

# Boron Nitride Ceramic Hexagonal BN Ceramic

## Product Description

Boron Nitride powder is a white and lubricant powder. By means of hot pressing at high temperature and pressure, Boron Nitride ceramics are produced into a block as big as 480\*480mm. It is a machinable ceramic that can be easily cut into plates, rods or machined into complex shapes.



## Product Advantages

- (1) Electrical insulated at high temperature;
- (2) Oxidation and corrosion inert;
- (3) Outstanding lubricating capability;
- (4) High thermal conductivity;
- (5) Corrosion resistant by molten-metals liquid;
- (6) Non-wetted (without oxidation);
- (7) Superior thermal shock resistance;
- (8) High temperature resistance.

## Advanced Product Application

- Furnace fixture support and components
- Crucibles and setters for Nitride firing
- Melting crucibles for molten glass and metals
- Thermocouple protection tubes and sheaths
- High temperature insulators, valves, spacers
- Metal gas atomization nozzles
- Sputtering targets

## Material Properties

Item	Unit	A950	A990	A995	A998
Material	—	95%Al <sub>2</sub> O <sub>3</sub>	99%Al <sub>2</sub> O <sub>3</sub>	99.5%Al <sub>2</sub> O <sub>3</sub>	99.8%Al <sub>2</sub> O <sub>3</sub>
Colour	—	White	Ivory	Ivory	Ivory
Density	Gpa	3.70	3.85	3.90	3.92
Vickers Hardness	g/cm <sup>3</sup>	14	17	17.5	17.5
Flexural Strength	Mpa	310	360	370	380
Compressive Strength	Mpa	2200	2500	2600	2650
Electrical Resistivity	Ω*cm	≥10 <sup>14</sup>	≥10 <sup>14</sup>	≥10 <sup>14</sup>	≥10 <sup>14</sup>
Dielectric Strength	Kv/mm	15	17	17.5	17.5
Dielectric Constant	1MHz	8	9	9.5	9.6
Max. Working Temperature	°C	1500	1650	1700	1700
Thermal Conductivity	25°C,w/(m·k)	25	29	30	30.5
Resistance to Thermal Shock	ΔT(°C)	210	230	235	235

Unipretec produces 5 grades of boron nitride ceramic, BN-1700, BN-2000, BN-2300, BN-2800 and BN-3000.

### **BN-2000**

It is a material of 99% purity boron nitride, the most common used hot-pressed BN material. It's generally used in applications where high temperature and corrosion resistance capability is required, because it's resistant up to 2000°C in inert or vacuum environments, and it's non-wet by most molten metals. With good thermal conductivity and thermal shock resistance, BN-2000 is recommended for applications such as crucibles of melting metals, high temperature insulation components, high temperature electrode protection tube and insulators, and plasma chambers for hall effect thruster.

### **BN-1700**

99.7% purity boron nitride is the highest purity hBN without any binder added. This material offers extreme high temperature resistance in vacuum furnace, superior thermal shock resistance and exceptional thermal conductivity, it's suitable for high temperature ceramic manufacturing, particularly for crucibles, sintering setter plate of Nitride ceramic(aluminum nitride and silicon nitride) manufacturing.

### **BN-2300**

It is a composite of boron nitride and alumina matrix. The alumina composite contributes to its better mechanical strength and non-abrading properties. With an added benefit of good thermal conductivity, non-wetting by molten metals and easy machining, BN-2300 is an ideal material for molten metal applications such as metal atomizing nozzles, and side dams for thin strip casting.

### **BN-2800**

Unipretec hexagonal boron nitride grade BN-2800 combines boron nitride with aluminum nitride to get higher thermal conductivity. AlN material also contributes to better mechanical strength. BN2800 material has an advantage in applications where high thermal conductivity and high temperature is required.

### **BN-3000**

BN-3000 grade machinable ceramics combine the non-wetting properties of hBN with extremely wear resistance of zirconia material. It also offers high thermal conductivity and superior high temperature strength. All this makes it an excellent choice in molten metal applications, such as continuous casting break rings and nozzles for metal atomization.

Typical Products



Melting crucibles



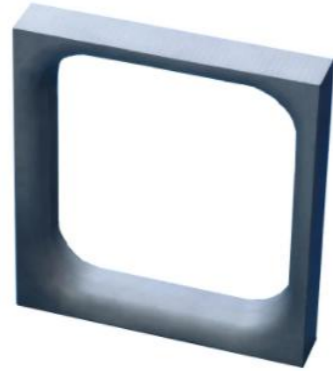
Vacuum Furnace Components



Thermocouple protection tubes



Furnace Setter plates



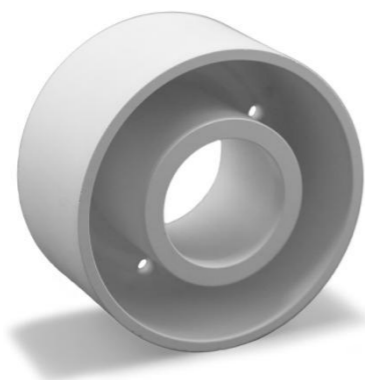
Continuous casting break rings



Metal gas atomization nozzles



High Temperature Tube



Hall-effect thruster chamber



Crucible setters for Nitride firing

Manufacturing Process



Product Application

