Grade ATJ Graphite

Product Overview
Grade ATJ™ graphite has been an industry standard for years. It is a fine grain, high strength material that can be machined to precise tolerances and a fine surface finish. ATJ™ graphite has unique thermal shock resistance due to the combination of low thermal expansion, high thermal conductivity, and low elastic modulus.

Applications
• Permanent molds
• Composite tooling
• Continuous casting dies
• Hot pressing molds and punches
• Rocket motor nozzles
• Plungers & rams

Sizes*

<table>
<thead>
<tr>
<th>Inches</th>
<th>Millimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>16” x 16” x 65” rectangles</td>
<td>406 x 406 x 1651 mm rectangles</td>
</tr>
<tr>
<td>12” x 25” x 80” rectangles</td>
<td>305 x 635 x 2032 mm rectangles</td>
</tr>
<tr>
<td>8” - 24” diameter x 72” long rounds</td>
<td>203-610 mm diameter x 1829 long rounds</td>
</tr>
</tbody>
</table>

Grade ATJW™ graphite is a post purified version of ATJ™ graphite for applications requiring very low ash. ATJW™ has the same properties as ATJ™ with an ash content of less than 20ppm.

Typical Properties at Room Temperature**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ENGLISH</th>
<th>WG</th>
<th>METRIC</th>
<th>WG</th>
<th>SI</th>
<th>WG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>lbs/ft³</td>
<td>110</td>
<td>g/cm³</td>
<td>1.76</td>
<td>g/cm³</td>
<td>1.76</td>
</tr>
<tr>
<td>Average Particle Size</td>
<td>inches</td>
<td>0.001</td>
<td>mm</td>
<td>0.03</td>
<td>mm</td>
<td>0.03</td>
</tr>
<tr>
<td>Specific Resistance</td>
<td>10⁻⁴μΩm in.</td>
<td>4.61</td>
<td>μΩm</td>
<td>11.7</td>
<td>μΩm</td>
<td>11.7</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>psi</td>
<td>4500</td>
<td>kg/cm²</td>
<td>317</td>
<td>MPa</td>
<td>31</td>
</tr>
<tr>
<td>Young’s Modulus</td>
<td>10⁶ psi</td>
<td>1.40</td>
<td>kg/mm²</td>
<td>982</td>
<td>GPa</td>
<td>9.7</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>psi</td>
<td>3740</td>
<td>kg/cm²</td>
<td>262</td>
<td>MPa</td>
<td>26</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>psi</td>
<td>9500</td>
<td>kg/cm²</td>
<td>670</td>
<td>MPa</td>
<td>66</td>
</tr>
<tr>
<td>Permeability</td>
<td>Darcy</td>
<td>0.002</td>
<td>Darcy</td>
<td>0.002</td>
<td>Darcy</td>
<td>0.002</td>
</tr>
<tr>
<td>Hardness</td>
<td>Rockwell “L”</td>
<td>60</td>
<td>Rockwell “L”</td>
<td>60</td>
<td>Rockwell “L”</td>
<td>60</td>
</tr>
<tr>
<td>C.T.E. (to 100 °C)</td>
<td>10⁻⁶/°F</td>
<td>1.7</td>
<td>10⁻⁶/°C</td>
<td>3.0</td>
<td>10⁻⁶/K</td>
<td>3.0</td>
</tr>
<tr>
<td>Thermal Conductivity</td>
<td>BTU-ft/hr ft² °F</td>
<td>67</td>
<td>W/mK</td>
<td>116</td>
<td>W/mK</td>
<td>116</td>
</tr>
<tr>
<td>Ash Content</td>
<td>%</td>
<td>.11</td>
<td>%</td>
<td>.11</td>
<td>%</td>
<td>.11</td>
</tr>
</tbody>
</table>

Notes:
* Other sizes available upon request
** Properties listed are typical and cannot be used as accept/reject specifications