



DATA SHEET

Alumina (AL-990)

Description:

High purity alumina with a minimum purity of 99%. Specifically developed for resistance to wear and corrosion.

Salient Features:

- Excellent Electrical insulation
- Excellent chemical resistance to acids, bases and organics
- Small grain size, nil porosity, high polishability
- Low dielectric constant
- High Mechanical Resistance
- Superior mechanical wear resistance.

Typical Applications:

- Piston and Sleeve Pump Sets
- Crucibles
- Nozzles and Igniters
- Hydrocyclones
- Semiconductor Components
- High power laser insulators
- Parts for defense and space application

Physical Properties

PROPERTY	TEST	UNITS	AL980	
Colour			Ivory	
Density	ASTM-C20	g/cc	3.83	
Average Crystal Size	THIN-SECTION	Microns	4	
Water Absorption	ASTM-373	%	0	
Gas Permeability			0	
Flexural Strength (20°C)	ASTM-F417	MPa (psi x 10 ³)	350 (50.8)	
Elastic Modulus (20°C)	ASTM-C848	GPa (psi x 10 ³)	340 (49.3)	
Poisson's Ratio (20°C)	ASTM-C848		0.22	
Compressive Strength (20°C)	ASTM-C773	MPa (psi x 10 ³)	2500 (363)	
Hardness	KNOOP 1000 gm ROCKWELL 45 N	GPa (kg x mm ²)	15 (1441)	
		R45 N	85	
Tensile Strength (25°C)	ACMA TEST #4	MPa (psi x 10 ³)	248 (36)	
Fracture Toughness K _{IC}	NOTCHED BEAM	MPa m ^{1/2}	3-4	
Thermal Conductivity (20°C)	ASTM-C408	W/mK	24	
Coefficient of Thermal Expansion (25-1000°C)	ASTM-C372	1X10 ⁻⁶ /°C	8.1	
Specific 100°C	ASTM-E1269	J/Kg K	880	
Maximum No Load Temperature		°C	1600	
Thermal Shock Resistance T _c		°C	200	
Dielectric Strength	ASTM-D116	Ac-kV/mm (ac V/mil)	8.7 (220)	
Dielectric Constant (1 MHz)	ASTM-D150		9.5	
Dielectric Loss (1 MHz)	ASTM-D150		<0.0001	
Volume Resistivity	ASTM-D1829	Ohm-cm	25°C	>10 ¹⁴
			500°C	2.0 X 10 ¹⁰
			1000°C	2.0 X 10 ⁷

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.