

# ST-200 AlN

## ALUMINUM NITRIDE

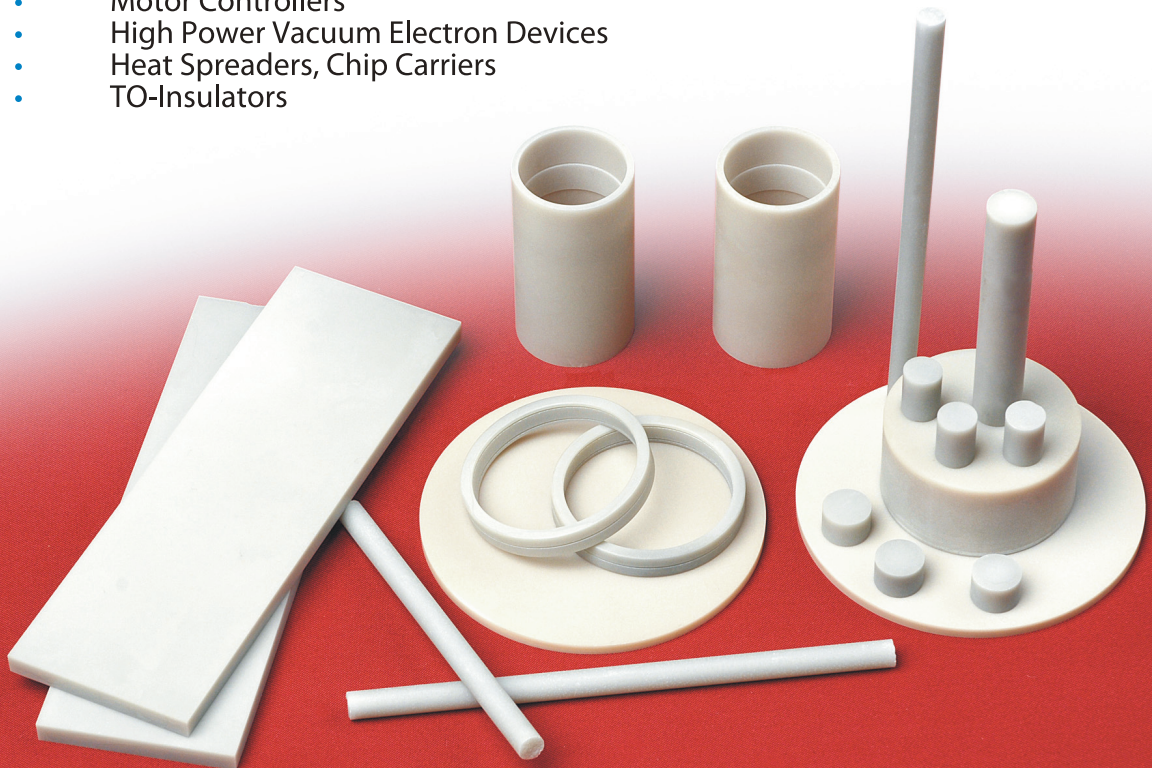
Aluminum nitride (AlN) provides the high performance electrical and thermal properties of beryllia (BeO) at a more economical cost and without BeO's toxicity concerns.

Sienna ST-200 AlN offers:

- Thermal conductivity that is comparable to that of beryllia and over five to eight times that of alumina
- Thermal expansion that closely matches that of Si, SiC, and GaN over a wide temperature range
- No toxicity - Aluminum Nitride poses no special disposal requirements
- Reliable metallization performance
- Available in a wide range of sizes and shapes by dry pressing, cold isostatic pressing, and extrusion
- Significant cost/performance advantage

These attributes make Sienna ST-200 AlN the best choice for solving thermal management problems in high power microwave and electronics applications. ST-200 AlN is ideal for high power and high frequency applications including:

- Power Transistors and Rectifiers
- Power Supplies
- Motor Controllers
- High Power Vacuum Electron Devices
- Heat Spreaders, Chip Carriers
- TO-Insulators



Sienna's technical team is ready to help you implement Aluminum Nitride in your current and next generation of products. Contact us for applications assistance, and for fast prototyping and production needs.

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 **SIENNA**  
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# ST-100 and ST-200

## AlN PROPERTIES

	ST-100	ST-200
<b>Color</b>	Light Gray	Light Gray
<b>Purity, %wt (min)</b>	99	95
<b>Density, g/cm<sup>3</sup></b>	3.20	3.30
<b>Thermal Conductivity, W/m•K</b>	90±10	200±20
<b>Heat Capacity @ RT, J/g•K</b>	0.736	0.736
<b>Thermal Expansion Coefficient, X10<sup>-6</sup>/°C</b> 25°C 300°C 600°C	3.38 4.22 4.80	3.53 4.55 5.07
<b>Dielectric Strength, kV/mm</b>	>15	≥70
<b>Volume Resistivity, Ohm-cm</b>	>10 <sup>14</sup>	>10 <sup>14</sup>
<b>Dielectric Constant</b> 1 MHz 2.6 GHz 10 GHz	8.8 8.0 8.0	8.5 8.38 8.35
<b>Loss Tangent</b> 1 MHz 2.6 GHz 10 GHz	0.001 0.01 0.007	0.001 0.007 0.005
<b>Flexural Strength, MPa</b>	275-300	300-350
<b>Elastic Modulus, GPa</b>	320	320
<b>Poisson's Ratio</b>	0.22	0.22
<b>Hardness, GPa</b>	12	12
<b>Fracture Toughness, MPa•m<sup>1/2</sup></b>	2.0	2.5
<b>Application</b>	High purity AlN, High temperature insulator, Excellent CTE match to SiC and Si die	High thermal conductivity, thermal management products, good CTE match to SiC and Si die

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