

Materials Selection Guide

Park specializes in advanced materials for advanced composites, high layer count circuit boards and high speed digital and RF / Microwave electronic systems. Park's product line has been designed with an emphasis on higher performance, higher technology materials. Park focuses its R&D efforts toward developing industry-leading product technology to meet the most demanding performance requirements.

Nelco and Neltec are subsidiaries of Park Electrochemical Corp. which offer diverse advanced circuitry materials including modified epoxies for high temperature and increased reliability applications, high speed / low loss materials for digital applications requiring increased signal integrity, and BT, polyimide, cyanate ester and specialized RF / Microwave dielectric substrates that operate at frequencies up to 77 GHz.

FR-4 Materials	Description	Glass Transition Temperature (T _g) DSC (°C)	Dielectric Constant			Dissipation Factor	
			1 MHz	1 GHz	2.5 GHz	1 MHz	2.5 GHz
N4000-2	Multifunctional Epoxy	140	4.4	4.1	-	0.027	-
N4000-6	High Tg Multifunctional Epoxy	175	4.3	4.1	4.0	0.027	0.022
N4000-6 FC	Fast-Cure, High Tg Multifunctional Epoxy	175	4.3	4.1	4.0	0.023	0.022
N4000-7	Low CTE Multifunctional Epoxy	155	4.5	4.0	3.9	0.018	0.017
N4000-7 EF®	Environmentally Friendly Multifunctional Epoxy	165	4.3	4.1	4.0	0.010	0.011
N4000-7 SI®	Low CTE Multifunctional Epoxy	155	4.0	3.6	3.4	0.016	0.015
N4000-11	Low CTE, High Tg Multifunctional Epoxy	175	4.3	4.1	3.8	0.012	0.015

High Performance Materials	Description	Glass Transition Temperature (T _g) DSC (°C)	Dielectric Constant			Dissipation Factor	
			1 GHz	2.5 GHz	10 GHz	2.5 GHz	10 GHz
N4000-12	High Speed, Low Loss Lead-Free Epoxy	190	3.7	3.7	3.6	*0.008	*0.008
N4000-13	High Speed, Low Loss Epoxy	210	3.8	3.7	3.6	*0.007	*0.008
N4000-13 SI®	High Speed, Low Loss Epoxy	210	3.5	3.2	3.2	-	*0.006
N4380-13 RF	Microwave Performance, Modified Epoxy	210	-	-	3.8	-	0.007
N5000	BT Epoxy	185	3.8	3.6	3.6	0.014	0.014
N5000-30 & 32	Chip Packaging BT Epoxy	205	4.1	-	-	0.009	-
N7000-1	non-MDA Polyimide	260	3.9	3.9	3.8	0.015	0.016
N7000-2 HT /-3	non-MDA Toughened Polyimide	260	3.8	3.5	3.5	0.015	0.015
N7000-2 V0	UL 94 V-0 Toughened Polyimide	250	4.0	3.8	3.8	-	0.010
N8000	Cyanate Ester	250	3.7	3.6	3.5	0.011	0.011
N9000-13 RF	PTFE Blended Laminate	220	N/A	N/A	3.00-3.50	N/A	0.0040-0.0055
NH9000	Woven, Glass/Ceramic Loaded PTFE	N/A	N/A	N/A	2.94-3.50	N/A	0.0022-0.0030
NX9000	Woven, Glass-Reinforced PTFE	N/A	N/A	N/A	2.40-3.20	N/A	0.0016-0.0024
NY9000	Woven, Glass-Reinforced PTFE	N/A	N/A	N/A	2.08-2.33	N/A	0.0006-0.0011

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.

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*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.parkedelectro.com.

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