

Data Sheet

Deranox™ 999 (Mac-A999R)

Description

Alumina ceramic of 99.9% Al₂O₃ content. A very high purity material used for the highest integrity applications where one or a combination of its exceptional mechanical, electrical, thermal or corrosion resistant properties are essential.

Prime Features:

- Very high density
- Ultra fine grain
- Resistant to extreme chemical environments
- Excellent electrical insulator
- Excellent abrasion resistance
- High mechanical strength
- Stable at high temperatures
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- Non-porous and vacuum tight

Typical Applications:

- Semiconductor processing applications
- Components for a wide range of high-integrity industrial and defence equipment

Production Capabilities

- Volume production to close dimensional tolerances
- Prototype, batch and volume production

Specifications

- Quality Assurance to ISO 9002

Physical Properties

Colour	White
Bulk Density (fired)	3.95 Mg/m ³
Grain Size	2.5 μm
Porosity (apparent)	0% (fully dense) % nominal
Vickers Hardness	18.5 GPa @ Hv 1.0kg
Compressive Strength	2500 MPa
Flexural Strength (3-point)	500 MPa
Young's modulus	400 GPa
Thermal Conductivity	30 W/m.K
Thermal Expansion Coefficient (20-800C)	8.9 10 ⁻⁶ /C
Thermal Downshock	210 σC
Specific heat	800 J/kg.K
Maximum no-load temperature	1500 C
Dielectric Constant	
@ 1MHz	10.1
@ 9.4GHz	10
Dielectric Loss	
@ 1MHz, tan δ 10.4	8.0
@ 9.4GHz, tan δ 10.4	10
Dielectric strength	20 @ 2-3mm, kV/mm
Volume Resistivity	
@20C	> 10 ¹⁵ ohm.cm
@600C	> 10 ⁸ ohm.cm

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.