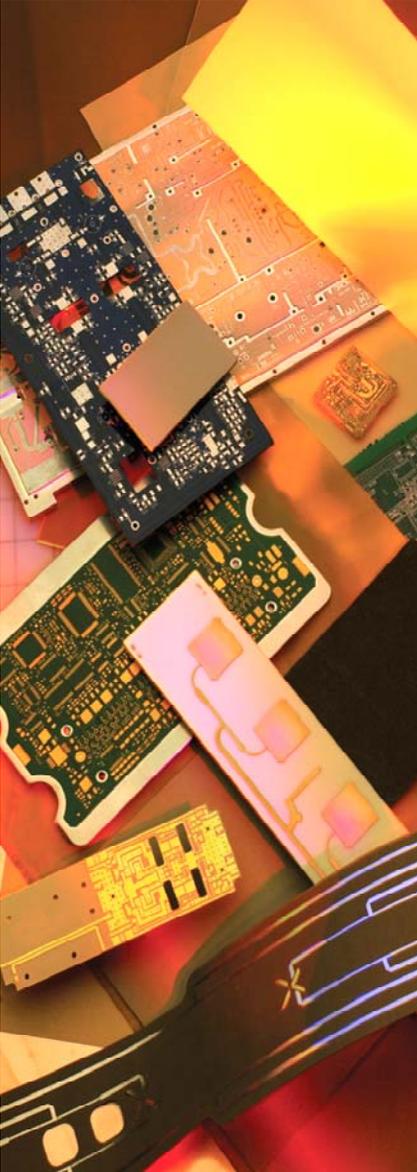


37N

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

Typical Properties:

37N

Property	Units	Value	Test Method
1. Electrical Properties			
Dielectric Constant <i>(may vary with Resin %)</i>			
@ 1 MHz	-	4.25	IPC TM-650 2.5.5.3
@ 1 GHz	-		IPC TM-650 2.5.5.9
Dissipation Factor			
@ 1 MHz	-	0.018	IPC TM-650 2.5.5.3
@ 1 GHz	-		IPC TM-650 2.5.5.9
Volume Resistivity			
C96/35/90	MΩ-cm	8.2 x 10 ⁹	IPC TM-650 2.5.17.1
E24/125	MΩ-cm	4.7 x 10 ⁹	IPC TM-650 2.5.17.1
Surface Resistivity			
C96/35/90	MΩ	4.4 x 10 ⁶	IPC TM-650 2.5.17.1
E24/125	MΩ	1.2 x 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
Dielectric Breakdown	kV		IPC TM-650 2.5.6
Arc Resistance	sec	124	IPC TM-650 2.5.1
2. Thermal Properties			
Glass Transition Temperature (Tg)			
TMA	°C	210	IPC TM-650 2.4.24
DSC	°C		IPC TM-650 2.4.25
Decomposition Temperature (Td)			
Initial	°C	322	IPC TM-650 2.3.41
5%	°C	340	IPC TM-650 2.3.41
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		IPC TM-650 2.4.41
CTE (z)			
< Tg	ppm/°C	76	IPC TM-650 2.4.24
> Tg	ppm/°C	252	IPC TM-650 2.4.24
z-axis Expansion (50-260°C)	%	2.3	IPC TM-650 2.4.24
3. Mechanical Properties			
Peel Strength to Copper (1 oz/35 micron)			
After Thermal Stress	lb/in (N/mm)	6.8 (1.2)	IPC TM-650 2.4.8
At Elevated Temperatures	lb/in (N/mm)	5.5 (0.9)	IPC TM-650 2.4.8.2
After Process Solutions	lb/in (N/mm)	9.2 (1.6)	IPC TM-650 2.4.8
Peel Strength to Kapton			
As Received	lb/in (N/mm)	4.2	
After Solder	lb/in (N/mm)		
Young's Modulus	Mpsi (GPa)		IPC TM-650 2.4.18.3
Flexural Strength	kpsi (MPa)	60 (414)	IPC TM-650 2.4.4
Tensile Strength	kpsi (MPa)	32 (221)	IPC TM-650 2.4.18.3
Compressive Modulus	kpsi (MPa)		ASTM D-695
Poisson's Ratio (x, y)	-	0.17	ASTM D-3039
4. Physical Properties			
Water Absorption	%	<1.0	IPC TM-650 2.6.2.1
Specific Gravity	g/cm ³		ASTM D792 Method A
Thermal Conductivity	W/mK	0.3	ASTM E1461
Flammability	class	V-0	UL-94

Availability:

Arlon Part Number	Glass Style	Resin %	Flow Range	Pressed Thickness
37N0666	106	66%	70 – 100 mils	1.8 mils
37N066601	106	66%	100 – 130 mils	1.8 mils
37N066606	106	66%	4 – 8% (mil flow)	1.8 mils
37N8060	1080	60%	70 – 100 mils	3.0 mils
37N806001	1080	60%	100 – 130 mils	3.0 mils
37N806006	1080	60%	4 – 8% (mil flow)	3.0 mils

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” (736mm) 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°C - 6°C) between 200°F and 300°F (93°C and 149°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	cm	psi	kg/sq cm
9 x 12	22 x 30	180	13
12 x 12	30 x 30	200	14
12 x 18	30 x 46	250	18
16 x 18	40 x 46	290	20
18 x 24	46 x 61	330	23
24 x 24	61 x 61	350	24

Cure time is 90 minutes at temperature.

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

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North America:

9433 Hyssop Drive, Rancho Cucamonga, California 91730
Tel: (909) 987-9533 • Fax: (909) 987-8541

1100 Governor Lea Road, Bear, Delaware, 19701
Tel: (302) 834-2100, (800) 635-9333
Fax: (302) 834-2574

Northern Europe:

44 Wilby Avenue, Little Lever, Bolton, Lancaster, BL31QE, UK
Tel/Fax: (44) 120-457-6068

Southern Europe:

1 Bis Rue de la Remarde, 91530 Saint Cheron, France
Tel: (33) 871-096-082 • Fax: (33) 164-566-489

Arlon Material Technologies

No. 20 Datong Road, Export Processing Zone, Suzhou New & High
District, Jiangsu, China
Tel (86) 512-6269-6966
Fax: (86) 512-6269-6038

Arlon Electronic Materials (Suzhou) Co., Ltd.

Building 7, Da Xing Industrial Park of Suzhou New & High District
Jinangsu, China 21500
Tel: (86) 512-6672-1698
Fax: (86) 512-6672-1697

Eastern China:

Room 11/401, No. 8, Hong Gu Road, Shanghai, China, 200336
Tel/Fax: (86) 21-6209-0202

Southern China:

Room 601, Unit 1, Building 6, Liyuanxincun, Road Holiday,
Hua qiaocheng, Nanshan District, Shenzhen City, China
Tel: (86) 755-26906612 • Fax: (86) 755-26921357

