

# 3M™ Boron Nitride Sintered Parts

The 3M™ hot pressed hexagonal boron nitride parts show a unique combination of chemical, mechanical and electrical properties.

## Special characteristics

- 3M™ Boron Nitride Grade S characteristics depend on a defined amount of boron oxide working as an additive binder to obtain dense boron nitride shapes. 3M™ Boron Nitride Grade S offers excellent performance for a wide range of applications.
- 3M™ Boron Nitride Grade CD is a hot pressed hexagonal boron nitride using a calcium oxide as a binder. It is, when compared to 3M™ Boron Nitride Grade S, less sensitive to moisture and allows higher application temperatures. Especially hot forming technologies used in glass industry take full advantage of these properties.
- 3M™ Boron Nitride Grade HD is a hot isostatically pressed hexagonal boron nitride showing isotropic behavior and good physical properties. Because of the lower boron oxide content it is suitable for applications demanding high purity. 3M Technical Ceramics recommends 3M™ Boron Nitride Grade HD for use in the semiconductor industry and high temperature furnace engineering.
- 3M™ Boron Nitride Grade O is a BN-ZrO<sub>2</sub> composite material showing as well as Boron Nitride Grade SO an increased bending strength. 3M™ Boron Nitride Grade O is recommended for casting nozzles and refractory components for nickel and cobalt based alloys and for the aluminium industry.
- 3M™ Boron Nitride Grade SO is a BN-ZrO<sub>2</sub>-SiC composite material which combines the non-wetting property of boron nitride with the extraordinary refractory properties of zirconia and the high wear resistance of silicon carbide. It offers excellent hardness and other wear resistance for molten metal applications. 3M™ Boron Nitride Grade SO is our preferred solution for refractory applications in the steel industry.



3M™ Boron Nitride Break Ring for horizontal continuous casting of steel and nonferrous alloys

## Advantages

- High resistance to molten metals and glass
- Outstanding thermal shock resistance
- Excellent electrical insulation – even at high temperatures
- Application temperature up to 1,100 °C in oxidizing atmosphere and up to 1,800 °C in inert atmosphere (according to type)

## Applications

3M Technical Ceramics offers machined parts or blanks according to customer specifications for various applications in high performance material processing industry.

3M™ Boron Nitride solids are designed particularly for refractories, e.g. side-dams in thin strip casting process, break rings in horizontal continuous casting and ceramic firing supports.

## Processing

3M™ Boron Nitride boron nitride can be easily machined, even to complex shapes and forms by a wide range of conventional cutting technologies like sawing, turning, drilling, milling or ultrasonic assisted machining.

Do not hesitate to contact us if you need any technical advice. Our specialists will help you to find the best machining conditions.

### Please note following recommendations:

- Do not use a coolant or lubrication in the machining of boron nitride because of its hygroscopic properties.
- To control dust release we recommend the use of an auxiliary vacuum system at the tool.

## Storage

3M™ Boron Nitride boron nitride should be stored in well closed containers until use and protected against moisture and freeze.

## Safety

Boron nitride is not a hazardous substance within the meaning of the European CLP regulation No. 1272/2008 EC (regulation on the classification, labelling and packaging of substances and mixtures). Boron nitride is not toxic (does not cause eye or skin irritation).

Detailed safety information is contained in each material data safety sheet, which can be obtained from our sales offices.

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