



VT-90

Datasheets & Process Guideline

VT-90TC /Laminate VT-90PP/Prepreg

General Information

- **High Tg (Tg 250 °C) and Extreme Operating Temperature**
- High Thermal Resistance(Td 390 °C) and Several Assembly Processing
- Improved Fracture Toughness
- Low CTE z-axis for Through Hole Reliability

Application

- Chip Manufacturers
- Engine/Flight Controls
- Down Hole
- Power Supply /Backplane
- Military and Burn-in Board

Availability

VT-90TC Laminates are available in thickness from .004"to .090" and with the copper foil from 1/2oz to 3oz;

Ventec can supply double side treated copper foil and single side treated copper foil.

VT-90PP pre-pregs are available in many E-Glass styles, such as 7628, 7629, 1506, 1500, 2113, 2313, 3313, 2116.

**High Tg &
High Reliability
Material**



VT-90

Properties Sheet: IPC-4101B Specification Sheet(s)/41

(Test Sample: .061"1/1)

| TEST ITEM | | Test Condition (IPC-TM-650 or As Noted) | UNIT | Specification (IPC-4101 B) | Typical Value | |
|--------------------------------|-----------------|---|---------------------|-------------------------------|----------------------|-------------------------|
| | | | | | VT-90 | Normal FR-4 |
| Flexural Strength | Warp | 2.4.4 | MPa | >415 | 500 | 600 |
| | Fill | | | >345 | 380 | 500 |
| Peel Strength (1 oz) | As Receive | 2.4.8 | 1b/in | 6.0 min | 6~9 | 8.59 |
| | After Thermal | | | | 6~9 | 8.03 |
| Glass Transition Temp.(Tg),DSC | | 2.4.25 | °C | - | 250 | 136~140 |
| Decomposition Temp. (Td) TGA | | ASTM D3850 | °C | - | 390 | 290~310 |
| X-axis C.T.E. | | TMA | in/in/ °C | - | 13x10 ⁻⁶ | 12~15 x10 ⁻⁶ |
| Y-axis C.T.E. | | TMA | in/in/ °C | - | 14x10 ⁻⁶ | 12~15 x10 ⁻⁶ |
| Z-axis C.T.E. | Before Tg | TMA | in/in/ °C | - | 50x10 ⁻⁶ | 50x10 ⁻⁶ |
| | After Tg | | | - | 250x10 ⁻⁶ | 250x10 ⁻⁶ |
| Z-axis Total Expansion | 50→260°C | TMA | % | / | 1.5% | 3.5~4.0% |
| | 50→288°C | TMA | % | - | 2.0% | 4.0~5.0% |
| Moisture | D-24/23 | 2.6.21 | % | 0.35 max | 0.10~0.16 | 0.28 |
| Absorption | After PCT | 1atm.,121°C,1hour | % | - | 0.20 | 0.28 |
| Volume | After Moisture | 2.5.17.1 | MΩ-cm | ≥106 | 5×10 ⁸ | 5×10 ⁸ |
| Resistance | E-24/125 | | | ≥103 | 5×10 ⁶ | 5×10 ⁶ |
| Surface | After Moisture | 2.5.17.1 | MΩ | ≥104 | 5×10 ⁷ | 5×10 ⁷ |
| Resistance | E-24/125 | | | ≥103 | 5×10 ⁶ | 5×10 ⁶ |
| Electric Strength | | 2.5.6.2 | KV/mm (volt/mil) | ≥30 | 54 (1200~1400) | 54 |
| Dielectric Constant (Dk) | 1.0 MHz | 2.5.3, | - | 5.4 max. | 4.2-4.5 | 4.42 |
| | 1.0 GHz | 2.5.9, | | | 4.0-4.3 | 4.39 |
| | 2.0 GHZ | 2.5.5 | | | 3.9~4.2 | 4.38 |
| Dispersion Factor(Df) | 1.0 MHz | 2.5.3, | - | 0.035 max. | 0.016~0.018 | 0.022 |
| | 1.0 GHz | 2.5.9, | | | 0.016~0.018 | 0.022 |
| | 2.0 GHZ | 2.5.5 | | | 0.018~0.020 | 0.021 |
| Thermal Stress | 288°C,Sold Dip | 2.4.13.1 | Sec. | 60 Sec. | >1200 | 90-120 |
| | 288°C,SoldFloat | 2.4.13.1 | sec | / | >1200 | 120~200 |
| Pressure Cook Test | | Pretreat15psi/30m 288°C,10Sec/cycle | Cycle | 2 cycles Min. | >18 | 6-8 |
| Time to Delamination---T288 | | 2.4.24.1 | Min | >5 | >60 | 3 |
| Flame Resistance | | UL94 | - | V1 | V0 | V0 |

※ All test data provided are typical values and are not intended to be specification values.



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Process Guideline

Press Condition

1. Heating rate(Rise of Rate) of material:

Programmable Press: 1.5-3.0°C/min (3~5°F/min). Manual Press:3~6°C/min (5~10°F/min)

2. Curing Temperature & Time: >150min at more than 220°C (428°F) [Material Temperature].

3. Full Pressure: ≥250-300psi

4. Vacuuming should be continued until **over 140°C** (284°F) [Material Temperature]