

## Data Sheet

# AL-300<sup>®</sup> (Mac-A976W)

### Description

A top quality alumina ceramic of **97.6% Al<sub>2</sub>O<sub>3</sub>** content, widely used for high integrity components where its exceptional electrical and thermal properties are essential to operational stability and reliability.

### Prime Features:

- Exceptionally high dielectric strength
- Consistent dielectric constant
- Dense, non-porous and vacuum tight
- Readily accepts moly-manganese metallizing for high temperature brazing of assemblies
- Electrically and dimensionally stable across a wide temperature range
- Resists chemical attack and abrasion
- Good thermal conductivity

### Specifications

- Quality Assurance to ISO 9001

### Physical Properties

Colour  
Bulk Density (fired)  
Porosity (apparent)  
Rockwell Hardness (R45N)  
Compressive Strengths  
Flexural Strength  
Thermal Conductivity  
Thermal Expansion Coefficient  
10<sup>-6</sup>/C [10<sup>-6</sup>/°F]

### Maximum no-load temperature

#### Dielectric Strength \*

#### Dielectric Constant K<sup>l</sup>

@10MHz

@1000MHz

@8500MHz

#### Dissipation factor, tanδ

@10MHz

@1000MHz

@8500MHz

#### Loss factor, K<sup>l</sup>.tan δ

@10MHz

@1000MHz

@8500MHz

#### Volume resistivity, ohm.cm:

\*ASTM Standard D149-97a<sup>13</sup>

White			
3.76 g/cm <sup>3</sup>		0.136 lb/in <sup>3</sup>	
0 (fully dense) % nominal			
75			
> 1720 MPa		> 250,000 lb/in <sup>2</sup>	
296 MPa		43,000 lb/in <sup>2</sup>	
26.8 W/m.K		15.5 BTU/ft.hr.°F	
25-200°C [77-390°F]		6.9 [3.8]	
200-400°C [390-750°F]		7.8 [4.3]	
400-600°C [750-1110°F]		8.5 [4.7]	
600-800°C [1110-1470°F]		8.8 [4.9]	
800-1000°C [1470-1830°F]		9.0 [5.0]	
1650°C		3000°F	
32.6 dc kV/mm		828 V/mil	
	<b>25°C</b>	<b>300°C</b>	<b>500°C</b>
	9.53	9.91	10.14
	9.00	-	-
	9.04	9.32	9.54
	0.00004	0.00016	0.00052
	0.00030	-	-
	0.00045	0.00040	0.00072
	0.00038	0.00158	0.00527
	0.00207	-	-
	0.00407	0.00373	0.00687
	> 10 <sup>14</sup>	1.0x10 <sup>12</sup>	8.4 x 10 <sup>10</sup>

### Typical Applications:

- Power distribution equipment
- High power tubes for klystron and x-ray equipment used in defence, medical and communications
- Electro-optical equipment
- Flow measurement devices
- Pressure sensors

### Production Capabilities:

- Isostatic and dry pressing of small to large complex components
- CNC grinding and lapping to very tight tolerances
- Prototype, batch and volume production
- Complete documentation and traceability
- Functional coatings, such as Cr<sub>2</sub>O<sub>3</sub>, MnTiCr...