Product and Solutions Offering

Isola Laminate Systems' broad range of laminate, prepreg and foil products and solutions includes:

- **PWB Substrates**
  - FR-4s
  - Composites
- **Advanced PWB Substrates**
  - BT/Epoxy
  - Polyimide
  - Specialty Prepregs
    - A11, FR406N, P11
- **HDI Materials**
- **Signal Integrity Substrates**
- **Buried Passive Solutions**
- **Packaging Substrates**

No-Flo® Specialty Prepreg

High Performance Epoxy Laminate and Prepreg

Isola offers a family of No-Flo Prepregs consisting of proprietary resin systems specifically formulated for optimal performance in bonding applications requiring minimal resin flow and consistency in lamination. Each of the three materials offered brings the fabricator specific thermal characteristics appropriate for use in heat sink bonding, die cavity board (direct chip attachment) and multilayer rigid-flex applications.

Performance and Processing and Advantages

- **Minimal, Uniform Resin Flow**
  Void free encapsulation and embedment of non-planar surfaces
  Consistent dielectric spacing

- **Wide Range of Thermal Performance**
  A11: General purpose epoxy - 100°C Tg
  FR406N: High temperature FR-4 epoxy - 165°C Tg
  P11: High temperature, modified polyimide - 205°C Tg

- **Adhesion to Wide Range of Materials**
  Flex films - (Mylar®, Kapton®, etc.)
  Treated or untreated copper
  Plated metals (tin, solder, nickel, etc.)
  Conventional laminate surfaces

- **Processing Ease**
  Machinable to complex shapes by steel rule die and punching
  Allows for lamination at non-uniform pressures
  Cure and form bond at low temperatures

Purchasing Information

- **Industry Approvals**
  A11: IPC 4101/20, UL HB
  FR406N: IPC 4101/24, UL V-0
  P11: IPC 4101/30 & 40, UL V-0

- **Standard Availability**
  Glass Styles:
  A11: 104, 108
  FR406N: 106, 1080, 2116
  P11: 106, 1080, 2116
  Available in 38" rolls or paneled forms

  Other styles and roll widths are available upon request

isola

Ordering Information
Contact your local sales representative or the Inside Sales Department in La Crosse, WI.

Phone: 1-800-845-2904 or
608-784-6070
Fax: 1-800-344-1825 or
608-791-2428

Isola Laminate Systems Corp.
230 North Front Street
La Crosse, WI 54601

For further information visit
www.isolalaminatesystems.com

No-Flo® Specialty Prepregs

PROPERTY	A11	FR406N	P11	CONDITIONING
Pressed Thickness[1]				
104	2.0±.3	NA	NA	Condition A
106	NA	1.7±.3	1.8±.3	Condition A
1080 (108 for A11)	3.7±.3	2.7±.3	3.1±.3	Condition A
2116	NA	4.5±3	4.8±.3	Condition A
Resin Content %				
104	75±3	NA	NA	Condition A
106	NA	65±1.5	65±2	Condition A
1080 (108 for A11)	65±3	60±1.5	65±2	Condition A
2116	NA	50±1.5	50±2	Condition A
Resin Flow Testing				
104	2% max.	NA	NA	Condition A
106	NA	R&R	R&R	Condition A
1080 (108 for A11)	2% max.	R&R	R&R	Condition A
2116	NA	R&R	R&R	Condition A
Modified Circle Flow[2]				
104	.010 - .100	NA	NA	Condition A
106	NA	.030 - .120	.150 - .500	Condition A
1080 (108 For A11)	.010 - .100	.030 - .120	.150 - .500	Condition A
2116	NA	.040 - .140	.150 - .500	Condition A
Cured Properties				
Tg - full cure (nominal)[3]	100°C	165°C	205°C	E-2/105
Cure Temperature				
Recommended for full cure[4]	340°F	360°F	390°F	—
Min. for functional bonding	300°F	325°F	360°F	—
Flammability	HB	V-0	V-0	UL Test
Dielectric Strength (volts/mil)	2000	1750	1243	D-48/50
Dielectric Constant (1MHz)[5]	4.5	4.3	3.9	C-24/23/50
Dissipation Factor (1MHZ)[5]	.033	.025	.018	C-24/27/50
CTE (ppm) x - axis[5]	18	17	20	Ambient to Tg
y - axis	16	20	22	Ambient to Tg
z - axis	80	75	55	Ambient to Tg
Peel Strength (lbs/in) (1 oz copper)	9.0	10.0	9.0	After Thermal Stress
Thermal Conductivity (wats/m°C)	.25	.30	.33	Condition A

[1] For Reference Only. Pressed thickness determined by loading the press hot at the recommended press temperature and applying 200 psi for 70 minutes.
[2] Isola Laminate Systems' modified 1" circle flow test.
[3] A11 and FR406N Tg by DSC test method, P11 by DMA test method.
[4] Material at specified temperature: A11 and FR406N - 75 minutes, P11 - 130 minute.
[5] Cured Test specimens based on multiple plies of 1080/108.

Application Suitability	A11	FR406N	P11
Metal Plane Attachment	★★★★	★★★	★★★
Rigid-Flex Bond Layers	★★	★★★★	★★★★
Cavity Boards	★★	★★★	★★★
Surface Exposure	★	★★★★	★★★★
Heat Sink Rebonding	★★★★	★★	★★

★ → ★★★★
Poor → Excellent

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