HIGH THERMAL CONDUCTIVE GRAPHITE SHEET

Tgon™ 9000 is a synthetic graphite thermal interface material consisting of carbon in-plane mono-crystal structure.

Tgon™ 9000 is ultra-thin, light-weight, flexible and offers excellent in-plane thermal conductivity. Ideal for variety of heat spreading applications where in-plan thermal conductivity dominates and limited spaces.

FEATURES AND BENEFITS

- Thermal Conductivity: 500 to 1900W/mK
- 4 times thermal conductivity than copper
- Reduce hot spots and protect sensitive areas
- Enables slim device designs with ultra-thin of 17um
- Light weight with density of 2.05~2.25 5g/cm³ for thickness of 17um & 25um
- Flexible (Withstand more than 10,000 times bending with R=5mm)
- Ease of manufacturing for high volume production

MARKETS

- Handheld devices
- Mobile computing
- Display
- Lighting
- Telecom

PRODUCT NAME AND KEY PROPERTIES AS BELOW:

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Test Method</th>
<th>Tgon 9017</th>
<th>Tgon 9025</th>
<th>Tgon 9040</th>
<th>Tgon 9070</th>
<th>Tgon 9100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>ASTM D374</td>
<td>0.017+/-.005</td>
<td>0.025+/-.005</td>
<td>0.04+/-.005</td>
<td>0.07+/-.01</td>
<td>0.1+/-.01</td>
</tr>
<tr>
<td>Thermal conductivity (W/mK)</td>
<td>ASTM E1461</td>
<td>1650~1900</td>
<td>1500~1700</td>
<td>1150~1400</td>
<td>700~1000</td>
<td>500~700</td>
</tr>
<tr>
<td>Density (g/cm³)</td>
<td>ASTM D792</td>
<td>2.05~2.25</td>
<td>2.05~2.25</td>
<td>1.65~1.85</td>
<td>1.0~1.3</td>
<td>0.7~1.0</td>
</tr>
<tr>
<td>Specific heat (50°C)(J/gK)</td>
<td>ASTM E1269</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>Heat resistance (˚C)</td>
<td>Over 100 hours of testing</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Extensional strength (MPa)</td>
<td>ASTM F152</td>
<td>39</td>
<td>28</td>
<td>23</td>
<td>20</td>
<td>19.2</td>
</tr>
<tr>
<td>Bending test(times) (R5/180˚)</td>
<td>ASTM D2176</td>
<td>10,000 or more</td>
<td>10,000 or more</td>
<td>10,000 or more</td>
<td>10,000 or more</td>
<td>10,000 or more</td>
</tr>
<tr>
<td>Electric conductivity (S/cm)</td>
<td>ASTM E1269</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>96000</td>
<td>96000</td>
</tr>
</tbody>
</table>
# PRODUCT STRUCTURE

- There are two types of product structure as follows:
  - **Tgon™9000 series**: Tgon™9000 sheet only
  - **Tgon™9000PA series**: Tgon™9000 with one-side PET film & one-side adhesive

- Below is the product structures available:

<table>
<thead>
<tr>
<th>Type</th>
<th>Graphite Only</th>
<th>Laminated (Insulation &amp; Adhesive)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tgon 9000 series</strong></td>
<td>Graphite: 17µm, 25µm, 40µm, 70µm, 100µm</td>
<td>PET film: 5µm, 10µm, 30µm</td>
</tr>
<tr>
<td><strong>Tgon 9000PA series</strong></td>
<td>Graphite: 17µm, 25µm, 40µm, 70µm, 100µm</td>
<td>Adhesive: 5µm, 10µm, 30µm</td>
</tr>
</tbody>
</table>

- **Standard Size**:
  - 180 x 220mm

- **Die-cut edge options**:

<table>
<thead>
<tr>
<th>Type</th>
<th>Flush Edge</th>
<th>Envelope Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tgon 9000PA series</strong></td>
<td>Tgon 9000EPA series</td>
<td></td>
</tr>
</tbody>
</table>

## PART NUMBER INFORMATION

**Tgon™ 9000 25 PA**

- **Graphite Thickness**
  - 17 = 17µm
  - 25 = 25µm
  - 40 = 40µm
  - 70 = 70µm
  - 100 = 100µm

- **Structure & Edge Options**
  - **PA**: Laminated with PET & Adhesive with flush edge
  - **EPA**: Laminated with PET & Adhesive with envelope seal

- **PET Thickness**
  - 05 = 5µm
  - 10 = 10µm
  - 30 = 30µm

- **Adhesive Thickness**
  - 05 = 5µm
  - 10 = 10µm
  - 30 = 30µm

**THR-DS-TGON 9000 032415**

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