

VT-42

UL Approval: E214381 Version: 13/02/2025

PROCESS GUIDE

Laminate / Prepreg (Standard FR4 Material)

Precautions in Handling

Storage Condition & Shelf Life

		Prepreg		Laminate
Storage Condition	Temperature	Below 23°C (73°F)	Below 5°C (41°F)	Room
	Relative Humidity	Below 55%	/	/
Shelf Life		3 Months	6 Months	24 Months (airproof)

- 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.

Designing and Inner layer Process

- Please be careful when single ply of 1080, 1086, 1078 or 106 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.
- For unclad or single sided laminates to be used in multilayer, please brush unclad sides before use.

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Prepreg Availability

E-Glass styles: 7628, 1506, 1500, 2113, 2313, 3313, 2116, 1080, 1086, 1078, 106, 1067 etc.

Type	Resin Content	Press Thickness (mil)	DK				DF				Remark
			@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	
7628	46%	8.00	4.16	4.11	4.11	4.06	0.014	0.014	0.014	0.016	Standard
7628	43%	7.60	4.26	4.20	4.20	4.15	0.013	0.013	0.013	0.015	Standard
1506	52%	7.40	3.98	3.92	3.90	3.85	0.015	0.016	0.016	0.017	Standard
2116	55%	5.20	3.93	3.87	3.87	3.80	0.015	0.016	0.016	0.017	Standard
2116	53%	4.90	3.98	3.92	3.90	3.85	0.015	0.016	0.016	0.017	Standard
2113	56%	4.00	3.87	3.82	3.82	3.77	0.015	0.016	0.016	0.017	Standard
1080	65%	3.20	3.68	3.63	3.63	3.58	0.017	0.017	0.018	0.019	Standard
1080	63%	3.00	3.73	3.69	3.65	3.60	0.017	0.017	0.018	0.019	Standard

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.

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Laminates Availability

- Thickness: 0.002" (0.05mm) to 0.200" (5mm), available in sheet or panel form
- Copper Foil: 1/4 to 12oz, HTE or RTF or DST

DK values are for impedance design

Core thk. (inches)	Stack-up	Resin Content	DK				DF				Remark
			@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	
0.002	1-106	70%	3.55	3.50	3.50	3.45	0.018	0.018	0.019	0.020	Standard
0.003	1-2112	50%	4.05	4.00	4.00	3.95	0.015	0.015	0.016	0.017	Preferred
0.003	1-1080	63%	3.73	3.69	3.65	3.60	0.017	0.017	0.017	0.019	Standard
0.004	1-2116	44%	4.17	4.13	4.13	4.08	0.014	0.014	0.014	0.016	Standard
0.004	2-106	70%	3.70	3.70	3.50	3.45	0.018	0.018	0.019	0.020	2ply
0.005	1-2116	53%	3.98	3.92	3.90	3.85	0.015	0.015	0.016	0.017	Standard
0.006	1-1506	45%	4.16	4.11	4.11	4.06	0.014	0.014	0.014	0.016	Standard
0.007	1-7628	41%	4.27	4.23	4.23	4.18	0.013	0.013	0.013	0.015	Standard
0.008	1-7628	45%	4.16	4.11	4.11	4.06	0.013	0.013	0.013	0.015	Standard
0.008	2-2116	44%	4.17	4.13	4.13	4.08	0.013	0.013	0.013	0.015	2ply
0.010	2-2116	53%	3.98	3.92	3.90	3.85	0.015	0.015	0.016	0.017	Standard
0.012	2-1506	44%	4.17	4.13	4.13	4.08	0.014	0.014	0.014	0.016	Standard
0.014	2-7628	40%	4.29	4.25	4.25	4.20	0.013	0.013	0.013	0.015	Standard
0.016	2-7628	45%	4.16	4.11	4.11	4.06	0.014	0.014	0.014	0.016	Standard
0.028	4-7628	40%	4.29	4.25	4.25	4.20	0.013	0.013	0.013	0.015	Standard
0.036	5-7628	42%	4.26	4.20	4.20	4.15	0.013	0.013	0.013	0.015	Standard
0.045	6-7628	42%	4.26	4.20	4.20	4.15	0.013	0.013	0.013	0.015	Standard
0.049	7-7628	40%	4.29	4.25	4.25	4.20	0.013	0.013	0.013	0.015	Standard
0.059	8-7628	42%	4.26	4.20	4.20	4.15	0.013	0.013	0.013	0.015	Standard

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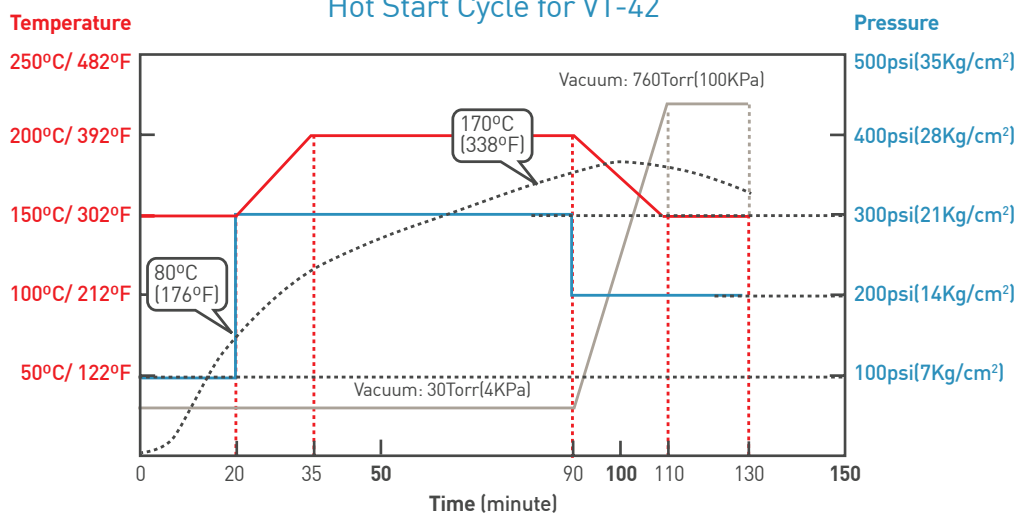
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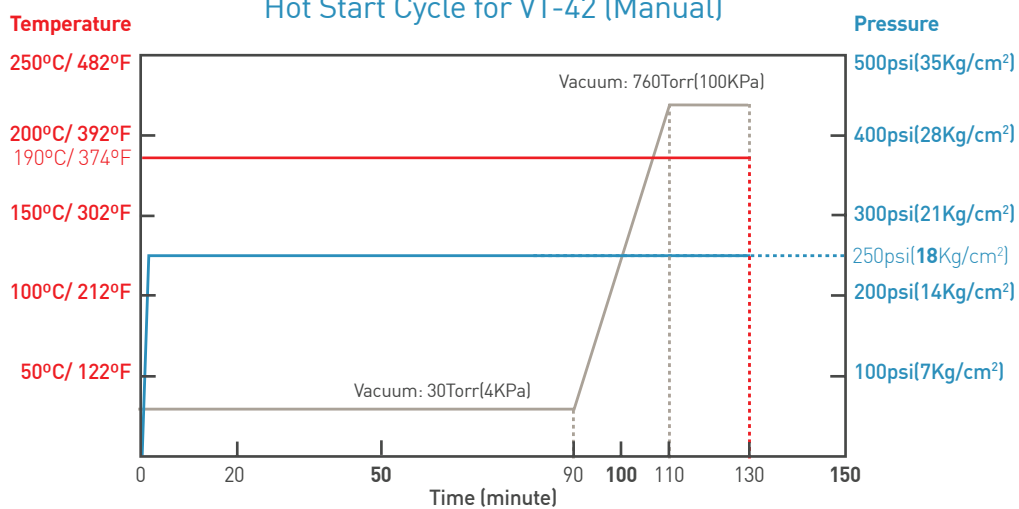
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Press Condition

Hot Start Cycle for VT-42



Hot Start Cycle for VT-42 (Manual)

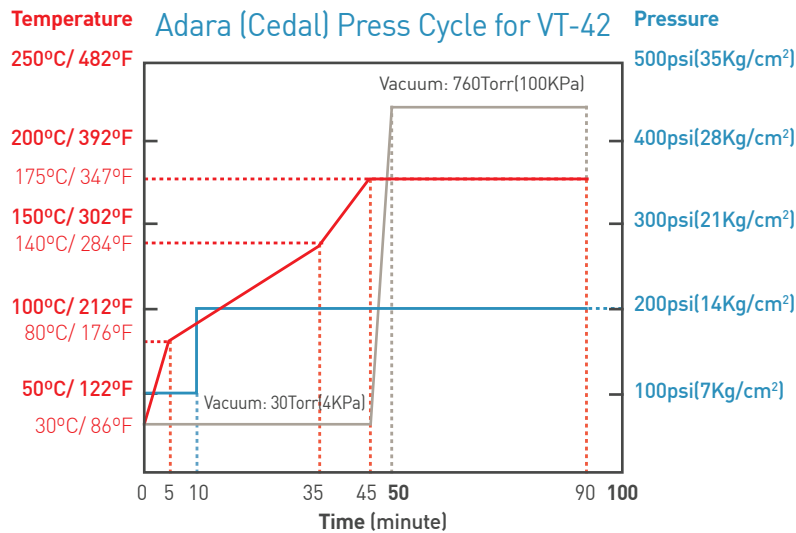


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Typical Drilling Parameters (φ0.3-1.0 mm)

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.
5. Entry board:	t0.15mm Al	-

Desmearing Process

Standard FR4 Desmear Process

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 use.