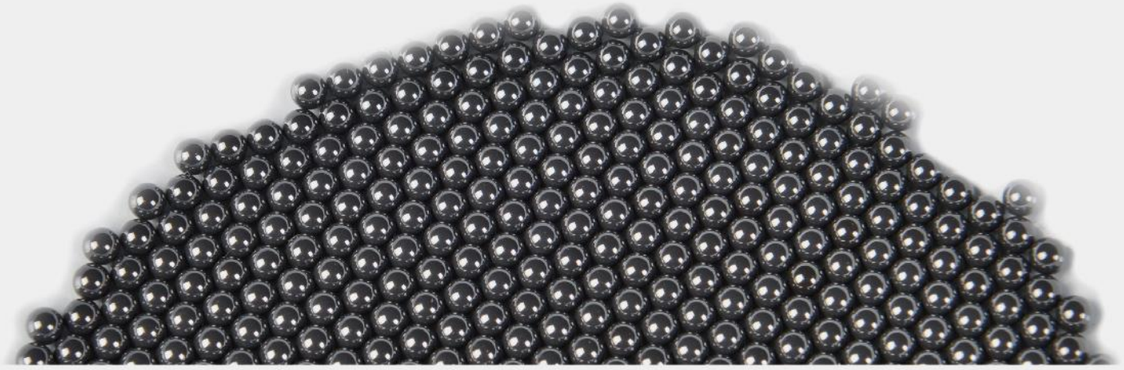
产品简介
Product Introduction

Ceramic balls made of Si3N4, ZrO2, and Al2O3 have excellent properties such as low density, high strength, high hardness, high toughness, corrosion resistance, wear resistance, oxidation resistance, thermal vibration resistance, low expansion, self-lubricating, insulation, and electrical insulation. They are ideal products for ceramic ball valves used in the bearing and chemical industries.

Grade	Ball diameter variation momentum Vdws	Spherical error △SPH	Batch diameter variation Vdwl	Surface roughness Ra
G3	0 . 05-0 . 08	≤0.08	< 0.13	0.010
G5	0 . 08-0 . 13	≤0.13	< 0.25	0.014
G10	0 . 15-0 . 25	≤0.25	< 0.5	0.020
G16	0 . 2-0 . 4	≤0.4	< 0.8	< 0.025
G20	0 . 3-0 . 5	≤0.5	< 1	< 0.032
G100	0 . 4-0 . 7	0.4-0.7	< 1.4	< 0.0105



Si3N4 ceramic balls are precision ceramics sintered at high temperatures in a non oxidizing atmosphere. They have high strength, wear resistance, high temperature resistance, corrosion resistance, acid and alkali resistance, and can be used in seawater for a long time. They also have good performance in electrical and magnetic insulation. At 800 ℃, the strength and hardness remain almost unchanged;
Its density is 3.20g/cm3, which is almost one-third of the weight of bearing steel. It has low centrifugal force when rotating and can achieve high-speed operation. It also has self-lubricating properties and can be used in environments with high pollution from non lubricating media.

Excellent performance
The excellent performance of Si3N4 ceramics has special practical value for working environments with high temperature, high speed, and strong corrosive media commonly encountered in modern technology.
Important applications
Mainly used in industries such as machinery, metallurgy, chemicals, aviation, semiconductors, etc., as components for certain equipment or products, achieving good expected results.

产品简介

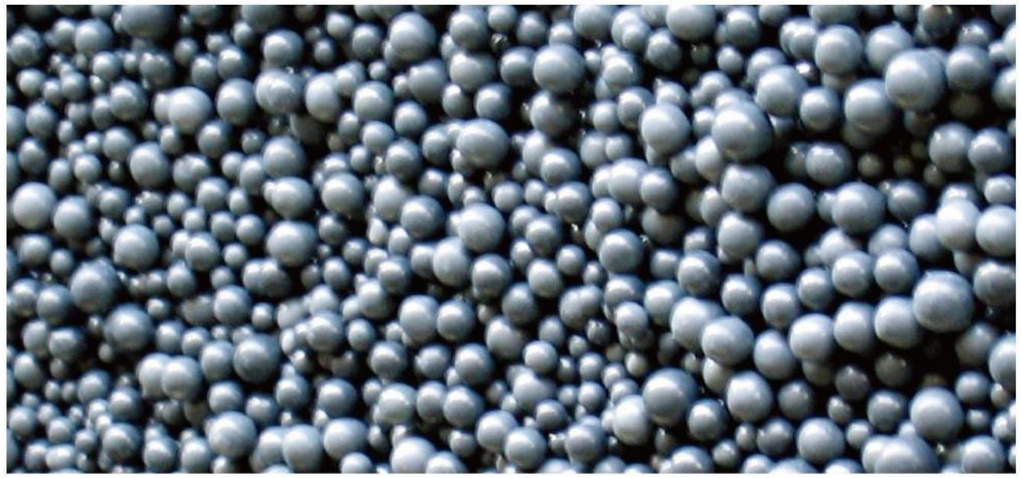
Product Introduction

φ 38.1- φ 180 large Si3N4 ceramic balls

大规格陶瓷球

Φ38.1-Φ180氮化硅陶瓷球

磨介球 Grinding ball



ZrO2 ceramic balls

At room temperature, it has high strength and toughness, good wear resistance, high temperature and corrosion resistance, high stiffness, non magnetic, and electrical insulation. At 600 ℃, the strength and hardness of ZrO2 ceramic balls remain almost unchanged, with a density of 6.00g/cm3 and a thermal expansion rate close to that of metals. If the expansion rate is close to that of metals, they can be used in conjunction with metals.

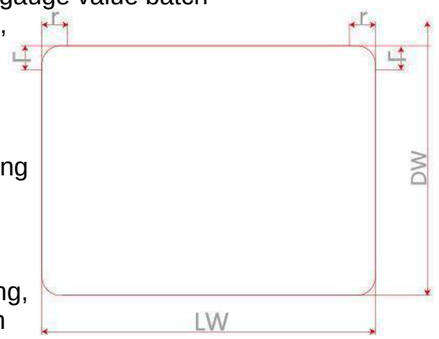
Al2O3 ceramic balls

It is a ceramic filler mainly processed and produced from Al2O3 material. This type of product has various specifications, sizes, and purities, and is used as a cover support material for catalysts in reactors and tower fillers. Al2O3 ceramic balls have the characteristics of high temperature and high pressure resistance, low water absorption, and stable chemical properties. Can withstand corrosion from acids, alkalis, and other organic solvents, and can withstand temperature changes that occur during the production process. Its main function is to increase the distribution point of gas or liquid, support and protect active catalysts with low strength.

Product Introduction
产品简介

Ceramic cylindrical rollers
Ceramic cylindrical rollers made of Si3N4 material; It is an ideal rolling element for mixed cylindrical roller bearings used in the bearing and chemical industries, suitable for various high-speed and high-precision bearing rollers, vacuum bearing rollers, high and low temperatures; Non magnetic, electrically insulated bearings, rollers, etc

1. External dimension specification table; Unit: mm
2. Diameter and roundness table; The diameter variation, diameter gauge spacing, gauge value, and roundness error of each tolerance level's gauge value batch
3. The gauge value batch length variation, length gauge spacing, gauge value, and cross-sectional runout of rollers with different tolerance levels
4. The surface roughness of rollers with different tolerance levels is tested according to the national GB/T 4661-2002 standard



1. Diameter and roundness table; The diameter variation, diameter gauge spacing, gauge value, and roundness error of each tolerance level's gauge value batch

Tolerance level	Dw/mm 超过	Dw/mm 到	VDwL^a max	Ic	Common gauge values			ΔCir max
II	--	18	3	1	-10,...,-1	0	+1...,+5	0.5
	18	30		1.5	-19.5,...,-1.5	0	+1.5...,+6	1.0
	30	--		2	-20,...,-2	0	+2...,+6	1.5
III	--	18	4	1	-10,...,-1	0	+1...,+5	1.0
	18	30		2	-20,...,-2	0	+2...,+6	1.5
	30	--	5	3	-24,...,-3	0	+3...,+6	2.5
Applicable to the middle of the roller length								

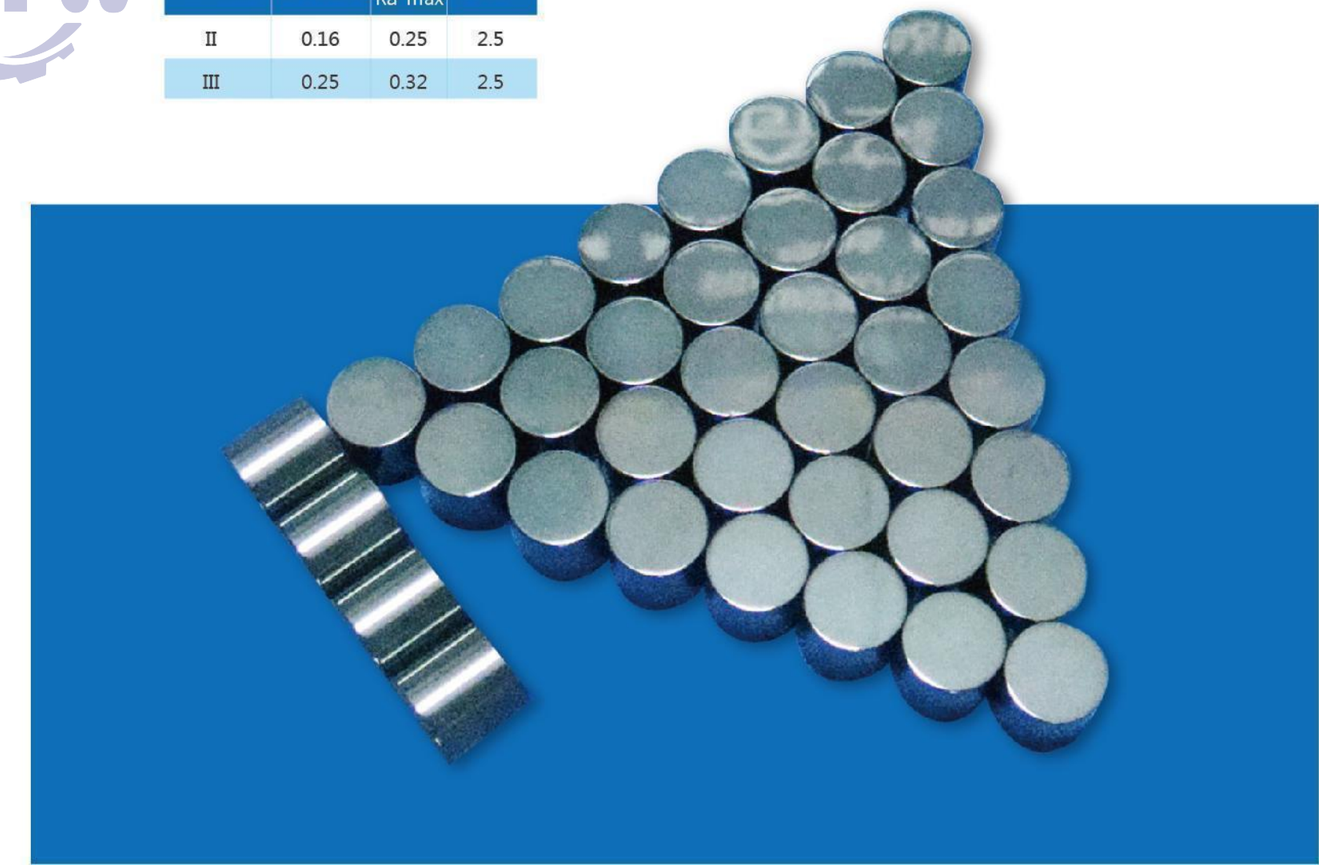
2、各公差等级滚子的规值批长度变动量、长度规值间距、规值、断面跳动

Tolerance level	Dw/mm 超过	Dw/mm 到	VDwL^a max	Ic	Common gauge values			ΔCir max
II	--	18	3	1	-10,...,-1	0	+1...,+5	0.5
	18	30		1.5	-19.5,...,-1.5	0	+1.5...,+6	1.0
	30	--		2	-20,...,-2	0	+2...,+6	1.5
III	--	18	4	1	-10,...,-1	0	+1...,+5	1.0
	18	30		2	-20,...,-2	0	+2...,+6	1.5
	30	--	5	3	-24,...,-3	0	+3...,+6	2.5
Applicable to the middle of the roller length								

Surface roughness of rollers with different tolerance levels

3、各公差等级滚子的表面粗糙度

Tolerance level	滚动表面	端面 Ra max	倒角
II	0.16	0.25	2.5
III	0.25	0.32	2.5



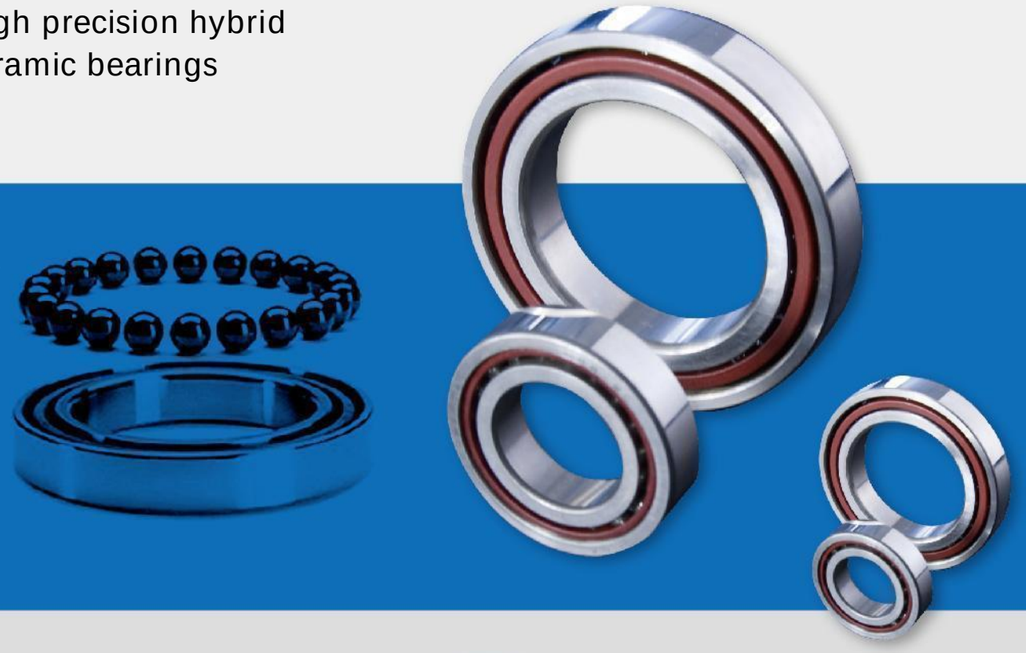
Product Introduction
产品简介

Si3N4 all ceramic bearings
The ring and rolling element are made of silicon nitride (SI3N4) ceramic material, and the retainer uses polytetrafluoroethylene (PTFF) as the standard configuration. Generally, GRPA66-25 can also be used, PEEK,PI, And phenolic resin pods, glued wood pipes, etc. Compared to ZrO2 material, all ceramic bearings made of SI3N4 can be used for higher speeds and load capacities, as well as for higher ambient temperatures, with maximum manufacturing accuracy of P4 to UP levels.
ZrO2 all ceramic bearings
The ring and rolling element are made of zirconia (ZrO ?) ceramic material, and the retainer uses polytetrafluoroethylene (PTFF) as the standard configuration. Generally, glass fiber reinforced nylon (GRPA66-25) and special engineering plastics (PEEK) can also be used, PI), Stainless steel (ALSI SUS316 SUS304), Brass (CU), etc.
Full loaded ball all ceramic bearings
One side is equipped with a ball gap, and due to the design without a cage, more ceramic balls can be loaded into the bearing than the standard structure, thereby improving its radial load capacity. In addition, it can avoid the limitation of the cage material and achieve the corrosion and temperature resistance effect of ceramic cage type all ceramic bearings. This series of bearings is not suitable for higher speeds. When installing, attention should be paid to installing the notch surface on the end that does not bear axial load.
Ceramic cage all ceramic bearings
Ceramic cages have the advantages of wear resistance, high strength, corrosion resistance, and self-lubricating. All ceramic bearings made with ceramic cages can be used in harsh environments such as extremely strong corrosion, ultra-high and low temperatures, and high vacuum. The commonly used ceramic material for cages is ZrO2.
Hybrid ceramic ball bearings
Ceramic balls, especially Si3N4, are particularly suitable as rolling elements for high-speed, high-precision, and long-life hybrid ceramic ball bearings (with metal inner and outer rings). Generally, the inner and outer rings are made of bearing steel (GCr15) or stainless steel (ALS1440C, 316304), and ceramic balls can be made of ZrO2, Si3N4, Or SiC material.

High speed bearings: Application: Spindle, spinning machine, electronic machinery
Shielded bearings: Application: Motors, pumps
High temperature bearings: use: steel, petroleum

Si3N4 ceramic bearing

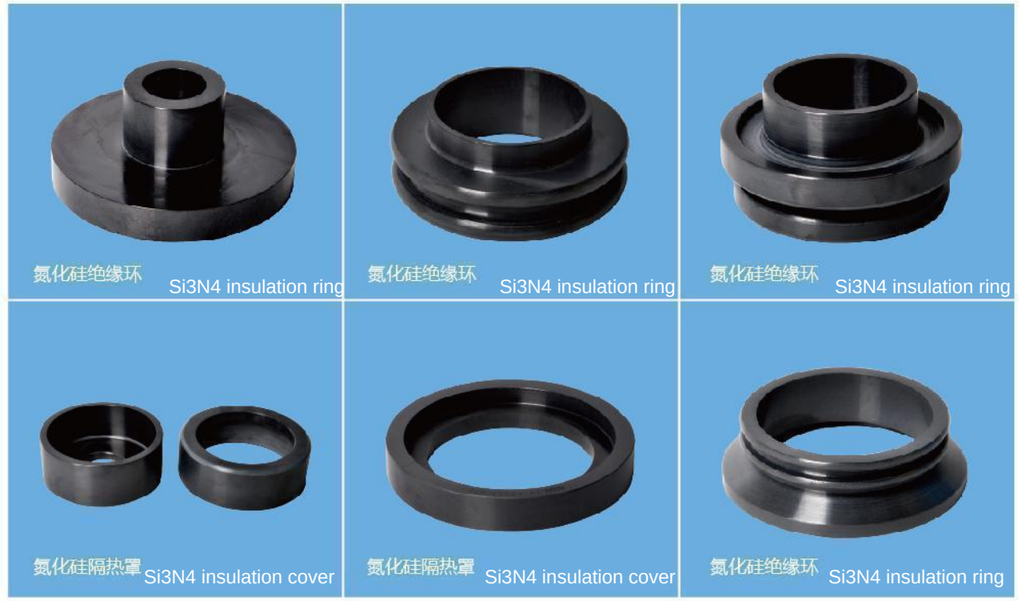
High precision hybrid ceramic bearings



ZrO2 bearing
氧化锆轴承

Product Introduction
产品简介

Application of Si3N4 ceramic components in the photovoltaic polycrystalline silicon industry
Mainly used to protect the insulation part of the hydrogenation reduction furnace electrode, protect the graphite seat and graphite clamp part of the electrode.



主要技术参数 Main technical parameters

密度g/cm²	相对密度%	弹性质量GPa	压碎载荷比(25°C)%	硬度(HV)MPa
3.2±0.05	>99.5	300-320	≥40	1600-1800
断裂韧性 /MPa·m$^{1/2}$	抗弯强度 MPa	泊松比	线膨胀系数 $10^{-6}K^{-1}$	泊松比
6.0-7.0	700-800	0.25	3.0-3.2	10-12
热导率 W·(m·k)$^{-1}$	表面光洁度	电绝缘KV	耐酸碱腐蚀性	磁性
15-20	≤0.4	≥20	优	无

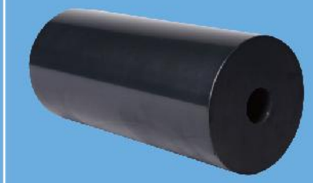
与其它材料使用寿命对比表 Comparison table of service life with other materials

项目 / 材料	绝缘性	空积率	表面光洁度	耐腐蚀性	硅粉积瘤	炉次使用寿命	耐久性 以6炉次/月计
传统陶瓷材料	一般	≥12%	≤6.4	一般	容易吸附	损坏10%/炉	1个月
氧化硅陶瓷材料	优	≤0.5%	≤0.4	优	不宜吸附	无损坏/炉	≥10个月

Product Introduction
产品简介

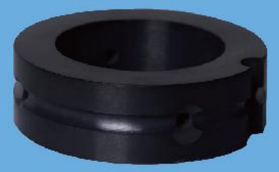
定位块 Positioning block

高温绝缘件 High temperature insulation components



陶瓷柱塞 Ceramic plunger

耐磨结构件 Wear resistant structural components



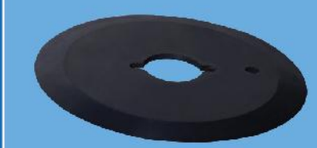
耐磨环 Wear resistant ring

保护套 Protective sleeve

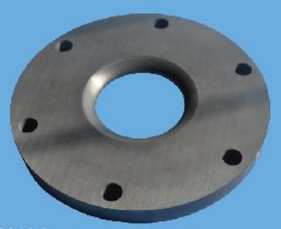
球磨罐 Ball milling tank

滑动轴承 Sliding bearing

碰撞板 Collision plate

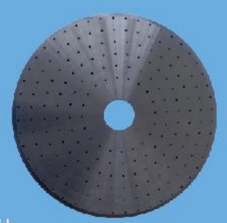


缝纫刀片 Sewing blade

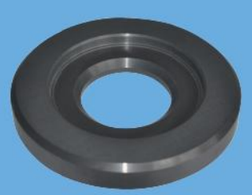


法兰盘 Flange plate

气流粉碎机配件 Airflow crusher accessories



圆片 Circular disc

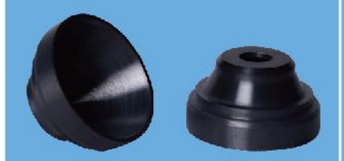


绝缘盘 Insulating disc

单向密封阀 Unidirectional sealing valve

高温定位块 High temperature positioning block

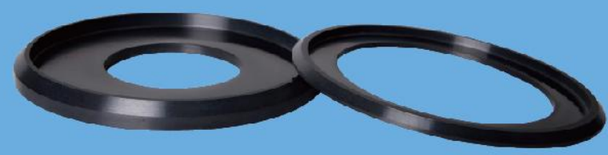
测温保护管 Temperature measurement protection tub



高温喷嘴 High temperature nozzle

陶瓷环 Ceramic ring

分体环 Split ring



气流粉碎机配件 Airflow crusher accessories

氮化硅料管 Si3N4 material tube

耐磨块 Wear resistant block

耐磨滑板 Wear resistant skateboard

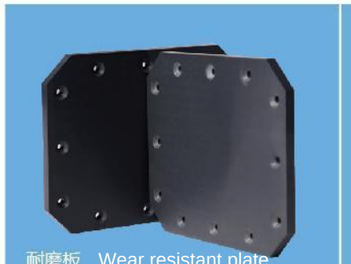
定位稍 Positioning slightly

Product Introduction
产品简介

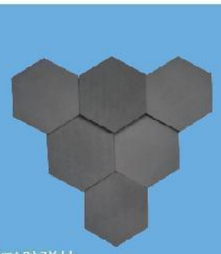
SI3N4 based ceramic structural components
Our company's oil pump seals, ceramic brackets, various types of ceramic nozzles, porous gaskets, various seals, spline shafts, ultra precision spray needle nozzles, ceramic gears, ceramic rollers, ceramic valves, ceramic plungers, various heating components, crucibles, ceramic cutting tools, measuring blocks, plug gauges, and other products have been widely used in aviation, aerospace, navigation, petroleum, steel, chemical, automotive, electronic equipment, metallurgy, power, textile, pumps, medical equipment, national defense and other fields; And non-standard irregular parts with complex shapes and lengths up to 2000mm can be processed according to customer needs.

SI3N4基陶瓷材料性能Performance of SI3N4 based ceramic materials

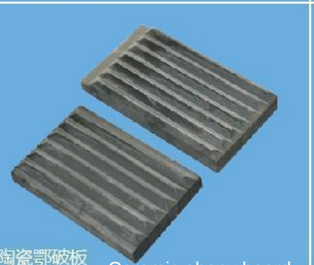
烧结方式	密度q/cm³	抗弯强度 MPa	纤维硬度 HV	断裂韧性 MPa.M1/2	弹性模量 GPa
气压烧结	3.15±0.05	650-800	≥1400	6-8	＞310


耐磨板 Wear resistant plate

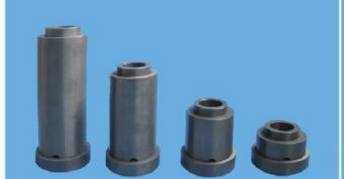

绝缘线圈架 Insulated coil holder


氮化硅防弹片


氮化硅高温阀芯 Silicon nitride high-temperature valve core


陶瓷鄂破板 Ceramic ebony board


绝缘线圈架 Insulated coil holder


滑动轴承 Sliding bearing


氮化硅结构件 Si3N4 structural components


氮化硅结构件 Si3N4 structural components


氮化硅螺杆 Si3N4 screw


陶瓷套 Ceramic sleeve


氮化硅螺旋套 Si3N4 spiral sleeve


氮化硅开口套 Si3N4 opening sleeve


氮化硅气缸 Si3N4 cylinder


绝缘线圈架 Insulated coil holder


保护套 Protective sleeve


氮化硅料室 Si3N4 material room


High temperature nozzle kit
高温喷嘴套件


缝纫刀具支架 Sewing tool holder


1米长度陶瓷管 1m long ceramic tube


耐磨喷嘴 Wear resistant nozzle


轴承套圈毛坯 Bearing ring blank