

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 ≥ 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 μm [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 |
| B. Standard profile copper foil | | | | | | 2.4.8.2 |
| 1. After Thermal Stress | 1.75(10.0) | 0.80 (4.57) | 1.93(11.0) | 1.05 (6.00) | | 2.4.8.3 |
| 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 ⁸ | 10 ⁶ | | --- | M Ω -cm | 2.5.17.1 |
| B. After moisture resistance | - | — | 5x10 ⁸ | 10 ⁴ | | |
| C. At elevated temperature E-24/125 | 5x10 ⁷ | 10 ³ | 5x10 ⁷ | 10 ³ | | |
| Surface Resistivity, minimum | | | | | | |
| A. C-96/35/90 | 3.5x10 ⁶ | 10 ⁴ | | --- | M Ω | 2.5.17.1 |
| B. After moisture resistance | - | — | 3.5x10 ⁶ --- | 10 ⁴ | | |
| C. At elevated temperature E-24/125 | 6x10 ⁶ | 10 ³ | 6x10 ⁶ | 10 ³ | | |
| 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 ² (lb/in ²) | 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 |

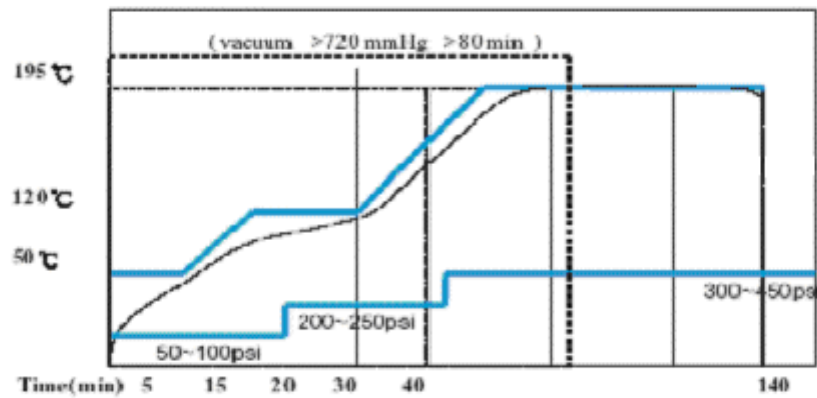
Scope : This specification covers ANSI FR-4 thin laminate for use in manufacture of multilayer printed wiring board

Prepreg specifications

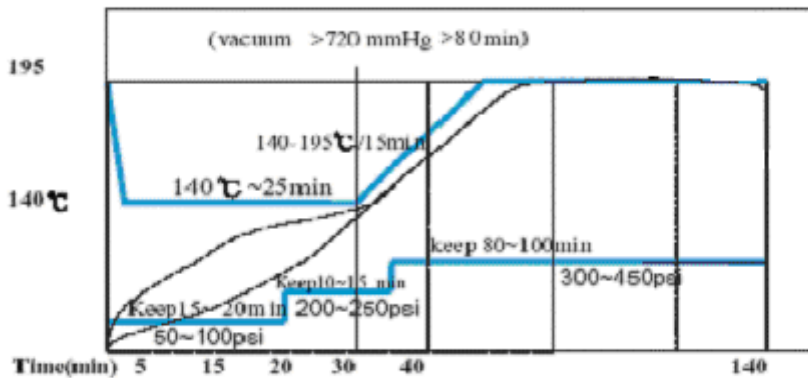
| Type | Resin Content (%) | Resin Flow (%) | Gel Time (sec) | Scaled Flow (mils/ply) | Volatile Content (%) |
|--------|-------------------|----------------|----------------|------------------------|----------------------|
| 7628UF | 47.0 ± 3 | 24.0 ± 5 | 135 ± 20 | 8.4 ± 0.4 | < 0.75 |
| 7628MF | 43.0 ± 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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