

### General Properties

BNP-3 is a boron nitride zirconia composite with outstanding thermal shock resistance and resistance to molten metal wetting.

### Applications

- Molten metal side dams.
- Continuous casting break rings.
- Refractories.
- Crucibles.
- Atomizing nozzles.

### Physical Properties

Property		Unit	BNP-3
Maximum Use Temperature		°C	850 (oxidizing) 1800 (inert)
Young's Modulus at RT		GPa	70,8 para 70,5 perp
Hardness (Knoop)		kg/mm <sup>2</sup>	95 para 105 perp
Shear Modulus		GPa	27,7 para 32,2 perp
Modulus of Elasticity	at 25 °C	GPa	70,8 para 70,5 perp
	at 1000 °C		63,8 para 59,5 perp
	at 3000 °C		43,8 para 44,2 perp
CTE	40 °C to 500 °C	10 <sup>-6</sup> K <sup>-1</sup>	6,40 para 1,98 perp
	600 °C to 1500 °C		15,40 para 5,42 perp
Flexural Strength	at 23 °C	psi	10460 para 20790 perp
	at 1000 °C		4600 para 7040 perp
	at 1500 °C		2120 para 3850 perp
Compressive Strength (23 °C)		ksi	2,95 para 0,87 perp
Density		g/cm <sup>3</sup>	2,9
Specific Heat	at 100 °C	J/g °C	0,7222 para 0,705 perp
	at 200 °C		0,850 para 0,835 perp
	at 300 °C		0,938 para 0,910 perp
	at 400 °C		0,979 para 0,965 perp
	at 500 °C		1,055 para 1,029 perp
Compressive Strength		MPa	30 para 48 perp
Density		g/cm <sup>3</sup>	1,9–1,95
B <sub>2</sub> O <sub>3</sub>		%	0.4
O <sub>2</sub>		%	3–5
Ca		%	0.5–3
Others		%	0.03

(continued)

### Physical Properties *(continued)*

Property		Unit	BNP-3
Thermal Diffusivity	at 19 °C	cm <sup>2</sup> /s	0,22 para 0,12 perp
	at 204 °C		0,13 para 0,08 perp
	at 504 °C		0,08 para 0,05 perp
	at 1005 °C		0,05 para 0,03 perp
	at 1507 °C		0,04 para 0,02 perp
Thermal Conductivity	at 25 °C	W/m*K	22,62 para 40,21 perp
	at 316 °C		15,46 para 29,39 perp
	at 437 °C		13,98 para 27,16 perp
	at 557 °C		13,32 para 24,96 perp
	at 711 °C		12,78 para 23,11 perp
	at 978 °C		11,65 para 21,88 perp
Open Porosity		%	2.4–3.4
Zr		%	30.9
N <sub>2</sub>		%	26.0
B		%	21.7
O <sub>2</sub>		%	14.0
Si		%	4.3
C		%	2.2
B <sub>2</sub> O <sub>3</sub>		%	1.0

NOTE: This data shows typical values and does not represent a specification.

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