

BORTEC[®] MMC

STANDARD SPECIFICATIONS

In October 2007, Ceradyne Canada acquired the exclusive rights to fabricate and distribute BORTEC[®] MMC for nuclear applications. We manufacture BORTEC[®] MMC in our Canadian ISO 9001:2008 certified and NQA-1 compliant facility into rolled plates and in B₄C contents up to 32% by weight using various aluminum alloys. The resulting composites are presently used for neutron attenuation in spent fuel dry storage and potentially for spent fuel pools.

1. BORTEC[®] Characteristics

B₄C particle size: average 10-12µm
 Relative density: > 98%
 Interconnected porosity: < 0.1%
 Uniformity: Uniformity of the B₄C in the matrix is insured by mixing the powders in qualified equipment.

2. BORTEC[®] Dimensions of Sizes Available

Thickness (in)	Maximum Width		Maximum Length	
	(in)	(mm)	(in)	(mm)
0.075 – 0.375	36	914	192	4877
Over 0.375 ⁽¹⁾	Contact Ceradyne Canada			

(1) Thicker material can be produced but will need to be water jet cut to finished dimensions.

3. BORTEC[®] Dimension Tolerances

Thickness (in)	Thickness		Width		Length	
	(in)	(mm)	(in)	(mm)	(in)	(mm)
0.075 – 0.090	+/- 0.005	+/- 0.127	+/- 0.079	+/- 2	+/- 0.118	+/- 3
0.091 - 0.150	+/- 0.006	+/- 0.152	+/- 0.079	+/- 2	+/- 0.118	+/- 3
0.151 – 0.375	+/- 0.008	+/- 0.203	+/- 0.118	+/- 3	+/- 0.157	+/- 4
Over 0.375	+/- 0.008	+/- 0.203	+/- 0.118	+/- 3	+/- 0.157	+/- 4

4. BORTEC[®] Typical Engineering Properties

Figures below show typical values for tensile strength and thermal conductivity for BORTEC[®] MMC with Pure Al matrix. The results are plotted against B₄C content.

BORTEC[®] MMC with Pure Al matrix

