

# IT-140

## Features

- Tg  $\geq 135^{\circ}\text{C}$  (DSC)
- Consistent Dimensional Stability
- UL 94 V-0
- AOI and UV blocking characteristic

## Properties

ITEQ Laminate/ Prepreg : IT-140TC / IT-140BS						
IPC-4101A Spec / 21						
LAMINATE(IT-140TC)						
Property	Thickness < 0.50 mm [0.0197 in]		Thickness $\geq 0.50$ mm [0.0197 in]		Units	Test Method
	Typical Value	Spec	Typical Value	Spec	Metric (English)	IPC-TM-650 (or as noted)
Peel Strength, minimum						
A. Low profile copper foil and very low profile copper foil - all copper weights > 17 $\mu\text{m}$ [0.669 mil]	0.96(5.5)	0.70(4.0)	0.96(5.5)	0.70(4.0)	N/mm (lb/inch)	2.4.8 2.4.8.2 2.4.8.3
B. Standard profile copper foil						
1. After Thermal Stress	1.75(10.0)	0.80 (4.57)	1.93(11.0)	1.05 (6.00)		
2. At 125 $^{\circ}\text{C}$ [257 F]	1.66(9.5)	0.70 (4.00)	1.66(9.5)	0.70 (4.00)		
Volume Resistivity, minimum						
A. C-96/35/90	5x10 <sup>8</sup>	10 <sup>6</sup>		---	M $\Omega$ -cm	2.5.17.1
B. After moisture resistance	-	—	5x10 <sup>8</sup>	10 <sup>4</sup>		
C. At elevated temperature E-24/125	5x10 <sup>7</sup>	10 <sup>3</sup>	5x10 <sup>7</sup>	10 <sup>3</sup>		
Surface Resistivity, minimum						
A. C-96/35/90	3.5x10 <sup>6</sup>	10 <sup>4</sup>		---	M $\Omega$	2.5.17.1
B. After moisture resistance	-	—	3.5x10 <sup>6</sup> ---	10 <sup>4</sup>		
C. At elevated temperature E-24/125	6x10 <sup>6</sup>	10 <sup>3</sup>	6x10 <sup>6</sup>	10 <sup>3</sup>		
Moisture Absorption, maximum	0.30	-	0.1	0.8	%	2.6.2.1
Dielectric Breakdown, minimum	-	-	60	40	kV	2.5.6
Permittivity at 1 MHz, maximum (Laminate & Prepreg as laminated)	4.6	5.4	4.6	5.4	—	2.5.5.
Loss Tangent at 1 MHz, maximum (Laminate & Prepreg as laminated)	0.016	0.035	0.016	0.035	—	2.5.5.
Flexural Strength, minimum						
A. Length direction	-	—	496(72,000)	415 (60,190)	N/mm <sup>2</sup> (lb/in <sup>2</sup> )	2.4.4
B. Cross direction	-	—	434(63,000)	345 (50,140)		
Arc Resistance, minimum	120	60	120	60	S	2.5.1
Thermal Stress 10 s at 288 $^{\circ}\text{C}$ [550.4F], minimum						
A. Unetched	Pass	Pass Visual	Pass	Pass Visual	Rating	2.4.13.1
B. Etched	Pass	Pass Visual	Pass	Pass Visual		
Electric Strength, minimum (Laminate & Prepreg as laminated)	45	30	-	—	kV/mm	2.5.6.2
Flammability, (Laminate & Prepreg as laminated)	V-0	V-1	V-0	V-1	Rating	UL94
Glass Transition Temperature	140	110 - 150	140	110 - 150	$^{\circ}\text{C}$	2.4.25
Decomposition Temperature		--	305	-	$^{\circ}\text{C}$	2.3.40 (5% wt loss)

						(5% wt loss)
Z-Axis CTE						
A. Alpha 1	-	--	55	-	PPM/°C	2.4.24
B. Alpha 2	-	--	290	-	PPM/°C	
C. 50 to 260 Degrees C	-	--	4.2	-	%	
Thermal Resistance						
A. T260	-	--	15	-	Minutes	2.4.24.1
B. T288	-	--	2	--	Minutes	

### PREPREG( IT-140BS)

	Typical Value	Specification	Units	Test Method
1. Shelf Life, minimum (Condition 1/Condition 2)	Meet requirement	180/90	Days	AABUS
2. Volatile content maximum	0.3	0.75	%	2.3.19

\*AABUS = As agreed upon between user and supplier.

## Laminate Construction

Nominal Thickness		Tolerance		Construction
mil	mm	mil	mm	
2	0.05	±0.5	±0.013	106*1
3	0.08	±0.5	±0.013	1078*1 or 1086*1
3.5	0.09	±0.5	±0.013	2113*1
4	0.10	±0.5	±0.013	2116*1 or 106*2
5	0.13	±0.7	±0.018	2116*1
6	0.15	±0.7	±0.018	1506*1 or 1080*2
7	0.18	±1.0	±0.025	7628*1
8	0.20	±1.0	±0.025	7628*1
9	0.23	±1.0	±0.025	7628*1 or 2116*2
10	0.25	±1.0	±0.025	2116*2
12	0.30	±1.0	±0.025	1506*2
14	0.35	±1.5	±0.038	7628*2
15	0.38	±1.5	±0.038	7628*2
16	0.40	±1.5	±0.038	7628*2
18	0.45	±1.5	±0.038	7628*2 or 7628*2+2116*1
20	0.50	±2.0	±0.050	7628*2+2116*1
21	0.53	±2.0	±0.050	7628*3
24	0.60	±2.0	±0.050	7628*3
26	0.65	±2.0	±0.050	1506*2+7628*2
28	0.71	±2.0	±0.050	7628*4
31	0.80	±3.0	±0.075	7628*4
37	1.0 1/1	±3.0	±0.075	7628*5
39	1.05 1/1	±3.0	±0.075	7628*5
41	1.1 1/1	±3.0	±0.075	7628*5
45	1.2 1/1	±3.0	±0.075	7628*6

57	1.5 1/1	±5.0	±0.130	7628*8
60	1.6 1/1	±5.0	±0.130	7628*8

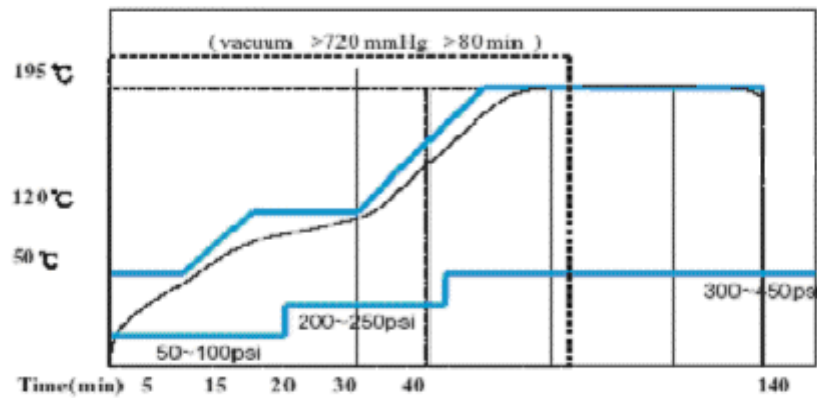
Scope : This specification covers ANSI FR-4 thin laminate for use in manufacture of multilayer printed wiring board

## Prepreg specifications

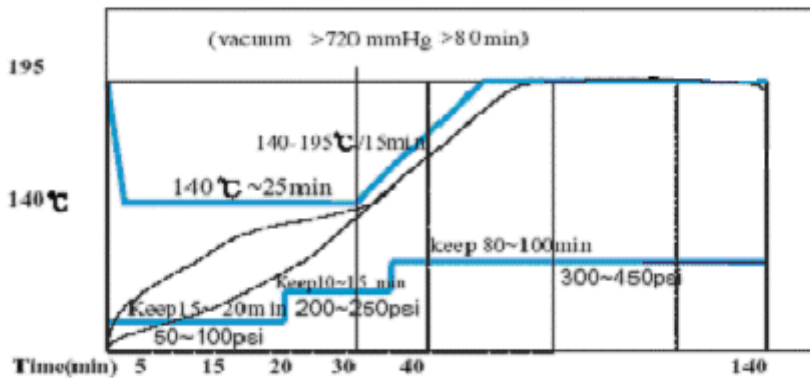
Type	Resin Content (%)	Resin Flow (%)	Gel Time (sec)	Scaled Flow (mils/ply)	Volatile Content (%)
7628UF	47.0 ± 3	24.0 ± 5	135 ± 20	8.4 ± 0.4	< 0.75
7628MF	43.0 ± 3	21.0 ± 5	135 ± 20	7.7 ± 0.4	
7628TF	44.0 ± 3	22.0 ± 5	135 ± 20	7.7 ± 0.4	
7628HF	46.0 ± 3	24.0 ± 5	135 ± 20	8.3 ± 0.4	
7628SF	48.0 ± 3	26.0 ± 5	135 ± 20	8.5 ± 0.4	
7628WF	43.0 ± 3	20.0 ± 5	135 ± 20	7.7 ± 0.4	
7628LF	46.0 ± 3	23.0 ± 5	135 ± 20	8.3 ± 0.4	
7629HF	47.0 ± 3	29.0 ± 5	135 ± 20	8.4 ± 0.4	
7630MF	50.5 ± 3	31.0 ± 5	135 ± 20	9.0 ± 0.4	
7631MF	52.0 ± 3	32.0 ± 5	135 ± 20	11.0 ± 0.4	
1506MF	48.0 ± 3	26.0 ± 5	135 ± 20	7.0 ± 0.3	
1506HF	50.0 ± 3	28.0 ± 5	135 ± 20	8.0 ± 0.3	
1506SF	52.0 ± 3	29.0 ± 5	135 ± 20	8.5 ± 0.3	
2165HF	52.0 ± 3	32.0 ± 5	135 ± 20	5.1 ± 0.3	
2116MF	53.0 ± 3	30.0 ± 5	135 ± 20	4.9 ± 0.3	
2116HF	55.0 ± 3	33.0 ± 5	135 ± 20	5.2 ± 0.3	
2116TF	50.0 ± 3	28.0 ± 5	135 ± 20	4.5 ± 0.3	
2116SF	57.0 ± 3	35.0 ± 5	135 ± 20	5.5 ± 0.3	
2116UF	61.0 ± 3	38.0 ± 5	135 ± 20	6.0 ± 0.3	
2125MF	50.0 ± 3	28.0 ± 5	135 ± 20	4.5 ± 0.3	
2125HF	57.0 ± 3	36.0 ± 5	135 ± 20	5.8 ± 0.3	
2112MF	57.0 ± 3	35.0 ± 5	135 ± 20	4.4 ± 0.3	
2113HF	56.0 ± 3	35.0 ± 5	135 ± 20	4.5 ± 0.3	
2113SF	58.0 ± 3	38.0 ± 5	135 ± 20	4.6 ± 0.3	
3313MF	58.0 ± 3	35.0 ± 5	135 ± 20	4.6 ± 0.3	
3313LF	50.0 ± 3	28.0 ± 5	135 ± 20	4.3 ± 0.3	
3313SF	63.0 ± 3	42.0 ± 5	135 ± 20	4.8 ± 0.3	
3313HF	53.0 ± 3	31.0 ± 5	135 ± 20	4.4 ± 0.3	
1080MF	62.0 ± 3	38.0 ± 5	135 ± 20	2.9 ± 0.3	
1080LF	63.0 ± 3	39.0 ± 5	135 ± 20	2.9 ± 0.3	
1080HF	65.0 ± 3	42.0 ± 5	135 ± 20	3.2 ± 0.3	
1080SF	68.0 ± 3	44.0 ± 5	135 ± 20	3.4 ± 0.3	
1081MF	71.0 ± 3	50.0 ± 5	135 ± 20	3.8 ± 0.3	
106MF	71.5 ± 3	46.0 ± 5	135 ± 20	2.1 ± 0.3	

## Recommended Press Cycle For IT140

### (a) Cold Press Cycle



### (b) Hot Press Cycle



#### Suggestion :

1. Heating rate of material between 80°C and 140°C is 1.3~1.8°C/min
2. Curing time : 165°C and above for >60min

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