



## Zirconia Ceramic

Zirconia generally refers to zirconium dioxide with a chemical formula of ZrO<sub>2</sub>. Zirconia is a very strong industrial ceramic with excellent properties in terms of hardness, fracture toughness and corrosion resistance.

### Features Of Zirconia Ceramic

- ◆ The density is relatively high;
- ◆ High bending strength and hardness;
- ◆ Excellent fracture toughness;
- ◆ Very resistant to wear and tear;
- ◆ Resistant to acid and alkali corrosion;
- ◆ Modulus of elasticity is similar to steel;

### Typical Applications

- ◆ Precision shafts and axles in high wear environments;
- ◆ Wear resistance pads;
- ◆ Bushings and caps
- ◆ Knives and blades
- ◆ Mechanical seals
- ◆ Pumps, pistons, and liners
- ◆ Ceramic guiders
- ◆ Fiber optic ferrules and sleeves

Great Ceramic are experts in the production of technical ceramics, we offer ceramic processing, ceramic materials, ceramic casting, ceramic metal packaging and surface metallization services.

[Contact us](#) for more information!

### Zirconia Ceramic Properties

- ◆ Yttria Stabilized Zirconia (Y-PSZ);
- ◆ Magnesia Stabilized Zirconia (Mg-PSZ);
- ◆ Zirconia Toughened Alumina (ZTA20).

#### MECHANICAL

Properties	Unit	Y-PSZ	Mg-PSZ	ZTA20
Colour	—	White	Yellow	White
Density	g/cm <sup>3</sup>	6.05	5.7	4.1~4.38
Hardness	GPa	12.5	11.8	15
Compressive Strength	MPa	2100	1750	2350
Flexural Strength	MPa	850	900	700
Fracture Toughness	MPa · m <sup>1/2</sup>	4~5	> 7.0	3.5
Modulus of Elasticity	GPa	200	200	310
Poissons Ratio	—	0.30	0.30	0.26

#### THERMAL

Properties	Unit	Y-PSZ	Mg-PSZ	ZTA20
Maximum Use Temperature	°C(No load)	1000	1000	1500
Thermal Conductivity	20°C, W/(m · K)	2	2.2	20
Thermal Expansion	40 – 400°C, × 10 <sup>-6</sup> /°C	10	10.2	8
Specific Heat	J/(kg · K)	460	400	720
Thermal Shock Resistance	°C(Put in water)	300	350	300

#### ELECTRICAL

Properties	Unit	Y-PSZ	Mg-PSZ	ZTA20
Dielectric Constant	1MHz	30	28	10.2
Dielectric Strength	KV/mm	9.0	9.4	9.0
Dielectric Loss	1MHz	16 × 10 <sup>-4</sup>	10 × 10 <sup>-4</sup>	20 × 10 <sup>-4</sup>
Volume Resistivity	25°C, Ω · cm	> 10 <sup>13</sup>	> 10 <sup>12</sup>	> 10 <sup>14</sup>
Volume Resistivity	500°C, Ω · cm	> 10 <sup>3</sup>	> 10 <sup>3</sup>	> 10 <sup>4</sup>

\*The values are typical material properties and may vary according to products configuration and manufacturing process.

## Zirconia Ceramic Product Introduction



### Zirconia Ceramic Rods

Zirconia ceramic rods with different diameters and precisions can be customized according to customer needs, and have the characteristics of high temperature resistance and wear resistance.

[Learn More](#)



### Zirconia Toughened Alumina

Great Ceramics manufactures zirconia toughened alumina (ZTA) advanced technical ceramics that deliver an optimal balance of high strength and fracture toughness.

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### Magnesia Stabilized Zirconia

Great Ceramic offers custom machining services for magnesium oxide stabilized zirconia materials, our materials offer exceptional strength, durability and thermal stability.

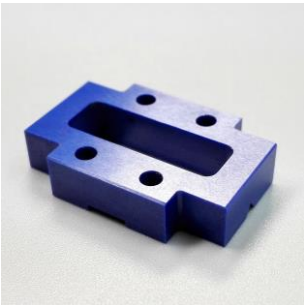
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### Black Zirconia Ceramic

Great Ceramic offers custom machining services for black zirconia ceramic materials, our materials offer high durability, corrosion resistance and high fracture toughness.

[Learn More](#)



### Blue Zirconia Ceramic

Great Ceramic offers blue zirconia ceramics that have a blue appearance due to the addition of trace amounts of transition metal dopants.

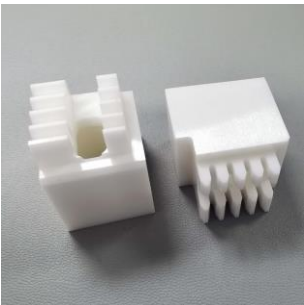
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### Mold Injection Molding

Ceramic injection molding (CIM) has advantages for mass production of ceramic products with high dimensional accuracy and complex shapes.

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### Custom Machining

Great Ceramic has a wide range of grinding and machining equipment to provide customers with efficient ceramic machining solutions.

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### Ceramic Pumps

Designs and manufactures high quality custom ceramic filling pumps for precise fluid transfer in demanding industries.

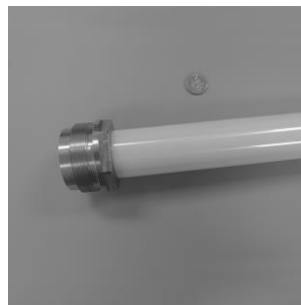
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### Ceramic Knife

Zirconia knives are made of zirconia ceramics, which are sharp and durable, not easy to rust, non-toxic and odorless.

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### Ceramic Plunger

Zirconia ceramic plungers are suitable for industrial environments requiring high temperature, high pressure and corrosion resistance.

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