



## P95/P25

### Polyimide-based Prepreg and Laminate

Isola offers a product line of polyimide-based prepreg (P25) and core material (P95) for high temperature printed circuit applications.

These products consist of an HB flammability rated polyimide resin system suitable for military, commercial or industrial electronic applications requiring superior performance and the utmost in thermal properties. These products utilize a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline). This results in a polymer with a high Tg without the characteristic difficulties of brittleness and low initial bond strength associated with traditional thermoset polyimides.

### Product Attributes

High Thermal Reliability , Polyimide

### Typical Market Applications

Aerospace & Defense , Automotive & Transportation

#### ORDERING INFORMATION:

Contact your local sales representative or visit [www.isola-group.com](http://www.isola-group.com) for further information.

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High Thermal Reliability

## Data Sheet

Tg 260°C

Td 416°C

Dk 3.76

Df 0.017

IPC-4101 - / 40 / 41

UL - File Number E41625

Last Updated September 25, 2018  
Revision No: C

### Product Features

- Industry Recognition
  - UL File Number: E41625
  - RoHS Compliant
- Performance Attributes
  - Lead-free assembly compatible
  - 6x 260°C reflow capable
- Processing Advantages
  - Via filling capability
  - Multiple reflow capable
  - Multiple lamination cycles

### Product Availability

- Standard Material Offering: Laminate
  - 2 to 125 mil (0.05 to 3.2 mm)
  - Available in full size sheet or panel form
- Copper Foil Type
  - HTE Grade 3
  - RTF (Reverse Treat Foil)
- Copper Weight
  - ½ to 3 oz (18 to 105 µm) available
  - Heavier copper available
  - Thinner copper foil available
- Standard Material Offering: Prepreg
  - Roll or panel form
  - Tooling of prepreg panels
- Glass Fabric Availability
  - E-glass

# P95/P25 Typical Values

Last Updated Sep 25, 2018

| Property   | Typical Value  | Units   | Test Method              |   |
|--|--|---|--------------------------|---|
|  |  | Metric (English)  | IPC-TM-650 (or as noted) |   |
| Glass Transition Temperature (Tg) by DSC               | 260  | °C  | 2.4.25C                  |   |
| Decomposition Temperature (Td) by TGA @ 5% weight loss | 416  | °C  | 2.4.24.6                 |   |
| Time to Delaminate by TMA (Copper removed)             | A. T260<br>B. T288   | 60  | Minutes                  | 2.4.24.1  |
| Z-Axis CTE   | A. Pre-Tg<br>B. 50 to 260°C, (Total Expansion)   | 55<br>1.5   | ppm/°C<br>%              | 2.4.24C   |
| X/Y-Axis CTE   | Pre-Tg   | 13/14   | ppm/°C                   | 2.4.24C   |
| Thermal Conductivity                                   |  | 0.4   | W/mK                     | ASTM E1952  |
| Thermal Stress 10 sec @ 288°C (550.4°F)                | A. Unetched<br>B. Etched   | Pass  | Pass Visual              | 2.4.13.1  |
| Dk, Permittivity                                       | A. @ 100 MHz<br>B. @ 500 MHz<br>C. @ 1 GHz<br>D. @ 2 GHz<br>E. @ 5 GHz<br>F. @ 10 GHz  | 3.83<br>3.80<br>3.78<br>3.76<br>3.73<br>3.73            | —                        | 2.5.5.9<br>2.5.5.9<br>2.5.5.9<br>Bereskin Stripline<br>Bereskin Stripline<br>Bereskin Stripline |
| Df, Loss Tangent                                       | A. @ 100 MHz<br>B. @ 500 MHz<br>C. @ 1 GHz<br>D. @ 2 GHz<br>E. @ 5 GHz<br>F. @ 10 GHz  | 0.0135<br>0.0151<br>0.0172<br>0.0179<br>0.0188<br>0.021 | —                        | 2.5.5.9<br>2.5.5.9<br>2.5.5.9<br>Bereskin Stripline<br>Bereskin Stripline<br>Bereskin Stripline |
| Volume Resistivity                                     | A. After moisture resistance<br>B. At elevated temperature   | $3.0 \times 10^8$<br>$7.0 \times 10^8$                  | MΩ-cm                    | 2.5.17.1  |
| Surface Resistivity                                    | A. After moisture resistance<br>B. At elevated temperature   | $3.0 \times 10^6$<br>$2.0 \times 10^8$                  | MΩ                       | 2.5.17.1  |
| Dielectric Breakdown                                   |  | >55   | kV                       | 2.5.6B  |
| Arc Resistance   |  | 130   | Seconds                  | 2.5.1B  |
| Electric Strength (Laminate & laminated prepreg)       |  | 44 (1100)   | kV/mm (V/mil)            | 2.5.6.2A  |
| Comparative Tracking Index (CTI)                       |  | 2 (250-399)   | Class (Volts)            | UL 746A<br>ASTM D3638   |
| Peel Strength  | A. Low profile copper foil and very low profile copper foil all copper foil >17 μm [0.669 mil]<br>B. Standard profile copper<br>1. After thermal stress<br>2. At 125°C (257°F)<br>3. After process solutions | 1.14 (6.5)<br>1.25 (7.0)<br>1.25 (7.0)<br>1.14 (6.5)    | N/mm (lb/inch)           | 2.4.8C<br>2.4.8.2A<br>2.4.8.3<br>2.4.8.3  |
| Flexural Strength                                      | A. Length direction<br>B. Cross direction  | 58.7<br>66.2  | ksi                      | 2.4.4B  |
| Tensile Strength                                       | A. Length direction<br>B. Cross direction  | 54.5<br>36.1  | ksi                      | ASTM D3039  |
| Young's Modulus  | A. Length direction<br>B. Cross direction  | 3892<br>3490  | ksi                      | ASTM D790-15e2  |
| Poisson's Ratio  | A. Length direction<br>B. Cross direction  | 0.187<br>0.164  | —                        | ASTM D3039  |
| Moisture Absorption                                    |  | 0.5   | %                        | 2.6.2.1A  |
| Flammability (Laminate & laminated prepreg)            |  | HB  | Rating                   | UL 94   |
| Max Operating Temperature                              |  | 140   | °C                       | UL 796  |

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.

<https://www.isola-group.com/products/all-printed-circuit-materials/p95-p25/>

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## NOTE

Rev B: Corrected units for Flexural and Tensile Strength

Rev C: Corrected UL MOT Value to reflect UL file