

N4000-11

CAF Resistant, Low CTE, High-T_g Multifunctional Epoxy Laminate & Prepreg



N4000-11 is a CAF resistant, high T_g (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 high layer count, sophisticated PWB designs. The resin chemistry of the N4000-11 eliminates the use of Dicyandiamide (DICY) as the primary cross-linking agent, thereby offering dramatic improvement in thermal stability and moisture resistance compared to traditional FR-4 epoxy systems. N4000-11 is designed for applications requiring outstanding thermal stability, low Z – axis expansion, and superior electrical integrity.

This material set is offered in a broad range of laminate and prepreg constructions and will be manufactured globally through our Nelco business units in Asia, North America, and Europe.

what you need...
when you need it...
where you need it...

PARK  **nelco**

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The N4000-11 has been formulated as a next generation high T_g FR-4 dielectric substrate. The use of advanced, proprietary resin technology has resulted in a product with exceptional thermal stability, a very low Z-CTE, and CAF resistance that far exceeds traditional multifunctional epoxy resin technology.

The PWB process latitude of the N4000-11 is almost identical to traditional high T_g FR-4 products. The rheology of this product has been optimized to avoid the potential problems associated with non-dicy cured systems. Users can expect the consistent, controlled flow and superior via topography required in today's complex PWB designs.

This advanced material is designed for use in high layer count, high density multilayer boards, backplanes, and surface mount multilayers for assembly of BGA's, MCM-Ls, and other CSP's. End use applications include network storage, wireless communications infrastructure, IT switching and high end servers. It is particularly appropriate for applications requiring lead-free assembly and PCB designs requiring very low Z-axis CTE and CAF resistance.

As with all Park/Nelco materials, the N4000-11 is vacuum laminated and available in a wide variety of alternative constructions, copper weights and glass styles. It is also available in standard Copper, double treat and RTFOIL™ Laminate.

*CAF resistance has been established to greater than 750 hours using a specific OEM coupon design and test procedure. For details on this or other CAF tests, please visit www.parknelco.com.

** T_g may exceed printed value and is dependent upon relamination cure time and temperature. Stated T_g is a minimum value and related product properties are determined at this T_g value.

*** Data based on an 8 ply 7628 construction with no innerlayer copper.

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Product Application Environments

Lead Free Assembly Substrates	◆
Large Format Backplanes	◆
Tight Tolerance Via to Via Applications	◆
High I/O Count BGA Substrates	◆
Extreme Layer Count Multilayers	◆
Lead Free DCA Applications	◆
Next Generation HDI Buildup Layers (-11 LD)	◆
High Temperature Underhood Automotive	◆
Telecommunication Infrastructure	◆
Sophisticated Data Storage Applications	◆

Key Engineering Values

X / Y CTE (ppm / °C) [-40 to 125°C]	12 - 14
Z-Axis Expansion (%) [50 to 260°C]	3.2
T _g by DSC** (°C)	≥ 175
Degradation Temp. (TGA) (°C)	360
T260*** (minutes)	30
T288*** (minutes)	6
CAF Resistance* (Hours)	>750
Dielectric Constant (.002" 106)	
@ 1 MHz	4.3
@ 1 GHz	4.1
@ 2.5 GHz	3.8

Vacuum Lamination Parameters

Full Cure In Press	60 min. @ 182 °C
Heat Up Rate (°C / min.)	3-6
Critical Range (°C)	70 – 130
Cool Down Rate (°C / min.)	< 3
Pressure (kg / cm ²) / (psi) *	15 - 20 / 200 - 300

Set platen 3 – 6° C higher than cure temp. & control heat up rate through critical temperature range. Large panel sizes, high layer count and / or thick panels require higher pressure depending on heat and pressure distribution during lamination.

For more information contact one of our ISO 9002 facilities worldwide or visit us at www.parknelco.com

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