

## Data Sheet

# Sintox™ FF (Mac-A950R-5)

## Description

Alumina ceramic with a *minimum* Al<sub>2</sub>O<sub>3</sub> content of **95.0%** (typically **96%**). This material is a high quality electrical insulator, with good mechanical properties, that is widely used for components in consumer products as well as for high integrity applications. This grade also has well controlled grain size to enable high integrity molybdenum metallising with our proprietary molybdenum based inks.

## Prime Features:

- High volume resistivity
- Low coefficient of expansion
- Dense, non-porous and vacuum tight
- Resists abrasive wear and chemical attack
- Fire resistant and non-outgassing
- Readily accepts molybdenum based metallising for high temperature brazing of assemblies

## Specifications

- Quality Assurance to ISO 9001
- Good temperature characteristics

## Physical Properties

Colour	White
Bulk Density (fired)	3.70 Mg/m <sup>3</sup>
Grain Size	6 μm
Porosity (apparent)	0% (fully dense) % nominal
Vickers Hardness	12.5 GPa @ Hv 0.5kg
Rockwell hardness (R45N)	78
Compressive Strength	2000 MPa
Flexural Strength (ASTM C1161) (3-point)	320 MPa
Young's modulus	325 GPa
Fracture toughness	4.5 K <sub>IC</sub> (SENB), MPa.m <sup>1/2</sup>
Sonic velocity	9000 m/s

### Thermal Conductivity

W/m.K@20°C	23.2
W/m.K@300°C	11.4
W/m.K@600°C	7.8
W/m.K@1200°C	5.1
W/m.K@1500°C	6.0
Thermal Expansion Coefficient (0-800C)	7.5 10 <sup>-6</sup> /C
Thermal Downshock	170 σC

### Dielectric Constant

@ 1MHz	9.5
@ 9.4GHz	9.4
Dielectric Loss	@ 1MHz, tan δ 0.00034

### Volume Resistivity

@20C	> 10 <sup>14</sup> ohm.cm
@300C	> 10 <sup>8</sup> ohm.cm

## Typical Applications:

- Laser power tubes
- Telecommunications components
- Aerospace components
- Automobile components
- Domestic product components
- Process equipment components
- High vacuum equipment and scientific instruments where ceramic components need to be brazed to form high strength connections and complex assemblies
- Insulators for probes and sensors
- Insulators for vacuum pumps
- Transducer components
- Gun assemblies and connectors for x-ray optics and electron microscopes

## Production Capabilities

- Pressed and machined components
- Extruded components
- Prototype, batch and volume production
- High temperature brazing of assemblies
- Metallising of components

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