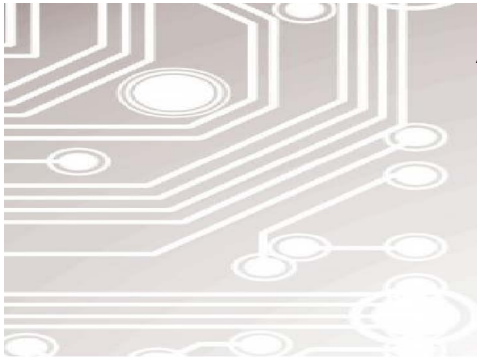


## Multifunctional Epoxy Laminate & Prepreg

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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. Processable 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
-

## Typical Properties:

Property	Units	Value	Test Method
<b>Electrical Properties</b>			
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	$2.6 \times 10^7$	IPC TM-650 2.5.17.1
E24/125	MΩ-cm	$3.3 \times 10^7$	IPC TM-650 2.5.17.1
Surface Resistivity			
C96/35/90	MΩ	$4.0 \times 10^4$	IPC TM-650 2.5.17.1
E24/125	MΩ	$2.9 \times 10^7$	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
<b>Thermal Properties</b>			
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 (50-260°C)	%	2.4	IPC TM-650 2.4.24C
<b>Mechanical Properties</b>			
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
<b>Physical Properties</b>			
Water Absorption (0.062")	%	0.1	IPC TM-650 2.6.2.1A
Density	g/cm <sup>3</sup>	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.

## Availability:

Arlon Part Number	Glass Style	Resin (%)	Scaled Flow Hf (mils)	Scaled Flow $\Delta H$ (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 (4.5°C - 6.5°C) per minute between 210°F and 300°F (100°C and 150°C)

Panel Size		Pressure	
in.	mm	psi	kg/cm <sup>2</sup>
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  $\leq$  12°F/min (6°C/min)

# ...Challenge Us!

For samples, technical assistance and customer service, please contact Arlon Electronic Materials at the following locations:

## NORTH AMERICA:

Arlon EMD, 9433 Hyssop Drive, Rancho Cucamonga, CA  
Tel: (909) 987-9533 • Fax: (909) 987-8541

### FRANCE:

CCI Eurolam  
9, rue Marcelin Bertholet  
92160 Antony, France  
Phone: (33) 146744747  
Fax: (33) 146666313

### GERMANY:

CCI Eurolam  
Otto-Hahn-Str. 46 63303  
Dreiech Germany  
Phone: (49) 610339920  
Fax: (49) 610339929

### UK & SCANDINAVIA:

CCI Eurolam – UK  
Ulness Walton Lane  
Leyland, PR26 8NB, UK  
Phone: (44) 1772452236  
Fax: (44) 1772456859

### ITALY:

CCI Eurolam  
9, rue Marcelin Bertholet  
92160 Antony, France  
Phone: (33) 146744755  
Fax: (33) 146666313

### ISRAEL:

Tech Knowledge, Ltd. 159 Yigal  
Alon Street,  
Tel Aviv 6744367, Israel  
Phone: (972) 36958117  
Fax: (972) 36917117

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493 Wen-zhong JãÉVã ~ a Á  
County ÁH DãVã a ÁÜEÜÖ  
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### SINGAPORE:

C.T.S. Industries Pte Ltd  
47 Kaki Bukit Place  
Singapore 416225  
Phone: (65) 6276 3328  
Fax: (65) 6276 3336

### JAPAN:

Nakao Corp.  
12-8 Nihonbashi Hisamatsu-Cho Tokyo  
103-0005 Japan  
Phone: (81) 336623201  
Fax: (81) 336617118

### KOREA

UniMicrotek Co. Ltd.  
478 Baekbeom-Ro, Bupyeong-Gu  
Incheon, Korea  
Phone: (82) 32-424-1776  
Fax: (82) 505-720-1785

### CHINA:

Zack Peng  
Room 6A, Unit 2, Bldg 2  
Jin Cheng Shi Dai, Tian Road  
Shenzhen, China 518103  
Phone: (86) 75528236491  
Fax: (86) 75528236463

### INDIA:

Synertec  
301 Raheja Chambers, 12 Museum Rd  
Bangalore, India 560001  
Phone: (91) 80-25585432  
Fax: (91) 80-25588565