



Uniceram Advanced Materials, Inc.

.....A provider of quality ceramic products.....





Uniceram Advanced Materials, Inc.

Company Introduction

Allow us to introduce our company, Uniceram Advanced Materials, Inc. a provider of quality ceramic products.

We have a wide array of products that serve a broad spectrum of industrial applications. Our products, typically, may be classified to four categories on basis of their end use:

- Insulators
- Wear Resistant Parts
- Porous Filters
- Refractory Products

Our core ability is the ability to customize and innovate. With the backing of the solid experience of our product development team, we are in a position to manufacture products as per our customer's pricing and technical requirements. For us, component geometry is not a restriction. As we say, if you can draw it, we CAN make it.

Uniceram Advanced Materials has dedicated manufacturing units at two locations around the world. Both these locations are ISO 9001 certified. Our expertise in supply chain management enables us to have the optimum quality at the optimum price.

We have been in this field for more than 25 years and have developed the technology indigenously, so have total mastery over managing the efficiency of the applications. We believe in adding competitive advantage to the client by enhancing the operational effectiveness of their processes.

Uniceram Advanced Materials is a quality conscious organization: All our vendors are ISO9001 Certified for their quality assurance in design, development, production and delivery. This shows our commitment to quality. We believe in setting very high standards to exceed the expectations of our customers.

If you have any queries about our products or need more information, feel free to contact us.

We look forward to having a long and a mutually beneficial business relationship with you. Count on us to deliver the best, always!

Thanks,

The Uniceram Team

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Our Product Range:

+ **Wear Resistant Parts-**

- Textile and Wire Drawing guides
- Mechanical and Chemical Seals
- Alumina Grinding Media
- Yttria Stabilized Zirconia Microgrinding Media and Structural Ceramics
- Ceramic Coatings

+ **Insulators-**

- Resistor Casing
- Fuse Bodies
- Ignitors
- Heat Resistant Interlocking Beads

+ **Porous Filters-**

- Honey Comb Filters
- Acid Filters
- Vaporization wicks

+ **Refractory Materials-**

- Crucibles
- Ferrules
- Thermocouple Sheaths and other labware.
- Coil Supports
- Infra-Red Heaters
- Assay Testing Ceramics
- Ceramic Rollers for Tile Industry
- Refractory products for Steel, Iron, Glass and Cement Industry
- Water Ground Mica



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What is YSZ?

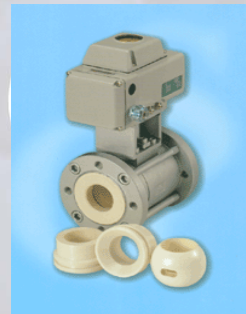
YSZ is **Yttria Stabilized Zirconia Polycrystal**, also known as **Y-TZP (Yttria Toughened Zirconia Polycrystal)**. It is the part of the Transformation Toughened Zirconia Series.

Zirconia, in its unstabilized form has monoclinic, square or cubic crystal phases. On partial stabilization by Yttria (Yttrium Oxide), the resultant phase is tetragonal endowing it with very high hardness & wear resistance along with high chemical inertness, making it the best material for wear resistant, corrosion resistant and temperature resistant applications.

Typical Applications of Yttria Stabilized Zirconia:

- # **YSZ Grinding Media:** For the high purity grinding and creation of dispersions. The key properties are its high wear resistance and chemical inertness that allows it to be used even in food and cosmetic industry.
- # **Ceramic Ball Valves:** Structure Ceramic Ball Valves are an ideal substitute for Titanium and Monel valves as they offers low-cost and longer life (2~4 times of Titanium Valves) coupled with extra resistance to corrosion and elevated temperature. It can be widely used in transportation systems of various acidic or alkaline solutions, high temperature steams and slurries and even in the lines of petroleum industry. Its excellent versatility makes it one of the best solutions to the valve problems.

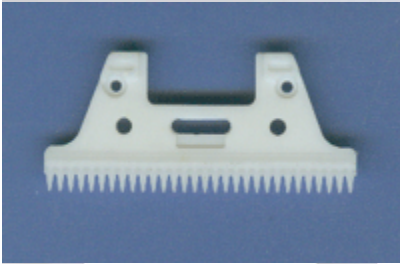
- # **Structural Ceramics:** Various structural ceramic components such as pistons, plungers, knives, wear components for the wire drawing industry such as capstans, precision measuring gauges and other customized products are made from YSZ material.



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Characteristics of YSZ Products:

- # YSZ products are very hard (> 9 on Mohs scale, diamond being 10), with a satin smooth surface finish.
- # YSZ products are chemically inert, thereby having a very high corrosion resistance. They are impervious to most acids & alkalis.
- # YSZ products have a very high wear resistance, hence causing no contamination in the material being milled / ground / dispersed / pumped.
- # YSZ products have a density >6 gm/cm³, which makes them the most dense of the ceramic products.





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Material Properties of YSZ Products:

PROPERTY	Specification
COMPOSITION	ZrO ₂ – 94.6% Y ₂ O ₃ – 5.4%
DENSITY	> 6.0 gm/cm ³
HARDNESS ON VICKERS (HV)	1250
HARDNESS ON Mohs	>9
ELASTIC MODULUS	205 GPa
WATER ABSORPTION	NIL
POROSITY	NIL
FRACTURE TOUGHNESS	>9 Mps.m ^{1/2}

Comparison of Properties of Various Medias:

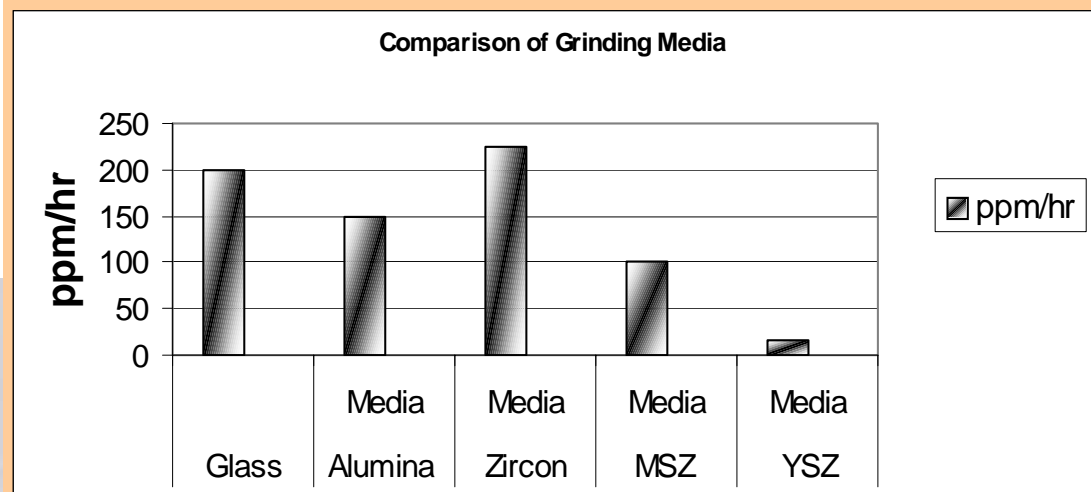
To see the difference in properties offered by Ytria Stabilized Zirconia

Property	MATERIAL				
	Glass	Alumina Media	Zircon Media	MSZ Media	YSZ Media
Density	2.5	3.5	3.75	5.6	>6.0
Fracture Toughness	1.5	3.5	3	6.5	>9
Hardness					
a) Mohs	6	9	7 – 8	8	>9
b) Vickers	500	1000	600	950	1250
Water Absorption	0.0	0.0	0.0	0.0	0.0
Wear Resistance (ppm/hour worn off)	200	150	225	100	15



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Comparison of wear rates of various media



In summary:

YSZ is the space age material which offers high temperature, high wear and high corrosion resistance giving the products high reliability, value for cost and enhanced life.

