深圳昊瑞工业技术有限公司

Shenzhen Haorui Industrial Technology Co.,Ltd

精益求精　匠心细作

企业简介

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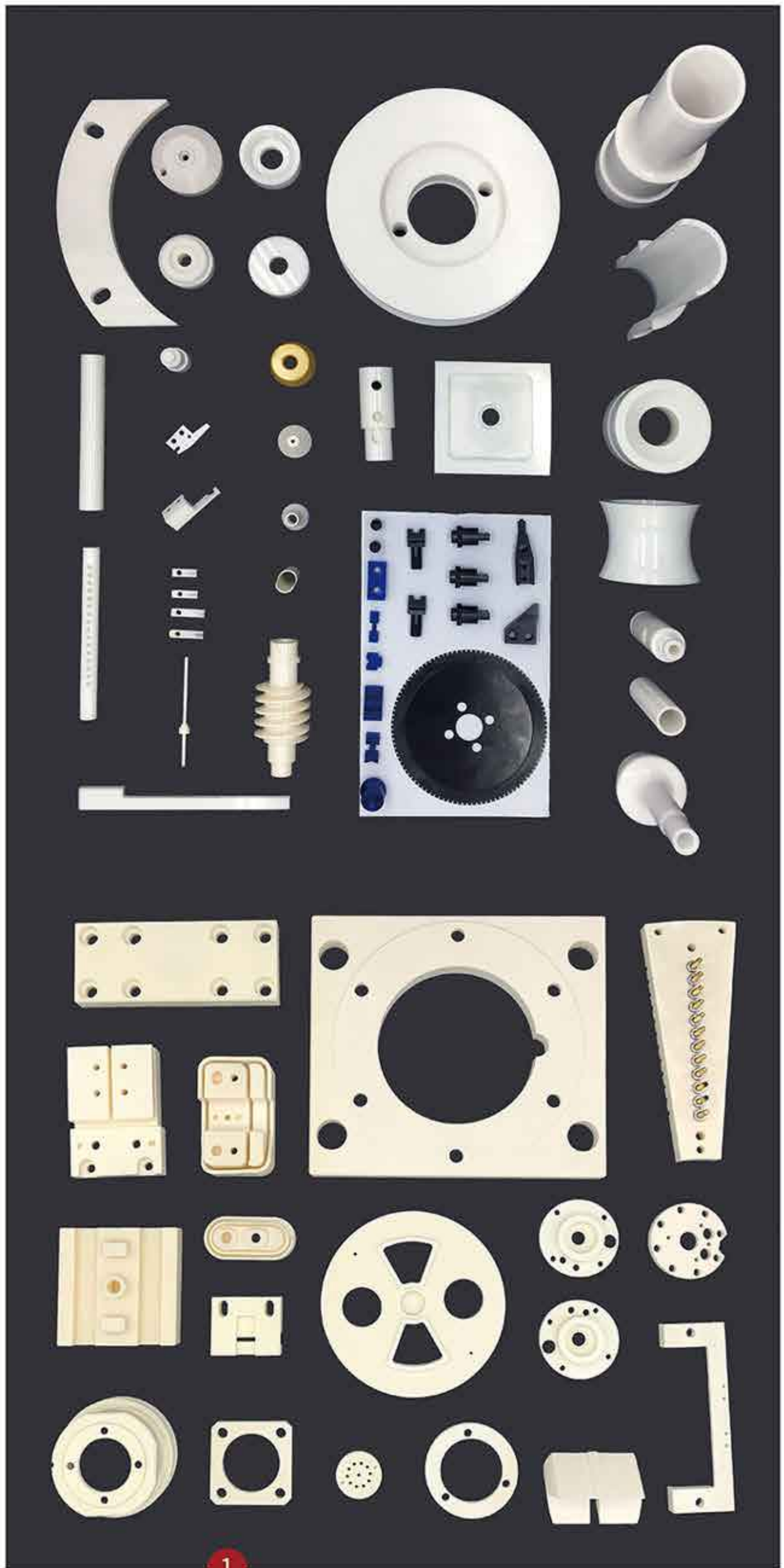


关于我们

ABOUT US

深圳昊瑞工业技术有限公司

Shenzhen Haorui Industrial Technology Co.,Ltd

·精益求精·匠心细作·

深圳昊瑞工业技术有限公司成立于2006年6月，是一家专业从事非标准工业陶瓷、硬质合金（钨钢）、各种金属与非金属精密机械零配件研发制造与销售的企业。

公司秉承着“精益求精·匠心细作”的经营理念。坚持以市场为导向、技术为核心、以人为本、客户满意度为目标的经营宗旨。

公司在工业陶瓷（氧化锆、氧化铝、氮化硅、碳化硅、氮化铝、微孔陶瓷等）、硬质合金（钨钢）非标准精密零配件加工制造领域拥有较强的技术水平、多项工艺技术在行业处于领先地位。公司拥有一批在行业内从业十多年的专业技师队伍，拥有较强的技术攻关能力。具备完善的生产工业流程和品质管理体系，以及配套齐全的精密加工设备和检验设备。

Founded in June 2006, Shenzhen Haorui Industrial Technology Co., Ltd. is a professional enterprise engaged in R&D, manufacturing and sales of non-standard industrial ceramics, hard alloys (tungsten steel) and various metal and non-metal precision machinery parts.

The company adheres to the business philosophy of "being honest, doing things with care." Adhere to the market-oriented, technology-centric, people-oriented, customer satisfaction as the business purpose.

The company has strong technical level in the field of industrial ceramics (zirconia, alumina, silicon nitride, silicon carbide, aluminum nitride, microporous ceramics, etc.) and hard alloy (tungsten steel) non-standard precision parts and components. A number of process technologies are leading the industry. The company has a group of professional technicians who have been engaged in the industry for more than ten years and has strong technical research ability. It has a complete production process and quality management system, as well as a complete set of precision processing equipment and inspection equipment.

我们能做什么

WHAT CAN WE DO

公司主要产品有：氧化锆陶瓷精密零配件、氧化铝陶瓷精密零配件、氮化硅陶瓷精密零配件、碳化硅陶瓷精密零配件、硬质合金（钨钢）精密零配件。产品广泛服务于：精密机械制造、微电子、半导体、航天航空、生物医疗、光纤通信、光电、测试、检验、光伏太阳能等专业领域。

The company's main products are: zirconia ceramic precision parts, alumina ceramic precision parts, silicon nitride ceramic precision parts, silicon carbide ceramic precision parts, hard alloy (tungsten steel) precision parts. Products are widely used in: precision machinery manufacturing, microelectronics, semiconductor, aerospace, aviation, bio-medical, fiber optic communications, optoelectronics, testing, inspection, photovoltaic solar energy and other professional fields.

我们能做什么

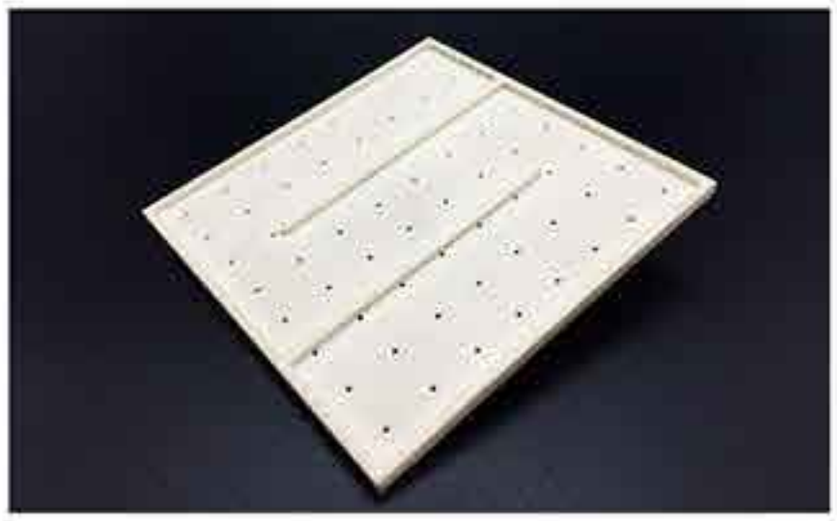
WHAT CAN WE DO

1

轴类零件：
径向尺寸可达到0.0015mm，圆度0.001mm，同心度0.0025mm，粗糙度0.02；
Shaft parts:
Radial size can reach 0.0015mm, roundness 0.001mm, concentricity 0.0025mm, roughness 0.02;

2

孔类零件：
机加工最小孔径0.2mm，深度可做到3mm，1mm以上孔，径向尺寸公差0.002mm，粗糙度0.02-0.04；
Hole parts:
Machined minimum hole diameter of 0.2mm, depth can be 3mm, hole above 1mm, radial dimension tolerance 0.002mm, roughness 0.02-0.04;

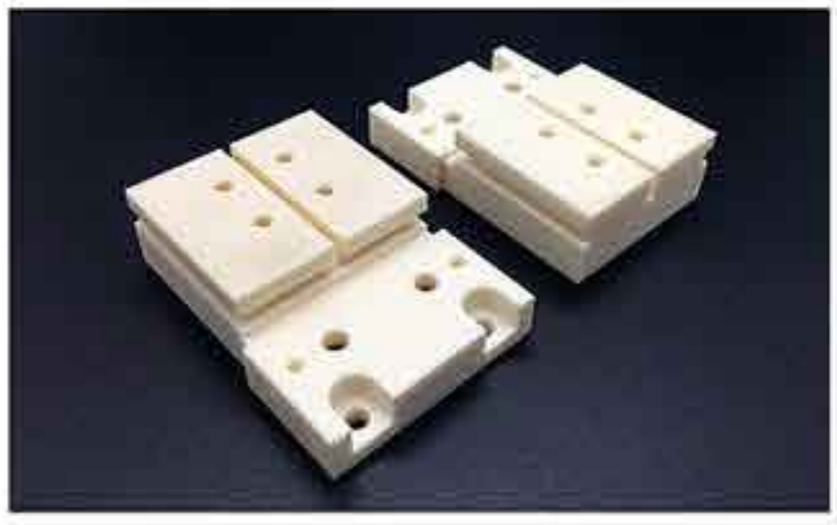


3

平面加工：
公差可做到0.002mm，平面度0.0015mm；
Plane processing:
Tolerance can be achieved 0.002mm, flatness 0.0015mm;

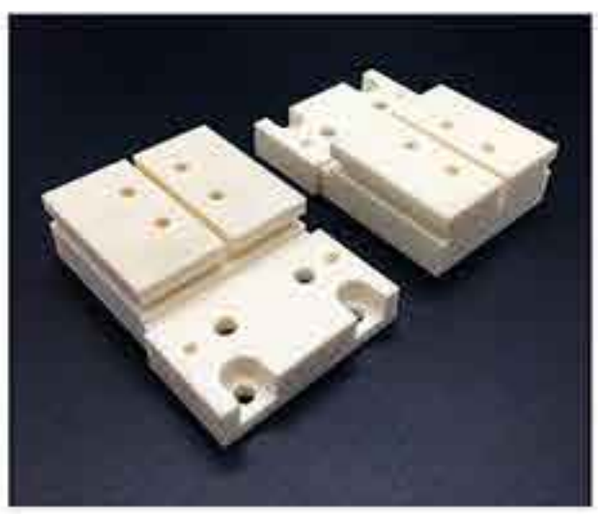
4

台阶加工：
台阶段差精度可达到0.002mm，R角清根可做到R0.02mm；
Step processing:
The stage difference accuracy can reach 0.002mm, and the R angle clear root can achieve R0.02mm;



5

陶瓷螺纹：
可加工M2以上内螺纹，螺纹精度GB-7H;外螺纹尺寸不限，精度GB-6g；
Ceramic thread:
It can process internal thread of M2 or above, thread precision GB-7H; external thread size is not limited, thread precision GB-6g;



经营理念

BUSINESS PHILOSOPHY

精益求精

匠心细作

KEEP IMPROVING

CRAFTSMANSHIP

我们是一群有着共同理想、志同道合，立志于专业精密制造的技术从业者组成的团队。我们的目标是：朝着做一流的精密机械制造企业而奋斗！

We are a group of technical practitioners who share common ideals, like-minded, and determined to specialize in precision manufacturing. Our goal is: Strive to be a first-class precision machinery manufacturing enterprise!

合作伙伴

PARTNER

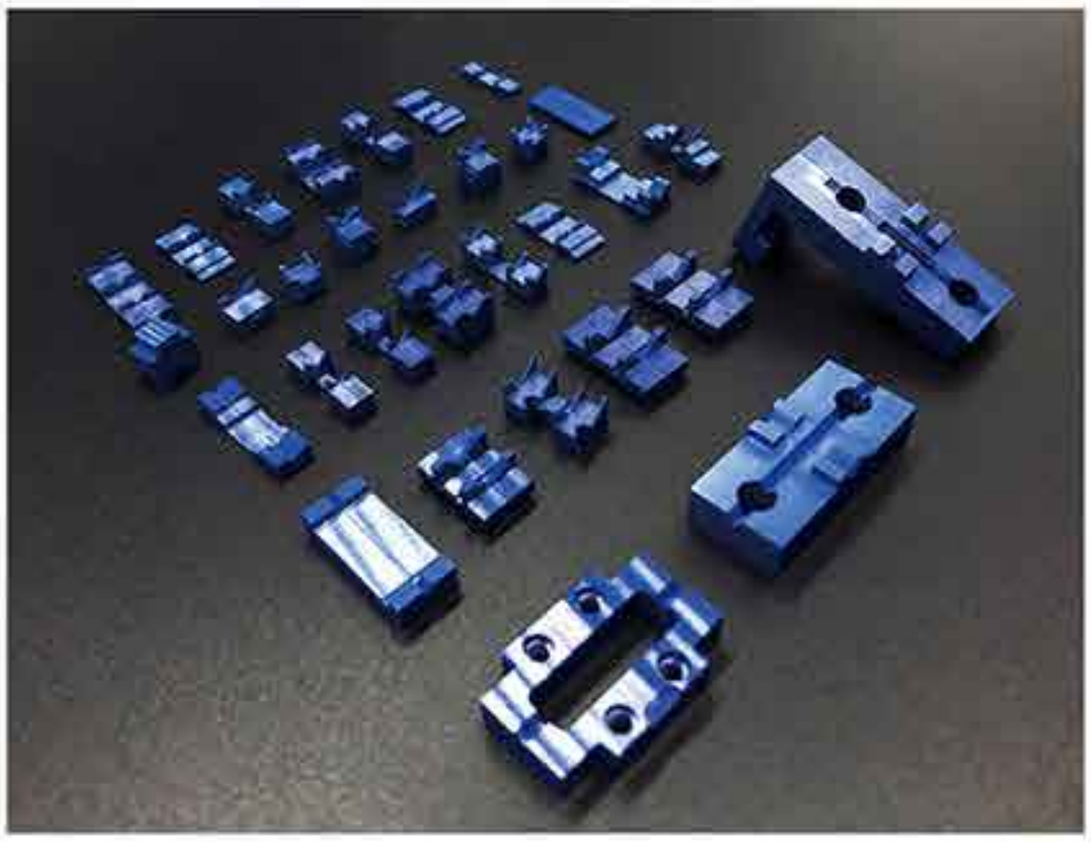
合作伙伴：中科院、清华大学、北京大学、复旦大学、浙江大学、上海交学、松下、三星、肯纳、康宁、富士康、大族、光宝、欧菲光等知名高校和企业。

PARTNERS: CHINESE ACADEMY OF SCIENCES, TSINGHUA UNIVERSITY, PEKING UNIVERSITY, FUDAN UNIVERSITY, ZHEJIANG UNIVERSITY, SHANGHAI JIAOTONG UNIVERSITY, PANASONIC, SAMSUNG, KENNAMETAL, CORNING, FOXCONN, HAN'S LASER, LITEON, O-FILM, AND OTHER WELL-KNOWN UNIVERSITIES AND ENTERPRISES.

荣誉证书

HONOR CERTIFICATE

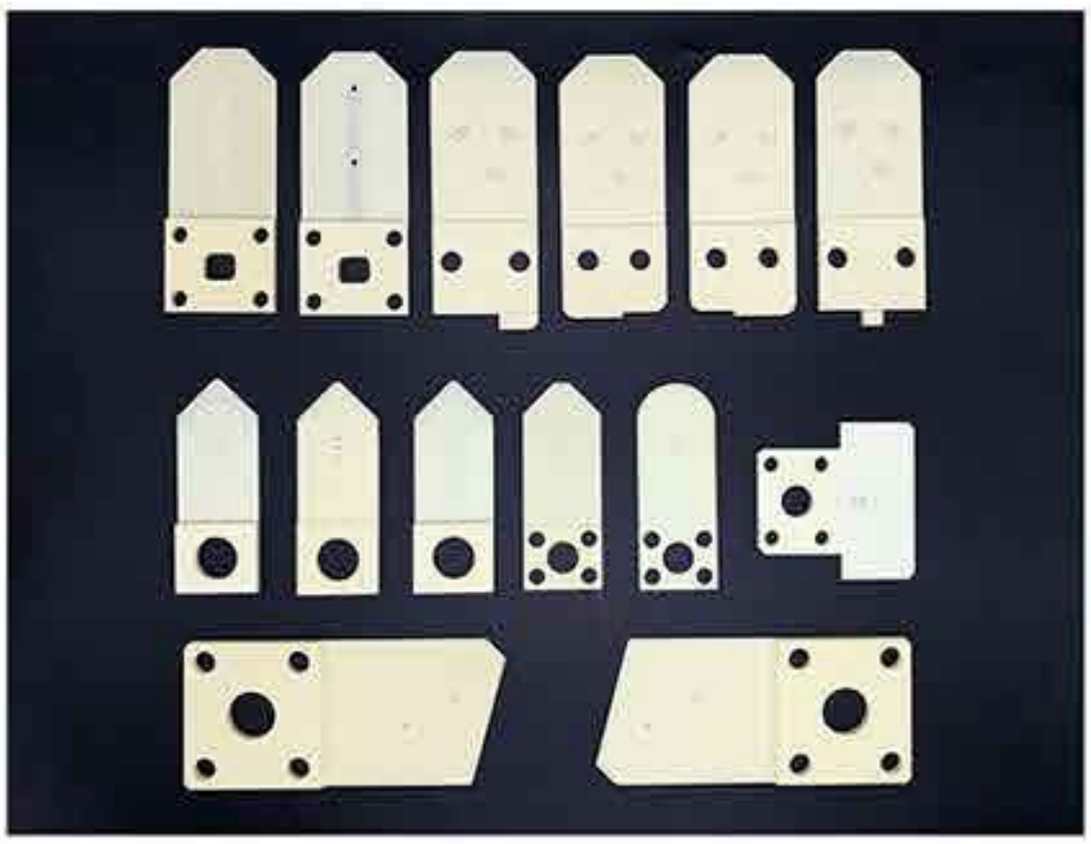
氧化锆
Zirconia

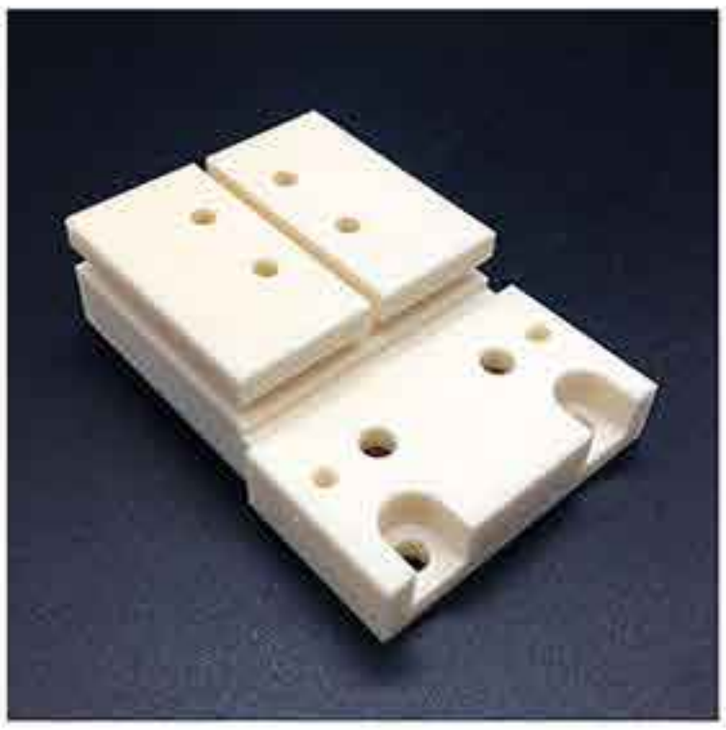


材料特性 Material Properties

项目Item	数值Data	单位Unit
密度 Density	6.02	g/cm^3
显微硬度 Vickers Hardness	1200	HV0.5
弯曲强度 Bending Strength	800	MPa
抗压强度 Compressive Strength	3000	MPa
断裂韧性 Fracture Toughness	8	$MPa.m^{1/2}$
弹性模量 Elastic Modulus	200	GPa
热膨胀系数 Coefficient of thermal expansion	10	$10^{-6}K^{-1}$
热震稳定性(水冷却) Thermal Shock Resistance	300	ΔT °C
20°C电阻率 Volume Resistance at 20°C	$>10^{13}$	Ωcm
最高使用温度 Max Working Temperature	1000	°C

氧化铝
Alumina





材料特性 Material Properties

项目Item	数值Data	单位Unit
密度 Density	3.85	g/cm^3
显微硬度 Vickers Hardness	1600	HV0.5
弯曲强度 Bending Strength	310	MPa
抗压强度 Compressive Strength	2400	MPa
断裂韧性 Fracture Toughness	3~4	$MPa.m^{1/2}$
弹性模量 Elastic Modulus	340	GPa
热膨胀系数 Coefficient of thermal expansion	7~8	$10^{-6}K^{-1}$
热震稳定性(水冷却) Thermal Shock Resistance	200	ΔT °C
20°C电阻率 Volume Resistance at 20°C	$>10^{14}$	Ωcm
最高使用温度 Max Working Temperature	1600	°C

材料特性 Material Properties

项目Item	数值Data	单位Unit
密度 Density	3.2	g/cm^3
显微硬度 Vickers Hardness	1700	HV0.5
弯曲强度 Bending Strength	750	MPa
抗压强度 Compressive Strength	3800	MPa
断裂韧性 Fracture Toughness	7	$MPa.m^{1/2}$
弹性模量 Elastic Modulus	290	GPa
热膨胀系数 Coefficient of thermal expansion	2	$10^{-6}K^{-1}$
热震稳定性(水冷却) Thermal Shock Resistance	750	ΔT °C
20°C电阻率 Volume Resistance at 20°C	$>10^{14}$	Ωcm
最高使用温度 Max Working Temperature	1300	°C

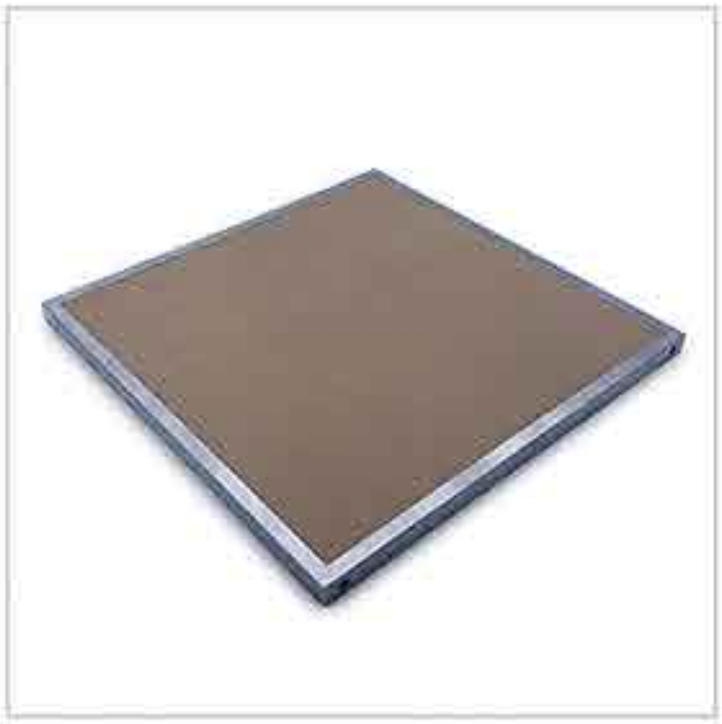
材料特性 Material Properties

项目Item	数值Data	单位Unit
密度 Density	>3.14	g/cm^3
显微硬度 Vickers Hardness	2800	HV0.5
弯曲强度 Bending Strength	450	MPa
抗压强度 Compressive Strength	3900	MPa
断裂韧性 Fracture Toughness	3.5	$MPa.m^{1/2}$
弹性模量 Elastic Modulus	420	GPa
热膨胀系数 Coefficient of thermal expansion	4.3	$10^{-6}K^{-1}$
20°C电阻率 Volume Resistance at 20°C	10^6 ~10^8	Ωcm
最高使用温度 Max Working Temperature	1600(氧化气氛 Oxide atmosphere) 1950(惰性气氛 Inert atmosphere)	°C

氮化铝
ALUMINUM NITRIDE

材料特性 Material Properties

项目Item	数值Data	单位Unit
密度 Density	3.33	g/cm^3
熔点 Melting point	2500°C(升华)	°C
弯曲强度 Bending Strength	>300	MPa
抗压强度 Compressive Strength	2.0	GPa
断裂韧性 Fracture Toughness	3.35	$MPa.m^{1/2}$
弹性模量 Elastic Modulus	310	GPa
热膨胀系数 Coefficient of thermal expansion	3.6	$10^{-6}K^{-1}$
热导率Thermal conductivity	180	W/m·K
20°C电阻率 Volume Resistance at 20°C	$>10^{13}$	Ωcm
介电强度 Dielectric strength	⩾20	KV/mm



材料特性 Material Properties

微孔陶瓷是指在陶瓷内部或表面含有大量微小气孔的陶瓷体，其孔径一般为微米级或亚微米级。采用粗细均匀的纳米粉体，经特殊工艺加工出来的微孔陶瓷板具有空隙分布均匀、内部相互贯通、高孔隙率、通透性好、组织致密均匀、高机械强度、耐磨损、耐化学腐蚀、研磨后的表面光滑平整等特点。

经我公司多年的技术攻关，生产的微孔陶瓷真空吸盘具有平面度高、平行度好、吸附力均匀、使用寿命长等特点。是各种半导体行业生产过程中用于吸附及承载的理想工具，应用于减薄、划片、清洗、搬运等工序，也适用于印刷、激光切割、PCB、柔性屏、薄膜吸附、机械搬运手臂等场合。

Microporous ceramic refers to a ceramic body containing a large number of tiny pores in or on the surface of the ceramic, and its pore diameter is generally micron or submicron. The microporous ceramic plate processed by special technology with uniform thickness and nanometer powder has uniform void distribution, internal interconnection, high porosity, good permeability, dense and uniform tissue, high mechanical strength, wear resistance, and chemical resistance. Corrosion, smooth and smooth surface after grinding.

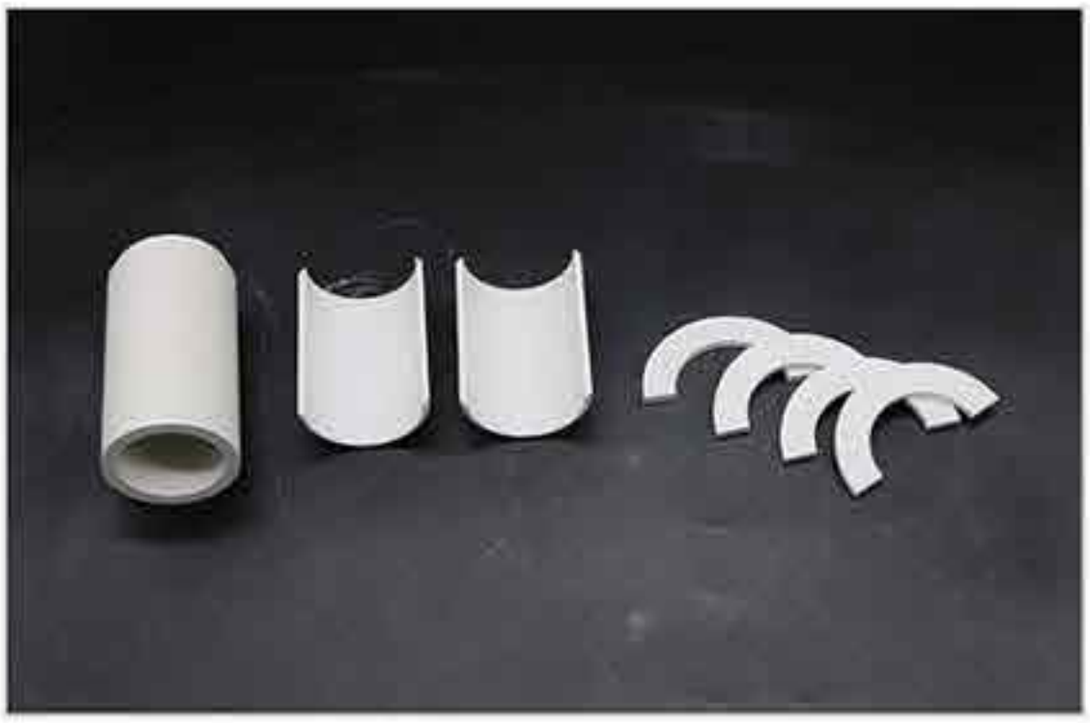
After years of technical research by our company, the microporous ceramic vacuum chucks produced have the characteristics of high flatness, good parallelism, uniform adsorption, and long service life. It is an ideal tool for adsorption and carrying in the production process of various semiconductor industries. It is used in processes such as thinning, dicing, cleaning, and handling. It is also suitable for printing, laser cutting, PCB, flexible screen, film adsorption, and mechanical handling arm. And other occasions.

材料特性 Material Properties

MACOR®具有其他技术材料所不能比拟的多重性能。它是一种白色无嗅的不润湿材料，清洁而不漏气，且孔隙率为零。MACOR®的加工公差很小，具有非常好的可加工性。方便进行复杂的形状设计。（尺寸公差小于+/-0.013mm，可加工成小于0.5μm的表面平整度，抛光成小于0.013μm的表面光洁度）MACOR®在温度为800°C下时，能持续保持稳定。空载条件下，在温度为1000°C时达到峰值并且不会像韧性材料那样发生蠕变或变形。MACOR®的热膨胀系数易于与大多数金属匹配方便封接玻璃。特别是在高温下，作为电绝缘体，具有高电压和宽频谱的优点。

MACOR® offers a unique combination of properties, unlike any other technical material.It is a white, nonwetting, odorless and non outgassing material that exhibits zero porosity.Extremely machinable, MACOR® offers tight tolerances capabilities,allowing complicated shape design (optimal performances up to +/- 0.013 mm for dimensions, < 0.5 µm for finished surface and
up to 0.013 µm for polished surface).MACOR® remains continuously stable at 800 °C, with a maximum peak at 1000 °C under no load, and unlike ductile materials, doesn’ t creep or deform. Its coefficient of thermal expansion readily matches most metals and sealing glasses. As an electric insulator, particularly at high temperatures, it is excellent at high voltages and a

氮化硼陶瓷
BORON NITRIDE CERAMIC

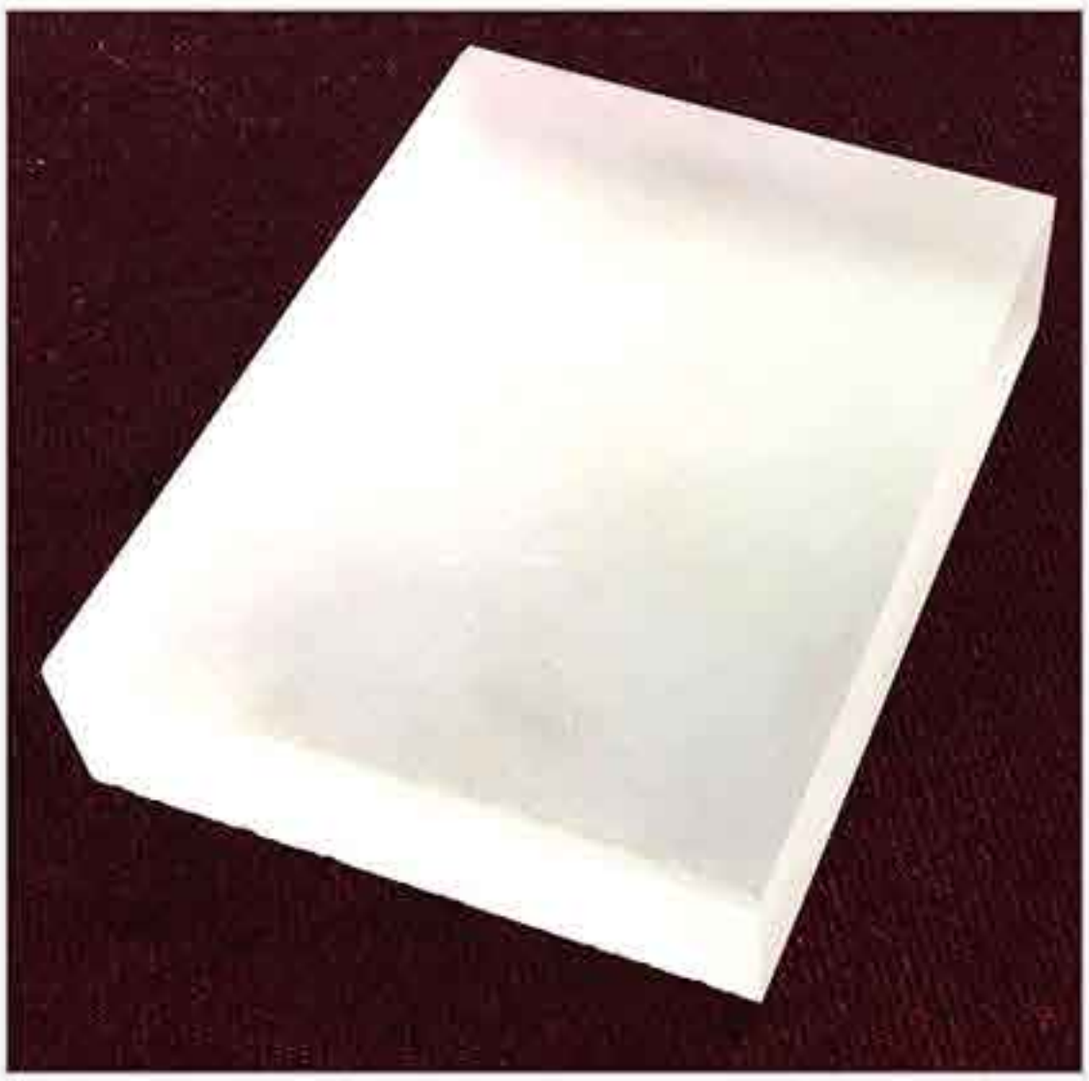


氮化硼通常是石墨型结构，俗称白色石墨。具有良好的耐热性、热稳定性、导热性、高温介电强度，是理想的散热材料和高温绝缘材料。氮化硼的化学稳定性好，能抵抗大部分熔融金属的浸蚀。它也有很好的自润滑性。

另一种是金刚石型，和石墨转变为金刚石的原理类似，石墨型氮化硼在高温高压下可转变为金刚石型氮化硼，这种氮化硼密度和金刚石相近，它的硬度和金刚石不相上下，而耐热性比金刚石好，是新型耐高温的超硬材料，用于制作钻头、磨具和切割工具。

Boron nitride is usually a graphite type structure, commonly known as white graphite. It has good heat resistance, thermal stability, thermal conductivity, high-temperature dielectric strength, and is an ideal heat dissipation material and high-temperature insulating material. Boron nitride has good chemical stability and can resist most of the erosion of molten metal. It also has good self-lubricating properties.

石英玻璃
QUARTZ GLASS



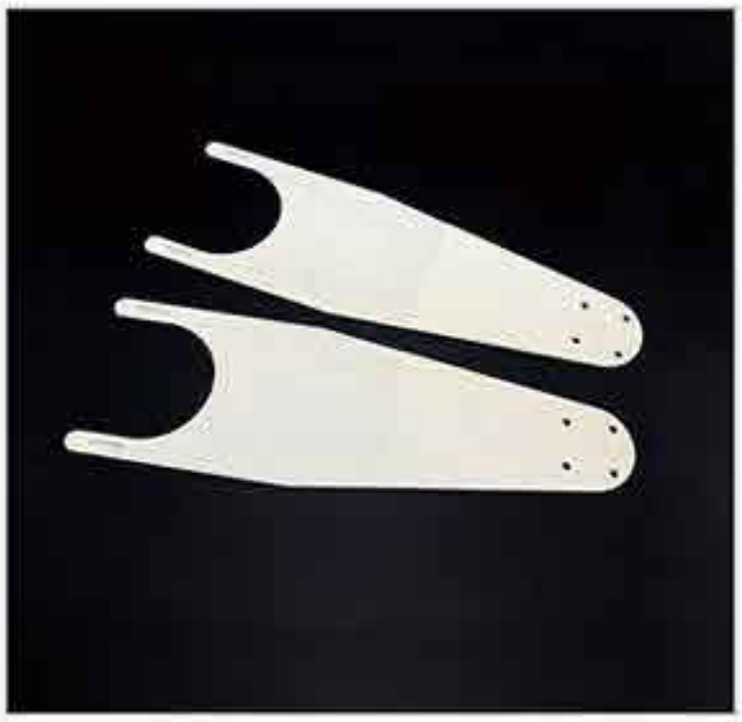
石英玻璃是由各种纯净的天然石英(如水晶、石英砂等)熔化制成。这种玻璃硬度大可达莫氏七级。热膨胀系数低，是普通玻璃的1/10-1/20。耐高温、耐热震性，经常使用温度为1100~1200摄氏度，短期使用温度可达1400摄氏度。化学稳定性良好，除氢氟酸、热磷酸外，对一般酸有较好的耐酸性。电绝缘性能良好，并能透过紫外线和红外线。

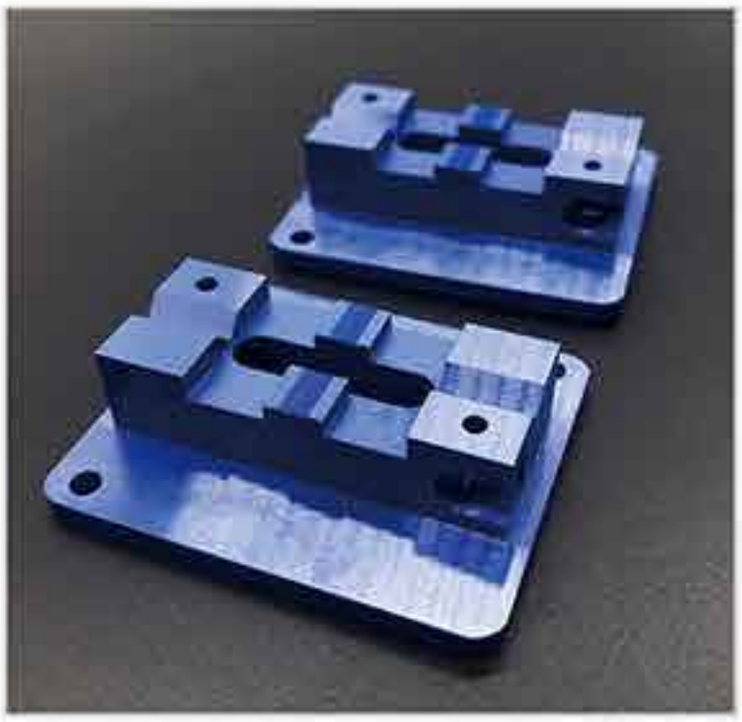
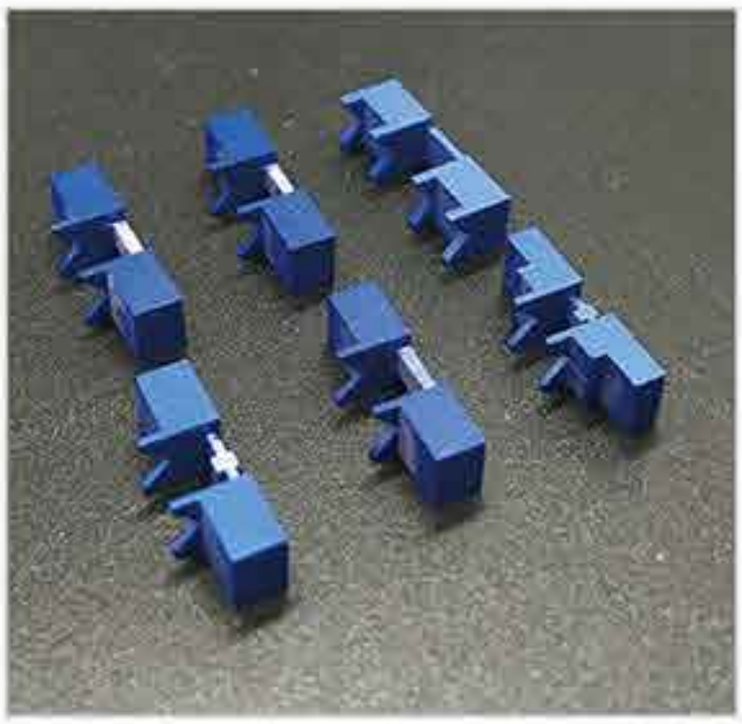
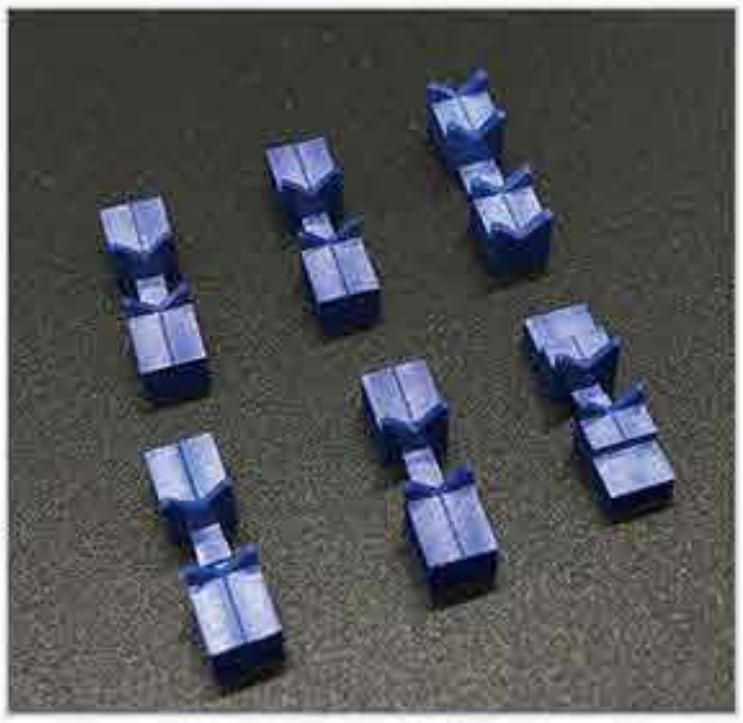
Quartz glass has a low thermal expansion coefficient. High temperature resistance, thermal shock resistance, often used temperature is 1100~1200 degrees Celsius. Good chemical stability. It has good electrical insulation and can transmit ultraviolet and infrared rays.

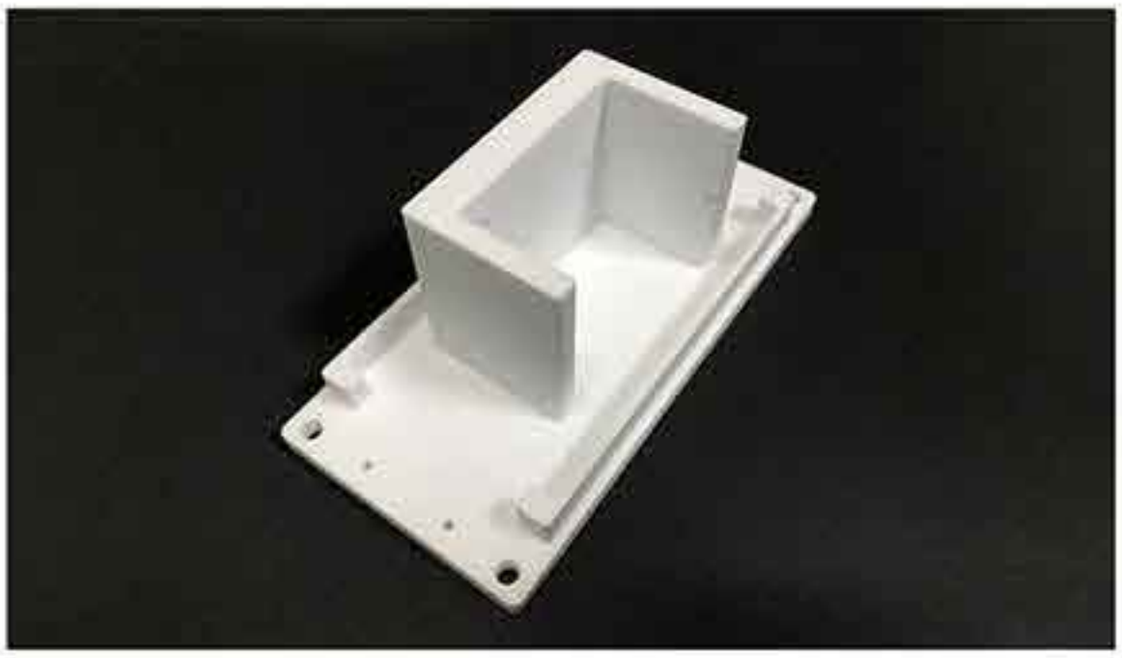
材料特性 Material Properties

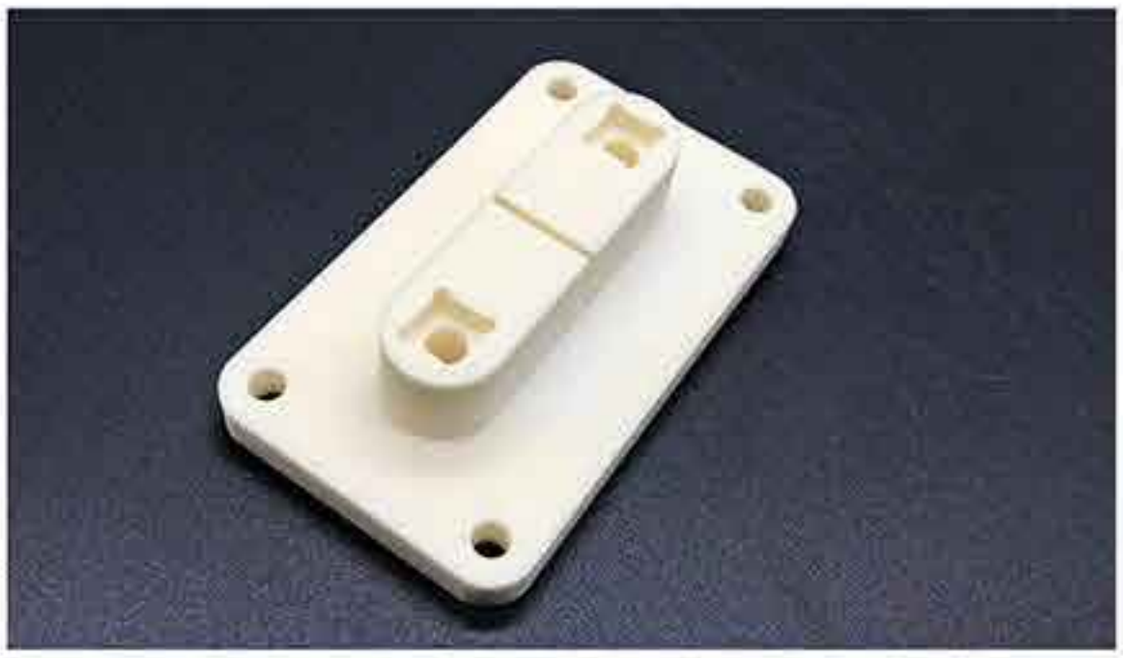
硬质合金是以一种或几种难熔碳化物（碳化钨、碳化钛等）的粉末为主要成分，加入作为粘接剂的金属粉末（钴、镍等），经粉末冶金法制得的合金。广泛应用于五金、机械、化工、国防等行业制作高精度、高耐磨的关键零部件。硬质合金的特点：1、密度高，11.0～15.0g/cm²；2、高强度，抗压强度高达6000MPa；3、硬度高、耐磨性好，常温下硬度可达86~93HRA，相当于69~81HRC；4、红硬性好，可达900～1000°C，保持60HRC时不变形；5、耐蚀性、抗氧化性好；6、线膨胀系数小，工作时，形状尺寸稳定。常用硬质合金按成分和性能特点分为三类：钨钴类、钨钛钴类、钨钛钽（铌）类生产中应用最广泛的是钨钴类和钨钛钴类硬质合金。

Cemented carbide is an alloy made by powder metallurgy with one or more refractory carbides (tungsten carbide, titanium carbide, etc.) powder as the main component, adding metal powder (cobalt, nickel, etc.) as a bonding agent, . It is widely used in hardware, machinery, chemical industry, national defense and other industries to make high-precision, high-wear-resistant key parts.
The characteristics of cemented carbide: 1. High density, g/cm2: 11.0～15.0; 2. High strength, compressive strength up to 6000MPa; 3. High hardness and good wear resistance, the hardness can reach 86~93HRA at room temperature, Equivalent to 69~81HRC; 4. Good red hardness, up to 900-1000°C, no deformation when maintained at 60HRC; 5. Good corrosion resistance and oxidation resistance; 6. Small linear expansion coefficient, stable shape and size during work.







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