

Data Sheet

AL 300™ (Mac-A976W)

Description

A top quality alumina ceramic of **97.6% Al₂O₃** 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
10⁻⁶/C [10⁻⁶/°F]

Maximum no-load temperature

Dielectric Strength *

Dielectric Constant K^l

@10MHz

@1000MHz

@8500MHz

Dissipation factor, tanδ

@10MHz

@1000MHz

@8500MHz

Loss factor, K^l.tan δ

@10MHz

@1000MHz

@8500MHz

Volume resistivity, ohm.cm:

*ASTM Standard D149-97a¹³

White			
3.76 g/cm ³		0.136 lb/in ³	
0 (fully dense) % nominal			
75			
> 1720 MPa		> 250,000 lb/in ²	
296 MPa		43,000 lb/in ²	
26.8 W/m.K		15.5 BTU/ft.hr.°F	
25-200C [77-390°F]		6.9 [3.8]	
200-400C [390-750°F]		7.8 [4.3]	
400-600C [750-1110°F]		8.5 [4.7]	
600-800C [1110-1470°F]		8.8 [4.9]	
800-1000C [1470-1830°F]		9.0 [5.0]	
1650 C		3000°F	
32.6 dc kV/mm		828 V/mil	
	25C	300C	500C
	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 ¹⁴	1.0x10 ¹²	8.4 x 10 ¹⁰

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 Cr₂O₃, MnTiCr...