Penclad®™ G1970 Copper PEN Laminates RoHS Compliant
Clear Non Flame-Retardant Modified Epoxy Adhesive

Description
Sheldahl Penclad® G1970 products use our proprietary RoHS compliant and halogen free non flame-retardant, high temperature, clear, modified epoxy adhesive to bond PEN film and copper foil, creating a single or double sided composite. G1970 laminates are engineered for use in thin flex circuitry applications where soldering and high end use temperatures are key. Sheldahl materials are suitable for roll to roll processing.

Features
- **Dielectric:** High stability PEN films.
- **Adhesive:** RoHS compliant and halogen free non flame-retardant, clear, polyester modified epoxy.
- **Available Coppers**:
  - **RA**: Rolled-Annealed. RA foils are suitable for dynamic flexing applications.
  - **ED**: Electro-deposited high-ductility (EDHD) foils are suited for general use and flex to install applications.
- **Processing:** High quality flexible circuits can be produced using standard manufacturing procedures.

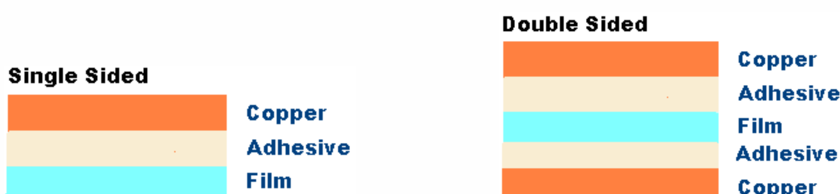
Storage
Material stored in original packaging, at temperatures of 40-80ºF (4-26ºC), and below 70% RH will retain their properties for a minimum of 1 year. Excessive exposure to heat and moisture may cause copper oxidation.

Quality
Sheldahl products are manufactured using quality systems that conform to ISO, QS, and TS quality standards. Key product characteristic are tested and monitored in accordance to IPC standards. Certifications are available with product shipments.

Constructions
- **Film Thickness**:* 1, 2, or 5 mils (25, 50, 125 µm)
- **Copper Thickness**:* ½, 1, 2 oz (17, 35, 70 µm)
- **Adhesive Thickness**:* Standard thickness is 0.7mil (18µm)
- **Width**:* Standard roll width is 12” (305mm) or 24” (610mm)

*Specialty thicknesses and widths available please contact your Sheldahl representative.

Typical Constructions:



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INFORMATION UPDATE

SHELDAHL

PROPERTY TO BE TESTED AND TEST METHOD	Test Method (IPC-TM-650 unless noted)	Sheldahl Typical Mean Value*
Dimensional Stability, maximum, percentage	2.2.4 Method B Method C	 0.05 0.09
Peel Strength, minimum, lb./in. - width	2.4.9 Method A as rec'd. Method B as rec'd. Method F after temperature cycling	 8.0 8.0 9.0
Chemical Resistance percentage	2.3.2,A	90%
Solderability	J-STD-003, Test A	Pass
Dielectric constant, maximum (at 1MHz)	2.5.5.3	3.0
Dissipation factor, maximum (at 1 MHz)	2.5.3	0.015
Volume Resistivity, minimum megohm-cm	2.5.17	10^6
Surface resistance minimum, megohms	2.5.17	10^4
Dielectric strength, minimum volts/mil	ASTM-D-149	3000
Fungus Resistance	2.6.1	Non-Nutrient
Moisture Absorption, maximum, percent	2.6.2	1.0
Moisture and Insulation Resistance, minimum, megohms	2.6.3.2	10^5

*The information contained herein is based upon typical data, Sheldahl makes no warranties expressed or implied as to its accuracy and assumes no liability arising out of its use by others. The user should determine suitability of Sheldahl materials for each individual application.

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