

Goodfellow Shapal™ -M soft Aluminum Nitride (AlN) - Machinable

Category : Ceramic , Machinable Ceramic , Nitride

Material Notes:

Shapal-M® soft is a high purity, machinable ceramic with high strength and high thermal conductivity. Although the thermal conductivity is not as high as Aluminum Nitride, it is still 50 times that of machinable glass ceramic. Like aluminum nitride, applications include heat sinks and electronically insulating components for the high power electronic industry, and crucibles for molten metals. Shapal-M® also has the advantage that much more complex shapes may be used. It may be machined by using carbide tools and is resistant to acids and bases. Information provided by Goodfellow. SHAPAL™ -M is a trademark of Tokuyama Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Goodfellow-Shapal-M-soft-Aluminum-Nitride-AlN-Machinable.php

Physical Properties	Metric	English	Comments
Density	2.95 g/cc	0.107 lb/in ³	
Porosity	0.00 %	0.00 %	Apparent Porosity

Mechanical Properties	Metric	English	Comments
Vickers Microhardness	390 @Load 0.300 kg	390 @Load 0.662 lb	kg/mm ²
Tensile Modulus	186 GPa	27000 ksi	
Flexural Strength	294 MPa	42600 psi	
Compressive Strength	1180 MPa	171000 psi	
Poissons Ratio	0.31	0.31	
Shear Modulus	71.0 GPa	10300 ksi	Calculated

Thermal Properties	Metric	English	Comments
CTE, linear	4.40 µm/m-°C @Temperature 20.0 - 400 °C	2.44 µin/in-°F @Temperature 68.0 - 752 °F	
	4.80 µm/m-°C @Temperature 20.0 - 600 °C	2.67 µin/in-°F @Temperature 68.0 - 1110 °F	
	5.10 µm/m-°C @Temperature 20.0 - 800 °C	2.83 µin/in-°F @Temperature 68.0 - 1470 °F	
	80.0 W/m-K	555 BTU-in/hr-ft ² -°F	

Thermal Properties	Metric	English	Comments
	86.0 W/m-K @Temperature 200 °C	597 BTU-in/hr-ft ² -°F @Temperature 392 °F	
	@Temperature 100 °C	@Temperature 212 °F	
	90.0 W/m-K @Temperature 25.0 °C	625 BTU-in/hr-ft ² -°F @Temperature 77.0 °F	
Maximum Service Temperature, Air	1000 °C	1830 °F	
Maximum Service Temperature, Inert	1900 °C	3450 °F	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	1.00e+12 ohm-cm @Temperature 25.0 °C	1.00e+12 ohm-cm @Temperature 77.0 °F	
Dielectric Constant	7.1 @Frequency 1.00e+6 Hz	7.1 @Frequency 1.00e+6 Hz	
Dielectric Strength	40.0 kV/mm	1020 kV/in	
Dissipation Factor	0.0010 @Frequency 1.00e+6 Hz	0.0010 @Frequency 1.00e+6 Hz	

Descriptive Properties	Value	Comments
Acid Resistance	0.2 mg/cm ² wt. loss	10% HCl (24 hrs.; 25°C)
Alkali Resistance	60 mg/cm ² wt. loss	10% NaOH (24 hrs.; 25°C)
Thermal Shock Resistance (ΔT)	400°C	Water Quench

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