



PARK ELECTROCHEMICAL CORP.

ADVANCED ELECTRONIC MATERIALS PRODUCTS *Selector Guide*



Park Electrochemical Corp. is a global advanced materials company which develops and manufactures high-technology digital and RF / microwave printed circuit materials principally for the telecommunications and internet infrastructure and high-end computing markets and advanced composite materials, parts and assemblies for the aerospace markets. Park's core capabilities are in the areas of polymer chemistry formulation and coating technology. The Company's manufacturing facilities are located in Singapore, France, Kansas, Arizona and California. The Company also maintains R&D facilities in Arizona, Kansas and Singapore.

Park provides a full range of prepreg and laminate systems providing superior thermal, mechanical and electrical performance in high layer count digital designs and RF / microwave applications. All of Park's electronic materials are RoHS compliant and include:

- Materials for high-temperature lead-free assembly
- Modified epoxies for high temperature and increased reliability applications
- High speed / low loss materials for digital applications
- BT, polyimide, cyanate ester substrates
- Specialized RF / microwave dielectric substrates that operate at frequencies up to 77 GHz

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Park's Advanced Electronic Materials Products

FR-4 Substrates	Description	High Temp	CAF ³	T _g °C	Dielectric ¹		Dissipation ¹
		Lead-Free ²			Resistant	Constant (Dk)	Factor (Df)
		Assembly		(DSC)	1 MHz	1 GHz	1 MHz
		Compatible					
N4000-6	High Tg Multifunctional Epoxy	-	-	175	4.3	4.1	0.023
N4000-6 FC	Fast-Cure, High Tg Multifunctional Epoxy	-	-	175	4.3	4.1	0.023
N4000-7	Low CTE Multifunctional Epoxy	Yes	Yes	155	4.5	4.0	0.018
N4000-7 SI®	Low CTE Multifunctional Epoxy	Yes	Yes	155	4.0	3.6	0.016
N4000-11	Low CTE, High Tg Multifunctional Epoxy	Yes	Yes	175	4.3	4.1	0.016
N4000-29	Lead Free, High Tg Multifunctional Epoxy	Yes	Yes	185	4.5	4.3	0.016

High Performance					1 GHz	10 GHz	10 GHz
Mercurywave® 9350	Microwave Performance, Very Low Loss, Modified Epoxy	Yes	-	200 (DMA)	-	3.5	0.004
Meteorwave® 1000	Very Low Loss, Very High Reliability	Yes	Yes	240 (DMA)	-	3.7	0.0055
Meteorwave® 2000	Ultra Low Loss, Very High Reliability	Yes	Yes	240 (DMA)	-	3.4	0.004
Meteorwave® 3000	Very Low Loss, Very High Reliability	Yes	Yes	200 (DMA)	-	3.8	0.0048
Meteorwave® 4000	Ultra Low Loss, Very High Reliability	Yes	Yes	200 (DMA)	-	3.5	0.0028
N4000-12	High Speed, Low Loss, Modified Epoxy	Yes	Yes	190	3.7	3.6	0.008
N4000-12 SI®	High Speed, Low Loss, Modified Epoxy	Yes	Yes	190	3.4	3.3	0.007
N4000-13	High Speed, Low Loss, Modified Epoxy	Yes	Yes	210	3.7	3.6	0.008
N4000-13 SI®	High Speed, Low Loss, Modified Epoxy	Yes	Yes	210	3.4	3.2	0.007
N4000-13 EP™	High Speed, Low Loss, Modified Epoxy	Yes	Yes	210	3.7	3.6	0.008
N4000-13 EP SI®	High Speed, Low Loss, Modified Epoxy	Yes	Yes	210	3.4	3.2	0.007
N4350-13 RF	Microwave Performance, Modified Epoxy	Yes	-	210	-	3.5	0.008
N4380-13 RF	Microwave Performance, Modified Epoxy	Yes	-	210	-	3.8	0.008
N4800-20	Thermally Robust, High Speed, Low Loss, Mod. Epoxy	Yes	Yes	200	-	3.8	0.0075
N4800-20 SI®	Thermally Robust, High Speed, Low Loss, Mod. Epoxy	Yes	Yes	200	-	3.4	0.006
N5000	BT Epoxy	Yes	Yes	185	3.6	3.6	0.010
N5000-30 & 32	Chip Packaging BT Epoxy (not available in Asia)	Yes	-	205 (DMA)	-	-	-
N7000-1	non-MDA Polyimide	Yes	-	260	3.9	3.8	0.0095
N7000-2 HT / -3	non-MDA Toughened Polyimide	Yes	-	260	3.5	3.5	0.009
N7000-2 V0	UL 94 V-0 Toughened Polyimide	Yes	-	250	3.8	3.8	0.010
N7000-3	UL 94 V-1 Toughened Polyimide	Yes	-	260	3.7	3.5	0.009
N8000	Cyanate Ester	Yes	-	250	3.6	3.5	0.007
N8000Q	Cyanate Ester with Quartz Fabric	Yes	-	250	3.3	3.2	0.006
N9000-13 RF	PTFE Blended Laminate	Yes	-	220	-	3.00-3.50	0.0040-0.0055
NH9000	Woven, Glass / Ceramic Loaded PTFE	Yes	-	-	-	2.94-4.50	0.0022-0.0030
NL9000	Woven, Glass-Reinforced PTFE	Yes	-	-	-	2.94-3.50	0.0017
NX9000	Woven, Glass-Reinforced PTFE	Yes	-	-	-	2.40-3.20	0.0016-0.0024
NY9000	Woven, Glass-Reinforced PTFE	Yes	-	-	-	2.08-2.33	0.0006-0.0011

Laser Drillable Materials

LD® materials enhanced for optimal laser ablation are available for a number of resin systems



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¹ Dk and Df numbers provided are typical values calculated at 50% resin content except where noted. RF/Microwave material Dk and Df values are based on actual constructions.

² High-temperature lead free assembly compatibility is based on T_d, T₂₆₀ and 245°C / 260°C reflow testing. Actual results will vary based on assembly and board construction conditions.

³ CAF resistance testing is based on specific coupon design and test protocols.

All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a company representative directly.

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