

High Performance Epoxy Laminate and Prepreg

Isola's FR406 sets the industry standard for high performance epoxy materials. 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-4101A /24, /26 and /28
UL Recognized – FR-4, File Number E41625
(Part of Isola's FR-4 Family)
- **Availability**
Thickness: 0.002" [.05 mm] to 0.125" [3.2 mm]
Available in sheet or panel form
Copper Foil Cladding: Grade 3 (HTE) , 1/8 to 3 oz.
Foil Options: Double treat, reverse treat
Prepregs: Available in roll or panel form
Glass Styles: 106, 1080, 2113, 2116, 1652 and 7628

FR406 Typical Laminate Properties, 0.008" [0.20mm]

PROPERTY	UNITS	IPC-4101A Spec /24	FR406 Value	CONDITIONING
Thickness	inches	0.0197	.008	
	mm	[<0.50]	[0.20]	—
Glass Construction	—	—	2-2116	—
Retained Resin	%	—	44	—
Thermal				
Tg (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
Thermal Stress, 10 s @, 288°C	seconds	pass visual	>220	Condition A
Thermal Stress, 10 s @, 288°C	seconds	—	>120	E-2/105
T-260	minutes	—	<10	Condition A
Electrical				
Permittivity (DK) @				
1 MHz (2 Fluid Cell)	—	5.4 max.	4.6	C-24/23/50
500 MHz (HP4291)	—	—	4.28	C-24/23/50
1GHz (HP4291)	—	—	4.29	C-24/23/50
Loss Tangent (DF) @				
1 MHz (2 Fluid Cell)	—	0.035 max.	0.023	C-24/23/50
500 MHz (HP4291)	—	—	0.014	C-24/23/50
1 GHz (HP4291)	—	—	0.014	C-24/23/50
Volume Resistivity				
	megohms-cm	1x10 ⁶ min.	9x10 ⁶	C-96/35/90
	megohms-cm	1x10 ³ min.	2x10 ⁶	E-24/125
Surface Resistivity				
	megohms	1x10 ⁴ min.	3x10 ⁶	C-96/35/90
	megohms	1x10 ³ min.	8x10 ⁶	E-24/125
Electric Strength				
	volt/mil	736 min.	1000	D-48/50
	[volts/mm]	[2.9x10 ⁴]	[3.9x10 ⁴]	D-48/50
Arc Resistance				
	seconds	60 min.	90	D-48/50
Comparative Tracking				
Index	volts PLC-UL	—	175-250 3	ASTM D-36/38-85 UL 746A
Physical				
Peel Strength, RTF ½ oz.				
	lb/in	4.0 min.	6.0	After Thermal Stress
	[Kg/M]	[70] min.	[107]	After Thermal Stress
Peel Strength, 1 oz.				
	lb/in	4.57 min.	6.0	After Thermal Stress
	[Kg/M]	[80] min.	[107]	After Thermal Stress
	lb/in	4.0	6.0	E-1/125
	[Kg/M]	[70]	[107]	E-1/125
Flexural Strength				
LW	psi	—	89,000	Condition A
LW	[N/mm ²]	—	[614]	Condition A
CW	psi	—	79,000	Condition A
CW	[N/mm ²]	—	[538]	Condition A
Flammability				
	rating	V-1 min.	V-0	UL94
Moisture Absorption, max.				
	%	0.80	.20*	D-24/23

* Material Thickness Tested 0.028"

ORDERING INFORMATION

Contact your local sales representative or the Customer Service Department in La Crosse, WI

Isola Laminate Systems Corp.
230 North Front Street
La Crosse, WI 54601
Phone: 800/845-2904 or
608/784-6070
Fax: 800/344-1825 or
608/791-2428

For further information visit
www.isola-usa.com

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