

## ISOLA LAMINATE SYSTEMS

### Product and Solutions Offering

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

### FR406

#### High Performance Epoxy Laminate and Prepreg

FR406 represents the highest level of product performance within Isola's family of FR-4 epoxy laminate and prepreg. This product is engineered to meet the demands of the multilayer printed circuit board industry, while maintaining standard FR-4 processing. FR406 offers improved dimensional control, superior chemical and thermal performance and product consistency.

#### Performance and Processing Advantages

- **High Tg - 170°C (DSC)**  
Superior performance through multiple thermal excursions  
Superior chemical and thermal resistance  
Lower CTE from ambient to 288°C
- **Ultraviolet (UV) Blocking & AOI Compatible**  
UV blocking and enhanced fluorescence  
Laser enhanced reflectance compatible with all AOI equipment
- **Standard FR-4 Processing**  
No post bake after pressing  
Drilling parameters and hole wall preparation are standard

#### Purchasing Information

- **Industry Approvals**  
IPC 4101/24  
UL Recognized - FR-4, File Number E41625  
(Part of Isola's FR-4 Family)  
CSA
- **Standard Availability**  
**Thicknesses:** 0.002" [.05 mm] to 0.125" [3.2 mm]  
Available in sheet or panel form  
**Copper Foil Cladding:** 1/8 to 3oz.  
Options - Grade 3 (HTE) Double-Treat, Reverse Treat  
**Prepregs:** Available in roll or panel form.  
Glass Styles - 106, 1080, 2113, 2116, 2116HR,  
1652, 7628, and 7628HR

## 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](http://www.isolalaminatesystems.com)

## FR406 Typical Laminate Properties, 0.008" [0.20mm]

<u>PROPERTY</u>	<u>UNITS</u>	<u>IPC 4101</u>	<u>FR406 VALUE</u>	<u>CONDITIONING</u>
Thickness	inches	<.030	.008	—
	mm	[<0.78]	[0.20]	—
Construction	—	—	2-2116	—
Retained Resin	%	—	44	—
<b>Thermal</b>				
Tg, min. (DSC)	°C	150-200	170	E-2/105
CTE - x-axis	ppm/°C	—	14	Ambient to Tg
y-axis	ppm/°C	—	13	Ambient to Tg
z-axis	ppm/°C	—	140	Ambient to 288°C
Solder Float, 288°C	seconds	—	>220	Condition A
<b>Electrical</b>				
Permittivity (DK), max. @				
1 MHz (2 Fluid Cell)	—	5.4	4.6	C-24/23/50
500 MHz (HP 4291)	—	—	4.28	C-24/23/50
1 GHz (HP4291)	—	—	4.29	C-24/23/50
Loss Tangent (DF), max. @				
1 MHz (2 Fluid Cell)	—	0.035	0.023	C-24/23/50
500 MHz (HP 4291)	—	—	0.014	C-24/23/50
1 GHz (HP4291)	—	—	0.014	C-24/23/50
Surface Resistivity, min.	megohms	1×10 <sup>4</sup>	3×10 <sup>6</sup>	C-96/35/90
	megohms	1×10 <sup>3</sup>	8×10 <sup>6</sup>	E-24/125
Volume Resistivity, min.	megohm-cm	1×10 <sup>6</sup>	9×10 <sup>6</sup>	C-96/35/90
	megohm-cm	1×10 <sup>3</sup>	2×10 <sup>6</sup>	E-24/125
Electric Strength, min.	volts/mil	736	1000	D-48/50
	[volts/mm]	[2.9×10 <sup>4</sup> ]	[3.9×10 <sup>4</sup> ]	
Arc Resistance, min.	seconds	60	90	D-48/50
<b>Physical</b>				
Peel Strength, min. - 1 oz.	lb/in	—	8.0	Condition A
	[Kg/M]	—	[143]	Condition A
	lb/in	4.5	6.0	After Thermal Stress
	[Kg/M]	[80]	[107]	After Thermal Stress
	lb/in	3.9	6.0	E-1/125
	[Kg/M]	[70]	[107]	E-1/125
Flammability	—	—	V-0	UL94
Moisture Absorption, max.	%	0.80	.20*	D-24/23

\* Material Thickness Tested - 0.028"

"The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold."