

# No Flow & Low Flow Prepreg

UL Approval: E214381  
Version : Rev. A1

## Datasheets & Selection Guideline

<b>VT-45PP</b>	}	104NF, 106NF/106LF, 1080NF/1080LF
<b>VT-47PP</b>		
<b>VT-447PP</b>		
<b>VT-901PP</b>		

### General Information

Ventec provides a series of No Flow and Low Flow Prepregs with different glass style and resin content. These products have good bonding and thermal performance in applications of heat sink bonding and rigid-flex board, and have a minimal flow range with a consistent lamination.

#### **VT-45PP High Tg, Low-Flow & No-Flow (Tg=170°C)**

A product designed for bonding heat sinks to PCBs, using Ventec's VT-42/VT-45 resin technology which has been optimized for processing at reduced temperature & pressure to protect previously mounted components on part processed assemblies.

#### **VT-47PP Lead-Free High Tg, Low-Flow & No-Flow (Tg=170°C)**

A generation of phenolic cured low and no flow products using Ventec's VT-47 resin technology with optimized resin rheology designed to enhance bond strength, specifically designed for lead-free assembly processes.

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

VT-447 no flow and low flow product is designed to meet friendly environment requirement. It has better bonding ability and could be used for lead free application, specifically designed for use in rigid-flex application.

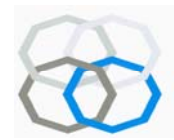
#### **VT-901PP Polyimide Low-Flow & No-Flow (Tg=200°C)**

Polyimide low and no flow product using Ventec's VT-901 resin technology with an epoxy component for flow control and enhanced bond strength designed for use in polyimide rigid-flex applications.

### Storage Condition & Shelf Life

		Prepreg	
Storage Condition	Temperature	Below 23°C (73°F)	Below 5°C (41°F)
	Relative Humidity	Below 55%RH	/
Retest Time*		2 Months	4 Months

**The pre-preg exceeding retest time should be retested.**



## No Flow & Low Flow Prepreg

### Availability

Product	Part#	Glass Type	Resin Content (%)	Flow Range (mil)	Pressed Thickness (mil)	
<b>VT-45 PP</b> Dicy Cured, Tg170	104LF-75	104	75%	60~120	1.9	1.7
	<a href="#">106NF-66</a>	<a href="#">106</a>	<a href="#">66%</a>	<a href="#">10~50</a>	<a href="#">1.9</a>	<a href="#">1.7</a>
	106LF-67	106	67%	60~120	2.1	1.9
	106LF-72	106	72%	60~120	2.3	2.1
	<a href="#">1080NF-60</a>	<a href="#">1080</a>	<a href="#">60%</a>	<a href="#">10~50</a>	<a href="#">2.9</a>	<a href="#">2.7</a>
<b>VT-47 PP</b> Lead Free, Tg170	1080LF-64	1080	64%	60~120	3.4	3.1
	<a href="#">106NF-68</a>	<a href="#">106</a>	<a href="#">68%</a>	<a href="#">10~50</a>	<a href="#">2.0</a>	<a href="#">1.8</a>
	106LF-72	106	72%	60~120	2.3	2.0
	<a href="#">1080NF-60</a>	<a href="#">1080</a>	<a href="#">60%</a>	<a href="#">10~50</a>	<a href="#">2.9</a>	<a href="#">2.7</a>
<b>VT-447 PP</b> Lead Free & Halogen-Free, Tg170	1080LF-65	1080	65%	60~120	3.3	3.0
	<a href="#">106NF-68</a>	<a href="#">106</a>	<a href="#">68%</a>	<a href="#">10~50</a>	<a href="#">1.9</a>	<a href="#">1.7</a>
	106LF-72	106	72%	60~120	2.2	2.0
<b>VT-901 PP</b> Polyimide, Tg200	<a href="#">1080NF-60</a>	<a href="#">1080</a>	<a href="#">60%</a>	<a href="#">10~50</a>	<a href="#">2.9</a>	<a href="#">2.7</a>
	1080LF-65	1080	65%	60~120	3.3	3.1
	<a href="#">106NF-64</a>	<a href="#">106</a>	<a href="#">64%</a>	<a href="#">10~50</a>	<a href="#">2.0</a>	<a href="#">1.8</a>
<b>VT-901 PP</b> Polyimide, Tg200	106LF-65	106	65%	60~120	2.1	1.9
	106LF-68	106	68%	60~120	2.3	2.1
	<a href="#">1080NF-60</a>	<a href="#">1080</a>	<a href="#">60%</a>	<a href="#">10~50</a>	<a href="#">2.8</a>	<a href="#">2.6</a>
	1080LF-62	1080	62%	60~120	3.3	3.1

Measured by  
micrometer

Measured by  
micro-section

#### Remark:

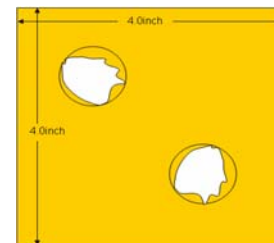
“NF” ---- No Flow PP,

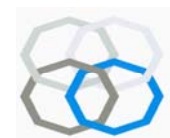
“LF” ---- Low Flow PP,

Right picture shows Flow-in test method: →

- 1) Press Temperature ---- 171°C
- 2) 3plys per pressing

\* Built on IPC-TM650, 2.3.17.2

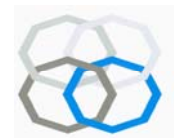




## Property sheet of pressed no flow prepreg

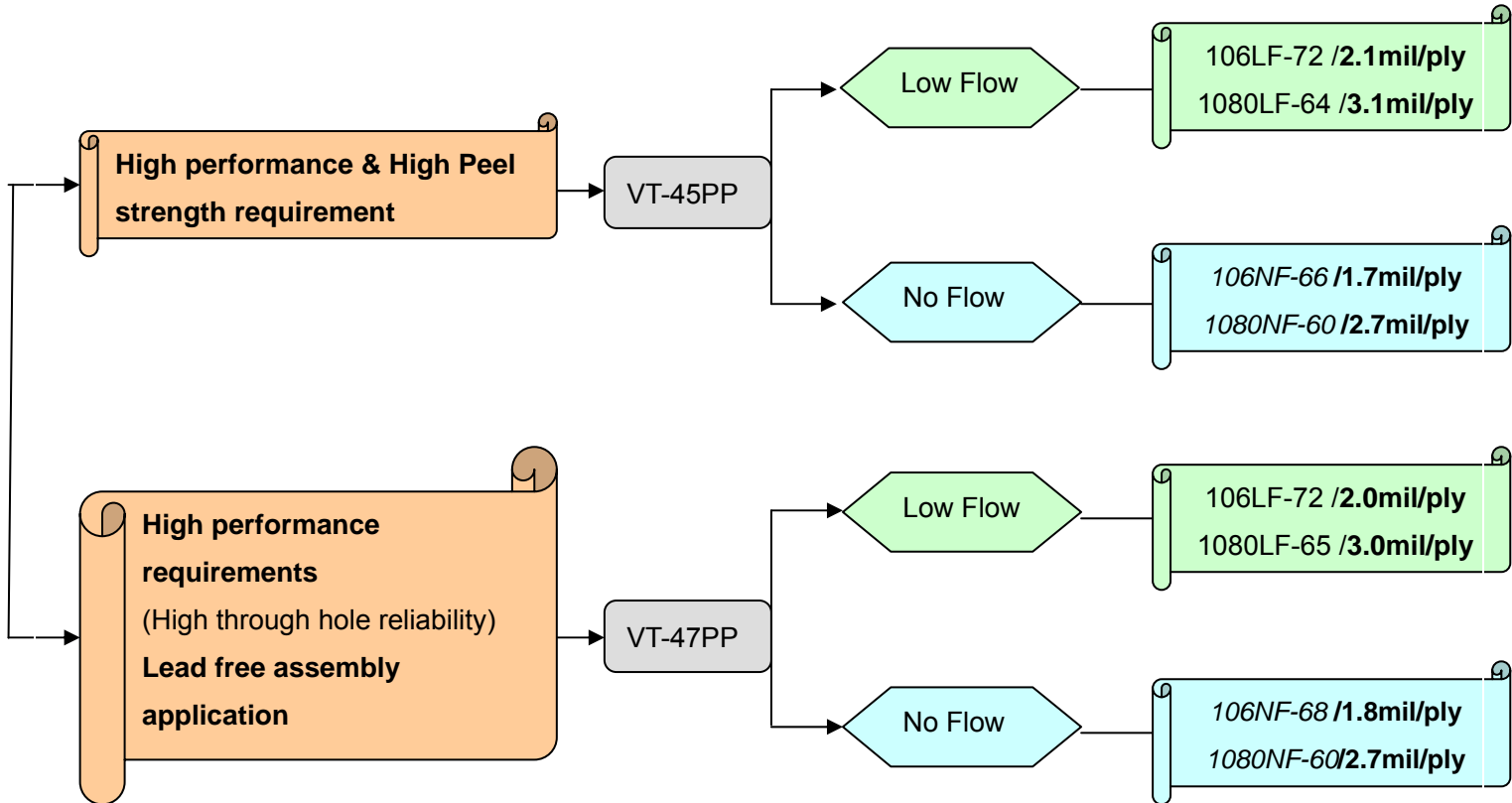
Test Item		Test Condition	Unit	VT-45	VT-47	VT-447	VT-901
<b>Glass Transition Temp.(Tg)</b>	DSC	2.4.25	°C	170	<u>170</u>	<u>170</u>	200
<b>Decomposition Temp. (Td)</b>	TGA	ASTM D3850	°C	<u>305</u>	<u>345</u>	<u>350</u>	<u>390</u>
<b>Electric Strength</b>		2.5.6.2	KV/mm	54	54	54	54
<b>Peel strength (1oz)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

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

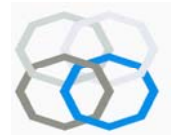


## Selection Guideline

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



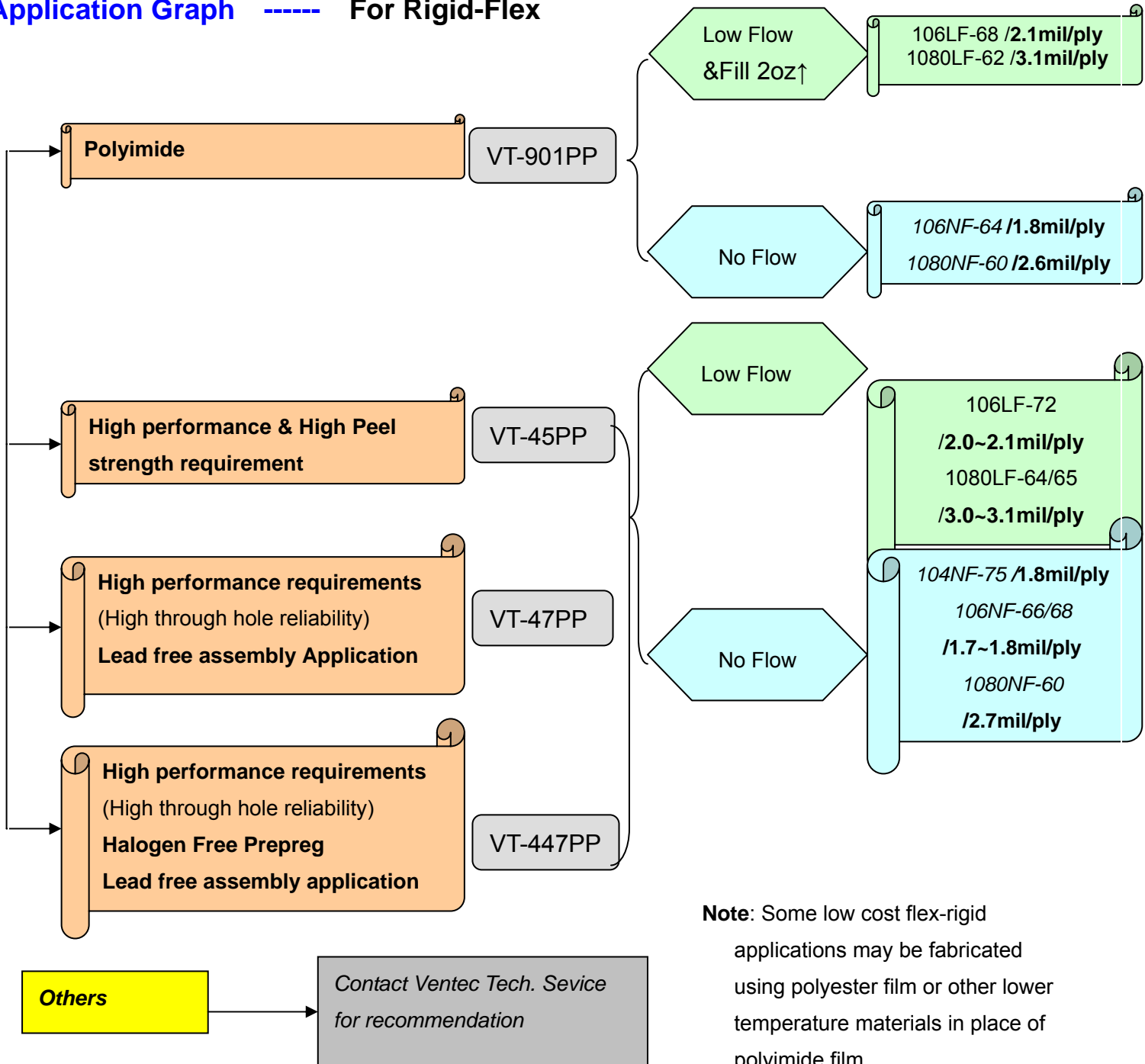
**Note:** Specific grades of each material have been developed in response to customer's varying processes and requirements. In general the lower flow values are recommended for heat sink bonding applications.



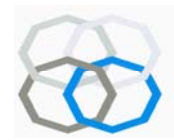
# No Flow & Low Flow Prepreg

## Selection Guideline

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



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



# No Flow & Low Flow Prepreg

## Pressing condition

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

※ Contact Ventec technical service to discuss the specific condition.

