



meteorwave® 8000

High Speed / Extremely Low Loss

Laminate & Prepreg

Meteorwave® 8000 high speed / extremely low loss digital electronic materials offer very advanced electrical performance. Meteorwave® 8000 is designed for high layer count printed circuit boards which require high levels of reliability. It is intended for use in 100Gbs core routers, high speed switches, supercomputers and applications where low signal attenuation, high reliability and high data transfer rates are critical.

Key Features

Excellent Electrical Properties utilizing Nelco SI® Technology

- Low Dk electrical performance
- Extremely low Df electrical performance
- Stable electrical properties versus frequency when tested over environmental conditions
- Designed for 100 Gbs applications

Highly CAF Resistant

- All constructions utilize super spread weaves and fiberglass finishes optimized for CAF performance..

Thermal and Mechanical Properties

- Good peel strength on ultra smooth copper
- Outstanding thermal reliability. T300 > 40 minutes.
- Meets NASA outgassing specification

High-Tg FR-4 Processing

- Processes similar to other high-Tg materials
- 30 minute lamination at 177°C plus 90 minutes cure at 216°C and 250 - 400 psi.

Available in a variety of constructions

- Available in a wide variety of constructions, copper weights and glass styles including ultra low profile copper, standard copper, double treat and RTFOIL®
- Available in laminate thicknesses from 1.2 mil and up.
- UL 94V-0 and 130°C MOT
- Meets IPC 4101/102 and IPC 4103/540 specifications
- All of Park's electronic materials are RoHS compliant

Applications

- Telecommunications
- High Speed Services
- High Speed Storage Networks
- Internet Switching / Routing Systems
- Wireless Communications
- Backplanes

Park's UL file number: E36295

meteorwave® 8000

High Speed / Extremely Low Loss Laminate and Prepreg

| Mechanical Properties | Meteorwave® 8000 | U.S. Units | Meteorwave® 8000 | Metric | Test Method |
|---|---------------------|-----------------------|---------------------|---------------------|---------------------|
| Peel Strength - 1 oz. (35 micron) Cu | 3.0 | lb / inch | 0.52 | N / mm | IPC-TM-650.2.4.8 |
| After Solder Float | 3.1 | lb / inch | 0.54 | N / mm | IPC-TM-650.2.4.8 |
| At Elevated Temperature | 3.3 | lb / inch | 0.58 | N / mm | IPC-TM-650.2.4.8.2a |
| After Exposure to Process Solutions | 3.5 | lb / inch | 0.61 | N / mm | IPC-TM-650.2.4.8 |
| X / Y CTE [-40°C to +125°C] | 14 / 16 | ppm / °C | 14 / 16 | ppm / °C | IPC-TM-650.2.4.41 |
| Z Axis CTE Alpha 1 [50°C to Tg] 55% RC | 35 | ppm / °C | 35 | ppm / °C | IPC-TM-650.2.4.24 |
| Z Axis CTE Alpha 2 [Tg to 260°C] 55% RC | 185 | ppm / °C | 185 | ppm / °C | IPC-TM-650.2.4.24 |
| Z Axis Expansion [50°C to 260°C] 55% RC | 2.5 | % | 2.5 | % | IPC-TM-650.2.4.24 |
| Young's Modulus (X / Y) | 2.9 / 2.7 | psi x 10 ⁶ | 1.99 / 1.86 | GN / m ² | ASTM D3039 |
| Poisson's Ratios (X / Y) | 0.177 / 0.163 | | 0.177 / 0.163 | | ASTM D3039 |
| Flexural Strength (X / Y) | 44,989 / 55,199 | psi | 0.31 / 0.381 | GN / m ² | ASTM D3039 |
| Felxural Strength @ 150°C (X / Y) | 34,000 / 22,000 | psi | 0.234 / 0.151 | GN / m ² | ASTM D3039 |
| Thermal Conductivity | 0.51 | W / mK | 0.51 | W / mK | ASTM E1461 |
| Specific Heat | 0.943 | J / gK | 0.943 | J / gK | ASTM E1461 |
| Electrical Properties | | | | | |
| Dielectric Constant (75% RC) | | | | | |
| @ 2 GHz (Stripline) | 3.29 | | 3.29 | | IPC-TM-650.2.5.5.5 |
| @ 10 GHz (Stripline) | 3.28 | | 3.28 | | IPC-TM-650.2.5.5.5 |
| Dissipation Factor (75% RC) | | | | | |
| @ 2 GHz (Split Post Cavity) | 0.0012 | | 0.0012 | | |
| @ 10 GHz (Split Post Cavity) | 0.0016 | | 0.0016 | | |
| Volume Resistivity | | | | | |
| C - 96 / 35 / 90 | 4.2x10 ⁶ | MΩ - cm | 4.2x10 ⁶ | MΩ - cm | IPC-TM-650.2.5.17.1 |
| E - 24 / 125 | 8.8x10 ⁷ | MΩ - cm | 8.8x10 ⁷ | MΩ - cm | IPC-TM-650.2.5.17.1 |
| Surface Resistivity | | | | | |
| C - 96 / 35 / 90 | 3.1x10 ⁵ | MΩ | 3.1x10 ⁵ | MΩ | IPC-TM-650.2.5.17.1 |
| E - 24 / 125 | 3.6x10 ⁷ | MΩ | 3.6x10 ⁷ | MΩ | IPC-TM-650.2.5.17.1 |
| Electric Strength | 1500 | V / mil | 5.9x10 ⁴ | V / mm | IPC-TM-650.2.5.6.2 |
| Dielectric Breakdown | >50 | kV | >50 | kV | IPC-TM-650.2.5.6 |
| Arc Resistance | 184 | seconds | 184 | seconds | IPC-TM-650.2.5 |
| Thermal Properties | | | | | |
| *Glass Transition Temperature (Tg) | | | | | |
| TMA (°C) | 165 | °C | 165 | °C | IPC-TM-650.2.4.24c |
| DMA (°C) (Tan d Peak) | 185 | °C | 185 | °C | IPC-TM-650.2.4.24.3 |
| Degradation Temp (TGA) (5% wt. loss) | 376 | °C | 376 | °C | IPC-TM-650.2.3.40 |
| Pressure Cooker-60 min then solder dip | pass | | pass | | IPC-TM-650.2.6.16 |
| @288°C until failure (max 10 min.) | | | | | (modified) |
| T288 | >120 | minutes | >120 | minutes | IPC-TM-650.2.4.24.1 |
| T300 | 40 | minutes | 40 | minutes | IPC-TM-650.2.4.24.1 |
| Chemical / Physical Properties | | | | | |
| Moisture Absorption | 0.01 | wt. % | 0.01 | wt. % | IPC-TM-650.2.6.2.1 |
| Methylene Chloride Resistance | 0.21 | % wt. chg. | 0.21 | % wt. chg. | IPC-TM-650.2.3.4.3 |
| Density [50% resin content] | 1.85 | g / cm ³ | 1.85 | g / cm ³ | |

*DMA is the preferred method for measuring Tg - other methods may be less accurate.

All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a company representative directly.

EF™, EP™, LD®, M-Ply™, Mercurywave®, Meteorwave®, Neltec™, Nelco®, RTFoil® and SI® are trademarks of Park Electrochemical Corp.

For Information about Park's materials:

North America +1.480.967.5600 • Europe +33.5.62.98.52.90 • Asia Pacific +65.686.17117
info@parkelectro.com • www.parkelectro.com

Rev 06-18