

High Performance Polyimide / E-Glass

U.L. 94-V1 Performance

Superior Reliability

Exceptional Thermal Performance

- Tg Greater than 250° C
- Non-MDA polyimide
- Meets flammability requirements of UL94V-1
- Meets IPC-4101 (type GIL)
- 30-50% reduction in cure time
- Excellent yield on complicated multilayers
- Low Z direction expansion

Description:

Arlon's 35N is the next generation of polyimide materials incorporating the high performance and reliability characteristics of 31N, the toughness and short cure of our 76N, and flame retardant properties meeting the stringent requirements of UL94V-1. The base resin system is a pure polyimide that provides low Z-axis expansion through the most severe processes and thermal excursions, resulting in plated through hole integrity second to none. 35N is tougher than conventional polyimides and is less prone to fracture during small hole drilling and profiling. 35N contains no MDA or other potentially carcinogenic diamines.

Applications:

35N material is an excellent choice for many different applications. The low Z-axis expansion improves plated through hole reliability on high layer count multilayer boards, or where very thick (>0.093") finished boards are needed for mechanical purposes. High Tg allows for multiple soldering or rework cycles, and is ideal where field repairs are required. Pure polyimide chemistry provides the ultimate in thermal resistance for high temperature burn-in applications or in down-hole environments.

Typical Properties: 35N Polyimide Laminate

Property	Test Method	Result
Peel strength lb/in elev. temp. lb/in (Kg/m)	IPC-TM-650 2.4.8	8.8 (160)
Peel after process solutions lbs./in (Kg/m)	IPC-TM-650 2.4.8	7.6 (136)
Tg (degrees C)	IPC-TM-650 2.4.24 (TMA)	>250
CTE - Z axis (ppm/°C)	IPC-TM-650 2.4.24 (TMA)	55
CTE - X,Y axis (ppm/°C)	IPC-TM-650 2.4.24 (TMA)	16 - 17
Permittivity (1 MHz) -16 MIL LAM	IPC-TM-650 2.5.5.3	4.39
Loss Tangent (1 MHz) -16 MIL LAM	IPC-TM-650 2.5.5.3	0.008
Flammability	UL94	V-1
Volume Resistivity (megohm-cm) <small>Elev. Temp. Temp. + Humidity</small>	IPC-TM-650 2.5.17.1	8.9 x 10 ⁸ 8.0 x 10 ⁹
Surface Resistivity (megohms) <small>Elev. Temp. Temp. + Humidity</small>	IPC-TM-650 2.5.17.1	7.9 x 10 ⁹ 1.4 x 10 ¹⁰
Flexural Strength elev. temp. -59 MIL LAM psi (Kg/m)	IPC-TM-650 2.4.4	72,400 (5.1 x 10 ⁷)
Electrical Strength -10 MIL LAM v/mil (V/mm)	IPC-TM-650 2.5.6.2	1340 (5.3 x 10 ⁴)
Water Absorption % -59 MIL LAM	IPC-TM-650 2.6.2.1	0.19%

Data provided herein is provided for reference purposes only and are not intended to be sales specifications. Determination of the suitability of any of these materials for a particular application is the sole responsibility of the user. Furthermore, no suggestion for use, or material supplied shall be construed as a recommendation or inducement to violate any law or infringe any patent. Product currently undergoing commercialization, and product specifications may be subject to change.

Typical Properties: 35N Polyimide Prepreg

Glass Cloth Style	Arlon Designation	IPC-4101 Classification	Resin Content (weight %)	SCALED FLOW Hf(mils)	SCALED FLOW ΔH(mils)
106	35N0672	P41 E0106 RC SC 00	72 ± 3	1.9 ± 0.3	0.55 ± 0.20
1080	35N8063	P41 E1080 RC SC 00	63 ± 3	2.6 ± 0.3	0.55 ± 0.20
2313	35N2355	P41 E2313 RC SC 00	55 ± 3	3.6 ± 0.3	0.55 ± 0.20
2116	35N2650	P41 E2116 RC SC 00	50 ± 3	4.3 ± 0.3	0.55 ± 0.20
7628	35N2840	P41 E7628 RC SC 00	40 ± 3	6.8 ± 0.3	0.55 ± 0.20

Processing:

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°-250°F(107°-121°C) immediately prior to lay-up.

Vacuum desiccate the prepreg for 8 - 12 hours prior to lamination.

Lamination: Pre-Vacuum for 30 - 45 minutes

Product heat rise = 8 - 12°F (4 - 6°C)/min. measured between 150°F and 250°F(65° and 121°C).

Full pressure: 12 x 18 = 275 PSI (30cm x 45cm, 20 kg/cm²)

16 x 18 = 350 PSI (40cm x 45cm, 25.5 kg/cm²)

18 x 24 = 400 PSI (45cm x 61cm, 28 kg/cm²)

Note: reduce pressure by 35 - 40% with vacuum assist lamination

Product temperature at start of cure = 415°F(212°C)

Cure time at temperature = 1.5 - 2.0 hours

Cool down under pressure at ≤ 12°F(6°C)/min.

Drill at 350 SFM. Undercut bits are recommended for vias 0.018" (0.045cm) and smaller.

De-smear using alkaline permanganate or plasma with settings appropriate for polyimide; plasma is preferred for positive etchback.

Conventional plating processes are compatible with 35N.

Standard profiling parameters may be used; chip breaker style router bits are not recommended.

Bake for 1 -2 hours at 250°F(121°C) prior to solder to reflow of HASL.

The information and data contained herein are believed reliable, but all recommendations or suggestions are made without guarantee. You should thoroughly and independently test materials for any planned applications and determine satisfactory performance before commercialization. Furthermore, no suggestion for use, or material supplied shall be construed as a recommendation or inducement to violate any law or infringe any patent.

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