

# N4000-12

## Application Bulletin- UL Approval

# UL Approval for N4000-12

June 23, 2004

### Scope

This bulletin describes the UL approval status for N4000-12 as of the date given above. Revisions to this document will be issued as necessary to reflect further UL approvals.

### Status

On October 10, 2003, Nelco, a subsidiary of Park Electrochemical Corporation, received UL Notice of Authorization for Nelco FR-4 Laminate Grade N4103-12. From a performance standpoint, this product is designed to fit into our digital broadband material offering between our high-Tg FR-4 products (N4000-6 or N4000-11) and our high speed, low loss dielectric, N4000-13. N4000-12 is a perfect fit for high volume, high speed assemblies in the 1+ GHz range. Effective February 9, 2004, N4103-12 laminate and N4203-12 B-sales prepreg will be available on a commercial basis in Asia and North America. Initial business unit manufacturing sites are Nelco Products, PTE. in Singapore and Neltec in Tempe, Arizona.

On March 18, 2004, Nelco received full UL Recognition for N4103-12 Metal Clad Laminate per the table below.

N4103-12 / N4203-12 can be added to an existing FR-4 multilayer board, with only Delamination testing required per Table 13.7, UL796, as long as the laminate and prepreg package parameters are equal or more severe than the board parameters (acceptable by CCIL/MCIL). The amount of testing may vary depending on the PWBs individual UL file. In some cases full bond/delam and flame tests may be required. If you have any questions regarding your specific test requirements please contact your local UL office.

# N4000-12 UL Approval Bulletin

## N4103-12 UL Recognition

Ultrathin industrial laminates with copper on one or both sides and prepregs for use in multilayer printed wiring boards

Clad Material Designation	ANSI Type	Min Thk In. (mm)	Clad Cond Thk		Max Area Diam In. (mm)	Sold Lts		Max Oper Temp	Min Board Bld-Up In. (mm)	UL-94 Flame Class
			Min Mils (Mics)	Max Mils (Mics)		Temp F (C)	Time Sec			
N4103-12	FR-4	0.0016	0.17	2.8	2.0*	550	30	120	0.008	V-0
		(0.040)	(4.3)	(70)	(50.8)	(288)			(0.20)	
N4103-12	FR-4	0.0016	0.17	2.8	2.0*	550	30	130	0.015	V-0
		(0.040)	(4.3)	(70)	(50.8)	(288)			(0.38)	

\* The 2.0 in. (50.8 mm) maximum area may be considered representative of larger areas not exceeding a printed wiring board fabricators limits.