VT-47LT
PROCESS GUIDE

VT-47 PP/Prepreg

Version: 27/03/2025

Precautions in Handling

Storage Condition

Properties		Prepreg	
Storage Condition	Temperature	Below 23°C (73°F)	Below 5°C (41°F)
	Relative humidity	Below 55% RH	/
Shelf Life		3 months	6 months

- The prepreg exceeding shelf time should be retested.
- 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.

Designing and Inner layer Process

- Please be careful when single ply of 1037, 1067, or 1078 prepreg is designed to the dielectric layer.
- Dimension stability is the same as Standard FR4 material.
- Please check with your oxide vendor to make sure that our material is suitable with your oxide process.
  We recommend to control the peel strength with brown oxide copper over 2 Lb/in.

VT-47LT PROCESS GUIDE

VT-47 PP/Prepreg

Version: 27/03/2025

Prepreg Availability

E-Glass styles: 1078, 1067, 1037 etc.

PP Type	R/C (%)	Pressed Thickness		Dk				Df			
		mil	μm	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz
1037	70	1.7	43	4.00	3.95	3.90	3.79	0.013	0.015	0.016	0.017
1037	72	1.8	46	3.96	3.91	3.86	3.75	0.014	0.016	0.017	0.018
*** 1037**	**74**	**2.0**	**51**	**3.92**	**3.87**	**3.82**	**3.71**	**0.014**	**0.016**	**0.017**	**0.018**
1037	76	2.2	56	3.88	3.83	3.78	3.67	0.014	0.016	0.017	0.018
1037	78	2.3	58	3.84	3.79	3.74	3.63	0.014	0.016	0.017	0.018
1067	70	2.2	56	4.00	3.95	3.90	3.79	0.013	0.015	0.016	0.017
1067	72	2.4	61	3.96	3.91	3.86	3.75	0.014	0.016	0.017	0.018
*** 1067**	**74**	**2.5**	**64**	**3.92**	**3.87**	**3.82**	**3.71**	**0.014**	**0.016**	**0.017**	**0.018**
1067	76	2.8	71	3.88	3.83	3.78	3.67	0.014	0.016	0.017	0.018
1067	78	2.9	74	3.84	3.79	3.74	3.63	0.014	0.016	0.017	0.018
*** 1078**	**66**	**3.0**	**76**	**4.08**	**4.03**	**3.98**	**3.87**	**0.013**	**0.015**	**0.016**	**0.017**
1078	68	3.2	81	4.04	3.99	3.94	3.83	0.013	0.015	0.016	0.017
1078	70	3.4	86	4.00	3.95	3.90	3.79	0.013	0.015	0.016	0.017
1078	72	3.6	91	3.96	3.91	3.86	3.75	0.014	0.016	0.017	0.018

***Standard Availability**

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.

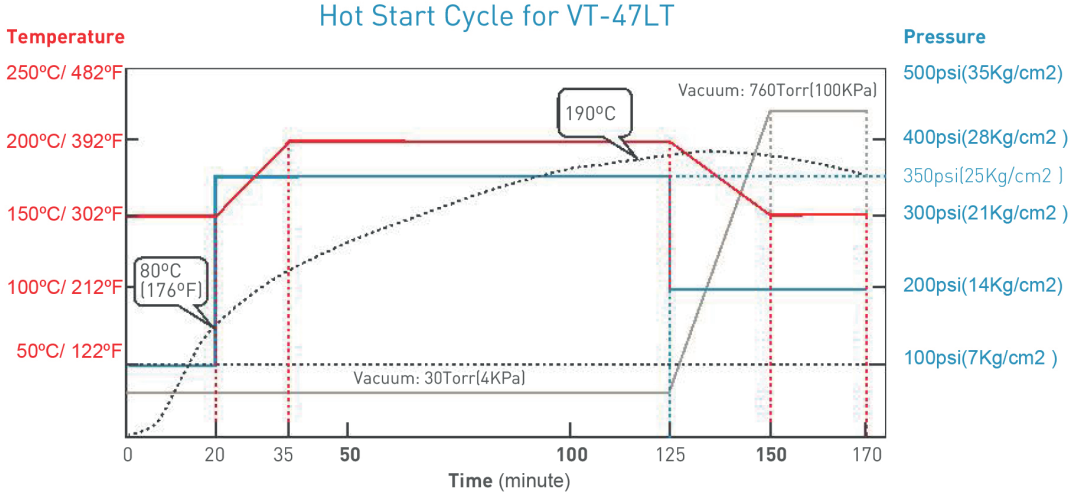
VT-47LT
PROCESS GUIDE
VT-47 PP/Prepreg

Version: 27/03/2025

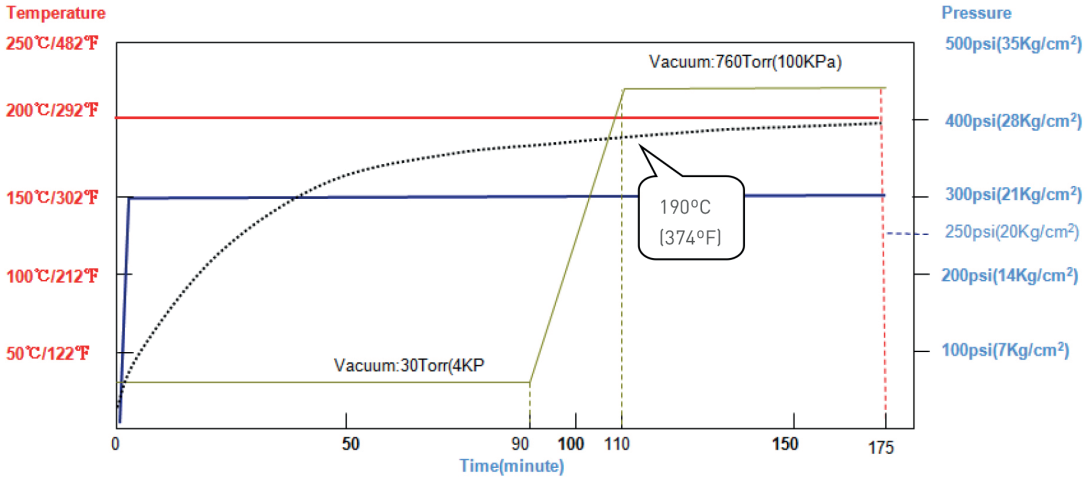
Press Condition

1. Heating rate (Rate of Rise) of material [Material Temperature]: Programmable Press: 2-4°C/min (4~7°F/min). Manual Press: 3~6°C /min (5~10°F/min)
2. Curing Temperature & Time: >60min at more than 190°C (374°F) [Material Temperature]
3. Full Pressure: ≥ 300psi
4. Vacuuming should be continued until over 140°C (284°F) [Material Temperature]
5. Cold Press condition: Keep Plate @ Room Temperature by water; Pressure:100psi; Keep Time: 60minutes

Hot Start Cycle for VT-47LT



Hot Start Cycle for VT-47LT (Manual)



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Typical Drilling Parameters

- The use of undercut drill bits has yielded better quality on smaller holes. Check with your drill bit supplier for more information.
- Suggest Drilling parameter as below:

Diameter (mm)	Spindle Speed (KRPM)	Feed Rate (IPM)	Retract Rate (IPM)	Chip Load (mil/rev)
0.20~0.25	135	75	791	0.56
0.30~0.35	155	120	984	0.77
0.40~0.45	120	125	900	1.04
0.50~0.55	95	90	700	0.95
0.60~0.65	80	110	765	1.38
0.70~0.75	72	120	765	1.67
0.80~0.95	68	120	850	1.76
1.00~1.05	60	140	984	2.33
1.10~1.15	54	150	984	2.78
1.20~1.25	52	160	984	3.08
1.30~1.45	50	150	984	3.00
1.50~1.55	45	130	984	2.89
1.60~1.75	40	120	800	3.00
1.80~2.00	35	80	600	2.29
2.05~2.45	30	80	500	2.67
2.50~2.75	25	70	500	2.80
2.80~3.20	20	60	500	3.00
3.20~3.60	20	60	500	3.00
3.65~4.00	20	35	500	1.75
4.50~4.80	20	25	400	1.25
4.81~6.50	20	20	300	1.00

Desmearing Process

- Desmear rate is less than that of the conventional FR4.
- Adjustments to the desmear process are necessary for the lead-free materials.
- Check with your chemical supplier for recommendations.