



**NAN YA PLASTICS CORPORATION**  
ELECTRONIC MATERIALS DIVISION.  
**COPPER CLAD LAMINATE DEPARTMENT**

**Glass cloth base epoxy resin  
flame retardant copper clad laminate**

NO. 201, TUNG HWA N. ROAD,  
TAIPEI, TAIWAN.

## NPGN-150TL

### ■ FEATURES

- Halogen, antimony, and red phosphorous free
- Flammability meets UL 94 V-0
- Excellent long term reliability
- UV blocking type
- Reactive type flame retardants
- Lower C.T.E will provide excellent through-hole reliability
- Superior CAF-Resistance (Anti-migration)

### ■ PERFORMANCE LIST

Characteristics	Unit	Conditioning	Typical Values	SPEC	Test Method
Volume resistivity	MΩ-cm	C-96/35/90	$5.5 \times 10^9$	$10^6 \uparrow$	2.5.17
Surface resistivity	MΩ	C-96/35/90	$5.5 \times 10^7$	$10^4 \uparrow$	2.5.17
Permittivity 1 MHZ	-	C-24/23/50	4.3-4.5	5.4 ↓	2.5.5.9
Permittivity 1 GHZ	-	C-24/23/50	3.9-4.1	-	2.5.5.9
Loss Tangent 1 MHZ	-	C-24/23/50	0.014-0.016	0.035 ↓	2.5.5.9
Loss Tangent 1 GHZ	-	C-24/23/50	0.012-0.014	-	2.5.5.9
Arc resistance	SEC	D-48/50+D-0.5/23	120 ↑	60 ↑	2.5.1
Dielectric breakdown	KV	D-48/50	60 ↑	40 ↑	2.5.6
Moisture absorption	%	D-24/23	0.2-0.3	0.35 ↓	2.6.2.1
Flammability	-	C-48/23/50	94V0	94V0	UL94
Peel strength 1 oz	lb/in	288°Cx10" solder floating	8-10	6 ↑	2.4.8
Thermal stress	SEC	288°C solder dipping	300 ↑	10 ↑	2.4.13.1
Glass transition temp	°C	DMA	$170 \pm 5$	N/A	2.4.25
Dimensional stability X-Y axis	%	E 4/105	0.01-0.03	0.05 ↓	2.4.39
Coefficient of thermal expansion					
X-Y axis	ppm/°C	TMA	9-13	N/A	2.4.24
Z-axis before Tg	ppm/°C	TMA	30-50		
Z-axis after Tg	ppm/°C	TMA	200-230		

**NOTE:**

The average value in the table refers to samples of .020" 1/1.

Test method per IPC-TM-650

Data shown are nominal values for reference only.