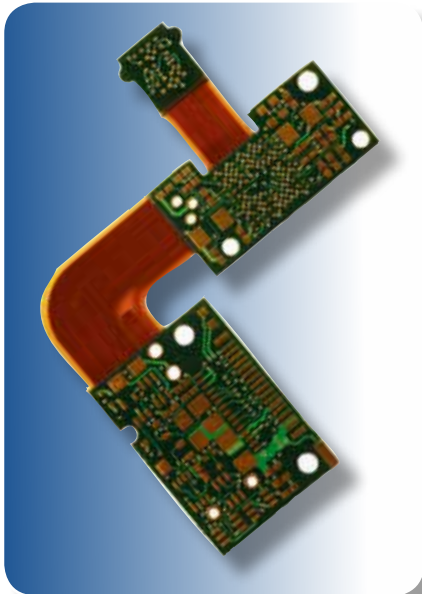


37N

Polyimide Low-Flow Prepreg



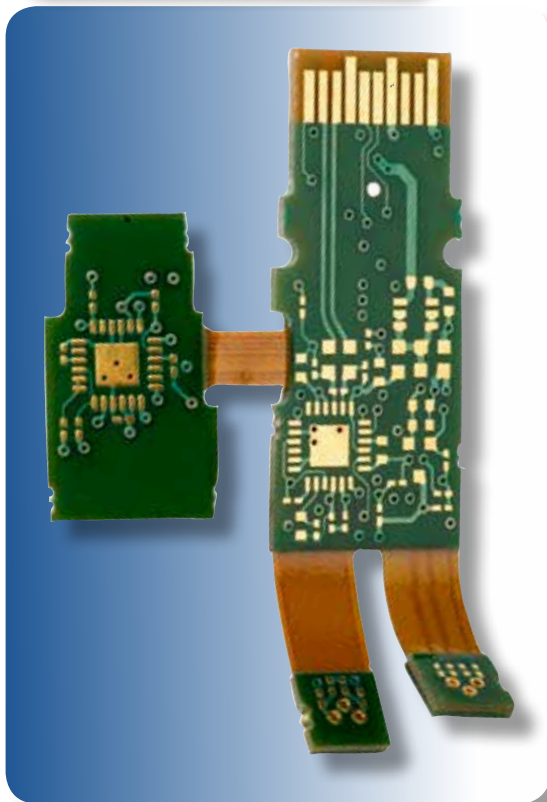
37N is a polyimide low-flow prepreg suitable for bonding multilayer polyimide rigid-flex, attaching heat sinks to polyimide MLBs, or other applications where minimal and uniform resin flow is required.

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



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Typical Properties:

| Property | Units | Value | Test Method |
|--|-------------------|-----------------------|---------------------|
| 1. Electrical Properties | | | |
| Dielectric Constant | | | |
| @ 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 (0.74) | |
| After Solder | lb/in (N/mm) | | |
| Young's Modulus | Mpsi (GPa) | 2.1 (14.5) | IPC TM-650 2.4.18.3 |
| Flexural Strength | kpsi (MPa) | 60 (414) | IPC TM-650 2.4.4 |
| Tensile Strength CD/MD | kpsi (MPa) | 32 (221) | IPC TM-650 2.4.18.3 |
| Poisson's Ratio | - | 0.17 | ASTM D-3039 |
| 4. Physical Properties | | | |
| Water Absorption (0.062") | % | <1.0 | IPC TM-650 2.6.2.1 |
| Specific Gravity | g/cm ³ | 1.30 | ASTM D792 Method A |
| Thermal Conductivity | W/mK | 0.3 | ASTM E1461 |
| Flammability | class | V-0 | 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 % | Pressed Thickness | Flow Range |
|-------------------|-------------|---------|-------------------|-------------------|
| 37N0666 | 106 | 66% | 1.8 mils | 70 – 100 mils |
| 37N066601 | 106 | 66% | 1.8 mils | 100 – 130 mils |
| 37N066606 | 106 | 66% | 1.8 mils | 4 – 8% (mil flow) |
| 37N8060 | 1080 | 60% | 3.0 mils | 70 – 100 mils |
| 37N806001 | 1080 | 60% | 3.0 mils | 100 – 130 mils |
| 37N806006 | 1080 | 60% | 3.0 mils | 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°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/cm ² |
| 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.

37N



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