

**SM560-5 Laminate**

**SM560B-5 Prepreg**

UL FILE : E199230

( IPC-4101C / 99 / 128 )

updated : A Version 03/07/2011

## General Specification:

Thickness		Copper Cladding		Standard Size		Special large (on Request)	
<u>inch</u>	<u>(mm)</u>	<u>oz</u>	<u>(<math>\mu</math>m)</u>	<u>inch</u>	<u>(mm)</u>	<u>inch</u>	<u>(mm)</u>
0.003	(0.08)	3/8	(12)	36.8 x 48.8	( 935 x 1240)	37.0 x 49.0	( 941 x 1246)
to		to		40.8 x 48.8	(1035 x 1240)	41.0 x 49.0	( 1043 x 1246)
0.125	(3.14)	12	(410)	42.8 x 48.8	(1085 x 1240)	43.0 x 49.0	( 1093 x 1246)

## Characteristics:

- Tetra-functional Epoxy does not contain any halogenated flame retardants
- E-woven Glass
- HTE Copper Foil

## Features:

- Halogen and antimony free, Flammability meets UL 94 V-0
- Thermal stability for lead-free process
- Excellent long term reliability
- Low C.T.E. provide excellent through-hole reliability
- UV Blocking and AOI Performance
- $T_g > 150^\circ\text{C}$  (DSC)

## Applications:

- Computer & Peripheral
- Communications Telecom
- Consumer Electronics
- Instrumentation / Industry / Medical
- OA Equipment / printer etc

## SM560-5 Laminate Properties:

Based on 1.6 mm<sup>t</sup>, 1/1

Test Items		Units Metric (English)	Test Condition	IPC Spec.	Typical Value	Test Method
						IPC-TM-650
					4.7 - 4.8	2.5.5
	Dissipation Factor	---	C-96/23/50	< 0.035	0.017	2.5.5
	Volume Resistivity	MΩ -cm	C-96/23/50	> 10 <sup>6</sup>	> 10 <sup>10</sup>	2.5.17.1
	Surface Resistivity	MΩ	C-96/23/50	> 10 <sup>4</sup>	> 10 <sup>6</sup>	2.5.17.1
Physical	Flexural Strength	Lb/In	As Received	< 6x10 <sup>4</sup>	8 - 6x10 <sup>4</sup>	2.4.4
	Moisture absorption	%	E-24/50+d-24/23	< 0.8	< 0.1	2.6.2.1
	Peel strength	N / mm (1b/in)	As Received	0.7 ( 4.0)	1.40 -1.75 (8 - 10)	2.4.8
			After Solder	0.7 ( 4.0)	1.05 -1.40 (6 - 8)	2.4.8
Thermal	Glass Transition Temp	°C	DSC	By DSC > 150	> 150	2.4.25
			TMA		> 145	2.4.24
	CTE	ppm/°C	> Tg	< 350	< 300	2.4.24
	Thermal resistance	min	TMA (T288°C)	> 5	> 30	2.4.24.1
	Decomposition Temp	°C	ASTM D3850	> 325	> 360	2.4.24.6
	Flammability	---	A	UL 94 V-0	UL 94 V-0	UL 94 V-0

※Specification Sheet : IPC-4101C / 99 / 128

## SM560B-5 Prepreg Parameters:

	<u>628</u>	<u>2116</u>	<u>1080</u>
<b>R/C : Resin Content (%)</b>	42 ± 3	53 ± 3	62 ± 4
<b>R/F : Resin Flow (%)</b>	18 ± 5	30 ± 5	34 ± 5
<b>P/G : Gel Time (sec)</b>	130 ± 20	130 ± 20	130 ± 20
<b>After Pressed Thickness (mil)</b>	7.0 ± 0.5	5.0 ± 0.5	3.0 ± 0.4
<b>VC : Volatile Content (%)</b>	Max 1.0	Max 1.0	Max 1.0

\* Other fabric types are available upon request.

\* Above value can be adjusted to fit customer's processing condition.

## Storage and Shelf Life:

### Storage condition

20 ± 2°C , 50 ± 10%RH // Refrigeration

5 ± 2°C , 50 ± 10%RH // Frozen

### Shelf life

< 3 months

< 6 months

- Excessive humidity will result in high press flow & possible quality defects.

## SM560B-5 Prepreg Recommended Press Cycle

- **Temperature Profile:**

- Heating Rise**

- Heating rate of material between 60°C and 140°C, 1-3°C/min is acceptable, 1.5-2.5°C/min would be better.

- Curing Condition**

- > 170°C/80 min

- Cooling Down**

- Hold cooling rate to less than 2.5°C/min down to below 120°C to minimize the accumulated stress, then cool down to 45°C as fast as possible.

- **Pressure Profile**

- Load press hot, close quickly, use kiss pressure 8 – 12 Kg/cm<sup>2</sup> (114 – 170 psi) for 15 – 20 minutes then apply full pressure 15 - 25 Kg/cm<sup>2</sup> (213 – 355 psi) (laminating pressure).

- Increase pressure by 10% for non-vacuum press system.

- **Vacuum**

- Min. 72 mmHg

