AGC
Your Dreams, Our Challenge

nelco

N7000-2 HT Laminate
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
- Tg 260°C by DSC
- T260 >120 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, /41 and /42
- 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 of AGC Nelco's PCB materials are RoHS compliant

Applications

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

UL file number: E36295

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	120+	minutes	120+	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

*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.