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

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

Glass cloth base epoxy resin
flame retardant copper clad laminate

NP-140TL

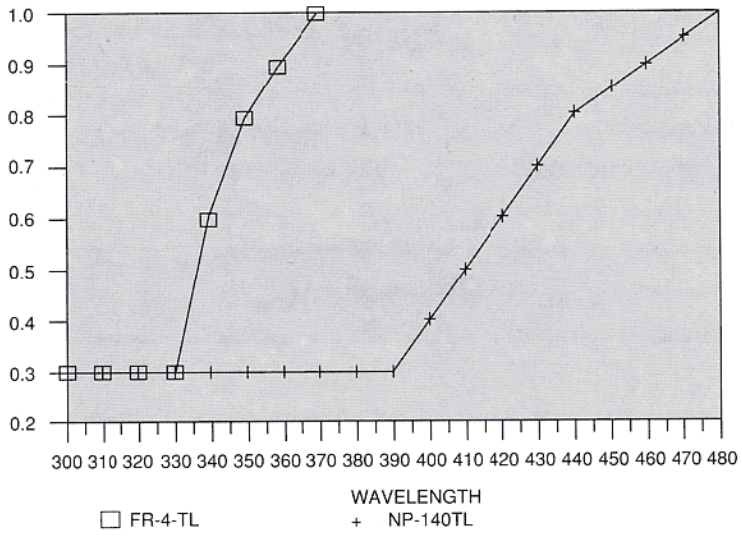
FEATURES

- Multi-functional epoxy renders the material outstanding heat resistance, better dimensional stability, and through-hole reliability that benefit the performance of high layer count multilayer boards.
- HTE copper foil applied to prevent corner cracking.
- High luminance of epoxy contrast with copper forA.O.I..
- UV solder mask may be applied simultaneously in order to increase yields
- Other properties are similar to FR-4-TL.
- IPC-4101 specification is applicable.

Characteristics	Unit	Conditioning		Typical Values	SPEC
Volume resistivity	MΩ-cm	C-96/35/90		5.0×10^9	10^6 ↑
Surface resistivity	MΩ	C-96/35/90		5.0×10^7	10^4 ↑
Permittivity 1MHZ	-	C-24/23/50		4.2-4.8	5.4 ↓
Loss Tangent 1 MHZ	-	D-24/23/50		0.010-0.016	0.035 ↓
Arc resistance	SEC	D-48/50+D-0.5/23		120 ↑	60 ↑
Dielectric breakdown	KV	D-48/50		60 ↑	40 ↑
Moisture absorption	%	C-24/23	<0.78mm	0.18	0.80 ↓
			≥0.78mm	0.15	0.35 ↓
Flammability	-	C-24/23/50+E-24/125		94V0	94V0
Peel strength 1oz	lb/in	288°C x 10" solder floating		10-14	8 ↑
Thermal stress	SEC	288 °C solder dipping		90 ↑	10 ↑
Glass transition temp	°C	DSC		140 ± 5	N/A
Dimensional stability X-Y axis	%	E 4/105		0.01-0.03	0.05 ↓
Coefficient of thermal expansion					
Z-axis before Tg	in/in/°C	TMA		5×10^{-5}	N/A
Z-axis after Tg	in/in/°C	TMA		25×10^{-5}	

Data shown are nominal values for reference only.

■ UV TRANSMISSION CURVE OF 0.2mm CCL



■ PRODUCT SIZE & THICKNESS

THICKNESS INCH (mm)	COPPER CLADDING OZ (µm)	SIZE INCH	SIZE mm	THICKNESS TOLERANCE
0.004 (0.1)	0.5 (17)	48.8 x 36.6	1240 x 0930	
to	1.0 (35)	48.8 x 40.5	1240 x 1030	CLASS C/M
0.047 (1.2)	2.0 (70)	48.8 x 42.5	1240 x 1080	

■ Keeping the core and prepreg in the same grain direction is crucial to ensure the flatness of multilayer boards.

Grain direction is shown on the certificate of Conformance

■ CERTIFICATION UL

• UL File No.:E98983(S)

■ CONSTRUCTION:

THICKNESS		CONSTRUCTION	
mm	mil		
0.08	3	2112	1 ply
0.10	4	1080	2 plies
0.11	4	2116	1 ply
0.13	5	1080	2 plies
0.13sp	5	2116	1 ply
0.15	6	1506	1 ply
0.16	6	2112	2 ply
0.21	8	7628	1 ply
0.26	10	2116	2 plies
0.30	12	2116	3 plies
0.30sp	12	1506	2 plies
0.35	14	7628	2 plies
0.38	15	7628	2 plies

THICKNESS		CONSTRUCTION	
mm	mil		
0.45	18	7628 x 2+1080 x 1	
0.46	18	7667	2 plies
0.50	20	7628	3 plies
0.53	21	7628	3 plies
0.60	24	7628	3 plies
0.77	31	7628	4 plies
0.8	32	7628	4 plies
0.9	36	7628	5 plies
1.0	39	7628	5 plies
1.1	44	7628	6 plies
1.2	47	7628	6 plies

*1.2,1.1,1.0,0.9,0.77 mm, THICKNESS INCLUDES CLADDING. ALL OTHERS EXCLUDE CLADDING.