

Nelco N5000

BT Epoxy Laminate & Prepreg

The Nelco N5000 BT epoxy laminate and prepreg system provides superior electrical properties. The N5000 resin system was originally developed for application specific use in high density military and commercial boards requiring not only close thickness tolerance, but also the ability to withstand the stress of multiple soldering excursions and repeated chemical exposure.

Key Features

BT resin chemistry

- BT (bismaleimide triazine) provides low Dk and Df values and overall superior electrical properties

Excellent Reliability and Performance

- Can be used in lead-free assembly applications and designs
- Tg 185°C by DSC
- Low Dk and Df
- Reduced X/Y and Z-Axis expansion

CAF* Resistant

- Low Z-CTE and proven CAF resistance provide long-term reliability

Wide processing latitude

- Unique BT/epoxy blend results in a wide processing latitude
- 90 min press at 190°C and 200-350 psi.

And Much More

- Vacuum laminated
- Available in a wide variety of constructions, copper weights and glass styles
- Meets UL 94V-0 and IPC-4101/30 specifications
- All Nelco materials are RoHS compliant



Applications

- Fine-Line Multilayers
- Backplanes
- Surface-Mount Multilayers
- BGA Multilayers
- MCM-Ls
- Direct Chip Attach
- Wireless Communications
- High Density Interconnects

Global Availability

Contact us worldwide:

Nelco, California	+1.714.879.4293
Nelco, New York	+1.845.567.6200
Neltec, Arizona	+1.480.967.5600
Nelco, Asia Pacific	+65.6861.7117
Neltec Europe SAS	+33.380.10.10.00
Neltec, SA	+33.562.98.52.90
www.parkelectro.com	info@parkelectro.com

Park's UL file number: E36295

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	U.S. Units		Metric Units		Test Method
Mechanical Properties					
Peel Strength - 1 oz. (35 micron) Cu					
After Solder Float	8.9	lb/inch	1.56	N/mm	IPC-TM-650.2.4.8
At Elevated Temperature	8.3	lb/inch	1.45	N/mm	IPC-TM-650.2.4.8.2a
After Exposure to Process Solutions	9.4	lb/inch	1.65	N/mm	IPC-TM-650.2.4.8
X/Y CTE [-40°C to +125°C]	10 - 14	ppm/°C	10 - 14	ppm/°C	IPC-TM-650.2.4.41
Z Axis Expansion [50°C to 260°C]	3.8	%	3.8	%	IPC-TM-650.2.4.41
Young's Modulus (X/Y)	4.7/4.1	psi x 10 ⁶	31.9/27.8	GN/m ²	ASTM D3039
Poisson's Ratios (X/Y)	0.16/0.14		0.16/0.14		ASTM D3039
Thermal Conductivity	TBD	W/mK	TBD	W/mK	ASTM E1461
Specific Heat	TBD	J/gK	TBD	J/gK	ASTM E1461
Electrical Properties					
Dielectric Constant (50% resin content)					
@ 1 GHz (RF Impedance)	3.8		3.8		IPC-TM-650.2.5.5.9
@ 2.5 GHz (Stripline)	3.6		3.6		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	3.6		3.6		IPC-TM-650.2.5.5.5
@ 10 GHz (Split Post Cavity)	3.6		3.6		
Dissipation Factor (50% resin content)					
@ 2.5 GHz (Stripline)	0.014		0.014		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	0.014		0.014		IPC-TM-650.2.5.5.5
@ 10 GHz (Split Post Cavity)	0.010		0.010		
Volume Resistivity					
C - 96/35/90	10 ⁷	MΩ - cm	10 ⁷	MΩ - cm	IPC-TM-650.2.5.17.1
E - 24/125	10 ⁷	MΩ - cm	10 ⁷	MΩ - cm	IPC-TM-650.2.5.17.1
Surface Resistivity					
C - 96/35/90	10 ⁶	MΩ	10 ⁶	MΩ	IPC-TM-650.2.5.17.1
E - 24/125	10 ⁷	MΩ	10 ⁷	MΩ	IPC-TM-650.2.5.17.1
Electric Strength	1200	V/mil	4.7x10 ⁴	V/mm	IPC-TM-650.2.5.6.2
Dielectric Breakdown	>50	kV	>50	kV	IPC-TM-650.2.5.6
Arc Resistance	118	seconds	118	seconds	IPC-TM-650.2.5.1
Thermal Properties					
Glass Transition Temperature (T _g)					
DSC (°C)	185	°C	185	°C	IPC-TM-650.2.4.25c
TMA (°C)	175	°C	175	°C	IPC-TM-650.2.4.24c
DMA (°C) (Tan δ Peak)	220	°C	220	°C	IPC-TM-650.2.4.24.3
Degradation Temp (TGA) (5% wt. loss)	334	°C	334	°C	IPC-TM-650.2.4.24.6
Pressure Cooker-60 min then solder dip @288°C until failure (max 10 min.)	Pass		Pass		IPC-TM-650.2.6.16 (modified)
T ₂₆₀	12+	minutes	12+	minutes	IPC-TM-650.2.4.24.1
Chemical/Physical Properties					
Moisture Absorption	<0.05	wt. %	<0.05	wt. %	IPC-TM-650.2.6.2.1
Methylene Chloride Resistance	0.7	% wt. chg.	0.7	% wt. chg.	IPC-TM-650.2.3.4.3
Density [50% resin content]	1.77	g/cm ³	1.77	g/cm ³	Internal Method

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All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a Nelco representative directly. Nelco reserves the right to change these typical values as a natural process of refining our testing equipment and techniques.

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*CAF resistance has been established to greater than 500 hours using a specific OEM coupon design and test procedure. For details on this or other CAF tests, please visit www.parkelectro.com.

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