GETEK® Low Dk/Df Laminate and Prepreg

GETEK® materials provide the low dielectric constant (Dk) and low dissipation factor (Df) performance demanded by high speed, low loss Printed Wiring Board (PWB) designs and applications, while providing superior thermal performance and high reliability based on the systems 180°C glass transition temperature (Tg). GETEK laminate and prepreg products are manufactured using a functionalized, Polyphenylene Oxide (PPO)/epoxy resin, reinforced with electrical grade (E-glass) glass fabric. In addition to this superior electrical and thermal performance, the mechanical, chemical and low moisture absorption properties all equal or exceed the performance of traditional FR-4 materials. The GETEK system is also UV blocking and fluorescing.

www.isola-group.com/products/GETEK

Features

- High Thermal Performance
  - Tg: 180°C (DMA)
  - Low CTE for reliability
- T260: >30 Minutes
- T288: >10 Minutes
- RoHS Compliant

- Improved Dielectric Properties
  - Dk <3.8 (50 MHz to 1 GHz)
    Supports increased signal speeds
  - Df <0.010 (50 MHz to 1 GHz)
    Provides better signal integrity

- UV Blocking and AOI Fluorescence
  - High throughput and accuracy during PCB fabrication and assembly

- Superior Processing
  - Closest to conventional FR-4 processing of all high-speed materials

- Core Material Standard Availability
  - Thickness: 0.002” (0.05 mm) to 0.125” (3.2 mm)
  - Available in full size sheet or panel form

- Prepreg Standard Availability
  - Roll or panel form
  - Tooling of prepreg panels available

- Copper Foil Type Availability
  - Standard HTE Grade 3
  - RTF (Reverse Treat Foil)

- Copper Weights
  - ½, 1 and 2 oz (18, 38 and 70 µm) available
  - Heavier copper available upon request
  - Thinner copper foil available upon request

- Glass Fabric Availability
  - Standard E-glass
  - Square weave glass fabric available

- Industry Approvals
  - IPC-4101C /25
  - UL - File Number E41625
  - Qualified to UL’s MCIL Program

ORDERING INFORMATION:

Contact your local sales representative or visit www.isola-group.com for further information.

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<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Values</th>
<th>Units</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Transition Temperature (Tg) by DSC</td>
<td>180</td>
<td>170-200</td>
<td>°C</td>
</tr>
<tr>
<td>Decomposition Temperature (Td) by TGA @ 5% weight loss</td>
<td>345</td>
<td>–</td>
<td>°C ASTM D3850</td>
</tr>
<tr>
<td>T260</td>
<td>&gt;30</td>
<td>–</td>
<td>Minutes ASTM D3850</td>
</tr>
<tr>
<td>T288</td>
<td>&gt;10</td>
<td>–</td>
<td>Minutes ASTM D3850</td>
</tr>
<tr>
<td>CTE, Z-axis</td>
<td>55</td>
<td>AABUS</td>
<td>ppm/°C 2.4.24</td>
</tr>
<tr>
<td>CTE, X-, Y-axes</td>
<td>13/14</td>
<td>AABUS</td>
<td>ppm/°C 2.4.24</td>
</tr>
<tr>
<td>Z-axis Expansion (50-260°C)</td>
<td>3.01</td>
<td>–</td>
<td>% 2.4.24</td>
</tr>
<tr>
<td>Thermal Conductivity</td>
<td>0.4</td>
<td>–</td>
<td>W/mK ASTM D5930</td>
</tr>
<tr>
<td>Thermal Stress 10 sec @ 288°C (550.4°F)</td>
<td>A. Unetched</td>
<td>Pass</td>
<td>Pass Visual Rating</td>
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<tr>
<td>Dk, Permittivity (Laminate &amp; prepreg as laminated) Tested at 50% resin</td>
<td>3.81</td>
<td>5.4</td>
<td>2.5.5.3</td>
</tr>
<tr>
<td>Df, Loss Tangent (Laminate &amp; prepreg as laminated) Tested at 50% resin</td>
<td>0.0110</td>
<td>0.035</td>
<td>2.5.5.3</td>
</tr>
<tr>
<td>Surface Resistivity</td>
<td>3.81x10⁸</td>
<td>–</td>
<td>MΩ-cm 2.5.17.1</td>
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<tr>
<td>Dielectric Breakdown</td>
<td>&gt;50</td>
<td>–</td>
<td>kV 2.5.6</td>
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<tr>
<td>Arc Resistance</td>
<td>120</td>
<td>60</td>
<td>Seconds 2.5.1</td>
</tr>
<tr>
<td>Electric Strength (Laminate &amp; prepreg as laminated)</td>
<td>48 (1200)</td>
<td>30 (750)</td>
<td>kV/mm (V/mil) 2.5.6.2</td>
</tr>
<tr>
<td>Comparative Tracking Index (CTI)</td>
<td>3 (175-249)</td>
<td>–</td>
<td>Class (Volts) UL-746A ASTMD3638</td>
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<tr>
<td>Peel Strength</td>
<td>A. Low profile copper foil and very low profile – all copper weights &gt;17 microns</td>
<td>1.14 (6.5)</td>
<td>0.70 (4.0)</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>A. Lengthwise direction</td>
<td>58,000</td>
<td>–</td>
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<tr>
<td>Tensile Strength</td>
<td>A. Lengthwise direction</td>
<td>50,000</td>
<td>–</td>
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<tr>
<td>Young's Modulus</td>
<td>A. Grain direction</td>
<td>3304</td>
<td>–</td>
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<tr>
<td>Poisson's Ratio</td>
<td>A. Grain direction</td>
<td>0.192</td>
<td>–</td>
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<tr>
<td>Moisture Absorption</td>
<td>0.15</td>
<td>–</td>
<td>% 2.6.2.1</td>
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<tr>
<td>Flammability (Laminate &amp; prepreg as laminated)</td>
<td>V-0</td>
<td>–</td>
<td>Rating UL 94</td>
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<tr>
<td>Max Operating Temperature</td>
<td>130</td>
<td>UL Cert</td>
<td>°C –</td>
</tr>
</tbody>
</table>

The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.