ALUMINA RESIN

3D-MODEL

Alumina 4N

Technical Ceramic with Extreme Performance

A 99.99% purity technical ceramic with exceptional performance in extreme environments: thermally resistant, hard, abrasion resistant, mechanically strong, and chemically inert.

High voltage components

Insulating housings or tubes

Mixing blades and pipes

Foundry tools for metal casting

V1 **FLAL4N01**

* **May not be available in all regions**

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MATERIAL PROPERTIES DATA **Alumina 4N Resin**

	METRIC	IMPERIAL	METHOD
Resin Properties			
Purity (%)	99.99%		-
Particle Size	d90 < 1 micron		-
Green State Properties			
Flexural Strength [3]	3.6 MPa	520 psi	ASTM D 790
Flexural Modulus [3]	24.5 MPa	3.5 ksi	ASTM D 790
Shore D Hardness [3]	70D		ASTM D 2240
Color	Off-White		
Sintered State Properties			
Physical and Mechanical Properties			
4 Point Flex Strength (XY) [3, 5]	400 MPa	58 ksi	ASTM C-1259
4 Point Flex Strength (Z) [3, 5]	320 MPa	46 ksi	ASTM C-1259
Weibull Modulus (XY) [3, 5]	9	-	ASTM C-1259
Theoretical Density [4, 5]	3.987 g/cm^3	0.144 lbs/in3	-
Relative Density [3, 5]	98.60%	-	ASTM C-373
Compressive Strength [4, 5]	2200 MPa	330 ksi	ASTM C-773
Color	White		-
Vickers Hardness [4, 5]	1500	-	-
Young's Modulus [4, 5]	390 GPa	58,000 ksi	ASTM C-1259
Fracture Toughness [4, 5]	3-5 MPa √m	-	ASTM C-1421
Surface Roughness [3, 5]	0.5-3 mircrons Ra	20-120 microinches Ra	
Electrical Properties			
Electrical Resistivity [4, 5]	> 1x10^{14} ohm metre (Ω·m)	-	ASTM D-257
Dielectric Loss tan delta (tan δ), 1 MHz [4, 5]	9x10^{-5}	-	-
Permittivity [4, 5]	9.8	-	-
Thermal properties			
Coefficient of Thermal Expansion [4, 5]	5 ppm/K	2.78 ppm / °F	ASTM E-228
Maximum Working Temperature [3, 5]	1500 °C	2750 °F	-
Thermal Conductivity [4, 5]	32 W/m·K	-	-

[1] Material properties may vary based on part geometry, print orientation, print settings, and firing schedule used.

[2] All sintered parts were fired using a 2 oven conservative firing schedule (schedule #1)

[3] Internally measured data

[4] Literature value

[5] Currently testing at an independent testing lab