



Nelco materials include diverse advanced circuitry materials, from modified epoxies for high temperature and increased reliability applications to specialized RF/microwave dielectric substrates that operate at frequencies up to 77 GHz. Some of the newest products include N4350-13RF and N4380-13RF.

N9000 Series - Typical Engineering Values

Typical Parameter	Test Method	9208	9217	9220	9233	9240	9245	9250
		NY SERIES			NX SERIES			
Dielectric Constant at 10 GHz (Dk)	IPC-TM-650, 2.5.5.5	2.08±.02	2.17±.02	2.20±.02	2.33±.02	2.40±.04	2.45±.04	2.50±.04
Dissipation Factor at 10 GHz (Df)	IPC-TM-650, 2.5.5.5	0.0006	0.0008	0.0009	0.0011	0.0016	0.0016	0.0017
Passive Intermodulation Formulation Availability		Yes			Yes			
Passive Intermodulation Performance		-155 dBc			-155 dBc			
Dielectric Breakdown	IPC-TM-650, 2.5.6	50kV			50kV			
Volume Resistivity	IPC-TM-650, 2.5.17	10 ⁹ MΩ/cm			10 ⁹ MΩ/cm			
Surface Resistivity	IPC-TM-650, 2.5.17	10 ⁹ MΩ			10 ⁹ MΩ			
Arc Resistance	ASTM D-495	180 sec.			180 sec.			
Flexural Strength Lengthwise	IPC-TM-650, 2.4.4	82.7 MPa			158.6 MPa			
Flexural Strength Crosswise	IPC-TM-650, 2.4.4	68.9 MPa			131.0 MPa			
Copper Peel Strength	IPC-TM-650, 2.4.8	2.33 kN / m			2.33 kN / m			
18, 35, and 70µm copper (1/2 oz, 1 oz, and 2 oz copper)								
After Thermal Shock (30 sec. at 260°C)		2.31 kN / m			2.31 kN / m			
Moisture Absorption	IPC-TM-650, 2.6.2.1	0.02%			0.05%			
Specific Gravity	ASTM D-792, A	2.23 g / cm ³			2.25 g / cm ³			
Thermal Conductivity	ASTM E-1225	0.272 W / m / K			0.251 W / m / K			
Coefficient of Thermal Expansion (CTE)	IPC-TM-650, 2.4.41							
X		25 ppm / °C			12 ppm / °C			
Y		35 ppm / °C			18 ppm / °C			
Z		260 ppm / °C			150 ppm / °C			
Flammability	IPC-TM-650, 2.3.10	V-0			V-0			

For non-standard dielectric constants or additional copper foil options, please contact the factory or your local Nelco representative.

Available Laminate Thicknesses

Series	Product	0.005	0.010	0.015	0.020	0.030	0.031	0.045	0.060	0.062	0.125	inches mm
		0.127	0.254	0.381	0.508	0.762	0.787	1.143	1.524	1.575	3.175	
NY	9208					■			■		■	
NY	9217	■	■	■	■	■	■	■	■	■	■	
NY	9220	■	■	■	■	■	■	■	■	■	■	
NY	9233	■	■	■	■	■	■	■	■	■	■	
NX	9240	■	■	■	■	■	■	■	■	■	■	
NX	9245	■	■	■	■	■	■	■	■	■	■	
NX	9250	■	■	■	■	■	■	■	■	■	■	
NX	9255	■	■	■	■	■	■	■	■	■	■	
NX	9260	■	■	■	■	■	■	■	■	■	■	
NH	9294	■	■	■								
NX	9294				■	■	■	■	■	■	■	
NH	9300	■	■	■								
NX	9300				■	■	■	■	■	■	■	
NH	9320	■	■	■	■							
NX	9320					■	■	■	■	■	■	
NH	9338	■	■	■	■	■	■	■	■	■	■	
NH	9348	■	■	■	■	■	■	■	■	■	■	
NH	9350		■	■	■	■	■	■	■	■	■	

Constructions

NY: PTFE/woven-glass composite. Low glass: PTFE ratio for lowest loss applications.

NX: PTFE/woven-glass composite. Medium glass: PTFE ratio for increased mechanical strength.

NH: PTFE/woven-glass/ceramic composite. Medium glass: PTFE ratio with ceramic added for thermal stability and Dk uniformity at higher Dks.