

METEORWAVE® 6000 HF

Very Low Loss, Halogen Free Laminate & Prepreg For High Layer Count Printed Circuit Board Designs

Benefits

- Halogen Free
- Excellent Electrical Properties utilizing SI® Technology
- Stable dielectric performance over a wide frequency range
- Very high reliability and fracture toughness
- High Conductive Anodic Filament (CAF) resistance

Applications

- Telecommunications
- High Speed Services and Storage Networks
- Data and Wireless Communications
- Switching, Routing and Backplanes



Meteorwave® 6000 HF high speed and low loss digital electronic material offers advanced electrical performance and high reliability for Halogen Free circuit board requirements.

Meteorwave 6000 HF is designed for multiple high temperature lead-free assemblies and high layer count printed circuit board designs which require a halogen free material with very high levels of reliability.

Excellent Electrical Properties

- Ultra low Dk/Df electrical performance
- Stable electrical properties versus frequency when tested over environmental conditions

Good Thermal and Mechanical Properties

- Good peel strength on ultra smooth coppers
- $T_{300} > 120$ minutes
- High Decomposition Temperature (T_d) at 430°C
- Excellent IST performance
- Meets NASA outgassing specification
- Lead-free assembly compatibility

Highly CAF Resistant

- Highest quality and purest materials used to insure consistent CAF resistance.

High-T_g FR-4 Processing

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

Meets UL 94V-0 and IPC-4101/96 Specifications

UL file number: E36295

Properties	Conditions	Typical Value	Unit	Test Method
Electrical Properties				
Dielectric Constant	@ 10 GHz	3.20		IPC-TM-650.2.5.5.5
Dissipation Factor	@ 10 GHz	0.0022		Split-Post Dielectric Resonator
Volume Resistivity	C - 96 / 35 / 90	8.10 x 10 ⁶	MΩ - cm	IPC-TM-650.2.5.17.1
	E - 24 / 125	2.70 x 10 ⁸		
Surface Resistivity	C - 96 / 35 / 90	2.10 x 10 ⁶	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	1.30 x 10 ⁸		
Electric Strength		3.6x10 ⁴ (900)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
Thermal Properties				
*Glass Transition Temperature (Tg)	TMA(°C)	160	°C	IPC-TM-650.2.4.24c
	DMA(°C) (Tan d Peak)	185	°C	IPC-TM-650.2.4.24.3
Degradation Temperature (TGA)	Degradation Temp (TGA) (5% wt. loss)	430	°C	IPC-TM-650.2.3.40
T-300	Time to delamination @ 300°C	>120	minutes	IPC-TM-650.2.4.24.1
Thermal Conductivity		0.52	W/mK	ASTM E1461
Specific Heat		1.06	J/gK	ASTM E1461
Mechanical Properties				
Peel Strength	1/2 oz VLP Cu (18μ)	0.52 (3.0)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
	After Solder Float	0.58 (3.3)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
X / Y CTE	-40°C to + 125°C	10 / 14	ppm/°C	IPC-TM-650.2.4.41
Z Axis CTE Alpha 1 / Alpha 2	50°C to Tg / Tg to 260°C	46 / 215	ppm/°C	IPC-TM-650.2.4.24
Z Axis Expansion	50°C to 260°C	3.0	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)		22.7 / 24.8 (3.3 / 3.6)	GN/m ² (psi x 10 ⁶)	ASTM D3039
Poisson's Ratios (X / Y)		0.157 / 0.178		
Flexural Strength (X / Y)	@125°C	0.24 / 0.30 (3.5 / 4.4)	GN/m ² (psi x 10 ⁶)	
	@ 150°C	0.22 / 0.27 (3.2 / 3.9)	GN/m ² (psi x 10 ⁶)	
Chemical / Physical Properties				
Moisture Absorption		0.12	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® 6000HF can be manufactured in laminate thickness from 2 mil (0.050 mm) and up.
- * Meteorwave® 6000HF 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®

