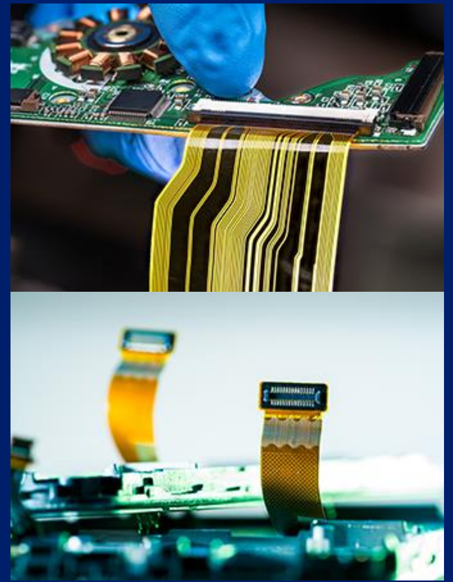
N4000-6NF

AGC
Your Dreams, Our Challenge

High-Tg Multifunctional Epoxy
No Flow Prepreg

Benefits
- Minimal and consistent resin flow
- Proven High-Tg Material
- Consistent flow characteristics
- Standard FR-4 Processing

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



N4000-6NF is a no flow bond ply based on the proven N4000-6 resin system. It is a high-Tg epoxy prepreg system that provides performance versatility and ease of processing. N4000-6NF is designed for bonding flex circuitry and bonding heat sinks to rigid circuit boards and it adheres well to most substrates. It's minimal, and consistent, flow is controlled through precise rheological and prepreg process control.

Thermal and Mechanical Properties
- Tg 175°C
- Years of field use with consistent results
- Consistent flow characteristics with enhanced bonding.

Standard FR-4 processing
- Key processing parameters of drilling, desmear and lamination use standard FR-4 methods
- 60 min press at 182°C and 200-300 psi

Typical Flow specification
- Flow migration 50 -120 mils

Meets UL 94V-0 and IPC-4101/24 and /26 Specifications
UL file number: E36295

Available Prepreg			
Glass Style	RC%	*Flow (mils)	Thickness (inches)
106	65	50 - 120	0.0016
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	6 – 9°F / 3 -5°C per minute
Critical Range	150 - 250°F / 70 - 130°C
Pressure	325 - 375 psi / 22 - 26 bar
Cure Time / Temp	60 minutes @ 360°F / 182°C
Cooling Rate	7°F / 4°C per minute or less until stack reaches 260°F / 127°C
Breakdown	150°F / 65°C

Properties	Conditions	Typical Value	Unit	Test Method
Electrical Properties				
Dielectric Constant	@ 1 GHz	3.7		IPC-TM-650.2.5.5.9
	@ 2.5 GHz	3.7		IPC-TM-650.2.5.5.5
Dissipation Factor	@ 2.5 GHz	0.015		IPC-TM-650.2.5.5.5
Volume Resistivity	C - 96 / 35 / 90	8.10×10^{8}	MΩ - cm	IPC-TM-650.2.5.17.1
	E – 24 / 125	1.90×10^{7}		
Surface Resistivity	C - 96 / 35 / 90	5.60×10^{7}	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	1.80×10^{7}		
Electric Strength		5.1×10^{4} (1300)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
Thermal Properties				
*Glass Transition Temperature (Tg)	DSC(°C)	175	°C	IPC-TM-650.2.4.25c
Degradation Temperature (TGA)	Degradation Temp (TGA) (5% wt. loss)	325	°C	IPC-TM-650.2.3.40
T-260	Time to delamination @ 260°C	4 - 8	minutes	IPC-TM-650.2.4.24.1
Thermal Conductivity		0.3 – 0.4	W/mK	ASTM E1461
Mechanical Properties				
Peel Strength	1 oz (35µ) Cu After Solder Float	1.58 (9.0)	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 Expansion (43% RC)	50°C to 260°C	3.7	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)		29.9 / 25.1 (4.4 / 3.7)	GN/m^2 (psi x 10^6)	ASTM D3039
Poisson's Ratios (X / Y)		0.16 / 0.14		
Chemical / Physical Properties				
Moisture Absorption		0.10	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
- N4000-6NF is available in most common panel sizes.
- Please contact AGC for availability of any other constructions or glass styles

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