



Boron Nitride Composites

AC6043 and BIN77

Momentive Performance Materials' boron nitride (BN) composites incorporate proprietary compositions with other refractory materials and are excellent candidates to consider for harsh environments such as non-ferrous molten metal applications.

Potential Applications

AC6043 may be considered for use in replacement parts for areas of high oxidation where longer life and much lower erosion rates are needed such as vents, plates, stacks, crucibles, and capsules. AC6043 is an excellent candidate to consider for valuable aluminum processing applications.

BIN77 may be considered for use as an insulator in high voltage, vacuum environments where mechanical strength and durability are required. Good thermal conductivity enables it for use in crucibles and thermocouple wells.



AC6043

Grade AC6043 is an electrically conductive titanium diboride/boron nitride composite that is machinable and typically exhibits better oxidation resistance and improved strength compared to common furnacing materials such as graphite.

BIN77

Grade BIN77 is an electrically insulating Aluminum Nitride/Boron Nitride composite that is durable and typically offers long life in abrasive environments. The calcium-stabilized binder system typically provides resistance to moisture pick up, spalling and cracking.

Machining

AC6043, BIN77 can be machined using standard practices for hard ceramic materials, including diamond tooling with high cutting or grinding speeds and normal feed rates.

Momentive Performance Materials produces over 70 standard and custom grades of BN powders to meet a wide range of application requirements, and has over 50 years of expertise in the synthesis and refinement of boron nitride powders.

Typical Physical Properties¹

PROPERTY	AC6043	BIN77
Binder	N/A	Calcium Borate
Pressing Direction		⊥
Density, g/cm ³	2.78	2.43
Max. Operating Temp., °C	950 Oxidizing 1600 Inert/Vacuum	950 Oxidizing 1600 Inert/Vacuum
CTE (25-1500°C), ppm/°C	7	5.4 5.6
Modulus of Elasticity, GPa (psi x 10 ⁶)	107 (15.5)	41 (6) 62 (9)
Flexural Strength, MPa (psi x 10 ³) @ 25°C @ 1500°C	89.6 (13.0) 16.5 (2.4)	78.6 (11.4) 103.4 (15.0) 24.8 (3.6) 32.4 (4.7)
Thermal Conductivity, W/m-K @ 25°C @ 500°C @ 1500°C	70 56 43	70 80
Rockwell Hardness (H)	123	
Dielectric Strength (V/mm x 10 ³)		43
Dielectric Constant @ 1GHz @ 9.3 GHz @ 1 MHz		6.2 5.9 6.4
Volume Resistivity @ 25°C (ohm-cm) @ 700°C (ohm-cm)	<1000 x 10 ⁻⁶ —	>10 ¹⁵ 7.4 x 10 ⁶

¹Typical data are average and actual results may vary. Typical data shall not be used as product specifications.

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