

## Momentive Performance Materials HBC Hot-Pressed Boron Nitride

Category : Ceramic , Nitride

### Material Notes:

Hot-pressed BN is compacted at temperatures up to 2000°C and pressures up to 2000 psi to form a dense, strong engineering material that is easily machined. It is available in standard and custom hot-pressed shapes and has several unique characteristics and physical properties which make it valuable for solving tough problems in a wide range of industrial applications. Four Material Grades HBC and HBT are the highest purity hot-pressed boron nitrides commercially available. They are diffusion bonded and feature a low dielectric constant, minimal moisture pick-up, and low loss tangent which makes them ideal for electronic applications. Grade HBT, although lower in strength and density than HBC, is available in larger sizes, at lower cost, and usually with a shorter delivery schedule. Grade HBN uses small amounts of boric oxide as a binder and should be used in applications where hydration and thermal shock are not a concern. Grade HBR uses calcium borate as a binder and is less sensitive to moisture. Thermal Management The unique combination of being both an excellent electrical insulator and thermal conductor makes BN very useful as a heat sink in high power electronic applications. Its properties compare favorably with beryllium oxide, aluminum oxide and other electronic packaging materials, yet is easier to form and finish. High Temperature Applications Temperature stability and excellent resistance to thermal shock makes BN the material of choice in the toughest high temperature applications such as equipment for plasma arc welding, diffusion source wafers, and semiconductor crystal growth equipment & processing. Molten Metal Handling BN is inorganic, inert, nonreactive with halide salts and reagents, and is not wet by most molten metals and slags. These characteristics, combined with low thermal expansion, make useful in various molten metal processes. Information provided by Momentive Performance Materials, formerly GE Advanced Ceramics.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Momentive-Performance-Materials-HBC-Hot-Pressed-Boron-Nitride.php](http://www.lookpolymers.com/polymer_Momentive-Performance-Materials-HBC-Hot-Pressed-Boron-Nitride.php)

Physical Properties	Metric	English	Comments
Density	1.95 g/cc	0.0704 lb/in <sup>3</sup>	typical
Moisture Absorption at Equilibrium	0.60 %	0.60 %	400 hours, 100% RH
Open Porosity	13 %	13 %	

Mechanical Properties	Metric	English	Comments
Hardness, Knoop	16	16	100 g
Modulus of Elasticity	20.6 GPa	2990 ksi	Perpendicular to pressing direction
	48.2 GPa	6990 ksi	Parallel to pressing direction
Flexural Strength	17.2 MPa	2490 psi	Perpendicular to pressing direction
	20.6 MPa	2990 psi	Parallel to pressing direction
Compressive Strength	41.3 MPa	5990 psi	Parallel to pressing direction
	51.7 MPa	7500 psi	Perpendicular to pressing direction

Thermal Properties	Metric	English	Comments
CTE, linear	0.400 $\mu\text{m/m}\cdot\text{Å}^\circ\text{C}$	0.222 $\mu\text{in/in}\cdot\text{Å}^\circ\text{F}$	Parallel to pressing direction
	@Temperature 25.0 - 1500 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 2730 $\text{Å}^\circ\text{F}$	
CTE, linear, Transverse to Flow	0.800 $\mu\text{m/m}\cdot\text{Å}^\circ\text{C}$	0.444 $\mu\text{in/in}\cdot\text{Å}^\circ\text{F}$	Perpendicular to pressing direction
	@Temperature 25.0 - 1500 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 2730 $\text{Å}^\circ\text{F}$	
Specific Heat Capacity	0.808 J/g- $\text{Å}^\circ\text{C}$	0.193 BTU/lb- $\text{Å}^\circ\text{F}$	
	1.846 J/g- $\text{Å}^\circ\text{C}$	0.4412 BTU/lb- $\text{Å}^\circ\text{F}$	
Thermal Conductivity	23.0 W/m-K	160 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	Perpendicular to pressing direction
	28.0 W/m-K	194 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	Parallel to pressing direction
Maximum Service Temperature, Air	850 $\text{Å}^\circ\text{C}$	1560 $\text{Å}^\circ\text{F}$	oxidizing atmosphere
Maximum Service Temperature, Inert	2000 - 3000 $\text{Å}^\circ\text{C}$	3630 - 5430 $\text{Å}^\circ\text{F}$	Inert/Vacuum

Electrical Properties	Metric	English	Comments
Electrical Resistivity	$\geq 1.00\text{e}+15$ ohm-cm	$\geq 1.00\text{e}+15$ ohm-cm	
Dielectric Constant	4.1	4.1	
	@Frequency 1e+6 Hz	@Frequency 1e+6 Hz	
Dielectric Strength	54.0 kV/mm	1370 kV/in	
Dissipation Factor	$\leq 0.00020$	$\leq 0.00020$	
	@Frequency 1e+6 Hz	@Frequency 1e+6 Hz	

## Contact Songhan Plastic Technology Co.,Ltd.

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