



# MOMENTIVE

performance materials

## Boron nitride composites AC6043, BNC1, and BNC2

**Momentive Performance Materials' boron nitride (BN) composites incorporate proprietary compositions with other refractory materials and are ideally suited for the harsh environments of molten metal applications of non-ferrous and ferrous alloys.**

### AC6043

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

### BNC 1 & 2

Grades BNC 1 & 2 offer excellent corrosion and wear resistance, have excellent thermal shock capability and low CTE, are non-wetting and are self lubricating.

### Applications:

AC6043 is used 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.

BNC 1 & 2 are useful in a broad range of metallurgical applications, including side dams, break rings, submerged nozzles, heat shields, spatter guards, stopper rods, slide gates, thermocouple wells and many other super refractory uses.

### Machining:

AC6043, BNC1, and BNC2 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 75 standard and custom grades of BN powders to meet a wide range of application requirements, and has over 40 years of expertise in the synthesis and refinement of boron nitride powders.



Machined hot pressed BN and composite shapes for use in a variety of applications.

### Available Sizes (AC6043 only)

Rods:	Diameters 1 - 5 in.	Lengths 1 - 12 in.
Blocks:	Width-Heights 1 - 5 in.	Lengths 1 - 12 in.
Plates:	Thickness 0.125 - 1 in.	Lengths-Widths 1 - 12 in.

For AC6043 sizes not listed above, and for size availability of BNC1 and BNC2, please call for price and delivery.

## Typical Properties

	AC6043	BNC1		BNC2	
Pressing Direction			⊥		⊥
Density, g/cc	2.78	2.24		2.85	
Max. Operating Temp., ° C	950 Oxidizing 1600 Inert/Vacuum	950 Oxidizing 1600 Inert/Vacuum		950 Oxidizing 1500 Inert/Vacuum	
CTE (25-1500° C), ppm/° C	7	5.2	8.8	8.3	6.5
Modulus of Elasticity, psi x 10 <sup>6</sup>	15.5	1.5	9.0	9.7	3.0
Compressive Strength (@ 25° C), psi x 10 <sup>3</sup>	N/A	13.4	16.2	18.6	11.3
Flexural Strength, psi x 10 <sup>3</sup> @ 25° C	13.0	2.7	9.8	3.2	6.7
@ 1500° C	2.4	2.0	5.9	3.1	4.9
Thermal Conductivity, W/m-K @ 25° C	70	14.1	15.7	10.8	26.5
@ 500° C	56	9.7	11.4	8.0	18.6
@ 1500° C	43	5.0	5.6	4.5	10.7
Rockwell Hardness (H)	123	71	82	93	86



BNC1 Before Test      BNC1 304 SS      BNC1 1006 CS      Competitive Product (1)

(1) Contains ZrO<sub>2</sub>/BN/SiC

Tests conducted in 304 SS and 1006 Carbon Steel at 1600° C. Samples were immersed in molten steel and rotated at 60 rpm for 3 hours. Table below lists erosion/corrosion as percentage reduction in diameter per hour.

BNC1		BNC2		Competitive Product	
CS	SS	CS	SS	CS	SS
0.4	0.4	0.4	0.9	0.9	2.5

## Wear Resistance and Coefficient of Friction

Test method used was pin-on-disk at 450° C in argon, nickel static substrate, sliding velocity 0.5m/sec, 2N load.

	BNC1		BNC2	
		⊥		⊥
Wear Rate, mm <sup>3</sup> /N/m	0.023	0.044	0.018	0.099
Coefficient of Friction	0.62	0.62	0.76	0.73

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