



S&S ADVANCE CERAMICS PRIVATE LIMITED

DATA SHEET

Alumina (AL-997)

Description:

High purity alumina with a minimum purity of 99.7%. Specifically developed for high temperature application.

Salient Features:

- Excellent Electrical insulation
- Excellent chemical resistance to acids, bases and organics
- Small grain size, nil porosity, high polishability
- High volume resistivity
- High Mechanical Resistance
- Superior mechanical wear resistance.
- Less than 200 ppm soda and silica impurity levels.
- Maintains surface integrity in corrosive environments

Typical Applications:

- Piston and Sleeve Pump Sets
- High Vacuum Components
- Crucibles
- Nozzles and Igniters
- Thermocouple Tubes & Furnace Tubes
- Semiconductor Components
- High power laser insulators
- Parts for defense and space application

Physical Properties

PROPERTY	TEST	UNITS	AL997
Colour			Ivory
Density	ASTM-C20	g/cc	3.92
Average Crystal Size	THIN-SECTION	Microns	6
Water Absorption	ASTM-373	%	0
Gas Permeability			0
Flexural Strength (20°C)	ASTM-F417	MPa (psi x 10 ³)	375 (54)
Elastic Modulus (20°C)	ASTM-C848	GPa (psi x 10 ³)	370 (54)
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) R45 N	14.1 (1441) 83
Tensile Strength (25°C)	ACMA TEST #4	MPa (psi x 10 ³)	248 (36)
Fracture Toughness K _{IC}	NOTCHED BEAM	MPa m ^{1/2}	4-5
Thermal Conductivity (20°C)	ASTM-C408	W/mK	30
Coefficient of Thermal Expansion (25-1000°C)	ASTM-C372	1X10 ⁻⁶ /°C	8.2
Specific 100°C	ASTM-E1269	J/Kg K	880
Maximum No Load Temperature		°C	1700
Thermal Shock Resistance T _c		°C	200
Dielectric Strength	ASTM-D116	Ac-kV/mm (ac V/mil)	8.7 (220)
Dielctric Constant (1 MHz)	ASTM-D150		9.8
Dielectric Loss (1 MHz)	ASTM-D150		<0.0001
Volume Resistivity			>10 ¹⁴
25°C			2.0 X 10 ¹⁰
500°C	ASTM-D1829	Ohm-cm	2.0 X 10 ⁷
1000°C			

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.