

Data Sheet

Nilcra[®] Zirconia 3Y-TZP Grade

Description

- Yttria-Tetragonal Zirconia Polycrystal (Y-TZP) with excellent transformation toughening properties.
- Comprising 3 mol% (5.2 wt%) Y_2O_3 in ZrO_2 .
- A high purity, fine grain (sub-micron) tetragonal, transformation toughened zirconia (3Y-TZP).

Prime Features:

- Very high mechanical strength
- Excellent wear and abrasion resistance
- High impact resistance and toughness
- Good thermal shock resistance

Specifications

- Quality Assurance to ISO 9001

Physical Properties

Colour		White
Density g/cm^3	20°C	6.05
Flexural Strength (4 Pt Bend) MPa	20°C	1000
Compressive Strength MPa	20°C	2300
Modulus of Elasticity GPa	20°C	205
Poisson's Ratio	20°C	0.3
Hardness $HV_{0.3}$ kg/mm^2	20°C	1300
Fracture Toughness $MPa\sqrt{m}$	20°C	10
Average Grain Size μm		0.4
Electrical Resistivity $ohm\cdot cm$	20°C	$> 10^{11}$
Thermal Conductivity $W/m\cdot K$	20°C	3.0
Thermal Expansion Coefficient $\times 10^{-6}/^{\circ}C$	25-400°C	9
Specific Heat $J/g\cdot K$	20°C	0.5

Typical Applications:

- Typically used for blades and cutting edges where the fine grain structure is an advantageous.
- Gas and Oil field applications
- Pump and Valve components
- Canning and Metal Packaging
- Solids Handling
- Automotive (eg Weld Pins)

Production Capabilities

- Sintered components
- Precision ground components
- Ceramic / Metal assemblies
- Ceramic design assistance
- Prototyping, batch and volume production

Please note that all values quoted are based on test pieces and may vary according to component design. These values are not guaranteed in anyway whatsoever and should only be treated as indicative and for guidance only.