

# METEORWAVE® 8000

## High Speed / Extremely Low Loss Laminate & Prepreg

### Benefits

- Excellent Electrical Properties utilizing SI® Technology
- Robust Thermal and Mechanical Properties
- Highly CAF Resistant
- High-Tg FR-4 Processing

### Applications

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



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.

### Excellent Electrical Properties utilizing 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

### Thermal and Mechanical Properties

- Good peel strength on ultra-smooth copper
- Outstanding thermal reliability
- Time to Delamination  $T_{300} > 40$  minutes
- Meets NASA outgassing specification

### Highly CAF Resistant

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

### High-Tg FR-4 Processing

- Processes similar to other high-Tg materials
- 90 minutes cure at 216°C and 400-500 psi

Meets UL 94V-0 and IPC4101 /102 specifications

UL file number: E36295

Properties	Conditions	Typical Value	Unit	Test Method
<b>Electrical Properties</b>				
Dielectric Constant	@ 2 GHz	3.29		IPC-TM-650.2.5.5.5
	@ 10 GHz	3.28		
Dissipation Factor	@ 2 GHz	0.0012		
	@ 10 GHz	0.0016		
Volume Resistivity	C - 96 / 35 / 90	4.2 x 10 <sup>6</sup>	MΩ - cm	IPC-TM-650.2.5.17.1
	E - 24 / 125	8.8 x 10 <sup>7</sup>		
Surface Resistivity	C - 96 / 35 / 90	3.1 x 10 <sup>5</sup>	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	3.6 x 10 <sup>7</sup>		
Electric Strength		5.9x10 <sup>4</sup> (1500)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
<b>Thermal Properties</b>				
*Glass Transition Temperature (Tg)	TMA(°C)	165	°C	IPC-TM-650.2.4.24c
	DMA(°C) (Tan d Peak)	185	°C	IPC-TM-650.2.4.24.2
Degradation Temp (TGA)	Degradation Temp (TGA) (5% wt. loss)	376	°C	IPC-TM-650.2.3.40
T-300	Time to delamination @ 300°C	40	minutes	IPC-TM-650.2.4.24.1
Thermal Conductivity		0.51	W/mK	ASTM E1461
<b>Mechanical Properties</b>				
Peel Strength	1 oz (35μ) Cu	0.91 (5.2)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
	After Solder Float	0.86 (4.9)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
X / Y CTE	-40°C to + 125°C	14 / 16	ppm/°C	IPC-TM-650.2.4.41
Z Axis CTE Alpha 1 / Alpha 2	50°C to Tg / Tg to 260°C	35 / 185	ppm/°C	IPC-TM-650.2.4.24
Z Axis Expansion	50°C to 260°C	2.5	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)		19.9 / 18.6 (2.9 / 2.7)	GN/m <sup>2</sup> (psi x10 <sup>6</sup> )	ASTM D3039
Poisson's Ratios (X / Y)		0.177 / 0.163		
Flexural Strength (X / Y)	@ 125°C	0.31 / 0.381 (4.50 / 5.52)	GN/m <sup>2</sup> (psi x10 <sup>6</sup> )	
	@ 150°C	0.234 / 0.151 (3.40 / 2.20)	GN/m <sup>2</sup> (psi x10 <sup>6</sup> )	
<b>Chemical / Physical Properties</b>				
Moisture Absorption		0.01	wt. %	IPC-TM-650.2.6.2.1

\* 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
- Meteorwave® 8000 series can be manufactured in laminate thickness from 1.2 mil (0.031 mm) and up.
- Meteorwave® 8000 series is available in most common panel sizes.
- Please contact AGC for availability of any other constructions, copper weights and glass styles including ultra-low profile copper and RTFOIL®
- The resistor foil manufacturer covers the warranty for the copper foil that includes the resistor layer, as well as the performance and workability related to the copper foil. Our company does not take responsibility for the processing of resistor layers and the performance or workability of the final products.

