Professional Manufacturer in
Copper Clad Laminates

Ventec

No Flow & Low Flow Prepreg

UL Approval: E214381
Version : Rev. 6

Datasheets & Selection Guideline

VT-42PP
VT-45PP
VT-47PP
VT-447PP
VT-901PP

} 104NF， 106NF/106LF， 1080NF/1080LF

General Information

Ventec offers a kind of No Flow Prepregs consisting of proprietary resin systems specifically formulated for optimal performance in bonding applications requiring minimal resin flow and consistency in lamination. This material brings the fabricator specific thermal characteristics appropriate for use in heat sink bonding, die cavity board (direct chip attachment) and multilayer rigid-flex applications. Ventec has designed this No-Flow prepreg product to meet almost bonding needs. The No-Flow prepreg is designed to bond surfaces together with minimal flow.

***VT-42PP* Modified Epoxy Low-Flow & No-Flow (Tg=140˚C)**

***VT-45PP* Modified Epoxy Low-Flow & No-Flow (Tg=170˚C)**

VT-42/45 is optimized for bonding PWB's to heat sinks, when desired, can be processed at reduced laminating temperatures and pressures to protect devices already mounted on partially stuffed assembled devices.

***VT-47PP* Lead-Free Multifunctional Low-Flow & No-Flow (Tg=170˚C)**

VT-47 is a generation of low flow products designed with enhanced melt rheology for better bond and wetting and using a resin system specifically engineered for lead-free application environments.

***VT-447PP* High Tg, halogen-free & Lead-Free Low-Flow & No-Flow (Tg=170˚C)**

VT-447 is designed to meet friendly environment requirement. It has better bonding ability and could be used for lead free application.

***VT-901PP* Epoxy Modified Polyimide Low-Flow & No-Flow (Tg=200˚C)**

VT-901 is a basic polyimide Low-Flow product. Modified with epoxy for flow control and enhanced adhesion, It is designed for use in polyimide rigid-flex assemblies.

Storage Condition & Shelf Life

		Prepreg	
Storage Condition	**Temperature**	Below 20℃(68℉)	Below 5℃(41℉)
	Relative Humidity	Below 50%RH	/
Retest Time*		3 Months	5 Months

The pre-preg exceeding retest time should be retested.

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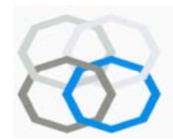
 

No Flow Prepreg

Availability

Product	Part#	Glass Type	Resin Content (%)	Flow Range (mil)	Pressed Thickness (mil)		Equivalent Material
VT-42PP Dicy Cured, Tg140	104NF-75	104	75%	0~30	2.0	1.8	47N
	106NF-68	106	68%	0~30	2.0	1.8	
	106LF-72	106	72%	30~80	2.3	2.1	
	1080NF-60	1080	60%	0~30	2.8	2.7	
	1080LF-64	1080	64%	30~80	3.2	3.0	
VT-45 PP Dicy Cured, Tg170	106NF-66	106	66%	0~30	1.9	1.7	49N
	106LF-72	106	72%	30~80	2.3	2.1	
	1080NF-60	1080	60%	0~30	2.9	2.7	
	1080LF-65	1080	65%	30~80	3.4	3.1	
VT-47 PP Lead Free, Tg170	106NF-68	106	68%	10~50	2.0	1.8	51N
	106LF-72	106	72%	50~100	2.3	2.0	
	1080NF-60	1080	60%	10~50	2.9	2.7	
	1080LF-65	1080	65%	50~100	3.3	3.0	
VT-447 PP Lead Free & Halogen-Free, Tg170	106NF-68	106	68%	10~50	1.9	1.7	/
	106LF-72	106	72%	50~100	2.2	2.0	
	1080NF-60	1080	60%	10~50	2.9	2.7	
	1080LF-65	1080	65%	50~100	3.3	3.1	
VT-901 PP Polyimide, Tg200	106NF-64	106	64%	0~30	2.0	1.8	37N
	106LF-68	106	68%	30~80	2.3	2.1	
	1080NF-58	1080	58%	0~30	2.8	2.6	
	1080LF-62	1080	62%	30~80	3.3	3.1	
					Measured by micrometer	Measured by micro-section	

Remark:

"NF" ---- No Flow PP,

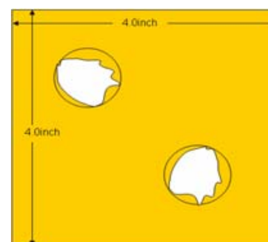
"LF" ---- Low Flow PP,

Right picture shows Flow-in test method: →

1) Press Temperature ---- 171℃

2) 3plys per pressing

* **Built on IPC-TM650, 2.3.17.2**



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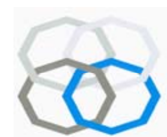

No Flow Prepreg

Property sheet of pressed no flow prepreg

Test Item		Test Condition	Unit	VT-42	VT-45	VT-47	VT-447	VT-901
Glass Transition Temp.(Tg)	DSC	2.4.25	℃	140	170	170	170	200
Decomposition Temp. (Td)	TGA	ASTM D3850	℃	310	305	345	350	390
Electric Strength		2.5.6.2	KV/mm	54	54	54	54	54
Peel strength (1oz)	As Received	2.4.8	Lb/in	10-12	10-12	9-10	8~9	8-9
	After Heated			10-12	10-12	9-10	8~9	8-9
Moisture Absorption	D-24 / 23	2.6.21	%	0.15	0.10	0.10	0.10	0.20
	After PCT	1atm.,121℃, 1hour		0.28	0.12	0.12	0.12	0.22
Z-axis C.T.E	Before Tg	2.4.24	PPM/℃	70	70	70	70	70
	After Tg			300	300	300	300	300
Thermal Stress	Solder Dip 288℃	2.4.13.1	Sec.	>80	>100	>300	>200	>100
Breakdown Voltage	D-48/50+ D0.5/23	2.5.6	KV	>60	>60	>60	>60	>60
Arc Resistance	D-48/50+ D0.5/23	2.5.1	Sec.	70	120	120	120	150
Permittivity (1MHz)	C-24/23/ 50	2.5.5.3,2.5.5.9 2.5.5.5	—	4.3~4.5	4.3~4.5	4.3~4.5	4.3~4.5	4.2-4.4
Dissipation Factor (1MHz)	C-24/23/50	2.5.5.3,2.5.5.9, 2.5.5.5	—	0.018~0.022	0.018~0.022	0.018~0.022	0.018~0.022	0.016~0.020
Flammability	As Received	UL 94	—	V-0	V-0	V-0	V-0	V-0

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

No Flow Prepreg

Selection Guideline

Application Graph ------ For Heat-Sink bonding

Requirement	Prepreg	Flow	Options
Lowest cost option **High Peel strength requirement**	VT-42PP	Low Flow	106LF-72 /**2.1mil/ply** 1080LF-64 /**3.0mil/ply**
		No Flow	*104NF-75* /**1.8mil/ply** *106NF-68* /**1.8mil/ply** *1080NF-60* /**2.7mil/ply**
High performance & High Peel strength requirement	VT-45PP	Low Flow	106LF-72 /**2.1mil/ply** 1080LF-65 /**3.1mil/ply**
		No Flow	*106NF-66* /**1.7mil/ply** *1080NF-60* /**2.7mil/ply**
High performance requirements (High through hole reliability) **Lead free assembly application**	VT-47PP	Low Flow	106LF-72 /**2.0mil/ply** 1080L-F65 /**3.0mil/ply**
		No Flow	*106NF-68* /**1.8mil/ply** *1080NF-60*/**2.7mil/ply**

Note: Specific grades of each material have been developed in response to customer's varying processes and requirements. In general the lower flow values are recommended for heat sink bonding applications.

No Flow Prepreg

Selection Guideline

Application Graph ------ For Rigid-Flex

Application	Prepreg	Flow	Product
Polyimide	VT-901PP	Low Flow &Fill 2oz ↑	106LF-68 /**2.1mil/ply** 1080LF-62 /**3.1mil/ply**
		No Flow	*106NF-64* **/1.8mil/ply** *1080NF-58* **/2.6mil/ply**
Lowest cost option **High Peel strength requirement**	VT-42PP		
High performance & High Peel strength requirement	VT-45PP		
High performance requirements (High through hole reliability) **Lead free assembly application**	VT-47PP		
High performance requirements (High through hole reliability) **Halogen Free Prepreg** **Lead free assembly application**	VT-447PP		
VT-42PP / VT-45PP / VT-47PP / VT-447PP		Low Flow	106LF-72 /**2.0~2.1mil/ply** 1080LF-64/65 /**3.0~3.1mil/ply**
VT-42PP / VT-45PP / VT-47PP / VT-447PP		No Flow	*104NF-75* **/1.8mil/ply** *106NF-66/68* **/1.7~1.8mil/ply** *1080NF-60* **/2.7mil/ply**
Others			*Contact Ventec Tech. Sevice for recommendation*

Note: Some low cost flex-rigid applications may be fabricated using polyester film or other lower temperature materials in place of polyimide film.

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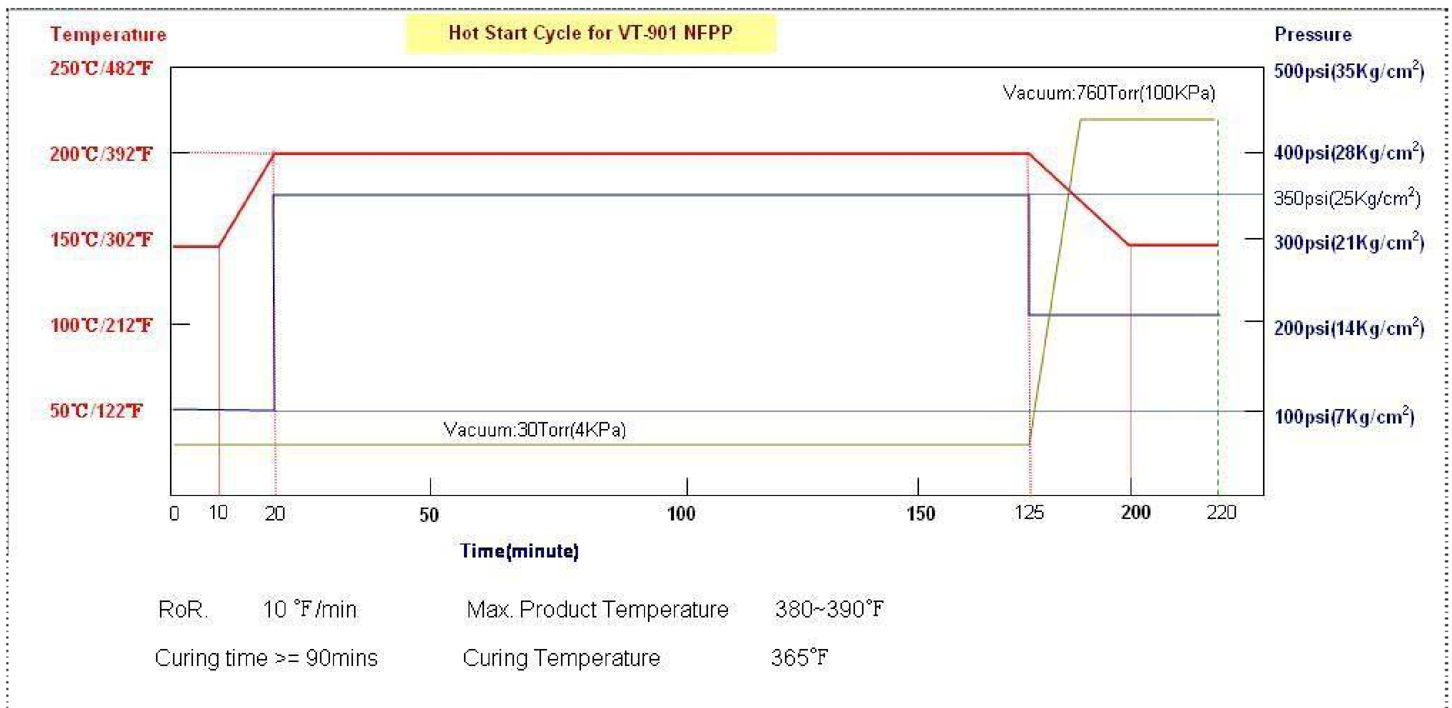
Pressing condition

	VT-42PP	VT-45PP	VT-47PP	VT-447PP	VT-901PP
Heating rate(Rise of Rate) of material	3.0 - 5.0℃/min (5~10℉/min)	3.0 - 5.0℃/min (5~10℉/min)	3.0 - 5.0℃/min (5~10℉/min)	3.0 - 5.0℃/min (5~10℉/min)	2.5 -3.5℃/min (4.5~6.5℉/min)
Curing Temperature	≥170℃	≥180℃	≥185℃	≥185℃	***≥190℃***
Curing Time:	>45min	>50min	>60min	>60min	***>90min***
Vacuuming should be continued until over 140℃(284℉) [Material Temperature]					
Material pressure when hot press: **Start with 100psi, Full pressure: 250~450psi**					
Cold Press condition: Keep Plate @ Room temperature by water; Pressure:100psi; Dwell Time:60minutes					

※ *Contact Ventec technical service to discuss the specific condition.*



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