ALUMINA RESIN

ADDITIVE X

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

If there's any other data that you want us to consider for future versions of the material's technical data sheet please fill out this survey form. For specific questions about how to evaluate the fit of the current material for your application, please reach out to the sales and support teams at Formlabs.

ADDITIVE X

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