Nelco N8000
Nelco N8000Q

Cyanate Ester Epoxy Laminate & Prepreg

The Nelco N8000 is a high-Tg cyanate ester laminate and prepreg system that provides superior performance and product integrity and is ideal for board designs with higher layer counts, finer lines and spaces and larger panel sizes.

Key Features

High thermal performance
- Tg of 250ºC by DSC
- Low Z-axis expansion
- Suitable for high-layer count, sophisticated PWB designs
- Superior properties for high speed, high reliability and controlled impedance board applications

Superior electrical properties
- Supports signal speed capabilities not achievable through a standard epoxy or polyimide
- Low Dk and Df to meet high speed, low loss design requirements

Typical Cyanate Ester processing
- 240 min press at 182ºC and 200-300 psi.

S-glass and Quartz options
- Available with S-glass which provides a lower X/Y CTE over standard E-glass
- Available with quartz fabric reinforcement for extremely harsh environment and critical low loss designs

And Much More
- Vacuum laminated
- Available in a wide variety of constructions, copper weights and glass styles including standard copper, double treat and RTFOIL® laminate
- Meets UL 94V-0 and IPC-4101/70 (s-glass) and /71 (e-glass) specifications
- All Nelco materials are RoHS compliant

Applications

- Fine-Line Multilayers
- Backplanes
- Surface-Mount Multilayers
- BGA Multilayers
- MCM-L's
- Direct Chip Attach
- Automotive
- Underhood Automotive
- Wireless Communications
- High Speed Computing
- Radomes and Secondary Aerospace Structures

Global Availability

Contact us worldwide:

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Park's UL file number: E36295

Nelco N8000 and N8000Q

Cyanate Ester Laminate & Prepreg

Mechanical Properties	N8000	N8000Q	U.S. Units	N8000	N8000Q	Metric	Test Method
Peel Strength - 1 oz. (35 micron) Cu							
After Solder Float	8.0	10	lb/inch	1.40	1.75	N/mm	IPC-TM-650.2.4.8
At Elevated Temperature	7.5	-	lb/inch	1.31	-	N/mm	IPC-TM-650.2.4.8.2a
After Exposure to Process Solutions	8.0	10	lb/inch	1.40	1.75	N/mm	IPC-TM-650.2.4.8
X/Y CTE [-40°C to +125°C]	11 - 13	-	ppm/°C	11 - 13	-	ppm/°C	IPC-TM-650.2.4.41
Z Axis CTE Alpha 1 [50°C to Tg]	-	70	ppm/°C	-	70	ppm/°C	IPC-TM-650.2.4.41
Z Axis CTE Alpha 2 [Tg to 260°C]	-	375	ppm/°C	-	375	ppm/°C	IPC-TM-650.2.4.41
Z Axis Expansion [50°C to 260°C]	2.5	2.5	%	2.5	2.5	%	IPC-TM-650.2.4.41
Young's Modulus (X/Y)	3.0/3.0	2.6/2.3	psi x 10^6	20.4/20.4	17.6/15.6	GN/m^2	ASTM D3039
Poisson's Ratios (X/Y)	0.14/0.14	0.16/0.16		0.14/0.14	0.16/0.16		ASTM D3039
Thermal Conductivity (Z/X - Y)	-	0.34/0.54	W/mK	-	0.34/0.54	W/mK	ASTM E1461
Specific Heat	-	1.0	J/gK	-	1.0	J/gK	ASTM E1461
Electrical Properties							
Dielectric Constant (50% resin content)							
@ 1 GHz (RF Impedance)	3.7	3.3		3.7	3.3		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)	3.5	3.2		3.5	3.2		IPC-TM-650.2.5.5.5
Dissipation Factor (50% resin content)							
@ 2.5 GHz (Stripline)	0.011	-		0.011	-		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	0.011	0.006		0.011	0.006		IPC-TM-650.2.5.5.5
Volume Resistivity							
C - 96/35/90	10^7	10^7	MΩ - cm	10^7	10^7	MΩ - cm	IPC-TM-650.2.5.17.1
E - 24/125	10^7	10^7	MΩ - cm	10^7	10^7	MΩ - cm	IPC-TM-650.2.5.17.1
Surface Resistivity							
C - 96/35/90	10^7	10^7	MΩ	10^7	10^7	MΩ	IPC-TM-650.2.5.17.1
E - 24/125	10^7	10^7	MΩ	10^7	10^7	MΩ	IPC-TM-650.2.5.17.1
Electric Strength	1650	1500	V/mil	$6.5x10^4$		V/mm	IPC-TM-650.2.5.6.2
Dielectric Breakdown	>50	>50	kV	>50	>50	kV	IPC-TM-650.2.5.6
Arc Resistance	160	125	seconds	160	125	seconds	IPC-TM-650.2.5.1
Thermal Properties							
Glass Transition Temperature (T_g)							
DSC (°C)	250	250	°C	250	250	°C	IPC-TM-650.2.4.25c
TMA (°C)	240	240	°C	240	240	°C	IPC-TM-650.2.4.24c
DMA (°C) (Tan δ Peak)	300	300	°C	300	300	°C	IPC-TM-650.2.4.24.3
Degradation Temp (TGA) (5% wt. loss)	376	-	°C	376	-	°C	IPC-TM-650.2.3.40
Pressure Cooker-60 min then solder dip							IPC-TM-650.2.6.16
@288ºC until failure (max 10 min.)	Pass	Pass		Pass	Pass		(modified)
T_{260}	60+	60+	minutes	60+	60+	minutes	IPC-TM-650.2.4.24.1
T_{288}	30+	30+	minutes	30+	30+	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	0.34	-	% wt. chg.	0.34	-	% wt. chg.	IPC-TM-650.2.3.4.3
Density [50% resin content]	1.73	1.73	g/cm^3	1.73	1.73	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. The company operates under the Nelco® and Nelcote™ 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.

*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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