VT-447(B)

UL Approval: E214381 Version: 12/12/2024

PROCESS GUIDE

Laminate/Prepreg

Precautions in Handling

- The prepreg exceeding shelf time should be retested.
- Take care in handling thin core laminates as they are easily damaged.
- If the prepreg is not consumed within 48hrs after opening the vacuum package, it is recommended that the bags be resealed.
- Material is available in both long and short grain. The grain direction is indicated on the label with an arrow.

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	24 Months (Airproof)

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Prepreg Availability

PP Type	Resin Content	Press Thickness (mil)	Dk		Df	
			@ 1GHz	@ 5GHz	@ 1GHz	@ 5GHz
7628	45%	7.6	4.34	4.24	0.012	0.013
2116	54%	4.8	4.07	3.97	0.014	0.015
1080	64%	3.5	3.90	3.76	0.015	0.016

Remark:

① Press thickness test condition---Prepreg lamination size 18"*24", Copper Foil---1oz/1oz, Flow---about 5%;

② Make laminated prepreg to micro-section and measure the thickness with microscope;
This thickness is used for resistance design calculation.

③ The thickness measured with micrometer is 0.2~0.4 mil larger than that measured with micro-section;
and mainly used for total thickness design calculation.

Laminate Availability

VT-447(B) Laminates are available in thickness from .003" up to .094" and with the copper foil from 1/4oz to 12oz;
Ventec can supply either reverse treated (RT) or double side treated copper foil.

DK values are for impedance design.

Core Thickness (inches)	Resin Content	Stack-up	Dk		Df	
			@ 1GHz	@ 5GHz	@ 1GHz	@ 5GHz
0.003	64%	1-1080	3.85	3.76	0.015	0.016
0.005	54%	1-2116	4.07	3.97	0.014	0.015
0.006	64%	2-1080	3.85	3.76	0.015	0.016
0.008	45%	1-7628	4.34	4.24	0.012	0.013
0.010	54%	2-2116	4.07	3.97	0.014	0.015
0.014	41%	2-7628	4.44	4.34	0.012	0.013
0.016	45%	2-7628	4.31	4.21	0.013	0.014
0.021	41%	3-7628	4.44	4.34	0.012	0.013
0.028	41%	4-7628	4.44	4.34	0.012	0.013
0.031	45%	4-7628	4.34	4.24	0.012	0.013
0.039	45%	5-7628	4.34	4.24	0.012	0.013
0.042	41%	6-7628	4.44	4.34	0.012	0.013

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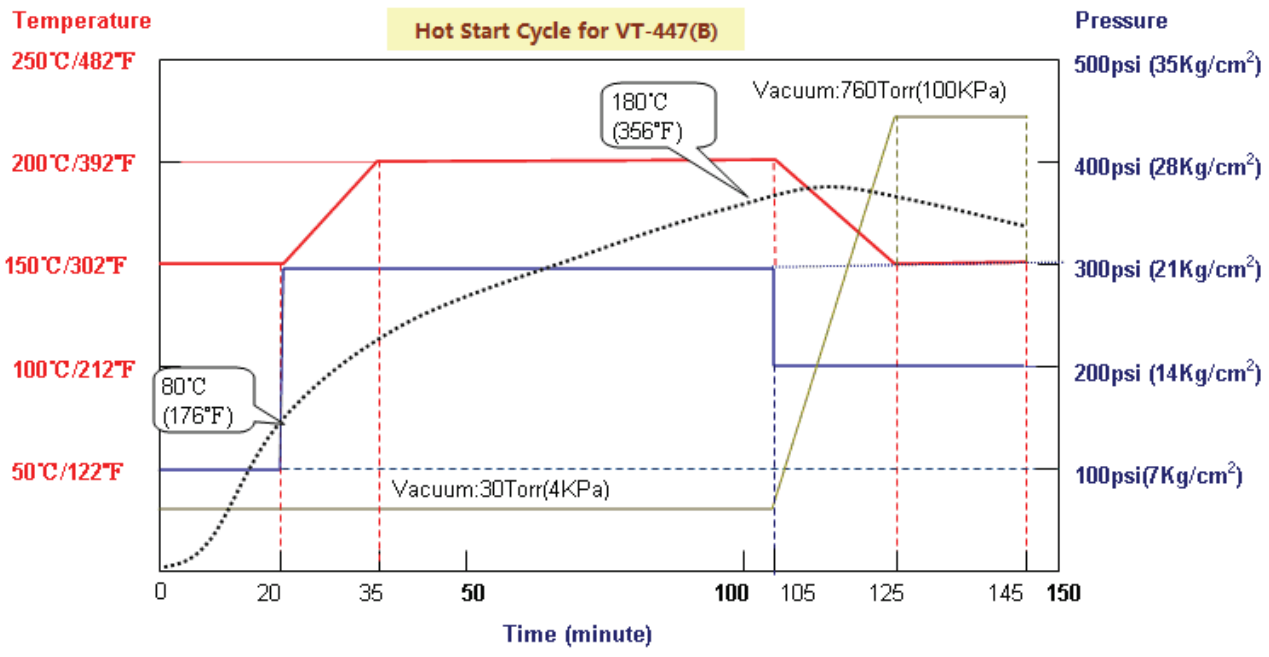
Press Condition

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: >60min at more than 185°C and peak temperature>195 °C
3. Full Pressure: ≥300psi
4. Vacuuming should be continued until over 140°C [Material Temperature]
5. Cold Press condition: Keep Plate @ Room Temperature by water; Pressure:100psi; Keep Time:60minutes



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Typical Drilling Parameters

1. Spindle Speed	120-180	KRPM
2. Feed Rate:	120-220	inch / min
3. Retract Rate:	596-1000	inch / min
4. Chip Load:	0.6~2.0	mil / Rev.
5. Entry board:	t0.15mm Al	-
6. Stack amount (t1.6mm):	1-3 stacks	-

Desmear Process

- Desmear rate of **VT-447(B)** is less than that of the conventional FR4;
- Minor adjustments to the desmear process may be necessary for the higher Tg materials;
- Check with your chemical supplier for recommendations.

Packaging and baking recommendation

- It is recommended to bake the board before packaging at 125°C/4~8h to avoid moisture causing a decrease in heat resistance.
- If the PCBs needs to be stored for a long time before use, it is recommended to use aluminum foil vacuum packaging.
- If exceed 3 months after packaging , It is best to bake the PCBs at 125°C/4~6h before assembly before use.