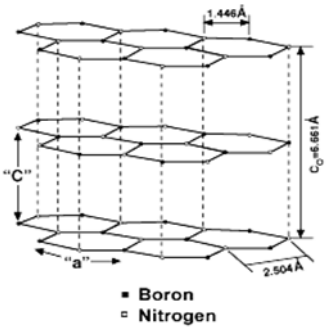
Data Sheet

PBN – Pyrolytic Boron Nitride



Description

PBN is a high purity (99.995%), non-porous, ceramic material grown via a Chemical Vapor Deposition (CVD) process. The material has anisotropic properties due to its planar crystal structure. PBN exhibits high thermal conductivity along its crystal planes ("a" direction) and good thermal insulation through its crystal planes ("c" direction).

Features:

- Very high dielectric strength over wide range of temperatures
- Spreads heat along its planes while acting as an electrical insulator
- Excellent high temperature stability
- Good flexural strength
- Non-toxic and Non-wetting
- Inert to most acids, alkalis, organic solvents, molten metals and graphite
- Oxidation resistant
- Low outgasing
- Excellent thermal shock resistance

Typical Applications:

- Crystal Growth, including GaAs and InP
- LEC, VGF and Bridgman crucibles
- MBE crucibles and furniture
- SUMO crucibles
- OLED crucibles and effusion cell hardware
- Heating elements

Production Capabilities:

- High Volume LEC capability
- CNC grinding and lapping
- PBN polishing
- Prototype, batch and volume production

Physical Properties*:		Units	Value	Testing Methods
Mechanical	Bulk densities	g/cc	1.90 - 2.05 – Plate 1.95 - 2.10 – Crucible	
	Tensile Strength	psi	8,800	ASTM D638-10
	Flexural Strength	psi	16,700	ASTM C1161-02c
	Gas Permeability (Helium)	cm^2/sec-atm	9.9×10^{-11}	ASTMD1434-82 (2009)e1
Thermal	Thermal Conductivity (32°C)	W/m-C	"c" 1.6	ASTM E1530-11
	CTE (-40°C to 150°C)	ppm/°C	"c" 15.5 "a" 3.0	ASTM E831-12
Electrical	Dielectric Strength	kV/mm	"c" 230	ASTM D149-09(2013)
	Dielectric Constant	-	"c" 3.7	ASTM D150-11
	Electrical Resistivity (25°C)	ohm-cm	1.0×10^{15}	

*Please note that these are typical properties and may vary.

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From an extensive range of advanced materials we produce components, assembles and systems that deliver significantly enhanced performance for our customers' products and processes. Our engineered solutions are produced to high tolerances and many are designed for use in extreme environments.

We design and manufacture products for demanding applications in a variety of markets using a comprehensive range of advanced ceramic, glass, precious metal, piezoelectric and dielectric materials. We utilise core competences of applications engineering and superior materials technology, together with state of the art fully integrated manufacturing processes to offer precision ceramic components, ceramic-to-metal assemblies and special coatings for use in a variety of applications.