Park Electrochemical Nelco® N4000-11 Multifunctional Epoxy Laminate and Prepreg

Category : Polymer , Thermoset , Epoxy

Material Notes:

The Nelco® N4000-11 is a CAF resistant, high Tg (175° C by DSC) multifunctional epoxy dielectric substrate. This material is formulated to provide the PWB manufacturer and OEM with vastly improved thermal, mechanical, and electrical performance in lead-free assembly and high layer count, sophisticated PWB designs.Key Features and Benefits:Tg >175°C, thermal stability and moisture resistanceCAF ResistantLow Z-axis expansionDicyandiamide (DICY) free, proprietary resin chemistrySuperior electrical propertiesOptimized FR-4 processingApplications/Qualifications:Lead-Free Assembly SubstrateLarge Format BackplanesTight Tolerance Via to Via ApplicationsHigh I / O Count BGA SubstratesExtreme Layer count MultilayersLead-Free DCA ApplicationsHigh Temperature Underhood AutomotiveTelecommunications InfrastructureSophisticated Data Storage ApplicationsRoHS CompliantMeets IPC-4101/28, /83, /98, /99 SpecificationsInformation provided by Park Electrochemical Corp.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Park-Electrochemical-Nelco-N4000-11-Multifunctional-Epoxy-Laminate-and-Prepreg.php

Physical Properties	Metric	English	Comments
Density	1.96 g/cc	0.0708 lb/in³	50% Resin Content; Internal Method
Water Absorption	0.15 %	0.15 %	IPC-TM-650.2.6.2.1

Mechanical Properties	Metric	English	Comments
Peel Strength	1.23 kN/m	7.00 pli	at elevated temperature; IPC-TM-650.2.4.8.2a
	1.58 kN/m	9.00 pli	after exposure to process solutions; IPC-TM-650.2.4.8
	1.58 kN/m	9.00 pli	after solder float; IPC-TM-650.2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	12.0 - 14.0 µm/m-°C @Temperature -40.0 - 125 °C	6.67 - 7.78 µin/in-°F @Temperature -40.0 - 257 °F	X/Y; IPC-TM-650.2.4.41
	65.0 µm/m-°C @Temperature 50.0 - 175 °C	36.1 µin/in-°F @Temperature 122 - 347 °F	Z-Axis Alpha 1; IPC-TM-650.2.4.41
	265 µm/m-°C @Temperature 175 - 260 °C	147 µin/in-°F @Temperature 347 - 500 °F	Z-Axis Alpha 2; IPC-TM-650.2.4.41
Specific Heat Capacity	1.21 - 1.38 J/g-°C	0.290 - 0.330 BTU/lb-°F	ASTM E1461-92

Thermal Properties	Metric	English	Comments
Thermal Conductivity	0.401 - 0.599 W/m-K	2.78 - 4.16 BTU-in/hr-ft²-°F	ASTM E1461-92
Glass Transition Temp, Tg	170 °C	338 °F	TMA; IPC-TM-650.2.4.24c
	>= 175 °C	>= 347 °F	DSC; IPC-TM-650.2.4.25c
Decomposition Temperature	345 °C	653 °F	5% weight loss; TGA; IPC-TM-650.2.4.24.6
Flammability, UL94	V-0	V-0	

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+13 ohm-cm	1.00e+13 ohm-cm	C - 96/35/90; IPC-TM-650.2.5.17.1
	1.00e+13 ohm-cm	1.00e+13 ohm-cm	E - 24/125; IPC-TM-650.2.5.17.1
Surface Resistance	1.00e+12 ohm	1.00e+12 ohm	C - 96/35/90; IPC-TM-650.2.5.17.1
	1.00e+12 ohm	1.00e+12 ohm	E - 24/125; IPC-TM-650.2.5.17.1
Dielectric Constant	3.8 @Frequency 2.50e+9 Hz	3.8 @Frequency 2.50e+9 Hz	Stripline; IPC-TM-650.2.5.5.5
	4.1 @Frequency 1.00e+9 Hz	4.1 @Frequency 1.00e+9 Hz	RF Impedance; IPC-TM-650.2.5.5.9
	4.3 @Frequency 1.00e+6 Hz	4.3 @Frequency 1.00e+6 Hz	TFC/LCR Meter; IPC-TM-650.2.5.5.3
Dielectric Strength	51.2 kV/mm	1300 kV/in	IPC-TM-650.2.5.6.2
Dielectric Breakdown	>= 50000 V	>= 50000 V	IPC-TM-650.2.5.6
Dissipation Factor	0.016 @Frequency 1.00e+6 Hz	0.016 @Frequency 1.00e+6 Hz	TFC/LCR Meter; IPC-TM-650.2.5.5.3
	0.020 @Frequency 2.50e+9 Hz	0.020 @Frequency 2.50e+9 Hz	Stripline; IPC-TM-650.2.5.5.5
Arc Resistance	124 sec	124 sec	IPC-TM-650.2.5.1

Descriptive Properties	Value	Comments
Methylene Chloride Resistance (% Weight Change)	0.8	IPC-TM-650.2.3.4.3

Descriptive Properties	Value	Comments
Pressure Cooker	Pass	Solder dip @288°C until failure (max 10 min.); IPC-TM-650.2.6.16 (modified)
T260 (minutes)	30	IPC-TM-650.2.4.24.1
Z Axis Expansion (%)	3.2	50°C to 260°C; IPC-TM-650.2.4.41

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