

isola

TerraGreen® (RF/MW)

Halogen-free, Very Low Loss Material

TerraGreen® laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.

TerraGreen® is engineered for such high performance applications as power amplifier boards for LTE base stations, internet infrastructure and cloud computing. TerraGreen® features a Dielectric Constant (Dk) that is stable between -55°C and 125°C, up to to W-band.

TerraGreen® is a lead-free assembly material and is easy to process. This high-performance material utilizes a short-lamination cycle; the product is easy to drill, does not require plasma desmear, and the prepreg shelf life is similar to FR-4 materials. TerraGreen® is suitable for high-layer count, high-speed digital backplanes and is compatible with Isola's FR-4 materials for hybrid designs.

TerraGreen® meets UL 94 V-0 and is halogen free.

Product Attributes

Halogen Free , RF/Microwave , High Thermal Reliability

Typical Market Applications

RF / Microwave , Aerospace & Defense , Automotive & Transportation

ORDERING INFORMATION:

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

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Halogen Free

Data Sheet

Tg 200°C

Td 390°C

Dk 3.45

Df 0.0032

IPC-4103 - / 17

UL - File Number E41625

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Revision No: C

Product Features

- Industry Recognition
 - RoHS Compliant
- Performance Attributes
 - Lead-free assembly compatible
 - Halogen free
- Processing Advantages
 - FR-4 process compatible
 - UV blocking and AOI fluorescence

Product Availability

- Standard Material Offering: Laminate
 - 10, 20, 30, 60 mil (0.25, 0.51, 0.76, 1.5 mm)
 - Available in full size sheet or panel form
- Copper Foil Type
 - VLP-2 (2 micron), 1 oz and below
- Copper Weight
 - ½ to 2 oz (18 to 70 µm) available
 - Thinner copper foil available
- Standard Material Offering: Prepreg
 - Roll or panel form
 - Tooling of prepreg panels
- Glass Fabric Availability

| Property | Typical Value | Units | | Test Method |
|--|---|--------------------|----------------|--------------------------|
| | | Metric (English) | | IPC-TM-650 (or as noted) |
| Glass Transition Temperature (Tg) by DSC | 200 | | °C | 2.4.25C |
| Decomposition Temperature (Td) by TGA @ 5% weight loss | 390 | | °C | 2.4.24.6 |
| Time to Delaminate by TMA (Copper removed) | A. T260 B. T288 | 60 | Minutes | 2.4.24.1 |
| Z-Axis CTE | 50 to 260°C. (Total Expansion) | 2.9 | % | 2.4.24C |
| X/Y-Axis CTE | Pre-Tg | 16 | ppm/°C | 2.4.24C |
| Thermal Conductivity | | 0.63 | W/mK | ASTM E1952 |
| Thermal Stress 10 sec @ 288°C (550.4°F) | A. Unetched B. Etched | Pass | Pass Visual | 2.4.13.1 |
| Dk, Permittivity | A. @ 2 GHz B. @ 5 GHz C. @ 10 GHz | 3.45 | — | 2.5.5.5 |
| Df, Loss Tangent | A. @ 2 GHz B. @ 5 GHz C. @ 10 GHz | 0.0032 | — | Bereskin Stripline |
| Volume Resistivity | C-96/35/90 | 1.33×10^7 | MΩ-cm | 2.5.17.1 |
| Surface Resistivity | C-96/35/90 | 1.33×10^5 | MΩ | 2.5.17.1 |
| Dielectric Breakdown | | 45.4 | kV | 2.5.6B |
| Arc Resistance | | 139 | Seconds | 2.5.1B |
| Electric Strength (Laminate & laminated prepreg) | | 45 (1133) | kV/mm (V/mil) | 2.5.6.2A |
| Comparative Tracking Index (CTI) | | In Testing | Class (Volts) | UL 746A ASTM D3638 |
| Peel Strength | A. 0.5 oz. EDC foil B. 1 oz. EDC foil | 0.88 (5.0) | N/mm (lb/inch) | 2.4.8C |
| Flexural Strength | A. Length direction B. Cross direction | 75.5 60.0 | ksi | 2.4.4B |
| Tensile Strength | A. Length direction B. Cross direction | 40.0 39.0 | ksi | ASTM D3039 |
| Poisson's Ratio | A. Length direction B. Cross direction | 0.238 0.231 | — | ASTM D3039 |
| Moisture Absorption | | 0.05 | % | 2.6.2.1A |
| Flammability (Laminate & laminated prepreg) | | V-0 | Rating | UL 94 |
| Max Operating Temperature | | 130 | °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/terrag-rf-mw/>

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NOTE

Visit our site <http://www.isola-group.com> for more details.

Revision C: Corrected typo in moisture absorption