



DATA SHEET

Magnesia Partially Stabilized Zirconia (MSZ)

Description:

Magnesia Partially Stabilized Zirconia (3.5 wt% MgO in ZrO₂) with exceptional toughening properties specifically developed for applications requiring maximum strength.

Salient Features:

- Very High Mechanical Strength
- Excellent wear and abrasion resistance
- Excellent corrosion resistance
- High Impact Resistance and Toughness
- Very Low Thermal Conductivity

Typical Applications:

- Wear resistance components
- Military
- Automotive
- Seal rings
- Pump seals
- General industrial duties requiring excellent mechanical, electrical, and thermal properties.

Physical Properties

PROPERTY	TEST	UNITS	MSZ
Colour			Bright Yellow
Density	ASTM-C20	g/cc	5.75
Average Crystal Size	THIN-SECTION	Microns	40
Water Absorption	ASTM-373	%	0
Gas Permeability			0
Flexural Strength (20°C)	ASTM-F417	MPa (psi x 10 ³)	820 (122)
Tensile Strength (20°C)	ASTM-C848	MPa (psi x 10 ³)	430 (62)
Poisson's Ratio (20°C)	ASTM-C848		0.31
Compressive Strength (20°C)	ASTM-C773	MPa (psi x 10 ³)	1990 (288)
Hardness	ROCKWELL 45 N	R45 N	80
Fracture Toughness K _{IC}	NOTCHED BEAM	MPa m ^{1/2}	12
Thermal Conductivity (20°C)	ASTM-C408	W/mK	3.08
Coefficient of Thermal Expansion (25-800°C)	ASTM-C372	1X10 ⁻⁶ /°C	10.2
Specific 100°C	ASTM-E1269	J/Kg K	470
Maximum No Load Temperature		°C	800
Thermal Shock Resistance T _c		°C	375
Dielectric Loss (1 MHz)	ASTM-D150		0.001
Electrical Resistivity 25°C 500°C 800°C	ASTM-D1829	Ohm-cm	>10 ¹¹ 3.3 X 10 ⁴ 100

Production Capabilities

- Isostatic, uniaxial pressing & Injection Molding
- Lapping & polishing to 2 microinch Ra
- Manual, CNC and high precision machining

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.