37N

ARLON ELECTRONIC MATERIALS

Polyimide Low-Flow Prepreg

37N is a polyimide low-flow prepreg suitable for bonding multilayer polyimide rigid-flex, attaching heat sinks to polyimide MLBs, or other applications where minimal and uniform resin flow is required.

Features:

- Tg >200°C and expansion characteristics typical of polyimide greatly improves PTH reliability
- Good bond strength to Kapton® polyimide, copper and other metals
- Curable at temperatures as low as 350°F (177°C)
- Excellent thermal stability
- Available in different flow ranges and fiberglass styles for optimal process flexibility
- Electrical and mechanical properties meeting the requirements of IPC 4101/42
- Compatible with lead-free processing
- RoHS/WEEE compliant

Typical Applications:

- Bonding multilayer polyimide rigid-flex
- Attaching heat sinks to polyimide MLBs
- Other applications where minimal and uniform resin flow is required

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Typical Properties:

Property	Units	Value	Test Method
Electrical Properties			
Dielectric Constant @ 1 MHz	-	4.25	IPC TM-650 2.5.5.3
Dissipation Factor @ 1 MHz		0.018	IPC TM-650 2.5.5.3
Volume Resistivity			
C96/35/90	MΩ-cm	8.2×10^9	IPC TM-650 2.5.17.1
E24/125	MΩ-cm	4.7×10^9	IPC TM-650 2.5.17.1
Surface Resistivity			
C96/35/90	MΩ	4.4×10^6	IPC TM-650 2.5.17.1
E24/125	MΩ	1.2×10^9	IPC TM-650 2.5.17.1
Electrical Strength	Volts/mil (kV/mm)	1330 (52.4)	IPC TM-650 2.5.6.2
Arc Resistance	sec	124	IPC TM-650 2.5.1
Thermal Properties			
Glass Transition Temperature (Tg)			
TMA	°C	200	IPC TM-650 2.4.24C
Decomposition Temperature			
Initial	°C	322	IPC TM-650 2.4.24.6
5% weight loss	°C	340	IPC TM-650 2.4.24.6
T260	min	>60	IPC TM-650 2.4.24.1
T288	min	5	IPC TM-650 2.4.24.1
T300	min	2	IPC TM-650 2.4.24.1
CTE (X,Y)	ppm/°C	17	IPC TM-650 2.4.41
CTE (Z)			
< Tg	ppm/°C	76	IPC TM-650 2.4.24C
> Tg	ppm/°C	256	IPC TM-650 2.4.24C
z-axis Expansion (50-260ºC)	%	2.3	IPC TM-650 2.4.24C
Mechanical Properties			
Peel Strength to Copper (1 oz/35 micron)			
After Thermal Stress	lb./in (N/mm)	6.8 (1.2)	IPC TM-650 2.4.8C
At Elevated Temperatures	lb./in (N/mm)	5.5 (0.9)	IPC TM-650 2.4.8.2A
After Process Solutions	lb./in (N/mm)	9.2 (1.6)	IPC TM-650 2.4.8C
Peel Strength to Kapton			
As Received	lb./in (N/mm)	4.2 (0.74)	IPC TM-650 2.4.9E
Young's Modulus CD/MD	Mpsi (GPa)	2.1 (14.5)	ASTM E111
Flexural Strength	kpsi (MPa)	60 (414)	ASTM D3039
Tensile Strength CD/MD	kpsi (MPa)	32 (221)	ASTM D3039
Poisson's Ratio	-	0.17	ASTM E13204
Physical Properties			
Water Absorption (0.062")	%	<1.0	IPC TM-650 2.6.2.1A
Density	g/cm^3	1.6	ASTM D792 Method A
Thermal Conductivity	W/mK	0.3	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 (%)	Pressed Thickness	Flow Range
37N0666	106	66	1.8	70 - 100 mils
37N066601	106	66	1.8	100 - 130 mils
37N066606	106	66	1.8	4 - 8% (mil flow)
37N8060	1080	66	3.0	70 - 100 mils
37N806001	1080	66	3.0	100 - 130 mils
37N806006	1080	66	3.0	4 - 8% (mil flow)

Recommended Process Conditions:

Because of varying storage conditions, it is recommended that 37N prepreg be dried at 29” (736mm) Hg for 12 to 24 hours.

37N Low-Flow prepreg is very process tolerant. It laminates well with either a cold platen press start or with a hot start. Vacuum or vacuum assist lamination is recommended for the removal of moisture and air. Low-Flow products do not displace air voids as well as standard prepregs, and vacuum will help assure a void-free final product.

Lamination Cycle:

1) Vacuum draw down the package for 30 minutes at <29” (736 mm Hg) prior to applying pressure in the press. Maintain the vacuum beyond the set point of the resin, i.e., above 320°F (160°C)
2) Use a platen temperature in the range of 370°F - 380°F (188°C - 193°C).
3) Control the heat rise to about 8°F - 12°F per minute (4.5°C - 6.5°C) between 210°F and 300°F (100°C and 150°C)
4) Use a pressure of 180 to 350 psi (12.6 to 24 kg/sq.cm), depending on panel size and complexity. Following are recommended pressures relative to panel size to use as starting points:

Panel Size		Pressure	
in.	mm	psi	kg/cm2
12 x 18	305 x 457	250	18
16 x 18	406 x 457	290	20
18 x 24	457 x 610	330	23

Cure time is 90 minutes at temperature.

The subsequent processing should be the same as those normally used for rigid-flex PCBs

ELECTRONIC MATERIALS

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