

IPC-4103 /17 UL - File Number E41625

Astra® MT77 materials are a breakthrough, very low-loss dielectric constant (Dk) product for millimeter wave frequencies and beyond.

## PRODUCT FEATURES

### Industry Recognition

- UL File Number: E41625
- RoHS Compliant

### Performance Attributes

- Lead-free assembly compatible

### Processing Advantages

- FR-4 process compatible
- Short lamination cycle
- Reduced drill wear
- No plasma desmear required
- Good flow and fill
- Dimensional stability
- Multiple lamination cycles
- Any layer technology compatible
- HDI technology compatible
- VIPPO design compatible

## PRODUCT AVAILABILITY

### Standard Material Offering: Laminate

- 2.5, 5, 7.5, 10, 12.5, 15, 20, 30, 60 mil (0.0635, 0.127, 0.1905, 0.254, 0.3175, 0.381, 0.510, 0.760, 1.50 mm)

### Copper Foil Type

- HVLP (VLP2) 2.5 micron Rz JIS, 1 oz and below is standard

### 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

Astra MT77 laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range. Astra MT77 is suitable for many of today's commercial RF/microwave printed circuit designs. It features a dielectric constant (Dk) that is stable between -40°C and +140°C at up to W-band frequencies. In addition, Astra MT77 offers an ultra-low dissipation factor (Df) of 0.0017, making it a cost-effective alternative to PTFE and other commercial microwave laminate materials.

Key applications include long antennas and radar applications for automobiles, such as adaptive cruise control, pre-crash, blind spot detection, lane departure warning and stop and go systems.

## PRODUCT ATTRIBUTES



HIGH DENSITY  
INTERCONNECT



HIGH THERMAL  
RELIABILITY



RADIO FREQUENCY  
& MICROWAVE

## TYPICAL MARKET APPLICATIONS



AUTOMOTIVE &  
TRANSPORTATION



RADIO FREQUENCY  
& MICROWAVE



AEROSPACE  
& DEFENSE

## ORDERING INFORMATION:

Contact your local sales representative or contact [info@isola-group.com](mailto:info@isola-group.com) for further information.

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# Typical Values Table

| 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 |   | 360                    | °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. Post-Tg                   | 50 - 70<br>250 - 350   | ppm/°C           | 2.4.24C                  |
| X/Y-Axis CTE   | Pre-Tg                                    | 12                     | ppm/°C           | 2.4.24C                  |
| Thermal Conductivity                                   |   | 0.45                   | W/m-K            | 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. @ 2 GHz<br>B. @ 10 GHz                 | 3.00                   | —                | 2.5.5.5                  |
| Df, Loss Tangent                                       | A. @ 2 GHz<br>B. @ 10 GHz                 | 0.0017                 | —                | Bereskin Stripline       |
| Volume Resistivity                                     | C-96/35/90                                | 1.33 x 10 <sup>7</sup> | MΩ-cm            | 2.5.17.1                 |
| Surface Resistivity                                    | C-96/35/90                                | 1.33 x 10 <sup>5</sup> | 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)                       |   | 3 (175-249)            | Class (Volts)    | UL 746A<br>ASTM D3638    |
| Peel Strength  | 1 oz. EDC foil                            | 1.0 (5.7)              | N/mm (lb/inch)   | 2.4.8.3                  |
| Flexural Strength                                      | A. Length direction<br>B. Cross direction | 49.0<br>39.0           | ksi              | 2.4.4B                   |
| Tensile Strength                                       | A. Length direction<br>B. Cross direction | 31.0<br>24.0           | ksi              | ASTM D3039               |
| Poisson's Ratio  | A. Length direction<br>B. Cross direction | 0.183<br>0.182         | —                | ASTM D3039               |
| Moisture Absorption                                    |   | 0.1                    | %                | 2.6.2.1A                 |
| Flammability (Laminate & laminated prepreg)            |   | V-0                    | Rating           | UL 94                    |
| Relative Thermal Index (RTI)                           |   | 130                    | °C               | UL 796                   |

## NOTES

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

Revisions:

A: Initial release - 4/17

B: Corrected units for Flexural and Tensile Strength - 8/18

C: Change MOT to RTI 5/19

D: Changed VLP2 to HVLP to align with common industry terms 4/21

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