S&S ADVANCE CERAMICS PRIVATE LIMITED

DATA SHEET

Alumina (AL-995)

Description:

High purity alumina with a minimum purity of 99.5%. Specifically developed for semiconductor application.

Salient Features:

- Electrically and dimensionally stable at high temperatures
- Low particle generation
- Dense, non-porous and vacuum tight
- Excellent dielectric properties
- Accepts moly-manganese metallizing for high temperature brazing of vacuum tight assemblies
- Excellent chemical and abrasion resistance

Typical Applications:

- Wafer processing and handling devices
- Components for semiconductor process chambers, spluttering targets, fixtures, etc
- Laser devices for wide range of industrial, medical and defence applications.
- Power tubes for klystron and x-ray equipment
- Flow meters and pressure sensors

Physical Properties

PROPERTY	TEST	UNITS	AL995
Color			Ivory
Density	ASTM-C20	g/cc	3.86
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)	360 (54)
Elastic Modulus (20°C)	ASTM-C848	GPa (psi x 10^3)	350 (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) 82
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	29.3
Coefficient of Thermal Expansion (25-1000°C)	ASTM-C372	1×10^{-6}/°C	8.2
Specific 100°C	ASTM-E1269	J/Kg K	880
Maximum No Load Temperature		°C	1675
Thermal Shock Resistance T_C		°C	200
Dielelectric Strength	ASTM-D116	Ac-kV/mm (ac V/mil)	8.7 (220)
Dielctric Constant (1 MHz)	ASTM-D150		9.60
Dielectric Loss (1 MHz)	ASTM-D150		<0.0001
Volume Resistivity 25°C 500°C 1000°C	ASTM-D1829	Ohm-cm	>10^{14} 2.2 X 10^9 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.