

Park's Advanced Circuitry Materials

Nelco® N7000-2 HT Laminate Nelco® N7000-3 Prepreg and Laminate Toughened Polyimide Prepreg & Laminate



The Nelco N7000-2 HT laminate and N7000-3 prepreg are a series of toughened polyimide material for use in high-reliability multilayers. This combined resin system provides excellent thermal performance, improved processing characteristics and is exceptional for use in a wide variety of applications that include fine geometry multilayer constructions and extreme reliability requirements.

Key Features

Polyimide Resin Chemistry

- Robust thermal stability and reliability
- Toughened resin system
- High temperature tolerance and chemical resistance

Lead-free Assembly Compatibility

- Withstands multiple thermal excursions
- T_g 260°C by DSC
- T₂₆₀ >12 minutes
- Low Z-Axis CTE
- Designed for use in severe conditions

Supports Current and Previous Military and Industrial Standards

- N7000-2 HT and N7000-3 meet IPC-4101/40 and /41
- Complies with the old GIJ and GIL military specifications

Reliable Plated-through Holes

- Low Z-Axis CTE and toughened polyimide chemistry providing good dimensional stability

Reliable Processing

- Improved fracture resistance compared with traditional polyimide systems
- Reduced cure time compared to other traditional polyimide systems

And Much More

- Vacuum laminated
- Available in a wide variety of constructions, copper weights and glass styles
- All Nelco materials are RoHS compliant

Applications

- Fine-Line Multilayers
- Backplanes
- Surface-Mount Multilayers
- BGA Multilayers
- Direct Chip Attach
- Underhood Automotive
- Burn-in Boards

Global Availability

Nelco Products, Inc. (California) - Americas

+1.714.879.4293

Neltec, Inc. (Arizona) - Americas

+1.480.967.5600

Nelco Products Pte. Ltd. - Asia Pacific

+65.6861.7117

Neltec, S.A. - Europe

+33.562.98.52.90

www.parkedelectro.com

info@parkedelectro.com

Park's UL file number: E36295



PARK
ELECTROCHEMICAL
CORP.

Nelco[®] N7000-2 HT / N7000-3

Toughened Polyimide Laminate & Prepreg

Mechanical Properties	U.S. Units		Metric Units		Test Method
Peel Strength - 1 oz. (35 micron) Cu					
After Solder Float	7.5	lb / inch	1.31	N / mm	IPC-TM-650.2.4.8
At Elevated Temperature	7.0	lb / inch	1.22	N / mm	IPC-TM-650.2.4.8.2a
After Exposure to Process Solutions	7.0	lb / inch	1.22	N / mm	IPC-TM-650.2.4.8
X / Y CTE [-40°C to +125°C]	9 - 12	ppm / °C	9 - 12	ppm / °C	IPC-TM-650.2.4.41
Z Axis Expansion [50°C to 260°C]	<2.5	%	<2.5	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)	3.1 / 3.3	psi x 106	21.1 / 22.2	GN / m2	ASTM D3039
Poisson's Ratios (X / Y)	0.146 / 0.153		0.146 / 0.153		ASTM D3039
Thermal Conductivity	0.45	W / mK	0.45	W / mK	ASTM E1461
Specific Heat	1.06	J / gK	1.06	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)	3.5		3.5		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	3.5		3.5		IPC-TM-650.2.5.5.5
@ 10 GHz (Split Post Cavity)	3.5		3.5		
Dissipation Factor (50% resin content)					
@ 2.5 GHz (Stripline)	0.015		0.015		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	0.015		0.015		IPC-TM-650.2.5.5.5
@ 10 GHz (Split Post Cavity)	0.009		0.009		
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 ⁷	MΩ	10 ⁷	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	100	seconds	100	seconds	IPC-TM-650.2.5.1
Thermal Properties					
Glass Transition Temperature (Tg)					
DSC (°C)	260	°C	260	°C	IPC-TM-650.2.4.25c
TMA (°C)	250	°C	250	°C	IPC-TM-650.2.4.24c
Degradation Temp (TGA) (5% wt. loss)	376	°C	376	°C	IPC-TM-650.2.4.24.6
Pressure Cooker-60 min then solder dip					IPC-TM-650.2.6.16
@288°C until failure (max 10 min.)	Pass		Pass		(modified)
T260	12+	minutes	12+	minutes	IPC-TM-650.2.4.24.1
Chemical / Physical Properties					
Moisture Absorption	0.35	wt. %	0.35	wt. %	IPC-TM-650.2.6.2.1
Methylene Chloride Resistance	<0.50	% wt. chg.	<0.50	% wt. chg.	IPC-TM-650.2.3.4.3
Density [50% resin content]	1.70	g / cm ³	1.70	g / cm ³	Internal Method

Park Electrochemical Corp. is a global advanced materials company which develops and manufactures high-technology digital and RF/microwave printed circuit materials and advanced composite materials, parts and assemblies. The company operates under the Nelco®, Nelcote® and Nova™ names.

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.

Aeroglide™, CoreFix®, Easy cure™, EF®, EP™, LD®, Mercurywave™, Nelco®, Nelcote®, Nova™, PeelCote™, RTFoil® and SI® are trademarks of Park Electrochemical Corp.

Nelco reserves the right to make changes without further notice to any products herein to improve reliability, function or design. Nelco does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights nor the rights of others. This disclaimer of warranty is in lieu of all warranties whether expressed, implied or statutory, including implied warranties of merchantability or fitness for a particular purpose.

