DuPont™ Pyralux® Flexible Composites

Impregnated Glass Fabric

Description

Pyralux® LG impregnated glass fabric composites combine the features of a proprietary B-staged modified acrylic adhesive with the stability and mechanical toughness of woven glass fabric. These composites are primarily used in heat sink bonding applications that require additional resistance to distortion in handling.

Specifications

- Impregnated glass fabric composites
- Certified to IPC-4203/17

Typical physical and electrical properties along with applicable test methods are shown in **Table 2**.

Construction

Standard Pyralux® LG products are listed in **Table 1**. Impregnated glass fabric composites are available in three pressed thicknesses and two resin content levels.

Packaging

Pyralux® LG impregnated glass fabric composites are supplied on 18 in (457 mm) or 36 in (914 mm) wide rolls. The minimum roll length is 300 ft (9.1 m). Other sizes are available by special order. All packaging materials are 100% recyclable.

Processing

Laminating conditions for Pyralux® flexible composites are typically in the following ranges:

Part Temperature: 182–199°C (360–390°F)

Pressure: 14–28 kg/cm^2 (200–400 psi)

Time: 1–2 hours, at temperature

Hard press pad systems are recommended. If soldered plated-throughholes are present, it may be necessary to use laminating temperatures at the low end of the range and pressures reduced to 6–9 kg/cm^2 (90–130 psi). However, when laminating below 177°C (350°F) extended time beyond 90 minutes may be required to achieve a complete cure level for high bond strengths, good chemical resistance and good solder resistance. Pyralux® impregnated glass fabric composites will not flow appreciably during lamination. If adhesive encapsulation of circuits is needed, a sheet of adhesive from the Pyralux® product line can be included in the lay-up.

Storage Conditions and Shelf Life

Pyralux® flexible composites are warranted for one year when stored in the original packaging at temperatures of 4–29°C (40–85°F) and below 70% relative humidity. The products do not require refrigeration and should not be frozen. The material should be kept clean and well protected from physical damage.

Safe Handling

Pyralux® impregnated glass fabric composites contain a B-staged adhesive. Since B-staged adhesive contains trace quantities (parts per million) of unreacted monomers, operators should take care to minimize contact. Although DuPont is not aware of anyone developing contact dermatitis when using Pyralux®, some individuals may be more sensitive than others.

Anyone handling Pyralux® should wash their hands with soap before eating, smoking or using restroom facilities. Gloves and finger pads should be changed daily. Wash protective clothing frequently.

The uncured monomers in the adhesive may impart a

mild odor when the protective Mylar® polyester film is removed in lay-up, or when the composite is laminated. Air sampling tests indicate no cause for conern. However, it is recommended that lay-up and lamination areas be well-ventilated, preferably with a fresh air make-up supply.

Pyralux® flexible laminates do not contain polybrominated biphenyls (PBBs) or polybrominated biphenyl oxides (PBBOs).

Table 1
Impregnated Glass Fabric Product Codes

Product Code	Resin Content Percent	Pressed Thickness mils/ply	(mm/ply)
LG 1000	65 ± 10	5 ± 10%	(127 ± 10%)
LG 1001	65 ± 10	7 ± 10%	(178 ± 10%)
LG 1002	75 ± 10	7.5 ± 10%	(190 ± 10%)

Table 2
Impregnated Glass Fabric Properties

Property	LG-1000	LG-1001	LG-1002	Test Method
Pressed Thickness, cured, mils/ply (μm/ply)	5.0 ± 1 (125)	7.0 ± 1 (175)	7.5 ± 1 (190)	Micrometer
Resin Content, %	65 ± 10	65 ± 10	75 ± 10	MIL-G-55636 4.6.6
Glass Fabric Style	108	1675	108	MIL-G-55636 4.6.6
Flow, max., mils (μm)	5 (125)	5 (125)	5 (125)	IPC-2.3.17.1
Solder Resistance	No blistering or delamination after dip at 260°C (500°F) for 10 seconds or float at 260°C (500°F) for 30 seconds			IPC-2.4.13 Method A Method B
Peel, lbs/in (kN/m)	9 (1.6)	9 (1.6)	9 (1.6)	IPC-2.4.9 Method A
Dielectric Constant, (at 1 MHz)	3.5	3.8	3.5	IPC-2.5.5.3
Dissipation Factor, (at 1 MHz)	0.018	0.020	0.021	IPC-2.5.5.3
Dielectric Strength, V/mil (kV/mm)	2000 (80)	1800 (70)	2000 (80)	ASTM-D-149
Volatile Content, %	0.75	0.65	0.75	IPC-2.3.37

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