



Boron Nitride Grade M & M26

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.

Solid Boron Nitride Grade M is a truly hydrophobic advanced ceramic. Composed of boron nitride and silica, it is completely resistant to moisture and has a MIL-I-10A grade of L542, a test requiring immersion in water for 48 hours prior to testing at elevated frequencies. Grade M is suitable for the most severe electrical applications. It is an excellent refractory material at temperatures up to 1400°C, and is unparalleled in resistance to thermal shock.

Applications

- High temperature electrical insulators and vacuum furnace supports which require electrical resistivity, high temperature strength, thermal shock resistance and low chemical resistivity
- Crucibles and containers for high purity molten metals
- Tools and refractories for glass forming which provide non-wetting, non-B₂O₃ containing contacts
- Radar components and antenna windows which require exacting electrical and thermal properties

Typical Properties		
Typical Chemical Analysis	Grade M	Grade M26
Boron ¹	18-20.25%	26.5-28.7%
Nitrogen ¹	22.5-25.5%	32.8-35%
Oxygen ¹	-	-
Calcium ¹	.01% ³	.01% ³
Silica (SiO ₂) ¹	60%	40% ¹
Other Inorganic ¹	.02%	.05%
Trace Metals	.05%	.05%
TOTAL	100%	100%
B ₂ O ₃ *	.2%	.2%

*B₂O₃ is given for clarification and is not part of the elemental analysis
¹ Wet Chemistry - ² LECD Oxygen - ³ Optical Emission Spectroscopy

Typical Physical Properties				
Typical Physical Properties	Grade M		Grade M26	
Percent BN:	40		60	
Percent SiO ₂ :	60		40	
	Parallel	Perpendicular	Parallel	Perpendicular
Volume Resistivity (ohm-cm) @RT:	1.7x10 ¹⁵	5.1x10 ¹⁵	6.4x10 ¹⁴	2.9x10 ¹⁵
@150°C:	2.4x10 ¹³	3.3x10 ¹³	2.4x10 ¹³	8.5x10 ¹³
Dielectric Constant (@ 1MHz) @RT:	4.21	3.87	4.48	3.89
microwave frequency: @ RT, 8.8 GHz:	3.86	4.08	3.89	4.28
Dielectric Strength: volts/mil & (volts/mm)				
Sample thickness: 10 mil	1670 (65748)		1690 (66535)	
Tested up to 25kV) 25 mil	>1000 (>39370)		>1000 (>39370)	
Dissipation Factor (Loss tangent)				
@RT @ 1MHz	.0016	.0035	.0017	.0061
@150°C @ 1MHz	.0017	.0055	.0094	.0062
@RT @ 8.8GHz	.0011	.0005	.0039	.0006
Loss Factor				
@RT @ 1MHz	.0067	.0140	.0076	.0230
@150°C @ 1MHz	.0077	.0230	.0440	.0250
@RT @ 8.8GHz	.0042	.0020	.0150	.0260
Surface Resistivity (ohms/) @ RT	8.5 x 10 ¹⁶		4.2 x 10 ¹⁶	
@ 150°C	1.4 x 10 ¹⁵		1.5 x 10 ¹⁵	

PRECISION CERAMICS