



Boron Nitride (BN)

Boron Nitride is an advanced synthetic ceramic material available in powder, solid, liquid and aerosol spray forms. Its unique properties - from high heat capacity and outstanding thermal conductivity to easy machinability and superior dielectric strength - make boron nitride a truly outstanding material.

In its solid form, boron nitride is often referred to as 'white graphite' because it has a microstructure very similar to that of graphite. However, unlike graphite, boron nitride is an excellent electrical insulator and does not require humidity to act as a lubricant. It offers very high thermal conductivity and good thermal shock resistance and can be easily machined to close tolerances in virtually any shape. After machining, it is ready for use without additional heat treating or firing operations.

In inert and reducing atmospheres, Boron Nitride will withstand temperatures over 2,000°C and in oxidizing atmospheres up to 750°C. It is not wet by most molten metals and slags and can therefore be used as a container for most molten metals including aluminium, cryolite, sodium, iron, steel, silicon, boron, tin, germanium and copper.

Boron Nitride is available in a variety of grades – A, AX05, HP, M, M26 and ZSBN - in solid and in powder form. Whilst each grade is very different in terms of temperature operation, all offer a series of unique common properties ...

- Corrosion resistant
- Excellent lubricating properties – low coefficient of friction
- Excellent Machinability
- Excellent thermal shock resistance
- Good chemical inertness
- High dielectric breakdown strength
- High electrical resistivity

- High temperature material
- High thermal conductivity
- Isotropic (thermal conductance is different in different planes)
- Low density
- Non-wetting (without oxidization)

Typical Boron Nitride Applications

- Break rings for continuous casting of metals
- Continuous casting
- Crucibles and containers for high purity molten metals
- Deck plates
- Heat treatment fixtures
- High temperature lubricant
- High temperature valves
- High-temperature & high-voltage electrical insulators
- Induction heating coil supports
- Laser Nozzles
- Molds/mold release agent
- Molten metals and glass casting
- Nozzles for transfer or atomization
- Nuclear Shielding
- Radar components and antenna windows
- Refractory applications
- Spacers
- Vacuum furnace supports which require electrical resistivity

Individual data sheets providing technical and application information for each grade of boron nitride are available from Precision Ceramics.

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