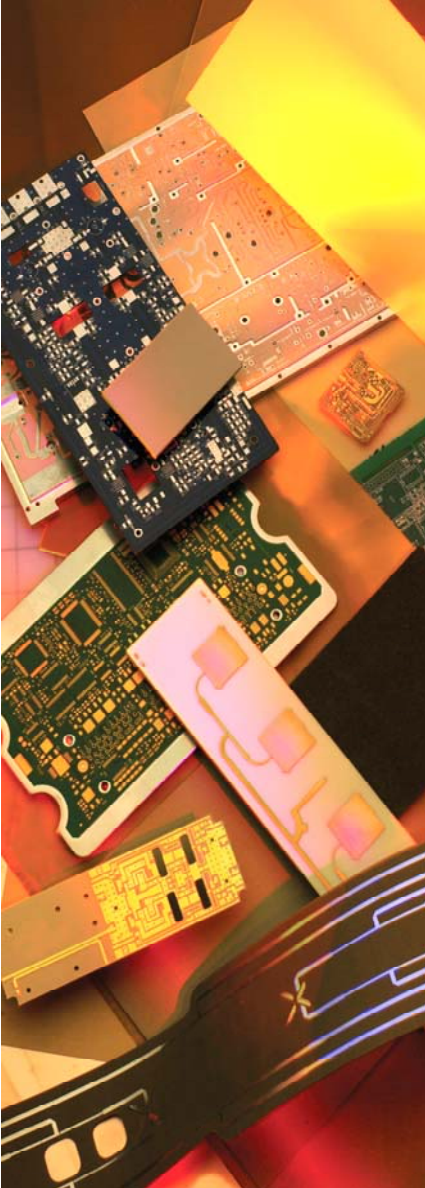


45N

MULTIFUNCTIONAL EPOXY LAMINATE AND PREPREG



Arlon's 45N is a tough, high Tg (175°C by DSC) multifunctional epoxy laminate and prepreg system designed for use in a variety of higher layer count MLB's. Processeable using conventional FR-4 conditions, 45N is supplied to meet the requirements of IPC-4101/26.

Features:

- High Tg by DSC (175°C)
- Resists barrel cracking and inner layer copper cracking during fabrication
- Resistant to Measling and Solder shock Defects
- UL-94 VO
- RoHS/WEEE Compliant
- Suitable for most Lead-Free applications

Typical Applications:

- Automotive Under-hood applications
- Backplanes and Mother Boards
- Ball Grid Array Packaging
- High layer count MLB's

Typical Properties:

45N

Property	Units	Value	Test Method
1. Electrical Properties			
Dielectric Constant <i>(may vary with Resin %)</i>			
@ 1 MHz	-	4.2 to 4.6	IPC TM-650 2.5.5.3
@ 1 GHz	-		IPC TM-650 2.5.5.9
Dissipation Factor			
@ 1 MHz	-	0.025	IPC TM-650 2.5.5.3
@ 1 GHz	-		IPC TM-650 2.5.5.9
Volume Resistivity			
C96/35/90	MΩ-cm	2.6 x 10 ⁷	IPC TM-650 2.5.17.1
E24/125	MΩ-cm	3.3 x 10 ⁷	IPC TM-650 2.5.17.1
Surface Resistivity			
C96/35/90	MΩ	4.0 x 10 ⁴	IPC TM-650 2.5.17.1
E24/125	MΩ	2.9 x 10 ⁷	IPC TM-650 2.5.17.1
Electrical Strength (typical)	Volts/mil (kV/mm)	1500	IPC TM-650 2.5.6.2
Dielectric Breakdown	kV		IPC TM-650 2.5.6
Arc Resistance	sec	65	IPC TM-650 2.5.1
2. Thermal Properties			
Glass Transition Temperature (Tg)			
TMA	°C		IPC TM-650 2.4.24
DSC	°C	175	IPC TM-650 2.4.25
Decomposition Temperature (Td)			
Initial	°C		IPC TM-650 2.3.41
5%	°C		IPC TM-650 2.3.41
T260	min		IPC TM-650 2.4.24.1
T288	min		IPC TM-650 2.4.24.1
T300	min		IPC TM-650 2.4.24.1
CTE (x,y)	ppm/°C	14 - 16	IPC TM-650 2.4.41
CTE (z)			
< Tg	ppm/°C	55	IPC TM-650 2.4.24
> Tg	ppm/°C	200	IPC TM-650 2.4.24
z-axis Expansion (50-260°C)	%	2.4	IPC TM-650 2.4.24
3. Mechanical Properties			
Peel Strength to Copper (1 oz/35 micron)			
After Thermal Stress	lb/in (N/mm)	8	IPC TM-650 2.4.8
At Elevated Temperatures	lb/in (N/mm)	8	IPC TM-650 2.4.8.2
After Process Solutions	lb/in (N/mm)	8	IPC TM-650 2.4.8
Young's Modulus	Mpsi (GPa)	2.8	IPC TM-650 2.4.18.3
Flexural Strength	kpsi (MPa)		IPC TM-650 2.4.4
Tensile Strength	kpsi (MPa)		IPC TM-650 2.4.18.3
Compressive Modulus	kpsi (MPa)		ASTM D-695
Poisson's Ratio (x, y)	-	0.2	ASTM D-3039
4. Physical Properties			
Water Absorption	%	0.1	IPC TM-650 2.6.2.1
Specific Gravity	g/cm ³	1.85	ASTM D792 Method A
Thermal Conductivity	W/mK	0.25	ASTM E1461
Flammability	Class	V0	UL-94

Availability:

Arlon Part Number	Glass Style	Resin %	Scaled Flow Hf (mils)	Scaled Flow ΔH (mils)
45N0675	106	75 \pm 3	1.8 \pm 0.3	0.55 \pm 0.20
45N8065	1080	65 \pm 3	2.4 \pm 0.3	0.55 \pm 0.20
45N2355	2313	55 \pm 3	3.4 \pm 0.3	0.55 \pm 0.20
45N2650	2116	50 \pm 3	3.9 \pm 0.3	0.55 \pm 0.20
45N2842	7628	42 \pm 3	6.8 \pm 0.3	0.55 \pm 0.20

Recommended Process Conditions:

Process inner-layers through develop, etch, and strip using standard industry practices. Use brown oxide on inner layers. Adjust dwell time in the oxide bath to ensure uniform coating.

Bake inner layers in a rack for 60 minutes at 225°F - 250°F (107°C - 121°C) immediately prior to lay-up. Vacuum desiccate the prepreg for 8 - 12 hours prior to lamination.

Lamination Cycle:

- 1) Pre-vacuum for 30 minutes
- 2) Control the heat rise to 8°F - 12°F (4°C - 6°C) per minute between 130°F and 230°F (55°C and 110°C)

Panel Size		Pressure	
in	cm	psi	kg/sq cm
12 x 18	40 x 46	275	19
16 x 18	30 x 46	350	25
18 x 24	46 x 61	400	28

- 3) Product temperature at start of cure = 360°F (180°C).
- 4) Cure time at temperature = 90 minutes
- 5) Cool down under pressure at \leq 12°F/min (6°C/min)

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