DuPont™ Pyralux® HT

High Temperature Polyimide Bonding Film

Flexible Circuit Materials

Product Description

DuPont™ Pyralux® HT Bonding Film features a thermoplastic polyimide composition that is suitable for application either as a coverlay to protect surface circuitry or bond ply for multilayer flex and rigid-flex applications. This stand-alone film exhibits low loss characteristics for high performance applications. Pyralux® HT can be used in conjunction with all-polyimide Pyralux® clads to afford a robust circuitry solution for applications requiring high operating temperature performance, excellent signal integrity, and high reliability.

Key Features and Benefits

- > 225 °C IPC service temperature when used as bond ply with Pyralux® AP copper clad laminate
- Low loss dielectric composition
- Excellent thermal resistance from polyimide dielectric
- Certified to IPC-4203A/24
- UL 94V-0, UL File E124294
- RoHS Compliant

Packaging

Pyralux® HT Bonding Film is supplied on 24 in (610 mm) wide rolls in either 100 ft (30.5 m) or 250 ft (76 m) lengths, on nominal 3 in (76 mm) cores. Narrower widths or cut sheets are also available by special order.

Storage and Warranty

DuPont™ Pyralux® HT Bonding Film should be stored in original packaging at temperatures of 4 - 29 °C (40 - 85 °F) and below 70% relative humidity. The product should not be refrigerated or frozen and should be kept dry, clean, and well-protected. Subject to compliance with the foregoing handling and storage recommendations, DuPont's warranties shall remain in effect for the period provided in the DuPont Standard Conditions of Sale.

Table 1 - Standard Pyralux® HT Bonding Film Offerings

Product Code	Dielectric Thickness µm (mil)
HT0100	25 (1.0)
HT7049	38 (1.5)
HT0200	50 (2.0)
HT0300	75 (3.0)

Processing

Lamination conditions for DuPont™ Pyralux® HT Bonding Film are typically in the following ranges:

Part Temperature: ..... 307 - 316 °C (585 - 600 °F)

Pressure: ..... 25 - 35 kg/cm^2 (350 - 500 psi)

Time: ..... 1 hour, at temperature

Pyralux® HT Bonding Film processing guide available from your DuPont sales representative.

Pyralux® HT Bonding Film Construction Selection

For further support in selecting the appropriate Pyralux® HT Bonding Film construction, please use the Laminate Product Selector at pyralux.dupont.com. This tool can help identify the appropriate product code for your bonding film solution.

Safe Handling

Prior to handling, DuPont recommends referencing the Pyralux® Safe Handling Guide available at pyralux.dupont.com.

Quality and Traceability

DuPont™ Pyralux® HT Bonding Film is manufactured under a certified ISO9001:2015 Quality Management System facility. Complete material and manufacturing records, which include archive samples of finished product, are maintained by DuPont. Each manufactured lot is identified for reference traceability. The packaging label serves as the primary tracking mechanism in the event of customer inquiry and includes the product name, batch number, size, and quantity.

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Product Performance

Table 2 - DuPont™ Pyralux® HT Bonding Film Properties

Property	HT0100 Typical Value	Test Method
Dielectric Constant (Dk) 1 MHz 10 GHz	 3.2 3.2	 IPC-TM-650 2.5.5.3 ASTM D2520
Loss Tangent (Df) 1 MHz 10 GHz	 0.0015 0.0015	 IPC-TM-650 2.5.5.3 ASTM D2520
Peel Strength* (Adhesion to Copper) As Received, N/mm (lb/in) After Solder, N/mm (lb/in) As Received (Alternative Oxide Cu Surface), N/mm (lb/in)	 1.4 (8) 1.4 (8) 1.1 (6)	 IPC-TM-650 2.4.9
Adhesive Flow, mm (mil)	0.01 (0.25)	IPC-TM-650 2.3.17.1
Coefficient of Thermal Expansion XY-Axis - 50 to 250 °C, ppm/°C Z-Axis, ppm/°C	 65 Below Tg - 54 / Above Tg 230	 IPC-TM-650 2.4.41 IPC-TM-650 2.4.24
Solder Float, 320 °C for 60 s	Pass	IPC-TM-650 2.4.13
Moisture Absorption, %	0.8	IPC-TM-650 2.6.2
Dielectric Strength, V/µm	161 - 275	ASTM D149
Tensile Modulus, GPa	2.8	IPC-TM-650 2.4.19
Tensile Strength, MPa	165	IPC-TM-650 2.4.19
Elongation, %	170	IPC-TM-650 2.4.19
Flexural Endurance, cycles	570 - 580	IPC-TM-650 2.4.24.6
Glass Transition Temperature (Tg), °C	233	IPC-TM-650 2.4.24c
Decomposition Temperature (2 % / 5 %), °C	548 / 579	ASTM D3850 (In Air)

Data within this table are typical values for the listed product. Performance can vary depending on construction and processing.

*Peel strength values generated after lamination to treated side of 1 oz RA copper foil.

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For more information on DuPont™ HT Bonding Film or other DuPont products, please visit our website.

pyralux.dupont.com

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