gases or liquids exist, like bearings used in chemical and textile industries. Graphite bearing does not require grease lubricants and can reduce contamination and maintenance costs. Besides, it has good high temperature resistance, corrosion resistance and self-lubrication.



Graphite Rotors and Vanes

The working principle of vacuum pump is to compress gas and discharge it by rotating the graphite rotors and vanes. Specifically, as the graphite rotor rotates, the space between the vacuum pump graphite vanes and the pump body continuously changes, thus sucking, compressing, and discharging gas. The main function of the graphite blades is to capture the gas and move it from the low pressure area to the high pressure area when they rotate inside the vacuum pump. The quantity, shape, and material of the graphite vanes have an influence on the performance and service life of the vacuum pump.

Vacuum pump graphite rotors and vanes have good self-lubrication and wear resistance and can work normally in dry-running state without additional lubricating oil or grease. Therefore, they can effectively avoid the contamination and damage to the vacuum pump caused by lubricating oil or grease. Meanwhile, they have good corrosion resistance and high temperature resistance, and can adapt to harsh working environments, so they are widely used in dry vacuum pumps.

Features

- Low friction, low coefficient of thermal expansion
- Excellent self-lubrication
- High thermal conductivity and thermal stability
- Good chemical corrosion resistance
- Wear resistance and high mechanical strength



Specifications of Graphite Rotors and Vanes

Grade	Density (g/cc)	Porosity	Shore Hardness	Compressive Strength (Mpa)	Flexural Strength (Mpa)	CTE ($\times 10^{-6} \text{ }^{\circ}\text{C}^{-1}$)	Max Working Temperature	Application
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Graphite Solutions for Tomorrow's Innovations

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