

Data Sheet

AL-600[®] (Mac-A960W)

Description

Highly versatile alumina ceramic of 96% Al₂O₃ content, with excellent combination of mechanical, electrical, thermal and chemical properties.

Prime Features:

- High mechanical strength and hardness
- Low thermal expansion across wide temperature range
- High volume resistivity
- Dense, non-porous and vacuum tight
- Consistent dielectric constant
- Resists abrasion

Typical Applications:

- Wear nozzles
- Wear guides
- Blood valves
- Electrical connector housings
- General industrial duties where its range of excellent mechanical, electrical and chemical properties prove advantageous

Specifications

- Quality Assurance to ISO 9001

Production Capabilities:

- Isostatic and dry pressing, green machining
- CNC grinding and lapping to very tight tolerances
- Metallising of components
- High temperature brazing of assemblies
- Prototype, batch and volume production

Physical Properties

Colour	White			
Bulk Density (fired)	3.72 g/cm ³	0.134 lb/in ³		
Porosity (apparent)	0 (fully dense) % nominal			
Rockwell Hardness (R45N)	79			
Compressive Strengths	>2070 MPa	>300,000 lb/in ²		
Flexural Strength	365 MPa	53,000 lb/in ²		
Thermal Conductivity	25.6 W/m.K	14.8 BTU/ft.hr.°F		
Thermal Expansion Coefficient (0-800°C) 10 ⁻⁶ /°C [10 ⁻⁶ /°F]	25-200°C [77-390°F]	6.4 [3.6]		
	200-400°C [390-750°F]	7.6 [4.2]		
	400-600°C [750-1110°F]	8.2 [4.6]		
	600-800°C [1110-1470°F]	8.7 [4.8]		
800-1000°C [1470-1830°F]	9.0 [5.0]			
Maximum no-load temperature	1620°C	2950 °F		
Dielectric Strength	26.6 DC kV/mm	675 V/mil		
Dielectric Constant K' ¹	25°C	300°C	500°C	
	@10MHz	9.30	9.65	10.10
	@1000MHz	9.20	-	-
	@8500MHz	9.16	9.30	9.45
Dissipation factor, tanδ	@10MHz	0.00030	0.00061	0.00330
	@1000MHz	0.00044	-	-
	@8500MHz	0.00062	0.00085	0.00121
	Loss factor, K'.tan δ	@10MHz	0.00297	0.00588
@1000MHz		0.00405	-	-
@8500MHz		0.00568	0.00719	0.01143
Volume resistivity, ohm.cm:		>10 ¹⁴	2.0x10 ¹²	3.4x10 ⁸