Morgan Advanced Materials

Data Sheet

AL 995™ (Mac-A995W)

Description

High purity alumina ceramic of 99.5% Al_2O_3 content.
Its purity, chemical resistance and high temperature capabilities prove invaluable for semiconductor processing applications.

Prime Features:

- Electrically and dimensionally stable at high temperatures
- Low particle generation
- Dense, non-porous and vacuum tight
- Excellent dielectric properties
- Accepts moly-manganese metallizing for high temperature brazing of vacuum tight assemblies
- Excellent chemical and abrasion resistance

Typical Applications:

- Wafer processing and handling devices
- Components for semiconductor process chambers, spluttering targets, fixtures, etc
- Laser devices for wide range of industrial, medical and defence duties
- Power tubes for klystron and x-ray equipment
- Flow meters and pressure sensors

Specifications

- Quality Assurance to ISO 9001: 2008

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)	3.86 g/cm^3	0.139 lb/in^3	
Porosity (apparent)	0 (fully dense) % nominal		
Rockwell Hardness (R30N)	81		
Compressive Strengths	2070 MPa	>300,000 lb/in^2	
Flexural Strength	310 MPa	45,000 lb/in^2	
Thermal Conductivity	29.3 W/m.K	16.9 BTU/ft.hr.°F	
Thermal Expansion Coefficient 10^{-6}/°C [10^{-6}/°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]	8.3 [4.6]	
	600-800°C [1110-1470°F]	9.0 [5.0]	
	800-1000°C [1470-1830°F]	9.4 [5.2]	
Maximum no-load temperature	1725°C	3150 °F	
Dielectric Strength	31.5 DC kV/mm	800 V/mil	
Dielectric Constant K'	25°C	300°C	500°C
@10MHz	9.58	9.92	10.20
@1000MHz	9.30	-	-
@8500MHz	9.37	9.61	9.82
Dissipation factor, tanδ			
@10MHz	0.00003	0.00009	0.00040
@1000MHz	0.00014	-	-
@8500MHz	0.00009	0.00014	0.00025
Loss factor, K'.tan δ			
@10MHz	0.00029	0.00089	0.00408
@1000MHz	0.00130	-	-
@8500MHz	0.00084	0.00135	0.00245
Volume resistivity, ohm.cm:	>10^{14}	2.0x10^{11}	2.2x10^9