Aluminium Nitride Ceramics

–Thermal Management Application

Introduction

Aluminum Nitride is stable at very high temperatures in inert atmospheres.

Also, it is the only technical ceramic material that offers high thermal conductivity and good electrical insulation. So it is widely used for electronics and thermal management relevent applications.

Properties

Properties	Unit	INC–AN170	INC–AN200	INC–AN220
Color	–	Dark Gray	Gray	Beige
Density	(g/cm^3)	3.335	3.3	3.28
Thermal Conducitivity	(W/m.K) in 20˚C	⩾170	200	220
Bending Strength	(Mpa)	382.7	⩾325	⩾280
Insulation	(KV/mm)	18.45	27	27
Dielectric	–	8.56	8.8	8.6
CTE (10^{-6})	/℃, 5℃/min, 20–300℃	2.805	4.6	4.5

Key Properties & Popular Application

Key Properties		Applications
■ High thermal stability ■ Low thermal expansion ■ High thermal conductivity ■ High thermal shock resistance	High thermal conductivity makes AlN ideal for applications where fast and uniform thermal response is required. It is often used for electronics applications due to its excellent heat dissipation properties. Also, the high thermal conductivity coupled with low thermal expansion make AlN an excellent thermal shock resistant material which withstands rapid heating and cooling.	■ Heat sinks & heat spreaders ■ Semiconductor heaters ■ Substrate material for high power, electronic devices ■ Heat transfer components used at high temperatures ■ Laser heatsinks power rectifiers

Available Sizes and Machining Capability

Availability	Sizes (mm)	Machining Capability	Sizes (mm)
Plate	Φ350×30	Hole diameter	Φ0.03 or more
Rod	Φ100×200	Hole depth	300 or less
Groove width	0.05 or more	Max. hole number	3,000 (approx.)
Max. step height	30	Thread size	M2 or more

Custom Machined Parts

ALN Component

ALN Component

ALN Heatsink

ALN Heater

ALN Ring

ALN Plate

ALN Wafer

ALN Substrate With Holes

ALN Substrate

ALN Substrate

ALN Substrate

ALN Substrate

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