Aluminum Nitride (AlN)

Features

- High Thermal Conductivity
- Thermal Expansion Coefficient Close to That of Si
- High Resistivity
- Low Dielectric Constant and Loss
- Inert to Almost All Molten Metals
- Excellent Mechanical Strength

Applications

- Circuit Substrates for Semiconductor Module and IC
- Heat Sink Materials for Power Transitors , Thyristors, LDs and LEDs etc.
- Crucibles for Molten Metal and Preparing Single Crystals
- Window Material for Infrared ray and Radar

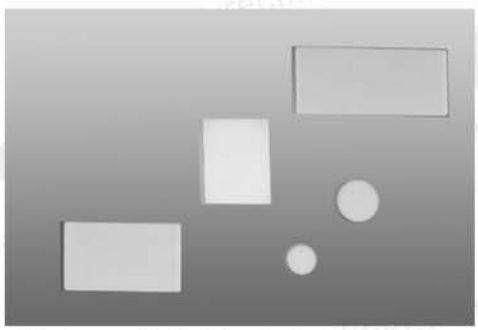
Characteristics of Material

Item	Unit	Value
Bulk Density	g/cm^3	3.24～3.3
Thermal Expansion Coefficient	$10^{-6}/℃$	4.36 (at 20～400℃)
Modulus of Elasticity	GPa	310
Mohs Hardness		7～8
Fracture Toughness	$MPam^{1/2}$	3.2～3.35
Vickers Hardness	GPa	12
Bending Strength	MPa	＞325
Thermal Conductivity	W/m.K	170～228
Dielectric Constant (at 1MHz)		8.6
Dielectric Loss Angle(at 1MHz)	$\times 10^{-4}$	5～10
Dielectric Strength	kV/mm	＞15
Volume Resistivity	Ω cm	$>3.6\times 10^{13}$

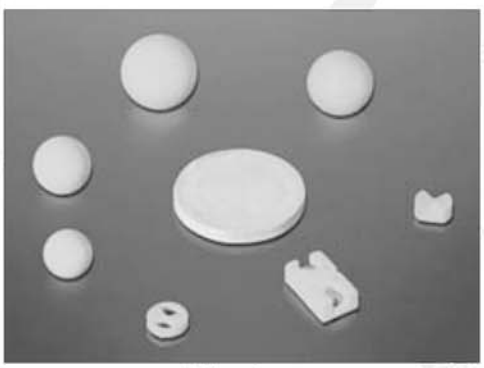
Metallized AlN Substraters

Item	Metallized Method						
Material	Pd-Ag	W-Mo	Mo-Mn	Pt-Ag	Ti/Cu/Ni/Au	Ta_2N/Ni	DCB
Feature	Thick film	Thick film	Thick film	Thick film	Thin film	Thin film	Direct Copper Bonded

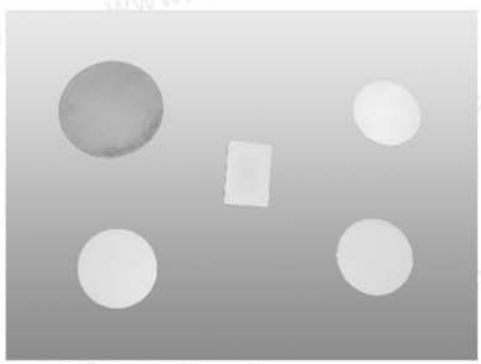
Crucible



Window materials for infrared and radar applications



Balls and parts



Plates, discs