

Pyrolytic Boron Nitride



Boron Nitride

Pyrolytic boron nitride is a grade of hexagonal boron nitride. It is produced by chemical vapor deposition process to create its solid body and all the boron nitride crystals grow parallel to the surface of which the vapor is deposited on.

Due to the nature of CVD process, PBN parts generally are requested the wall thickness not more than 3 mm. PBN is also a good choice for extremely high purity of boron nitride. 99.99% is the typical grade. The CVD process give this pyrolytic boron nitride almost perfect layered structure, which leads to anisotropic thermal conductivity, making it an ideal material to make crucibles for crystal growing.

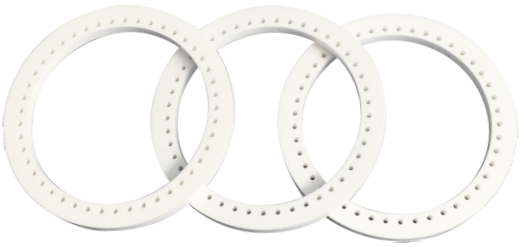
INNOVACERA PBN parts includes PBN Discs, PBN Sheets, PBN Filament Rings, PBN VGF Crucibles, PBN LEC Crucibles, PBN MBE Crucibles, PBN Conical Crucible and Other Custom PBN Parts.

Characteristic

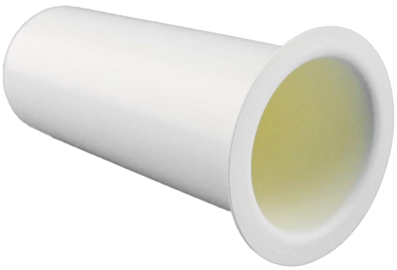
1. The color of PBN is between ivory and orange–brown, nontoxic, imporosity, easy processing.
2. The purity is up to 99.99%, surface densification, good gas barrier properties.
3. The strength increases as temperature rises and peaked at 2200℃.
4. Acid, alkali, salt and organic reagent resistant. Meanwhile, it does not react with the majority of molten–metal and semiconductor material.
5. Excellent thermal shock resistance, excellent thermal conductivity, low thermal expansion coefficient.
6. High resistance, high dielectric strength, low dielectric constant, low dissipation factor, excellent microwave and infrared ray ability.
7. It's with anisotropy in the mechanics, heat and electricity.



PBN Heating Plate



PBN Ring



OLED Crucibles

Applications

Crystal Growth (VGF, LEC Crucible)	Molecular Beam Epitaxy (MBE) Crucible	MOCVD Heater
PBN Infrared Window	Traveling Wave Tube (TWT) (PBN Support Rod)	PBN Coating Graphite
High Temperature, Vacuum Equipment Insulator		

Properties

Property		Unit	Value
Lattice Constant		μm	a: 2.504 x 10^{-10}; c: 6.692 x 10^{-10}
Density		g/cm^3	2.10–2.15 (PBN Crucible); 2.15–2.19 (PBN Plates)
Micro Hardness (Knoop)(ab side)		N/mm^2	691.88
Resistivity		Ω·cm	3.11 x 10^{11}
Tensile Strength		N/mm^2	153.86
Bending Strength	⊥C	N/mm^2	243.63
	⊥C	N/mm^2	197.76
Elastic Modulus		N/mm^2	235690
Thermal Conductivity		W/m·k	“a” direction; “c” direction
	200℃	W/m·k	60 2.60
	900℃	W/m·k	43.7 2.8
Dielectric Strength (at room temperature)		KV/mm	56

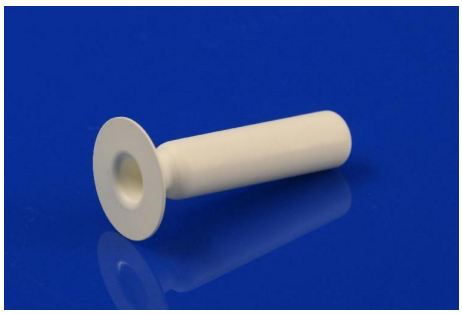
Show Case



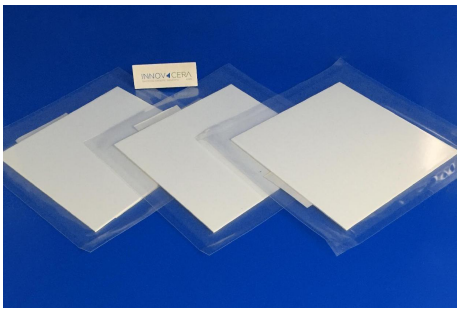
PBN Disc



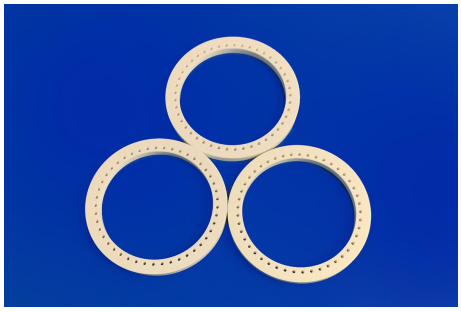
MBE Crucible



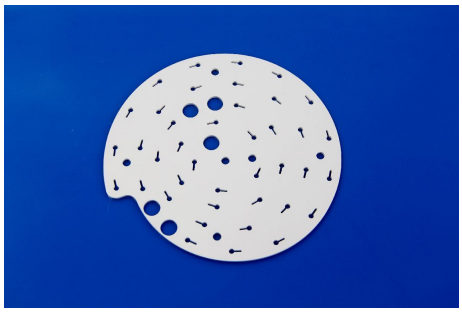
PBN Crucible



PBN Plate



PBN Ring



PBN Heating Plate

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