

# IT-180

## Features

- Multifunctional Epoxy Resin
- $T_g \geq 175^\circ\text{C}$  (DSC)
- Low Z-axis Coefficient of Thermal Expansion
- Excellent Dimensional Stability and heat resistance
- Low Water Absorption
- Good Drilling Properties
- Processing Like IT140
- UL 94 V-0
- AOI and UV blocking characteristic

## Properties

ITEQ Laminate/ Prepreg : IT-180TC / IT-180BS						
IPC-4101A Spec /24						
LAMINATE( IT-180TC)						
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]	0.88(5.0)	0.70(4.0)	0.88(5.0)	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	1.23(7.0)	0.80 (4.57)	1.40(8.0)	1.05 (6.00)		
2. At 125°C [257 F]	1.05(6.0)	0.70 (4.00)	1.23(7.0)	0.70 (4.00)		
Volume Resistivity, minimum						
A. C-96/35/90	$3.0 \times 10^6$	$10^6$		---	M $\Omega$ -cm	2.5.17.1
B. After moisture resistance	-	—	$3.0 \times 10^7$	$10^4$		
C. At elevated temperature E-24/125	$5.0 \times 10^7$	$10^3$	$1.0 \times 10^8$	$10^3$		
Surface Resistivity, minimum						
A. C-96/35/90	$3.0 \times 10^6$	$10^4$		---	M $\Omega$	2.5.17.1
B. After moisture resistance	---	—	$3.0 \times 10^6$	$10^4$		
C. At elevated temperature E-24/125	$4.0 \times 10^7$	$10^3$	$4.0 \times 10^7$	$10^3$		
Moisture Absorption, maximum		-	0.12	0.8	%	2.6.2.1
Dielectric Breakdown, minimum	-	-	60	40	kV	2.5.6
Permittivity at 1 MHz, maximum (Laminate & Prepreg as laminated)	4.5	5.4	4.7	5.4	—	2.5.5.
Loss Tangent at 1 MHz, maximum (Laminate & Prepreg as laminated)	0.018	0.035	0.018	0.035	—	2.5.5.
Flexural Strength, minimum						
A. Length direction	-	—	580(84,300)	415 (60,190)	N/mm <sup>2</sup> (lb/in <sup>2</sup> )	2.4.4
B. Cross direction	-	—	450(65,400)	345 (50,140)		
Arc Resistance, minimum	125	60	125	60	S	2.5.1
Thermal Stress 10 s at 288°C [550.4F],minimum		Pass Visual			Rating	2.4.13.1

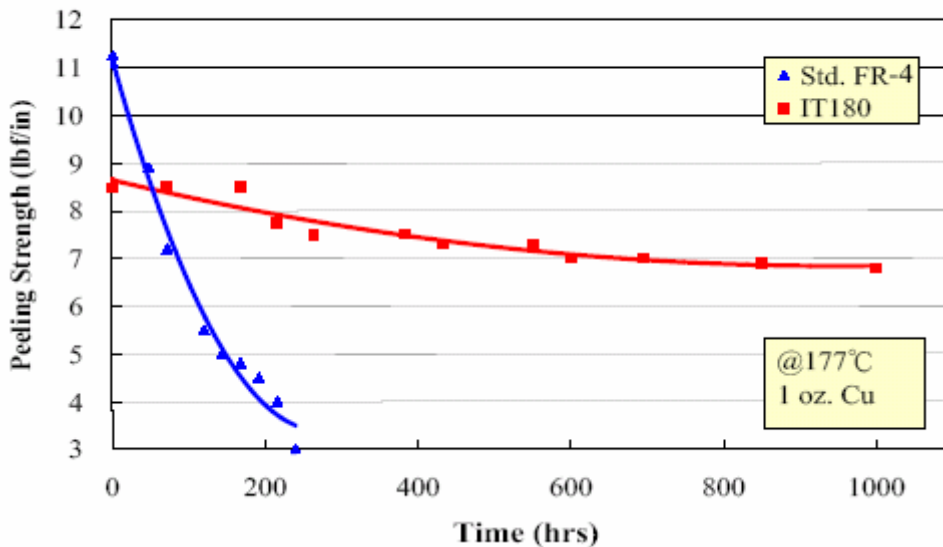
A. Unetched B. Etched	Pass Pass	Pass Visual	Pass Pass	Pass Visual Pass Visual		
Electric Strength, minimum (Laminate & Prepreg as laminated)	45	30	-	—	kV/mm	2.5.6.2
Flammability, (Laminate & Prepreg as laminated)	V-0	V-1	V-0	V-1	Rating	UL94
Glass Transition Temperature	180	150 - 200	180	150 - 200	°C	2.4.25
Decomposition Temperature		--	350	-	°C	2.3.40 (5% wt loss)
Z-Axis CTE A. Alpha 1 B. Alpha 2 C. 50 to 260 Degrees C	- - -	-- -- --	50 250 3.0	- - -	PPM/°C PPM/°C %	2.4.24
Thermal Resistance A. T260 B. T288	- -	-- --	>60 >20	- --	Minutes Minutes	2.4.24.1

### PREPREG(IT-180BS)

	Typical Value	Specification	Units	Test Method
1. Shelf Life, minimum (Condition 1/Condition 2)	Meet requirement	180/90	Days	AABUS
2. Volatile content maximum	0.5	1.5	%	2.3.19

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

### Peeling Strength Stability at Elevated Temperature



### 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

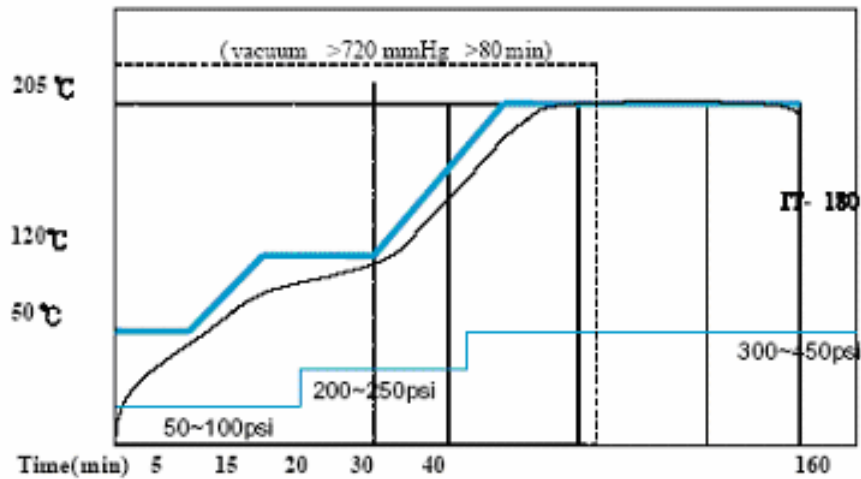
## Prepreg specifications

Type	Resin Content ±3%	Resin Flow ±5%	Gel time ±20sec	Scaled Flow ±0.4(mils/ply)	Volatile Content (%)
7628MF	43	20	130	6.9	<0.75
7628LF	46	22	130	7.3	
7628SF	47.5	24	130	7.5	
7630MF	49	27	130	7.7	
1506MF	48	25	130	5.8	
1506HF	50	27	130	6.1	
2116QF	48	23	130	3.9	
2116TF	50	26	130	4	
2116MF	53	30	130	4.1	
2116HF	55	32	130	4.2	
2116SF	57	35	130	4.3	
3313MF	58	35	130	3.6	
2112SF	60	38	130	3.5	
2113HF	56	32	130	3.4	
1080MF	62	38	130	2.1	

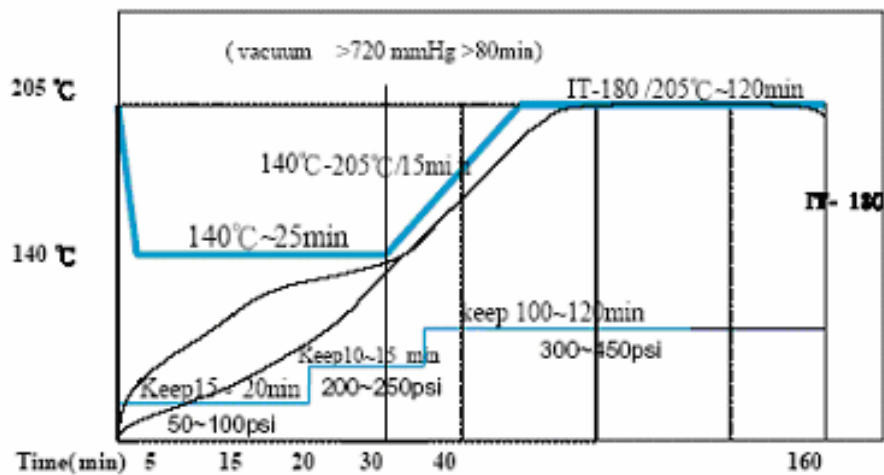
1080HF	65	40	130	2.3
1080UF	68	44.0	130	2.4
106MF	71.5	46	130	1.8

## Recommended Press Cycle for IT-180

### (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 Condition : 180°C and above for >90min

