

DuPont™ Pyralux® AG

All-Polyimide Double-Sided Copper-Clad Laminate

Flexible Circuit Materials



Product Description

DuPont™ Pyralux® AG is a double-sided copper-clad laminate featuring an adhesive-less, all-polyimide dielectric layer. This material system is ideal for low layer count flexible printed circuits that require advanced material performance, excellent temperature resistance, and high reliability. Offered in a variety of both dielectric and conductor thickness, DuPont™ Pyralux® AG provides designers, fabricators, and assemblers a versatile option for a wide variety of flexible circuit constructions.

Key Features and Benefits

- Strong dielectric to Cu bond strength affords high reliability
- Excellent thermal resistance from all-polyimide dielectric
- Minimal variance in dielectric thickness for consistent circuitry performance
- Pass UL 94 test. UL File number is E161336
- RoHS Compliant

Packaging

DuPont™ Pyralux® AG double-sided copper-clad laminate is supplied in roll form as 100 linear meter (328 ft) rolls in widths of either 250 mm (9.8 in) or 500 mm (19.7 in).

Storage

DuPont™ Pyralux® AG double-sided copper-clad laminate 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 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.

Processing

DuPont™ Pyralux® AG double-sided copper-clad laminate is fully compatible with all conventional flexible circuit fabrication processes, including oxide treatment and wet chemical plated-through-hole de-smearing. Fabricated circuits can be cover coated and laminated together to form multilayers or bonded to heat sinks using polyimide, acrylic, or epoxy adhesives. Pyralux® AG processing guides available from your DuPont sales representative.

Quality and Traceability

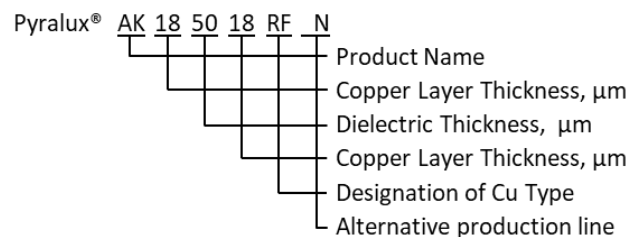
DuPont™ Pyralux® AG double-sided copper-clad laminate is manufactured under a certified ISO9001:2015 Quality Management System facility. Complete material and manufacturing records, which include archive samples of finished product, are maintained by DuPont. Each manufactured lot is identified for reference 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.

Table 1 – Standard Pyralux® AG Double-Sided Copper-clad Laminate Offerings

Product Code	Copper Thickness µm (oz/ft ²) & Type	Dielectric Thickness µm (mil)
AG072507EL	7 (0.20) ED	25 (1.0)
AG091209EN	9 (0.26) ED	12 (0.5)
AG092509EN	9 (0.26) ED	25 (1.0)
AG121212EM	12 (0.33) ED	12 (0.5)
AG121212RY	12 (0.33) RA	12 (0.5)
AG121212RY_N	12 (0.33) RA	12 (0.5)
AG121212RF	12 (0.33) RA	12 (0.5)
AG121212RF_N	12 (0.33) RA	12 (0.5)
AG121212RHV_N	12 (0.33) RA	12 (0.5)
AG122012RHV	12 (0.33) RA	20 (0.8)
AG122012RY	12 (0.33) RA	20 (0.8)
AG122512RY	12 (0.33) RA	25 (1.0)
AG122512RY_N	12 (0.33) RA	25 (1.0)
AG122512EM	12 (0.33) ED	25 (1.0)
AG125012RF	12 (0.33) RA	50 (2.0)
AG181218RY	18 (0.50) RA	12 (0.5)
AG181218RY_N	18 (0.50) RA	12 (0.5)
AG182518RY	18 (0.50) RA	25 (1.0)
AG182518RY_N	18 (0.50) RA	25 (1.0)
AG182518EM	18 (0.50) ED	25 (1.0)
AG185018RY	18 (0.50) RA	50 (2.0)
AG185018EM	18 (0.50) ED	50 (2.0)
AG352535RHV	35 (1.00) RA	25 (1.0)
AG352535RF	35 (1.00) RA	25 (1.0)
AG355035RF	35 (1.00) RA	50 (2.0)
AG702570E	70 (2.00) ED	25 (1.0)
AG705070RF	70 (2.00) RA	50 (2.0)

*At the end of the product code, "R" designates rolled-annealed copper (e.g., AG181218RY) and "E" designates electro-deposited copper (e.g., AG125012EM). "_N" designates alternative production line.

Product Code Key



Safe Handling

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

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Product Performance

Table 2 - DuPont™ Pyralux® AG Double-sided Copper-clad Laminate Properties

Laminates Property	AG122512RY Typical values	Test Method
Peel Strength (Adhesion to Copper)		
As Received, N/mm (lb/in)	> 1.0 (5.7)	IPC-TM-650 2.4.9
After Solder, N/mm (lb/in)	> 1.0 (5.7)	
Dimensional Stability (MD/TD)		
After etching, %	+/- 0.05%	IPC-TM-650 2.4.4
After 150°C/30min. aging, %	+/- 0.05%	
Flexural Endurance, cycles R=0.8mm	>2,500	JIS C6471(MIT)
Solder Float at 288°C/10 sec With pre-bake at 135°C/60min	Pass	IPC-TM-650 2.4.13
Dielectric Property	25 µm	Test Method
Tensile strength (MPa)	265	IPC-TM-650 2.4.19
Elongation (%)	60	IPC-TM-650 2.4.19
Modulus (GPa)	4.8	IPC-TM-650 2.4.19
Propagation tear strength (gf)	5	IPC-TM-650 2.4.17.1
Dielectric strength (V/µm)	290	ASTM D-149
Surface resistivity (Ω/□)	>1x10 ¹⁴	IPC-TM-650 2.5.17.1
Volume resistivity (Ω-cm)	>1x10 ¹⁶	IPC-TM-650 2.5.17.1
Glass transition temperature (°C)	220	DuPont Method, DMA
CTE (ppm/°C)	17-20	DuPont Method, TMA
CHE, ppm/%RH	11-15	-
Moisture absorption	< 1%	IPC-TM-650 2.6.2
Dielectric constant (Dk) @ 1MHz	3.17	IPC-TM-650 2.5.5.3
Loss Tangent (Df) @ 1MHz	0.0067	IPC-TM-650 2.5.5.3

Data within this table are typical values, not the specification value, for the listed product. About the product specification, please refer to the specification sheet.
Product performance can vary depending on sample preparation and test instrument.



pyralux.dupont.com

For more information on Pyralux® AG Double-Sided Clad or other DuPont products, please visit our website.

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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102-5 and "DuPont Policy Regarding Medical Applications" H-50103-5.

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