FR406 High Performance Epoxy Laminate and Prepreg

FR406 sets the industry standard for high performance epoxy materials. This product is engineered to meet the demands of the multilayer printed circuit board industry, while maintaining standard FR-4 processing. FR406 offers improved dimensional control, superior chemical and thermal performance and product consistency.

www.isola-group.com/products/FR406

Features

- High Thermal Performance
  - Tg: 170°C (DSC)
  - Td: 300°C (TGA @ 5% wt loss)
  - Superior chemical and thermal resistance
  - Lower CTE from ambient to 288°C
- T260: 10 minutes
- T288: >2 minutes
- RoHS Compliant
- UV Blocking and AOI Compatible
  - UV blocking and enhanced florescence
  - Compatible with all AOI equipment, including laser-enhanced reflectance systems
- Standard FR-4 Processing
  - No post bake after pressing
  - Drilling parameters and hole wall preparation are standard
- 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, 35 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-4101D WAM1 /21 /24 /26
  - UL - File Number E41625
## FR406 Typical Values

<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>170</td>
<td>ºC</td>
<td>IPC-TM-650 (or as noted)</td>
</tr>
<tr>
<td>Decomposition Temperature (Td) by TGA @ 5% weight loss</td>
<td>300</td>
<td>ºC</td>
<td>ASTM D3850</td>
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<tr>
<td>T260</td>
<td>10</td>
<td>Minutes</td>
<td>2.4.25</td>
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<tr>
<td>T288</td>
<td>&gt;2</td>
<td>Minutes</td>
<td>2.4.25</td>
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<tr>
<td>CTE, Z-axis A. Pre-Tg</td>
<td>60</td>
<td>ppm/ºC</td>
<td>2.4.24</td>
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<td></td>
<td>250</td>
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<tr>
<td>CTE, X-, Y-axes A. Pre-Tg</td>
<td>13</td>
<td>ppm/ºC</td>
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<tr>
<td>Z-axis Expansion (50-260ºC)</td>
<td>3.5</td>
<td>%</td>
<td>2.4.24</td>
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<tr>
<td>Thermal Conductivity</td>
<td>0.3-0.4</td>
<td>W/mK</td>
<td>ASTM D5930</td>
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<tr>
<td>Thermal Stress 10 sec @ 288ºC (550.4ºF)</td>
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<tr>
<td>Dk, Permittivity (Laminate &amp; prepreg as laminated) Tested at 50% resin A. @ 100 MHz (HP4285A)</td>
<td>4.00</td>
<td></td>
<td>2.5.5.3</td>
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<tr>
<td></td>
<td>3.95</td>
<td></td>
<td>2.5.5.9</td>
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<tr>
<td></td>
<td>3.93</td>
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<td>2.5.5.5</td>
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<tr>
<td></td>
<td>3.92</td>
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<td>3.92</td>
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<td>2.5.5.5</td>
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<tr>
<td>Df, Loss Tangent (Laminate &amp; prepreg as laminated) Tested at 50% resin A. @ 100 MHz (HP4285A)</td>
<td>0.0130</td>
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<td>2.5.5.3</td>
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<td>0.0161</td>
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<tr>
<td>Volume Resistivity</td>
<td>9.0x10^7</td>
<td>MΩ·cm</td>
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<tr>
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<td>3.0x10^7</td>
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<td>Surface Resistivity</td>
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<td>MΩ</td>
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<td>8.0x10^6</td>
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<td>Dielectric Breakdown</td>
<td>&gt;50</td>
<td>kV</td>
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<td>Arc Resistance</td>
<td>90</td>
<td>Seconds</td>
<td>2.5.1</td>
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<td>Electric Strength (Laminate &amp; prepreg as laminated)</td>
<td>44 (1100)</td>
<td>kW/mm (V/mil)</td>
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<tr>
<td>Comparative Tracking Index (CTI)</td>
<td>3 (175-249)</td>
<td>Class (Volts)</td>
<td>UL-746A, ASTM D3638</td>
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<td>Peel Strength</td>
<td>1.19 (7.0)</td>
<td>N/mm (lb/inch)</td>
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<td>Flexural Strength</td>
<td>92,700</td>
<td>lb/inch²</td>
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<td>78,200</td>
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<tr>
<td>Tensile Strength</td>
<td>62,950</td>
<td>lb/inch²</td>
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<td>Young's Modulus</td>
<td>3684</td>
<td>ksi</td>
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<td>Poisson's Ratio</td>
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<td>0.154</td>
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<td>Moisture Absorption</td>
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<td>%</td>
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<td>Flammability (Laminate &amp; prepreg as laminated)</td>
<td>V-0</td>
<td>Rating</td>
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<tr>
<td>Max Operating Temperature</td>
<td>130</td>
<td>ºC</td>
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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.