

Data Sheet

Deranox™ 995

Description

Alumina ceramic of 99.5% Al₂O₃ content. This material is extensively used for applications that require exceptional electrical resistance combined with resistance to chemical attack.

Prime Features:

- Ultra-low outgassing
- Low neutron absorption
- Resistant to fluorine and chlorine attack
- Very high volume resistivity
- Good thermal conductivity
- Non-porous and vacuum tight

Specifications

- Quality Assurance to ISO 9001

Physical Properties

Colour	White
Bulk Density (fired)	3.89 Mg/m ³
Grain Size	10 μm
Porosity (apparent)	0% (fully dense) % nominal
Vickers Hardness	14.3 GPa @ Hv 0.5kg
Rockwell hardness (R45N)	82
Compressive Strength	2000 MPa
Flexural strength (ASTM C1161, 3-point)	330 MPa
Young's modulus @20C	370 GPa
Thermal Conductivity (ASTM E228)	
@ 20°C	30.8 W/m.K
@ 300°C	13.7 W/m.K
@ 600°C	9.2 W/m.K
@ 1200°C	5.9 W/m.K
@ 1500°C	4.9 W/m.K
Thermal Expansion Coefficient (20-800C)	7.8 10 ⁻⁶ /C
Thermal Downshock	160 σC
Specific heat	880 J/kg.K
Maximum no-load temperature	1500 C
Dielectric Constant	
@ 1MHz	9.97
@ 9.4GHz	9.88
Dielectric Loss	
@ 1MHz, tan δ (ASTM D150)	0.000912
@ 1Ghz, tan δ (ASTM D2520)	0.000689
@ 9.4GHz, tan δ (ASTM D2520)	0.00107
Dielectric strength	30.5 kV/mm
Volume Resistivity (ASTM D257)	
20°C	3.0 x 10 ¹⁵
300°C	6.9 x 10 ¹¹
600°C	1.08 x 10 ⁸

Typical Applications:

- Gas, solid-state and waveguide lasers
- Components for a wide range of industrial, medical and defence equipment

Production Capabilities

- Isostatic pressing of components up to 1100mm long
- Volume production to close dimensional tolerances
- Surface polishing
- Glass or thermal diffusion bonding for high quality hermetic sealing
- Prototype, batch and volume production

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.