45N

ARLON ELECTRONIC MATERIALS

Multifunctional Epoxy Laminate & 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

Features:

- Meets IPC4101/26 description and specification
- 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

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Typical Properties:

Property	Units	Value	Test Method
Electrical Properties			
Dielectric Constant @ 1 MHz	-	4.2 to 4.6	IPC TM-650 2.5.5.3
Dissipation Factor @ 1 MHz		0.025	IPC TM-650 2.5.5.3
Volume Resistivity			
C96/35/90	MΩ-cm	2.6×10^7	IPC TM-650 2.5.17.1
E24/125	MΩ-cm	3.3×10^7	IPC TM-650 2.5.17.1
Surface Resistivity			
C96/35/90	MΩ	4.0×10^4	IPC TM-650 2.5.17.1
E24/125	MΩ	2.9×10^7	IPC TM-650 2.5.17.1
Electrical Strength	Volts/mil (kV/mm)	1500	IPC TM-650 2.5.6.2
Arc Resistance	sec	65	IPC TM-650 2.5.1
Thermal Properties			
Glass Transition Temperature (Tg)			
TMA	°C		IPC TM-650 2.4.24C
DSC	°C	175	IPC TM-650 2.4.25D
CTE (X,Y)	ppm/°C	14 - 16	IPC TM-650 2.4.41
CTE (Z)			
< Tg	ppm/°C	55	IPC TM-650 2.4.24C
> Tg	ppm/°C	200	IPC TM-650 2.4.24C
z-axis Expansion (50-260ºC)	%	2.4	IPC TM-650 2.4.24C
Mechanical Properties			
Peel Strength to Copper (1 oz/35 micron)			
After Thermal Stress	lb./in (N/mm)	8	IPC TM-650 2.4.8C
At Elevated Temperatures	lb./in (N/mm)	8	IPC TM-650 2.4.8.2A
After Process Solutions	lb./in (N/mm)	8	IPC TM-650 2.4.8C
Young's Modulus CD/MD	Mpsi (GPa)	2.8	ASTM E111
Poisson's Ratio	-	0.2	ASTM E13204
Physical Properties			
Water Absorption (0.062")	%	0.1	IPC TM-650 2.6.2.1A
Density	g/cm^3	1.85	ASTM D792 Method A
Thermal Conductivity	W/mK	0.25	ASTM E1461
Flammability	class	V0	UL-94

Results listed above are typical properties, provided without warranty, expressed or implied, and without liability. Properties may vary, depending on design and application. Arlon reserves the right to change or update these values.

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Availability:

Arlon Part Number	Glass Style	Resin (%)	Scaled Flow Hf (mils)	Scaled Flow Δ H (mils)
45N0675	106	75 ± 3	1.8 ± 0.3	0.55 ± 0.20
45N8065	1080	65 ± 3	2.4 ± 0.3	0.55 ± 0.20
45N2355	2313	55 ± 3	3.4 ± 0.3	0.55 ± 0.20
45N2650	2116	50 ± 3	3.9 ± 0.3	0.55 ± 0.20
45N2842	7628	42 ± 3	6.8 ± 0.3	0.55 ± 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 (4.5°C - 6.5°C) per minute between 210°F and 300°F (100°C and 150°C)

Panel Size		Pressure	
in.	mm	psi	kg/cm2
12 x 18	305 x 457	275	19
16 x 18	406 x 457	350	25
18 x 24	457 x 610	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 ≤ 12°F/min (6°C/min)

...*Challenge Us!*

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