3M Advanced Materials Division

3M™ Neutron Absorber Composite

Introduction

3M™ Neutron Absorber Composite (formerly Boral® Composite) is used for spent fuel storage pools, dry storage casks and fresh fuel transportation containers in the United States, Europe and Asia. Since the late 1950s, 3M neutron absorber composite has been used in research reactors, nuclear power plants and spent fuel storage systems worldwide, providing reliable service for very long periods of time in high gamma and neutron radiation fields.

3M neutron absorber composite is produced in our ISO 9001:2008 certified and NQA-1 compliant facility. We offer this material in a wide range of surface dimensions, areal densities and thicknesses. The product is manufactured in flat sheets that can be cut, punched and shaped by water jet to final dimensions.

Available Sizes

<table>
<thead>
<tr>
<th>Thickness Inches</th>
<th>Max. Width Inch (mm)</th>
<th>Max. Length Inch (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.075 – 0.250</td>
<td>36 (914)</td>
<td>192 (4877)</td>
</tr>
<tr>
<td>Over 0.250†</td>
<td>Contact 3M</td>
<td></td>
</tr>
</tbody>
</table>

†Thicker material can be produced, but must be cut by water jet to finished dimensions.

Dimension Tolerances

(Not for specification purposes)

<table>
<thead>
<tr>
<th>Nominal Thickness</th>
<th>Thickness Tolerance Inch (mm)</th>
<th>Width Tolerance Inch (mm)</th>
<th>Length Tolerance Inch (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.075 – 0.090</td>
<td>± 0.005 (± 0.127)</td>
<td>± 0.079 (± 2)</td>
<td>± 0.118 (± 3)</td>
</tr>
<tr>
<td>0.091 – 0.150</td>
<td>± 0.006 (± 0.152)</td>
<td>± 0.079 (± 2)</td>
<td>± 0.118 (± 3)</td>
</tr>
<tr>
<td>0.151 – 0.270</td>
<td>± 0.008 (± 0.203)</td>
<td>± 0.118 (± 3)</td>
<td>± 0.157 (± 4)</td>
</tr>
<tr>
<td>Over 0.270</td>
<td>± 0.008 (± 0.203)</td>
<td>± 0.118 (± 3)</td>
<td>± 0.157 (± 4)</td>
</tr>
</tbody>
</table>

Areal Density

Maximum B$_2$C loading in the core of 67%.

Technical Services

Our ISO 9001:2008 and NQA-1 Quality Program is fully qualified, audited and approved by many worldwide customers. We control the entire value stream in the manufacture of these specialized materials, also offering qualification services for new designs and applications. Whether using natural boron carbide or enriched boron, we manufacture neutron absorber materials that meet or exceed stringent end user requirements. Under our ISO and NQA-1 programs, we provide best-in-class service to our customers covering all steps of neutron absorber manufacturing and processing. For more information, contact us at boron@mmm.com.

Product Storage, Handling and Safety

Storage: Store away from heat. Store away from acids. Store away from strong bases. Store away from oxidizing agents.

Handling: Avoid contact with oxidizing agents (e.g. chlorine, chromic acid etc.).

Safety: May present a hazard under certain handling conditions. See Article Information Sheet for additional information.

For more information on storage, handling and safety, an Article Information Sheet (AIS) is available upon request. You may request this by contacting us at boron@mmm.com.
Product is manufactured and sold by 3M Technical Ceramics Inc.

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