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 Advanced Technical Ceramic Solutions

Boron Nitride PCBN3000

General Properties

PCBN3000 is a unique hot-pressed boron nitride, engineered to work in the most demanding applications. This high purity material exhibits very low thermal expansion with superb thermal shock properties.

Binder-free PCBN3000 is the lowest hardness hexagonal Boron Nitride. It is easily machinable to very tight tolerances, has excellent thermal conductivity, very low thermal cycling behavior and good chemical resistivity to molten metals at very high temperatures. The lubricity of the material enables low frictional values. It is non-reactive with graphite and refractory metals in the 2000C range.

PCBN3000 is also an electrical insulator with outstanding properties, retaining high dielectric strength and electrical resistivity at extreme temperatures.

The properties of PCBN3000 are ideal for high temperature applications where the only option is boron nitride with no binder. It can be machined in large shapes from billets up to 490 x 490 x 400mm.

Applications

- Setter plates for high temperature furnaces
- Crucibles for non-oxide ceramics, phosphors, and metals
- Electrical insulation for extremely high temperatures and high voltages
- Components exposed to molten salts
- Hall Effect Thruster insulators

- Nozzles for non-ferrous metals and alloys
- Thermocouple protection tubes and sheaths
- Laser supports

Typical Properties

| Properties | Unit | PCBN3000 |
|--------------------------|---------------------|---|
| Temperature | °C | 850, Air 1800 vacuum 2000, N ₂ , Inert |
| Density | g/cm ³ | >=1.9 |
| CTE, RT to 1000°C (para) | 10 ⁻⁶ /K | <1 |
| CTE, RT to 1000°C (perp) | 10 ⁻⁶ /K | <1 |
| Flexural Strength (para) | MPa at 25°C | >20 |
| Flexural Strength (perp) | MPa at 25°C | >20 |
| Dielectric Constant | k | 4.0 |
| Dielectric Strength | KV/mm | >40 |
| Thermal Conductivity | W/mk | >60 |
| Ca | ppm | <100 |
| Si | ppm | <1 |
| Ca | % | 0.04 |
| O | % | <0.5 |

The values presented are mean and typical of those resulted from test samples. They are provided as an indication only to serve as guidance in the design of ceramic components and are not guaranteed in any way. The actual values can vary according to the shape and size of the designed component.



PRECISION CERAMICS USA, INC.

9843 18th St North, Suite 120, St. Petersburg, FL 33716

Tel: (727) 388 5060 Fax: (813) 435 2020

Email: info@precision-ceramics.com

www.precision-ceramics.com