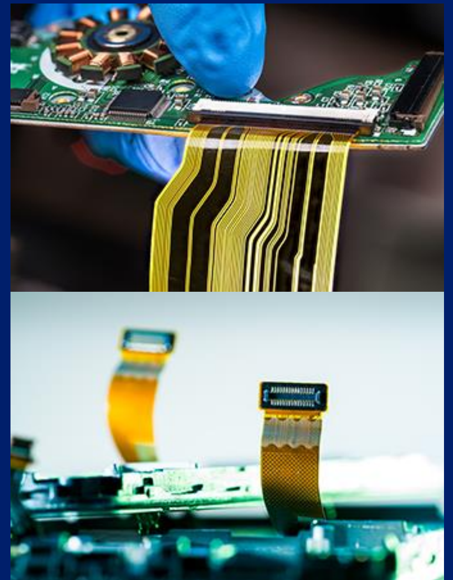
N4000-29NF

Lead Free, High-Tg

No Flow Prepreg

Benefits

- Minimal and consistent resin flow
- Excellent Thermal stability, Low Z-axis Expansion
- Withstands multiple reflow excursions / repair operations
- Good moisture resistance
- Compatible for use with Meteorwave products



Applications

- Bonding multilayer epoxy rigid-flex
- Bonding adhesiveless epoxy rigid-flex
- Attaching heat sinks
- Anywhere minimal and uniform resin flow is required

N4000-29NF is a no flow bond ply based on the proven N4000-29 resin system. This high Tg prepreg system provides performance, versatility, and ease of processing. It is designed for bonding flex circuitry and heat sinks to rigid circuit boards. N4000-29NF adheres well to most substrates. Its minimal, and consistent, flow is controlled through precise rheological and prepreg processes.

Thermal and Mechanical Properties

- Low Z-axis expansion improves through-hole reliability
- Excellent for high layer count assemblies
- Designed to withstand multiple reflow excursions and repair operations
- Proven IST testing results
- Exceptional peel strength
- Low Z-CTE
- High Tg and excellent thermal stability
- Improved thermal stability, CAF and moisture resistance when compared to traditional FR-4

Hybrid Applications

- Compatible with all Meteorwave products for hybrid applications to reduce package cost

Optimized FR-4 processing

- Superior rheology providing consistent controlled flow
- 75 min press at 185°C and 200-300 psi

Meets UL 94V-0 and IPC-4101/98, /99, /126 and /129 Specifications
UL file number: E36295

Available Prepreg			
Glass Style	RC%	*Flow (mils)	Thickness (inches)
106	65	50 - 120	0.0017
1080	61	50 - 120	0.0029
* Tested per IPC TM-650 2.3.17.2			

Lamination Process	
Vacuum	A minimum of 28.5” Hg / 1 torr for 15 minutes before applying heat & pressure
Heat Rate	8 – 12°F / 4.4 -7°C per minute
Critical Range	150 - 250°F / 70 - 130°C
Pressure	200 - 300 psi / 15 - 20 bar
Cure Time / Temp	75 minutes @ 365°F / 185°C
Cooling Rate	7°F / 4°C per minute or less until stack reaches 260°F / 126°C
Breakdown	130°F / 55°C

Properties	Conditions	Typical Value	Unit	Test Method
Electrical Properties				
Dielectric Constant	@ 1 GHz	4.30		IPC-TM-650.2.5.5.9
	@ 10 GHz	4.00		IPC-TM-650.2.5.5.5
Dissipation Factor	@ 2.5 GHz	0.015		
	@ 10 GHz	0.017		
Volume Resistivity	C - 96 / 35 / 90	8.10 x 10^7	MΩ - cm	IPC-TM-650.2.5.17.1
	E – 24 / 125	1.90 X 10^8		
Surface Resistivity	C - 96 / 35 / 90	5.60 X 10^6	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	1.80 x 10^7		
Electric Strength		4.2x10^4 (1100)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
Thermal Properties				
*Glass Transition Temperature (Tg)	DMA(°C) (Tan d Peak)	199	°C	IPC-TM-650.2.4.24.3
Degradation Temperature (TGA)	Degradation Temp (TGA) (5% wt. loss)	350	°C	IPC-TM-650.2.3.40
T-260	Time to delamination @ 260°C	> 60	minutes	IPC-TM-650.2.4.24.1
Thermal Conductivity		0.46	W/mK	ASTM E1461
Mechanical Properties				
Peel Strength	1 oz (35µ) Cu	1.72 (9.8)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
	After Solder Float	1.81 (10.1)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
X / Y CTE	-40°C to + 125°C	12 / 15	ppm/°C	IPC-TM-650.2.4.41
Z Axis CTE Alpha 1 / Alpha 2 (55% RC)	50°C to Tg / Tg to 260°C	55 / 265	ppm/°C	IPC-TM-650.2.4.24
Z Axis Expansion (43% RC)	50°C to 260°C	3.0	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)		22.6 / 18.2 (3.6 / 2.9)	GN/m^2 (psi x 10^6)	ASTM D3039
Poisson's Ratios (X / Y)		0.18 / 0.16		
Chemical / Physical Properties				
Moisture Absorption		0.15	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
- N4000-29NF is available in most common panel sizes.
- Please contact AGC for availability of any other constructions or glass styles

agc-ml.multimaterial@agc.com