



# S&S ADVANCE CERAMICS PRIVATE LIMITED

## DATA SHEET

### Yttria Stabilized Zirconia (YTZP)

#### Description:

Yttria Stabilized Zirconia (3 mol%) with exceptional toughening properties specifically developed for applications requiring maximum strength and resistance to wear and corrosion.

#### 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
- Bearings Severe
- General industrial duties requiring excellent mechanical, electrical, and thermal properties.

#### Physical Properties

PROPERTY	TEST	UNITS	YTZP	
Colour			Pure White	
Density	ASTM-C20	g/cc	6.02	
Average Crystal Size	THIN-SECTION	Microns	1	
Water Absorption	ASTM-373	%	0	
Gas Permeability			0	
Flexural Strength (20°C)	ASTM-F417	MPa (psi x 10 <sup>3</sup> )	1240 (180)	
Elastic Modulus (20°C)	ASTM-C848	GPa (psi x 10 <sup>3</sup> )	310 (30)	
Poisson's Ratio (20°C)	ASTM-C848		0.23	
Compressive Strength (20°C)	ASTM-C773	MPa (psi x 10 <sup>3</sup> )	2500 (363)	
Hardness	KNOOP 1000 gm ROCKWELL 45 N	GPa (kg x mm <sup>2</sup> )	12.7 (130)	
		R45 N	81	
Tensile Strength (25°C)	ACMA TEST #4	MPa (psi x 10 <sup>3</sup> )	550 (79)	
Fracture Toughness K <sub>IC</sub>	NOTCHED BEAM	MPa m <sup>1/2</sup>	13	
Thermal Conductivity (20°C)	ASTM-C408	W/mK	2.2	
Coefficient of Thermal Expansion (25-800°C)	ASTM-C372	1X10 <sup>-6</sup> /°C	10.3	
Specific 100°C	ASTM-E1269	J/Kg K	400	
Maximum No Load Temperature		°C	800	
Thermal Shock Resistance T <sub>c</sub>		°C	350	
Dielectric Strength	ASTM-D116	Ac-kV/mm (ac V/mil)	9 (228)	
Dielctric Constant (1 MHz)	ASTM-D150		29.0	
Dielectric Loss (1 MHz)	ASTM-D150		0.001	
Volume Resistivity	ASTM-D1829	Ohm-cm	25°C	>10 <sup>13</sup>
			500°C	2.0 X 10 <sup>4</sup>
			800°C	< 10 <sup>3</sup>

#### 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.