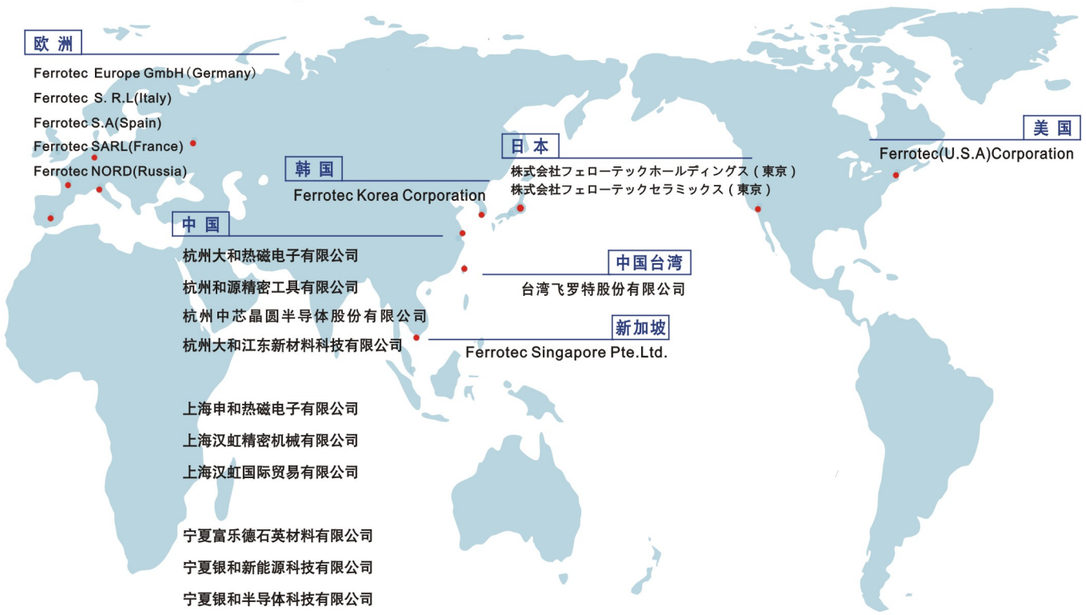
Ferrotec global



FerroTec

中国地区

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杭州大和江东新材料科技有限公司

Hangzhou Dahe New Material Technology Co., Ltd.

FerroTec


Fine Ceramics
FerroTec


粗加工
Green Machine
精密洗净
Fine Clean
烧结/氧化
Sinter/Oxidize
检测
Inspection
陶瓷产品
加工流程
Manufacture Process
of Ceramic Products
平磨
Surface
Grinding
喷砂
Bead Blast
圓筒
Universal
Grinding
抛光
Lapping
加工中心
Machining Center

勤勉立志

Diligence / Aspiration /

开拓創優

Creativity / Innovation

COMPANY PROFILE
公司简介

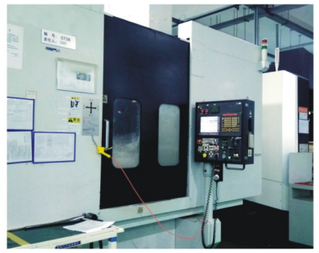
杭州大和江东新材料科技有限公司成立于2014年7月，是株式会社Ferrotec Holdings独立投资的企业。公司坐落于杭州大江东产业聚集区，主要从事各种耐高温、抗氧化、耐腐蚀、耐磨耗、高绝缘性的氧化物、碳化物，氮化物等精密陶瓷材料的研发，制造和销售，我们采用进口超精微细粉（亚微米及纳米微粉），引入先进的烧结工艺和精密陶瓷加工技术以及一套完善的检测和化学洗净设备，主要生产包括高纯氧化铝、氧化锆、无压烧结碳化硅、化学沉积碳化硅（CVD-SIC）、氮化硅、氮化铝等多种精密陶瓷部品，其广泛应用在半导体，液晶显示，精密仪器、电子、机械制造、生物医疗、化工、新能源、航空以及通讯等多个领域。同时，我们也是一家能根据客户需求提供高精密陶瓷设计和综合性解决方案的供应商。

Established in July 2014, Hangzhou Dahe New Material Technology Co., Ltd. Is exclusively invested by Ferrotec Holdings Corporation. Located in Jiangdong industrial zone, the company is mainly engaged in research and development, manufacturing and sales of fine ceramic materials, such as oxides, carbides and nitrides that offer the advantage of Thermostability, antioxidation, corrosion resistance, anti-brasion, high insulayivity.We have adopted imported super subtle powder (sub-micron and nanometer powder) and introduced advanced sintering process and precision ceramic processing technology as well as a set of perfect detection and chemical cleaning equipment We mainly manufacture high purity alumina, zirconia, sintered SiC, CVD-SiC，silicon nitride, and aluminum nitride, which are widely used in semiconductors, liquid-crystal display, precision instrument, electronics, machinery, biomedical, chemical, new energy, aviation industries as well as telecommunication. We are also a supplier who is able to provide fine ceramic design and comprehensive solutions.

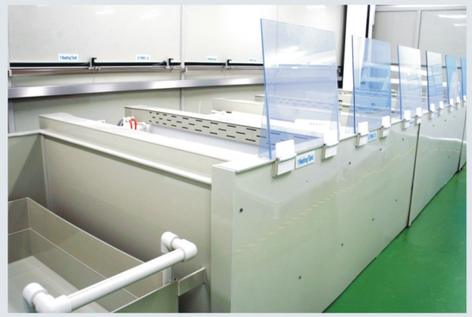
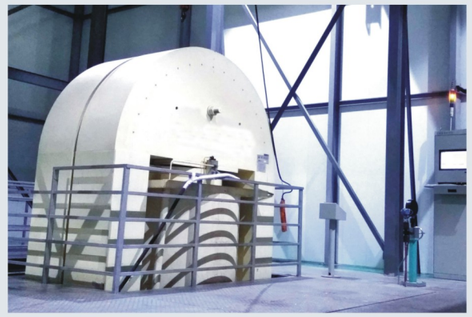
FerroTec

加工中心
Machining Center






Leading Technology Best Service 一流技术 一流服务

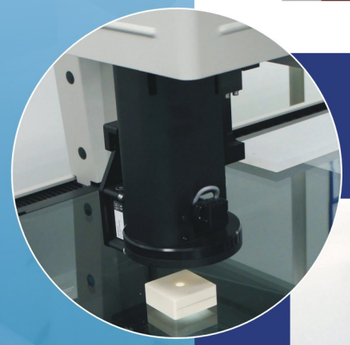

MANUFACTURE ADVANTAGES
制造优势

公司拥有完善的精密陶瓷生产线，材料工程和精加工工程。材料工程占地面积约5000m^{2}左右，其中材料成型，粗加工和烧结设备共计50余台。精加工工程占地面积约7000m^2，拥有MAZAK 、OKUMA 、太阳工机立车和立磨和OKK磨削中心、平面磨床、外圆/内圆磨床等精密加工设备200余台。能根据客户要求进行高精密陶瓷产品的生产和加工 。产品公差最小控制在±0.01mm内，平面度可达0.002mm。

The company has entire fine ceramics production line including material powder process and fine-machining process. Material powder process has an area of about 5000m^2 and more than 50 machines for forming, green machining and sintering. On the other hand, Fine-machining process has an area of about 7000m^2 and more than 200 machines with MAZAK, OKUMA, vertical lathe, vertical grinding, OKK CNN, surface grinder and excircle/internal grinder etc. We can produce fine ceramics products according to customers' requirements. Product tolerance can be controlled within 0.01mm and flatness can be achieved to 0.002mm.

公司拥有完善的精密陶瓷检测设备：三次元检测仪，粗糙度测试仪，投影检测仪，光学显微镜（最大倍率3000），激光显微镜（最大倍率10000），真空泄露测试仪等。同时拥有2条10000级和100级氧化铝陶瓷自动清洗线，以及1条100级碳化硅陶瓷自动化清洗线，且检测和清洗工艺已经获得LAM,AMAT等国际先进半导体设备厂商的认证。

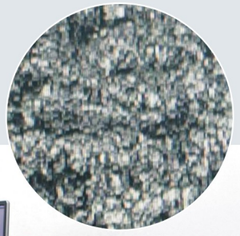
The company has all kinds of test facilities for fine ceramics: Coordinate Measuring Machine (CMM), Roughness Measuring Machine, Projection Tester, Light Microscope (max 3000x), Laser Microscope (max 10000x), and Vacuum Leak Detecting Machine etc. Company has two alumina automatic cleaning lines in Class 10000 and Class 100 clean room, and one SiC automatic cleaning line in Class 100 clean room. These measurement and cleaning processes were all qualified by the internationally advanced semiconductor equipment manufacturers like LAM、AMAT etc.

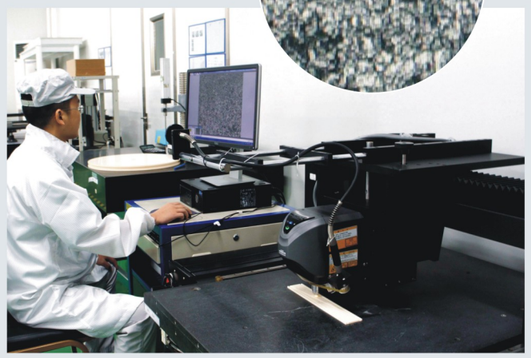


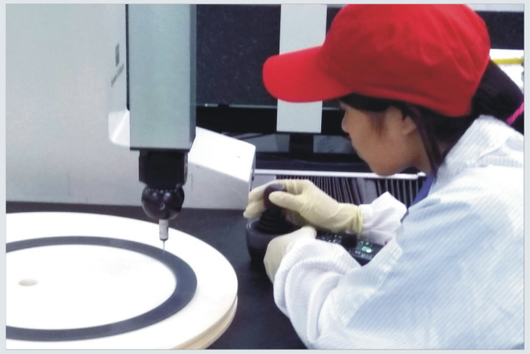
Leading Technology Best Service 一流技术 一流服务

QUALITY ASSURANCE
品质保证

检测中心
Inspection Center







精细陶瓷（或先进陶瓷）--主要为高熔点的氧化物、碳化物、氮化物等烧结材料。其原材料是经过一系列人工合成或提炼处理过的化工原料。采用超精微细粉体（亚微米及纳米微粉）经超高温高压烧结后制成。具备优异的耐高温、耐磨、耐腐蚀、绝缘等特性，在许多重要领域得到了越来越广泛的应用。

Ferrotec offers sintered oxide and non-oxide ceramics that are manufactured under highly controlled processes, which yield highly consistent ceramics with outstanding properies.These materials offer the advantage of superb corrosion,erosion and high temperature resistance and they are being used in the most demanding environments.

应用领域：
半导体/液晶显示
IT/多媒体
电子设备
工业制造设备
医疗设备
精密仪器

Fields:
Semiconductors/liquid crystals
IT/multimedia
Electronic equipment
General industrial machines
Advanced medical devices
Precision instruments

碳化硅陶瓷 SiC
Silicon Carbide

碳化硅是硬度仅次于金刚石的材料比其他陶瓷材料有更好的耐热性、耐磨损性，在特别高温度的情况下（1700℃）其强度不会降低，属于高温构造材料。在许多重要领域具有广泛应用。

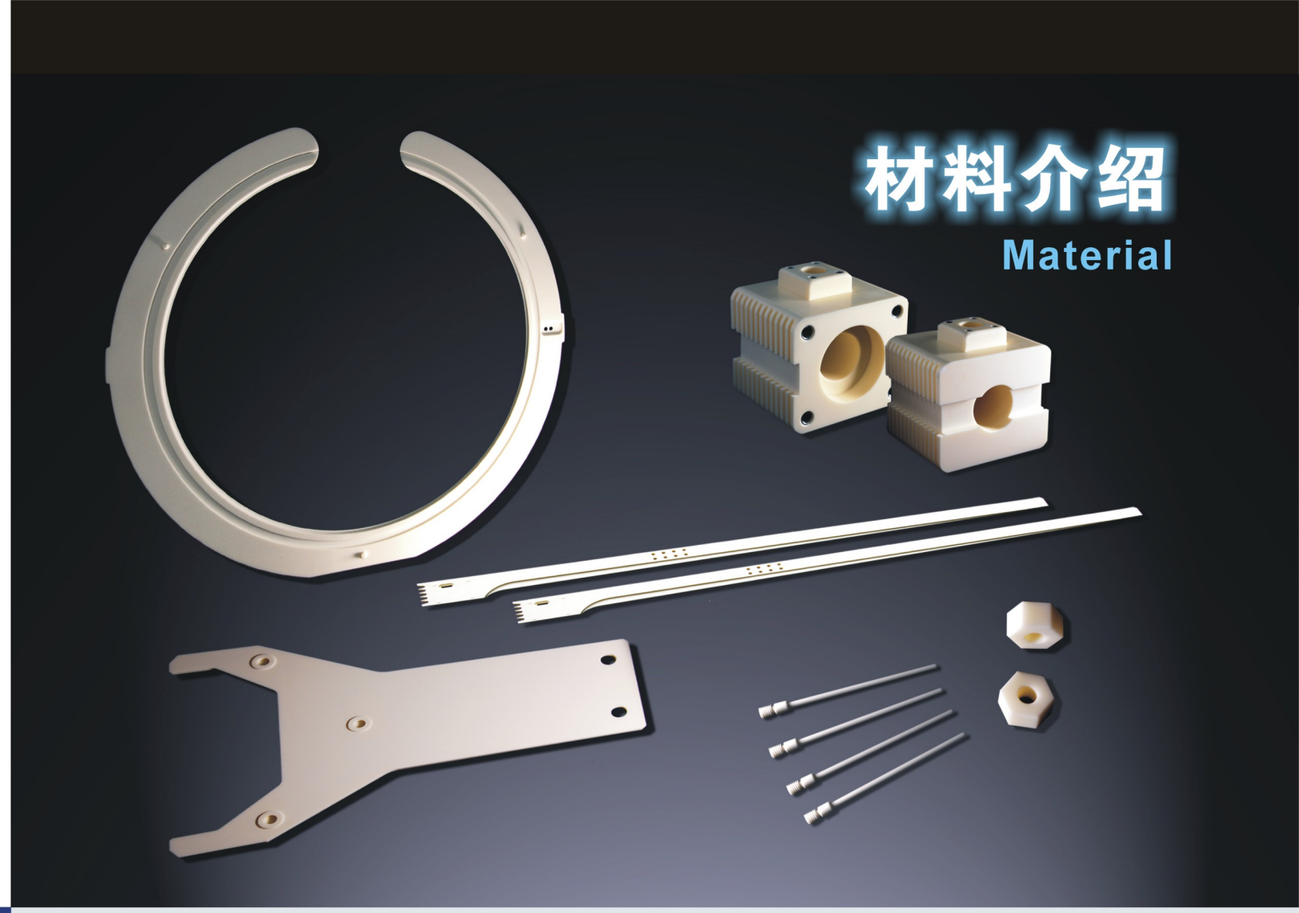
Silicon carbide's hardness is next to that of diamond. Unlike other ceramics that can deform at high temperature,silicon carbide maintains its strength and will not deform even at temperatures as high as 1700 degrees C. These properties combined with silicon carbides resistance to chemical attack make it a very versatile ceramics for the most demanding applications.

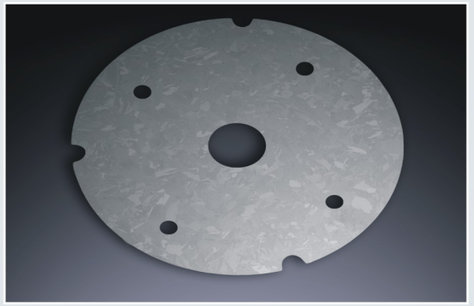
主要用途
Main applications

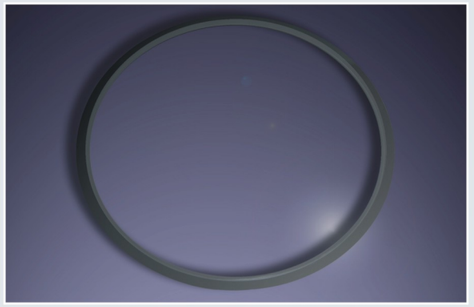
半导体制造装置用品；燃烧器喷嘴等。

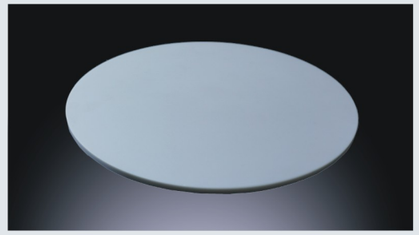
components used in semiconductor equipment;burner nozzle,etc.

材料介绍
Material









氮化铝陶瓷 ALN
Aluminum Nitride

具有很好的热传导性、绝缘性、防热性、耐热冲击性等。可被用作防热耐热材料。

Aluminum nitride's terrific thermal conductivity combined with its other properties-thermal shock resistance, excellent wear properties and corrosion resistance,make it the material of choice for applications with aggressive thermal management requirements and the harshest environments.

主要用途
Main applications

半导体制造装置用部品；防热性基材等。

components used in semiconductor equipment;heat resistant base materials,etc.

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三氧化二铝陶瓷 AL_2O_3
Aluminum Oxide

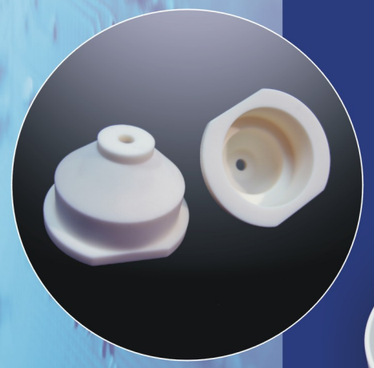
氧化铝为主要成分，有较好的绝缘性和耐磨性能，价格便宜。作为精密陶瓷材料的代表，使用较为广泛。高纯度的氧化铝(纯度99%上)适用于制作半导体制造设备部品。

Alumina ceramics are very hard and chemically stable materials and as a result they are highly regarded for applications that require both wear and corrosion resistance.Alumina has been one of the materials of choice for the Semicondctor industry for both its incomparable thermal and dimensional stability and its ability to resist the severe microchip-processing environment.

主要用途
Main applications

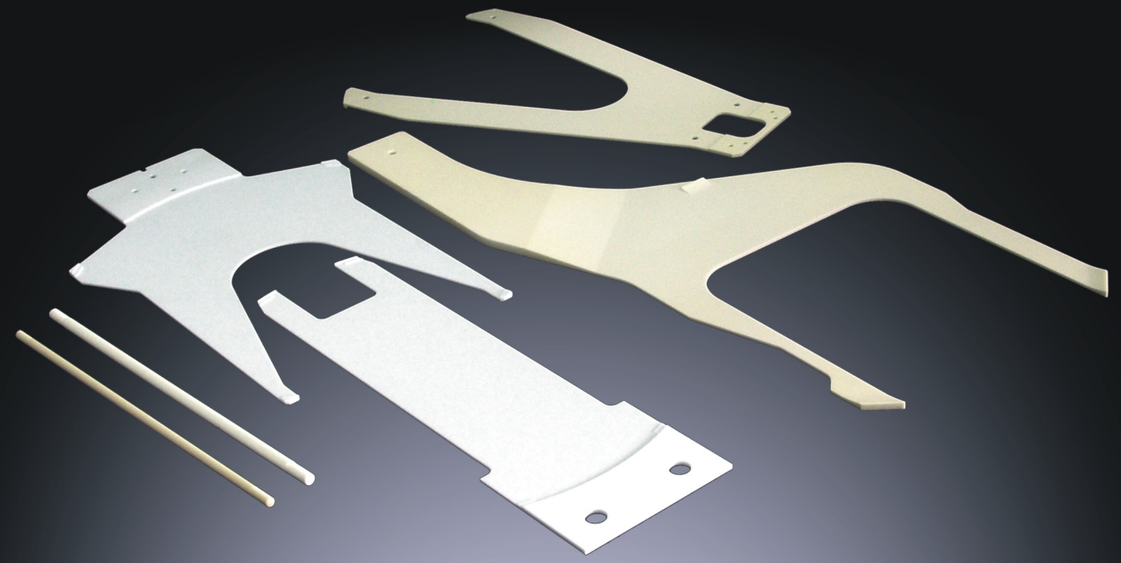
半导体制造装置腔体内部品；搬送部品；液晶制造装置用品；真空装置用品；一般产业机械用部品等；

components used in semiconductor equipment chamber; delivery device, components used in LCD equipment; vacuum parts;general mechanical parts, etc.



三氧化二铝陶瓷 AL_2O_3
Aluminum Oxide

材料介绍
Material



氮化硅陶瓷 Si_3N_4
Silicon Nitride

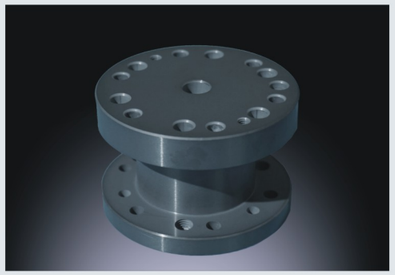
与氧化铝相比，其高温强度、耐热冲击性更佳，作为耐热复合构造材料广泛应用。

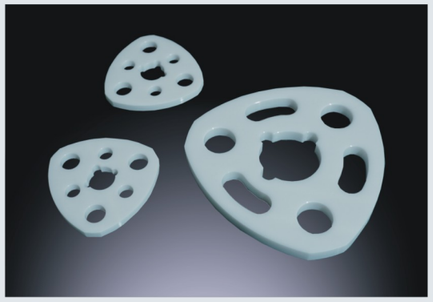
Silicon Nitride is very versatile because it has better thermal shock resistance than alumina. It is widely used in heavy-duty applications requiring thermal shock resistance.

主要用途
Main applications

半导体制造装置用部品；燃烧喷嘴；溶接治具等；

components used in semiconductor equipment; burner nozzle; welding fixtures, etc.





氧化锆陶瓷 ZrO_2
Zirconia

氧化锆为主要成分，有其他材料无法达到的强度和破坏韧性。适用于高腐蚀，高强度的环境。

Zirconia is one of the most fracture resistant ceramics and it has very good chemical resistance making it an excellent material for applications that have both a harsh chemical environment and require impact resistance.

主要用途
Main applications

半导体搬送用轨道；轴承部品；工业用刀具等；

semiconductor delivery tracks;bearing parts; industrial tooling,etc.

FerroTec

Ceramic Material Properties 陶瓷材质特性表

特征项目 Item / 材料 Material				精密陶瓷 Fine Ceramics													
				三氧化二铝 Al_2O_3						氮化硅 Si_3N_4	碳化硅 SiC	氮化硼 BN	氮化铝 AlN		氧化锆 ZrO_2	低膨胀陶瓷 Low thermal expansion ceramics
材质记号 Material Code				ACM96	ACM998	AM997A	AM997Q‖A	AT999	AS999	SN606	SC902E	BN	ALN99	ALN94	YZT94	LE101
一般属性 General Properties	主要成分纯度 Main Component Purity		wt%	≥96	≥99.8	≥99.7	≥99.7	≥99.9	≥99.99	≥90	≥97	≥99.5	≥99	≥94	≥94	-
	颜色 Color			白色 White	象牙白 Ivory	象牙白 Ivory	象牙白 Ivory	象牙白 Ivory	白色 White	灰色 Gray	黑色 Black	白色 White	浅灰色 Light gray	浅灰色 Light gray	乳白色 Milk white	灰色 Gray
	密度 Density		G/cm^3	3.70	3.93	3.93	3.93	3.93	3.95	3.16	3.15	1.92	3.24	3.31	6	2.55
	吸水率 Water Absorption		%	0	0	0	0	0	0	0	0	-	0	0	0	0
机械性能 Mechanical Properties	弯曲强度 Bending Strength		Mpa	350	370	390	390	400	390	750	490	35	295	345	1000	200
	杨氏模量 Young's Modulus		Gpa	320	370	375	385	385	380	285	400	39	320	320	245	140
	维氏硬度 Vicker's Hardness		Gpa	14	16	18	17	16	18	16	22		11	11	16	—
热学性能 Thermal Properites	最高工作温度 Max. Operating Temperature		℃	—	1600	1600	1600	1600	1600	1200	1600	>2000	1000	1000	—	—
	热膨胀系数 Coefficient of Thermal Expansion	Rt ~ 500℃	$*10^{-6}/^0C$	7.2	7.2	7.0	7.0	7.9	7.0	2.7	3.8		4.4	4.4	8.9	<0.5
		Rt ~ 800℃		—	—	7.6		8.1	7.7	4.2	—		—	—	10.4	2.0
	热传导率 Coefficient of Thermal Conductivity	25℃	W/(m·K)	24	32	33	33	34	33	23	170	75	80	150	3	—
	耐热冲击 Thermal Shock Resistance		△T (℃)	200	250	200	200	200	200	700	300	1500	—	400	280	—
电学性能 Electrical Properties	体积电阻率 Volume Resistivity	25℃	Ω·cm	10^{15}	10^{14}	10^{16}	10^{15}	10^{15}	10^{15}	10^{16}	10^{4}	10^{14}	10^{14}	10^{14}	10^{12}	10^{14}
		300℃		10^{9}	10^{14}	10^{13}	10^{14}	10^{14}	10^{12}	10^{13}	10^{2}	10^{13}	10^{8}	10^{10}	10^{7}	10^{12}
		500℃		10^{7}	10^{10}	10^{10}	10^{12}	10^{11}	10^{9}	10^{11}	10	10^{12}	10^{7}	10^{7}	10^{4}	10^{10}
		800℃		10^{5}	10^{5}	10^{9}	10^{5}	10^{5}	10^{7}	10^{7}		10^{9}	10^{5}	10^{5}	10^{2}	10^{5}
	介电常数 Dielectric Constant	10GHz	—	9.4	9.9	9.7	9.7	9.8	9.9	8	—	4	8.5	8.5	33	4.9
	介电损耗系数 Dielectric loss factor		$\times 10^{-4}$	38	10	10	1	4	0.5	6.1	—	26	30	30	9	5
	Q值 Q Factor(1/tan δ)		$\times 10^{4}$	0.03	0.1	1	6.7	0.25	2	0.16	—	0.04	0.03	0.03	0.1	0.2
	电介质击穿电压 Dielectric Breakdown Voltage		KV/mm	14	15	18	18	17	18	14	—	40	—	15	13	23
主要特点 Main Characteristics				耐热，耐磨。Good for Heat and Wear Resistant.	高强度，耐热，耐磨，耐腐蚀。High Mechanical Strength,Good Wear and Heat Corrosion Resistant.	高强度，耐热，耐磨，耐腐蚀。High Mechanical Strength,Good Wear and Heat Corrosion Resistant.	高绝缘性能，低介电损耗。High Electrical Insulation,Low Dielectric Loss.	高强度，耐热，耐腐蚀，耐磨。High Mechanical Strength,Good Wear and Heat Corrosion Resistant.	高强度，耐热，耐磨，耐腐蚀，透波性好。High Mechanical Strength and Heat Resistant, Excellent Wear and Corrosion Resistant,Microwave Transmissive.	高强度，耐磨，耐热冲击性。High strength, Wear-resistant, Thermalshock-resistant.	高热导率，耐热，高强度。High Thermal Conductivity, Heat Resistant and Strength.	高热稳定性，高绝缘性。Excellent Heat Stability and Electrical Insulation.	高热传导，透波性好。High Thermal Conductivity, Microwave Transmissive.		高强度，高韧性，耐磨性。High Strength and Though, Excellent Wear Resistant.	低热膨胀，无气孔。Low Thermal Expansion, Poreless.
推荐应用领域 Recommended Application				机械部件，电子部件。Mechanical Parts, Electronic Parts.	机械部件，电子部件。Mechanical Parts, Electronic Parts.	机械部件，电子部件，微波感应盘。Mechanical Parts, Electronic Parts, Microwave Induction Plates.	微波和射频半导体设备部件。Microwave and RF Semiconductor Equipments.	耐等离子部件，绝缘部件。Plasma-resistant Parts, Insulatiing Parts.	机械部件，电子部件，绝缘部件，微波感应盘。Mechanical Parts, Electronic Parts, Insulatiing Parts, Microwave Induction Plates.	机械部件，耐磨部件，耐热部件。Mechanical Parts, Wear-resistant Parts, Heat-resistant Parts.	机械部件，耐热部件，高热导率部件。High Thermal conductivity Parts,Heat Resistant Parts, Mechanical Parts.	金属熔融，绝缘部件。Mental Melting Parts, Insulatiing Parts.	微波感应盘，绝缘部件。Microwave Induction Plates, Insulatiing Parts.		机械部件，耐磨部件。Mechanical Parts, Wear-resistant Parts.	机械部件，电子部件。Mechanical Parts, Electronic Parts.

备注：表中数据是样品测试的特性值，特性值会随制品形状和使用情况变化而变化。
Note:The datas on above sheet are typical materials properties obtained by sample testing,the actual value may vary due to different shape or different enviroment.