

**NAN YA PLASTICS CORPORATION
COPPER CLAD LAMINATE
QUALITY TEST REPORT**

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DATE: 2002/01/18

PALLET NO: 25A

INVOICE NO: 2MC21001

CUSTOMER 管理

ORDER NO: NC1K1071

1356

LOT NO: 1B28105

MATERIAL SPEC.: FR-4-86 1V Block 1/1 2.40mm 1240mm x 0930mm MU (OVERALL THICKNESS)

IPC DESIGNATION: L21 0909 H1/H1 B/A 48.8" x 36.6" (f x g)

REQUIREMENT: IPC-4101

SPECIFICATION SHEET: IPC-4101 / 21

CHARACTERISTICS	UNIT	CONDITIONING	SPECIFICATION	RESULTS
VISUALS	-	IPC 4101	A	OK
METAL THICKNESS	μm	IPC-4101	Q: 8.1-9.9 T: 10.8-13.2 H: 15.5-18.9 1: 30.9-37.7 R: 46.4-56.7 2: 61.4-75.5 P: 77.2-94.4 3: 92.7-113.3	34.2
DIELECTRIC CONSTANT(1MHZ)		C 24/23/50	< 5.4	4.47
SURFACE RESISTANCE	MΩ	C 96/35/90	< 0.78mm 10 ⁴ ↑ ≥ 0.78mm -----	1.4E6
SURFACE RESISTIVITY	MΩ	E 24/125	10 ³ ↑	1.8E5
VOLUME RESISTANCE	MΩ-cm	C 96/35/90	< 0.78mm 10 ⁶ ↑ ≥ 0.78mm -----	6.5E8
VOLUME RESISTIVITY	MΩ-cm	E 24/125	10 ³ ↑	1.6E6
DISSIPATION FACTOR(1MHZ)		C 24/23/50	0.035 ↓ (CFRD - CFMD: 0.020 ↓)	.019
ARC-RESISTANCE	sec	D48/50+D1/2 /23	60" (CFRS - CFRS: 90 ↑)	121
FLEXURAL STRENGTH	N/mmt	LENGTHWISE A	< 0.78mm ----- ≥ 0.78mm 414.27 ↑	544
FLEXURAL STRENGTH	N/mmt	CROSSWISE A	< 0.78mm ----- ≥ 0.78mm 345.28 ↑	414
THICKNESS	m/m	A	1.2mm(含) CLASS C/M 1.2mm(不含) CLASS B/L	OK
THERMAL STRESS WARP AND TWIST	%	288°C x 10sec	No blister delamination SINGLS DOUBLE 2.0: 1.5 1.5: 1.0	OK 0.29
PRESSURE VESSEL		0.5-0.78 mm A >0.79 mm A D25/119.6+des (260°C X 15sec)	IPC-TM-650	OK
MOISTURE ABSORPTION	%	E1/105+des+D24/23	< 0.78 mm ≥ 0.78 mm 0.80% ↓ 0.35% ↓	.072
PEEL STRENGTH	lb/in	AFTER THERMAL STRESS	Qoz 5.0 ↑ Toz 5.5 ↑ Hoz 6.0 ↑ 1oz 8.0 ↑ Roz 10.0 ↑ 2oz 11.0 ↑ Poz 11.5 ↑ 3oz 12.0 ↑	11.8
TG GLASS TRANSITION TEMP	°C		135 ↑	136.61
FLAMMABILITY	sec	C 24/23/50 E 24/125	94-V0 94-V0	OK

THIS IS TO CERTIFY THAT THE MATERIAL BEING FURNISHED TO YOU MEETS THE IPC-4101.

APPROVED BY :

Y.S. Du

Q. A. ENGINEER
DD/MM/YEAR