



Zirconia Toughened Alumina

Description:

Zirconia toughened alumina is a ceramic material comprising alumina and zirconia. It is a composite ceramic material with zirconia grains in the alumina matrix.

Composition:

Al_2O_3 :	> 85%	ZrO_2, MgO, Y_2O_3 :	> 4%
Binders:	Propriety	Additives:	Propriety

Specifications:

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Colour	White/Ivory	
Compressive (Crushing) Strength	2000 to 2900	MPa
Density	4.20	g/cm^3
Hardness	85	R45N
Dielectric Constant (Relative Permittivity)	10.6 to 12.5	N/A
Dielectric Strength (Breakdown Potential)	9	kV/mm
Elastic (Young's, Tensile) Modulus	310 to 380	GPa
Electrical Resistivity Order of Magnitude	12×10^{12}	$\Omega \cdot m$
Flexural Strength	400 to 1000	MPa
Fracture Toughness	4 to 13	MPa
Poisson's Ratio	0.25	N/A
Specific Heat Capacity	890	J/kg-K
Tensile Strength Ultimate (UTS)	290	MPa
Thermal Conductivity	15 to 27 W/m-K	W/m-K
Thermal Expansion	8.1	$\mu m/m-K$

Features:

- Mechanical strength
- Toughness
- Wear resistance
- Stability at high temperatures
- Resistance to corrosion
- Biocompatibility

Applications:

- Bearing components
- Bushings
- Die and cutting tool inserts
- Valve seats
- Pump Components

Production Capabilities:

- Isostatic and dry pressing, green machining
- Grinding and lapping to very tight tolerances
- Prototype, batch and volume production

These values represent typical properties of standard materials. Values should be used only for comparison and should not be used as a warranty.