FR402 consists of a modified tetrafunctional epoxy resin system engineered for multilayer applications that require performance characteristics exceeding those of difunctional epoxies.

The formulation of FR402 is designed to enhance throughput and accuracy of laser based Automated Optical Inspection (AOI) equipment. FR402 offers superior resistance to chemical and thermal degradation.

**PRODUCT FEATURES**
- Industry Recognition
  - UL File Number: E41625
  - RoHS Compliant
- Processing Advantages
  - FR-4 process compatible
  - UV blocking and AOI fluorescence

**PRODUCT AVAILABILITY**
- Standard Material Offering: Laminate
  - 2 to 125 mil (0.05 to 3.2 mm)
- Copper Foil Type
  - HTE Grade 3
- Copper Weight
  - ½, 1 and 2 oz (18, 35 and 70 µm) available
  - Thinner copper foil available
- Standard Material Offering: Prepreg
  - Roll or panel form
  - Tooling of prepreg panels
- Glass Fabric Availability
  - E-glass
  - Square weave glass
  - Mechanically spread glass

**ORDERING INFORMATION:**
Contact your local sales representative or contact info@isola-group.com for further information.

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6565 West Frye Road
Chandler, AZ 85226
Phone: 480-893-6527
Fax: 480-893-1409

**Isola Asia Pacific**
(Hong Kong) Ltd.
12/F, Kin Sang Commercial Centre,
49 King Yip Street, Kwan Tong,
Kowloon,
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Phone: 852-2418-1318
Fax: 852-2418-1533

**Isola GmbH**
Isola Strasse 2
D-52348 Düren,
Germany
Phone: 49-2421-8080
Fax: 49-2421-808164
<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Units</th>
<th>Test Method</th>
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<tbody>
<tr>
<td>Glass Transition Temperature (Tg) by DSC</td>
<td>140</td>
<td>°C</td>
<td>IPC-TM-650 (or as noted)</td>
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<tr>
<td>Decomposition Temperature (Td) by TGA @ 5% weight loss</td>
<td>315</td>
<td>°C</td>
<td>IPC-TM-650 (or as noted)</td>
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<tr>
<td>Time to Delaminate by TMA (Copper removed)</td>
<td>A. T260</td>
<td>&gt;5 Minutes</td>
<td>2.4.24.1</td>
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<td>B. T288</td>
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<tr>
<td>Z-Axis CTE</td>
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<td>ppm/°C</td>
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<tr>
<td></td>
<td>A. Pre-Tg</td>
<td>50</td>
<td></td>
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<tr>
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<td>B. Post-Tg</td>
<td>250</td>
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<td>C. 50 to 260°C</td>
<td>4.2</td>
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<td>X/Y-Axis CTE</td>
<td>Pre-Tg</td>
<td>15</td>
<td>2.4.24C</td>
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<td>Thermal Conductivity</td>
<td>.36</td>
<td>W/m·K</td>
<td>ASTM E1952</td>
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<tr>
<td>Thermal Stress 10 sec @ 288°C (550.4°F)</td>
<td>A. Unetched</td>
<td>Pass</td>
<td>2.4.13.1</td>
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<td></td>
<td>B. Etched</td>
<td>Pass Visual</td>
<td></td>
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<tr>
<td>Dk, Permittivity</td>
<td></td>
<td>MQ·cm</td>
<td>2.5.17.1</td>
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<tr>
<td></td>
<td>A. @ 100 MHz</td>
<td>4.60</td>
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<td></td>
<td>B. @ 500 MHz</td>
<td>4.27</td>
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<td></td>
<td>C. @ 1 GHz</td>
<td>4.25</td>
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<tr>
<td>Df, Loss Tangent</td>
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<td>MQ</td>
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<tr>
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<td>A. @ 100 MHz</td>
<td>0.016</td>
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<tr>
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<td>B. @ 500 MHz</td>
<td>0.015</td>
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<tr>
<td>Dk, Permittivity</td>
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<td>—</td>
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<td>@ 1 GHz</td>
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<td>Volume Resistivity</td>
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<td>7.0 x 10^7</td>
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<td>Surface Resistivity</td>
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<td>6.0 x 10^6</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>120</td>
<td>Seconds</td>
<td>2.5.1B</td>
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<tr>
<td>Electric Strength (Laminate &amp; laminated prepreg)</td>
<td>29 (1100)</td>
<td>kV/mm (V/mil)</td>
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<tr>
<td>Comparative Tracking Index (CTI)</td>
<td>3 (175-249)</td>
<td>Class (Volts)</td>
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<td>Peel Strength</td>
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<td>N/mm (lb/inch)</td>
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<td></td>
<td>A. Low profile</td>
<td>1.05 (8.0)</td>
<td></td>
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<tr>
<td></td>
<td>copper foil</td>
<td>1.45 (9.0)</td>
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<tr>
<td></td>
<td>B. Very low</td>
<td>1.25 (8.0)</td>
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<tr>
<td></td>
<td>profile copper</td>
<td>1.45 (9.0)</td>
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<td></td>
<td>A. After thermal stress</td>
<td>1.05 (8.0)</td>
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<tr>
<td></td>
<td>B. At 125°C</td>
<td>1.45 (9.0)</td>
<td>2.4.8C</td>
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<td></td>
<td>C. At 125°F</td>
<td>1.25 (8.0)</td>
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<td>Flexural Strength</td>
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<td>MPa (kpsi)</td>
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<td>A. Length</td>
<td>634 (92.0)</td>
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<td>B. Cross</td>
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<tr>
<td>Tensile Strength</td>
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<td>MPa (kpsi)</td>
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<td>Moisture Absorption</td>
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<td>Flammability (Laminate &amp; laminated prepreg)</td>
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<td>Rating</td>
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<tr>
<td>Relative Thermal Index (RTI)</td>
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