

VT-441

UL Approval: E214381 Version: Rev. B4

PROCESS GUIDE

VT-441 CCL/Laminate VT-441 PP/Prepreg

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

- 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.

CORPORATE HEADQUARTERS

Ventec Electronics Co. Ltd.
308 TaiShan Rd,
New District Suzhou,
Jiangsu, P.R. China 215129
T: +86 512-68091810
Email: sales@ventec.com.cn

EMEA REGIONAL HEADQUARTERS

Ventec Europe
Unit 1 Trojan Business Centre,
Tachbrook Park Estate,
Leamington-Spa, CV34 6RH, UK
T: +44 1926-889822
Email: sales@ventec-europe.com

AMERICAS REGIONAL HEADQUARTERS

Ventec USA
21 Water Street, Amesbury,
Massachusetts, MA 01913,
United States of America
T: +1 978-5219700
Email: saleseast@ventec-usa.com

VT-441

PROCESS GUIDE

Prepreg Availability

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

PP Type	Resin Content	Press Thickness (mil)	DK				DF				Remark
			@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	
7628	45%	7.50	4.35	4.30	4.25	4.25	0.012	0.013	0.013	0.014	Standard
1506	52%	7.20	4.15	4.10	4.05	4.05	0.013	0.014	0.014	0.015	Standard
2116	58%	5.20	3.98	3.93	3.88	3.88	0.013	0.014	0.014	0.015	Standard
2116	54%	4.70	4.10	4.05	4.00	4.00	0.013	0.014	0.014	0.015	Standard
2116	52%	4.50	4.15	4.10	4.05	4.05	0.013	0.014	0.014	0.015	Standard
2113	57%	4.10	4.00	3.95	3.90	3.90	0.013	0.014	0.014	0.015	Standard
1080	68%	3.20	3.80	3.73	3.68	3.68	0.014	0.015	0.015	0.016	Standard
1080	66%	3.00	3.83	3.76	3.70	3.70	0.014	0.015	0.015	0.016	Standard
1078	65%	3.00	3.83	3.76	3.70	3.70	0.014	0.015	0.015	0.016	Standard
1067	73%	2.70	3.72	3.62	3.56	3.56	0.015	0.016	0.016	0.017	Standard
106	76%	2.30	3.68	3.58	3.50	3.50	0.016	0.017	0.017	0.018	Standard
1037	72%	2.00	3.77	3.68	3.63	3.63	0.015	0.016	0.016	0.017	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.

CORPORATE HEADQUARTERS

Ventec Electronics Co. Ltd.
308 TaiShan Rd,
New District Suzhou,
Jiangsu, P.R. China 215129
T: +86 512-68091810
Email: sales@ventec.com.cn

EMEA REGIONAL HEADQUARTERS

Ventec Europe
Unit 1 Trojan Business Centre,
Tachbrook Park Estate,
Leamington-Spa, CV34 6RH, UK
T: +44 1926-889822
Email: sales@ventec-europe.com

AMERICAS REGIONAL HEADQUARTERS

Ventec USA
21 Water Street, Amesbury,
Massachusetts, MA 01913,
United States of America
T: +1 978-5219700
Email: saleseast@ventec-usa.com

VT-441

PROCESS GUIDE

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

Note: For cores $\leq .005$ ", it is recommended to use the reverse treated copper due to the low profile. The peel strength for RT foil is 1-2lb/in (0.35Kg/m) less than Standard foil.

Core thk. (Inches)	Stack-up	Resin Content	DK				DF				Remark
			@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	
0.0015	1-1027	70%	3.77	3.67	3.60	3.60	0.015	0.016	0.016	0.017	Standard
0.002	1-1037	72%	3.73	3.63	3.58	3.58	0.015	0.016	0.016	0.017	Non-Standard
0.002	1-106	72%	3.73	3.63	3.58	3.58	0.015	0.016	0.016	0.017	Standard
0.003	1-1080	66%	3.83	3.73	3.68	3.68	0.014	0.015	0.015	0.016	Standard
0.004	1-2116	46%	4.35	4.30	4.25	4.20	0.013	0.014	0.014	0.015	Standard
0.004	2-106	72%	3.90	3.81	3.75	3.75	0.015	0.016	0.016	0.017	2ply
0.005	1-2116	55%	4.05	4.00	3.95	3.95	0.013	0.014	0.014	0.015	Standard
0.006	1-1506	45%	4.35	4.30	4.25	4.20	0.012	0.013	0.013	0.014	Standard
0.007	1-7628	41%	4.50	4.45	4.40	4.40	0.012	0.013	0.013	0.014	Standard
0.008	1-7628	46%	4.35	4.30	4.25	4.25	0.012	0.013	0.013	0.014	Standard
0.008	2-2116	46%	4.35	4.30	4.25	4.25	0.012	0.013	0.013	0.014	2ply
0.010	2-2116	55%	4.05	4.00	3.95	3.95	0.013	0.014	0.014	0.015	Standard
0.012	2-1506	45%	4.35	4.30	4.25	4.25	0.012	0.013	0.013	0.014	Standard
0.014	2-7628	41%	4.50	4.45	4.40	4.40	0.012	0.013	0.013	0.014	Standard
0.016	2-7628	46%	4.35	4.30	4.22	4.22	0.012	0.013	0.013	0.014	Standard
0.028	4-7628	41%	4.50	4.45	4.40	4.40	0.012	0.013	0.013	0.014	Standard
0.036	5-7628	43%	4.40	4.35	4.30	4.30	0.012	0.013	0.013	0.014	Standard
0.045	6-7628	46%	4.35	4.30	4.25	4.25	0.012	0.013	0.013	0.014	Standard
0.049	7-7628	41%	4.50	4.45	4.40	4.40	0.012	0.013	0.013	0.014	Standard
0.059	8-7628	44%	4.40	4.35	4.30	4.30	0.012	0.013	0.013	0.014	Standard

CORPORATE HEADQUARTERS

Ventec Electronics Co. Ltd.

308 TaiShan Rd,
New District Suzhou,
Jiangsu, P.R. China 215129

T: +86 512-68091810

Email: sales@ventec.com.cn

EMEA REGIONAL HEADQUARTERS

Ventec Europe

Unit 1 Trojan Business Centre,
Tachbrook Park Estate,
Leamington-Spa, CV34 6RH, UK

T: +44 1926-889822

Email: sales@ventec-europe.com

AMERICAS REGIONAL HEADQUARTERS

Ventec USA

21 Water Street, Amesbury,
Massachusetts, MA 01913,
United States of America

T: +1 978-5219700

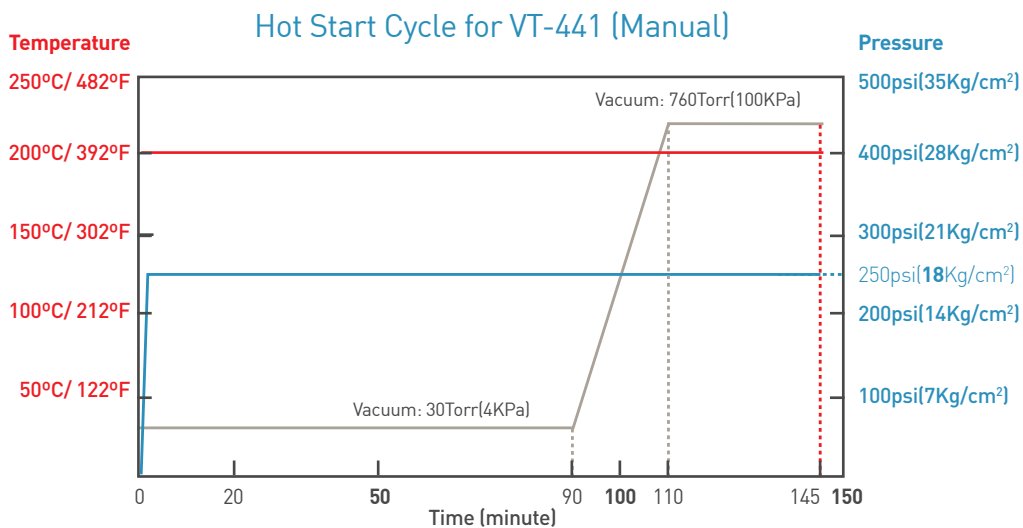
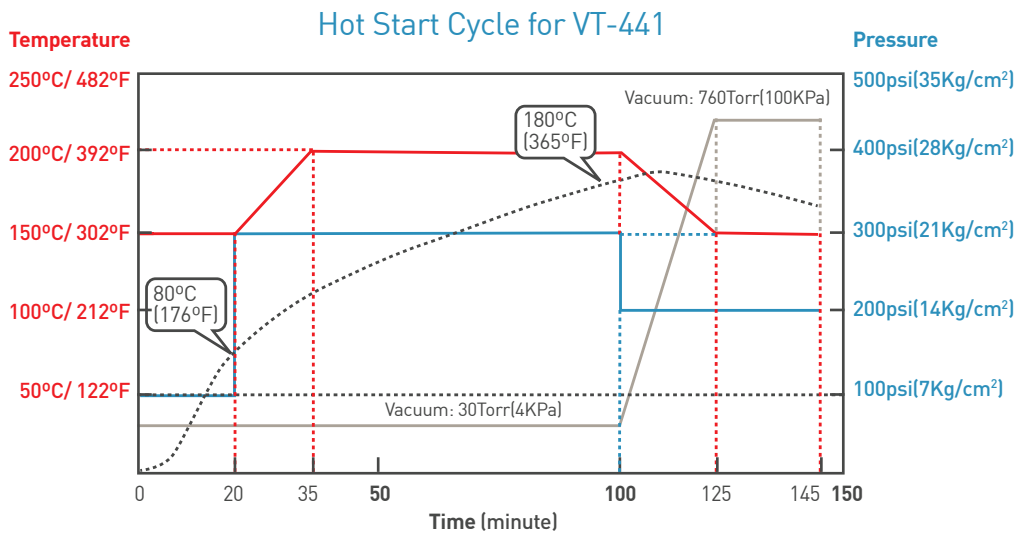
Email: saleseast@ventec-usa.com

www.ventecclaminates.com

VT-441 PROCESS GUIDE

Press Condition

1. Heating rate (Rise of Rate) 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: >50min at more than 180°C (356°F) [Material Temperature]
3. Full Pressure: ≥ 250-300psi
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



CORPORATE HEADQUARTERS

Ventec Electronics Co. Ltd.
308 TaiShan Rd,
New District Suzhou,
Jiangsu, P.R. China 215129
T: +86 512-68091810
Email: sales@ventec.com.cn

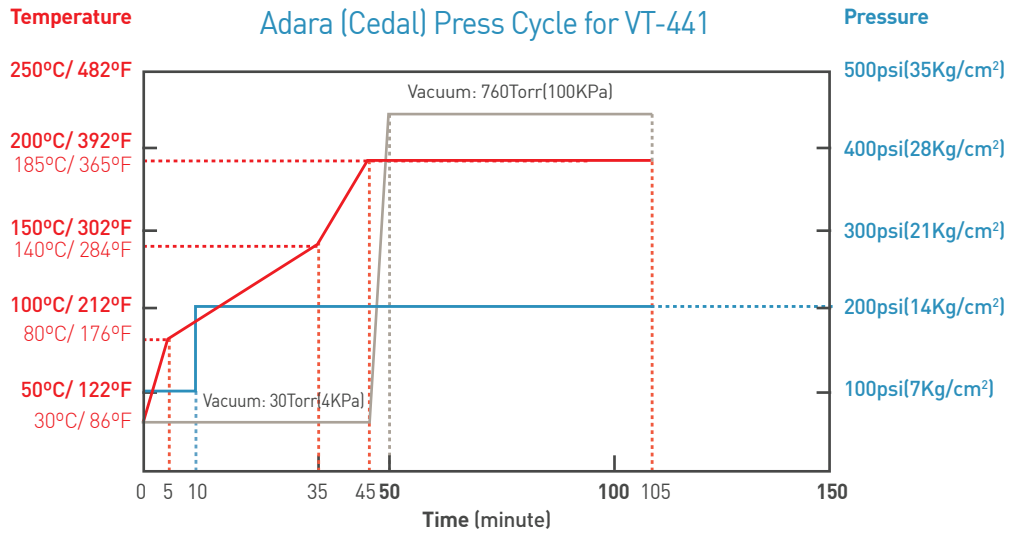
EMEA REGIONAL HEADQUARTERS

Ventec Europe
Unit 1 Trojan Business Centre,
Tachbrook Park Estate,
Leamington-Spa, CV34 6RH, UK
T: +44 1926-889822
Email: sales@ventec-europe.com

AMERICAS REGIONAL HEADQUARTERS

Ventec USA
21 Water Street, Amesbury,
Massachusetts, MA 01913,
United States of America
T: +1 978-5219700
Email: saleseast@ventec-usa.com

VT-441 PROCESS GUIDE



Typical Drilling Condition (φ0.3-1.0 mm) [Recommended]

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	-

Desmearing Process

1. Desmear rate of **VT-441** is less than that of the conventional FR4;
2. Adjustments to the desmear process are necessary for the lead-free materials;
3. Check with your chemical supplier for recommendations.

CORPORATE HEADQUARTERS

Ventec Electronics Co. Ltd.
308 TaiShan Rd,
New District Suzhou,
Jiangsu, P.R. China 215129
T: +86 512-68091810
Email: sales@ventec.com.cn

EMEA REGIONAL HEADQUARTERS

Ventec Europe
Unit 1 Trojan Business Centre,
Tachbrook Park Estate,
Leamington-Spa, CV34 6RH, UK
T: +44 1926-889822
Email: sales@ventec-europe.com

AMERICAS REGIONAL HEADQUARTERS

Ventec USA
21 Water Street, Amesbury,
Massachusetts, MA 01913,
United States of America
T: +1 978-5219700
Email: saleseast@ventec-usa.com