

Nelco[®] N7000-1

Polyimide Laminate & Prepreg

The Nelco N7000-1 series of polyimide laminate and prepreg has a low Z-axis expansion and high-Tg offering PCB manufacturers consistent board performance and reliability. N7000-1 is a good choice for applications requiring the superior thermal stability and chemical resistance provided by a polyimide.

Key Features

Polyimide resin chemistry

- Robust thermal stability and reliability
- High temperature tolerances and chemical resistance

Lead-free assembly compatibility

- Withstands multiple thermal excursions
- Tg 260°C by DSC
- Low Z-Axis CTE
- Designed for use in severe conditions

Supports current and previous military and industrial standards

- Meets UL 94 HB
- Meets IPC-4101/40 and /41 specifications and the laminate and prepreg properties of IPC-4101/42
- Complies with the old GIJ and GIL military specifications

Reliable plated-through holes

- Low Z-Axis CTE providing good dimensional stability
- Specially-treated copper for enhanced peel strength and bond integrity

Proven processing and performance

- Proven performer with well-known processing characteristics
- Wide processing window

And Much More

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



Applications

- Fine-Line Multilayers
- Backplanes
- Surface-Mount Multilayers
- BGA Multilayers
- MCM-Ls
- Direct Chip Attach
- High Speed Computing
- Burn-in Boards

Global Availability

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.parkelectro.com
info@parkelectro.com

Park's UL file number: E36295

Nelco® N7000-1

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	1.001	N / mm	IPC-TM-650.2.4.8
At Elevated Temperature	6.0	lb / inch	0.91	N / mm	IPC-TM-650.2.4.8.2a
After Exposure to Process Solutions	7.0	lb / inch	0.98	N / mm	IPC-TM-650.2.4.8
X / Y CTE [-40°C to +125°C]	12 - 15	ppm / °C	12 - 15	ppm / °C	IPC-TM-650.2.4.41
Z Axis Expansion [50°C to 260°C]	1.8	%	1.7	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)	3.9 / 3.9	psi x 10 ⁶	30.6 / 25.9	GN / m ²	ASTM D3039
Poisson's Ratios (X / Y)	0.12 / 0.12		0.183 / 0.160		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)	3.9		3.9		IPC-TM-650.2.5.5.9
@ 2.5 GHz (Stripline)	3.9		3.9		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	3.9		3.8		IPC-TM-650.2.5.5.5
@ 10 GHz (Split Post Cavity)	3.9		3.9		
Dissipation Factor (50% resin content)					
@ 2.5 GHz (Stripline)	0.015		0.015		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	0.016		0.016		IPC-TM-650.2.5.5.5
@ 10 GHz (Split Post Cavity)	0.0095		0.0095		
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	1350	V / mil	5.3x10 ⁴	V / mm	IPC-TM-650.2.5.6.2
Dielectric Breakdown	>50	kV	>50	kV	IPC-TM-650.2.5.6
Arc Resistance	136	seconds	136	seconds	IPC-TM-650.2.5.1
Thermal Properties					
Glass Transition Temperature (T _g)					
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)	389	°C	389	°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)
T ₂₆₀	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	0.42	% wt. chg.	0.42	% wt. chg.	IPC-TM-650.2.3.4.3
Density [50% resin content]	1.68	g / cm ³	1.68	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®, Easycure™, 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.

