

# VT-42

UL Approval: E214381    Version: Rev. 7

## DATASHEET

VT-42 CCL/Laminate VT-42 PP/Prepreg

### General Information

- Dicy Cured System
- Standard FR-4 (Tg140)
- UV Blocking
- Laser Fluorescing

### Application

For Single Side\Double Side\Multilayer PWB Applications.

### Availability

VT-42 Laminates are available in thickness from .002” to .200” and with the copper foil from 1/4oz to 12oz; Ventec can supply either reverse treated (RT) or double side treated copper foil. For cores ≤ .005”, it is recommended to use the reverse treated copper due to the low profile. The peel strength for RT foil is ≈1-2lbs/in (0.35Kg/m) less than Standard foil.  
 VT-42PP pre-pregs are available in many E-Glass styles, such as 7628, 7629, 1506, 1500, 2113, 2313, 3313, 2116, 1080, 1086, 1078, 106 & 1067.

### Storage Condition & Shelf Life

		Prepreg		Laminate
Storage Condition	Temperature	Below 23°C (73°F)	Below 5°C (41°F)	Room
	Relative Humidity	Below 55% RH	/	/
Shelf Life*		3 Months	6 Months	12 Months (airproof)

\*Prepreg exceeding shelf life should be retested.

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## PROPERTIES SHEET

### IPC-4101C Slash Sheet(s)/21

Properties	Test Method	Units	Specification	Typical Value
<b>Thermal Properties</b>				
Glass Transition Temp. (Tg)				
DSC	IPC-TM-650 2.4.25	°C	110 minimum	140
TMA	IPC-TM-650 2.4.24	°C	–	–
Decomposition Temp. (Td) By TGA (@5% weight loss)	ASTM D3850	°C	–	310
Time to Delamination---T260	IPC-TM-650 2.4.24.1	Minute	–	20
Time to Delamination---T288	IPC-TM-650 2.4.24.1	Minute	–	2
Z-axis CTE				
Before Tg	IPC-TM-650 2.4.24	ppm/°C	–	50
After Tg	IPC-TM-650 2.4.24	ppm/°C	–	250
Total Expansion (50–260°C)	IPC-TM-650 2.4.24	%	–	3.75
Thermal Stress @ 288°C	IPC-TM-650 2.4.13.1	Second	Pass 10s	300
<b>Electrical Properties</b>				
Dielectric Constant @ 1GHz	IPC-TM-650 2.5.5.9	–	5.4 maximum	4.2
Dissipation Factor @ 1GHz	IPC-TM-650 2.5.5.9	–	0.035 minimum	0.015
Volume Resistivity				
After Moisture Resistance	IPC-TM-650 2.5.17.1	MΩ-cm	10 <sup>6</sup> minimum	5*10 <sup>8</sup>
E-24/125	IPC-TM-650 2.5.17.1	MΩ-cm	10 <sup>3</sup> minimum	5*10 <sup>6</sup>
Surface Resistivity				
After Moisture Resistance	IPC-TM-650 2.5.17.1	MΩ	10 <sup>4</sup> minimum	5*10 <sup>7</sup>
E24/125	IPC-TM-650 2.5.17.1	MΩ	10 <sup>3</sup> minimum	5*10 <sup>6</sup>
Electrical Strength	IPC-TM-650 2.5.6.2	Volt/mil (KV/mm)	762 (30) minimum	1200~1400 (54)
Dielectric Breakdown	IPC-TM-650 2.5.6	KV	40 minimum	60
Comparative Tracking Index (CTI)	ASTM D3638	Rating (Volt)	–	Grade 3 (175–250)
Arc Resistance	IPC-TM-650 2.5.1	Second	60 minimum	65
<b>Mechanical Properties</b>				
Peel Strength (1oz)				
As received	IPC-TM-650 2.4.8	lb/in (N/mm)	–	10~12 (1.7~2.0)
After thermal stress	IPC-TM-650 2.4.8	lb/in (N/mm)	6 (1.05) minimum	9~12 (1.5~2.0)
Flexural Strength				
Warp	IPC-TM-650 2.4.4	Kpsi (MPa)	60 (415) minimum	87 (600)
Fill	IPC-TM-650 2.4.4	Kpsi (MPa)	50 (345) minimum	72 (500)
<b>Physical Properties</b>				
Moisture Absorption	IPC-TM-650 2.6.2.1	%	0.80 maximum	0.25
Flammability	UL-94	Rating	V0 minimum	V0

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

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## PROCESS GUIDELINE

## Press Condition

1. Heating rate (Rate of Rise) of material [Material Temperature]:  
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: >45min at more than 170°C (338°F) [Material Temperature]
3. Full Pressure: ≥250-280psi
4. Vacuuming should be continued until over 140°C (284°F) [Material Temperature]

## Typical Drilling Parameters (φ0.3-1.0 mm)

1. Spindle Speed:	64-105	KRPM
2. Feed Rate:	100-150	inch / min
3. Retract Rate:	596-600	inch / min
4. Chip Load:	0.7~2.0	mil / Rev.

## Desmearing Process

Standard FR-4 Desmear Process