

WP-S5001

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High Viscosity General Prepreg Epoxy Resin System



Wells Advanced Materials (Shanghai) Co., Ltd.

Creating Partners.

Introduction

WP-S5001 produced by WAM is a cured epoxy resin at 125°C, which achieves best balance of static (flexural/compressive strength and elasticity) and dynamic (impact strength, fatigue) physical properties. It is widely used in manufacturing bicycle, hockey sticks, tennis rackets, golf clubs and other high performance sporting goods. Its stickiness and viscosity are very suitable for prepreg processing. There is few difference in properties (viscosity and flexibility) along with temperature changes. WP-S5001's storage period is 4 weeks under room temperature and 1 year under -18°C.

Features and Advantages

- Low resin loss rate.
- Excellent impact resistance.
- Hot-melt resin/solvent-free: excellent working environment; products with minimize porosity and high quality.
- Suitable viscosity and stickiness.
- Reasonable price and good quality.
- Long storage life: Store for 4 weeks under 25°C and the humidity is not higher than 65%.

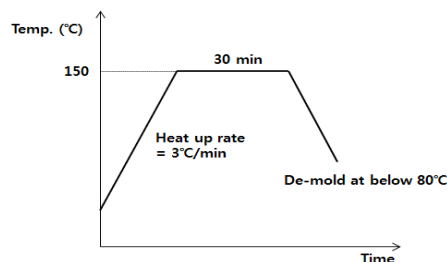
Recommended processing and applications

- Molding technique (inflation autoclave, autoclave, hot press plate)
: bicycle, hockey sticks, tennis rackets, helmet, machinery part, etc.
- Rolling process: fishing rods, golf clubs, bicycle, etc.

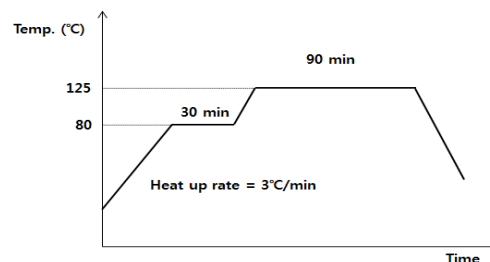
※ Not suitable for vacuum infusion which may recommend WP-S1000.

Recommended Curing Condition

- Curing: 90 mins~30 mins (120~150°C)
 - Tubular (golf club, fishing rod) Curing: 30mins × 80°C + 90mins × 125°C
- * Curing condition: required mending according to product thickness, transfusion, and curing type.



Example of curing condition



Standard curing condition for tubular

Storage

The resin system should be stored in cool and dry place or cold storage. After taking out the resin from cold storage, place the resin to room temperature, and then open the PE sealing bag to prevent condensation.

Shelf Life	Temperature (°C)	Humidity (%)	Storage Period
	25	≤65	4 Weeks
	0	≤65	3 Months
	-18	-	1 Year

Processing

1. Melting Condition

- Oven temperature: 70°C-80°C ×30-80 mins.
- Required time differs according to the temperature and resin melting quantity.

2. Coating Condition

- Temperature between 73°C-80°C.
- Increase the temperature if the coating quantity is low to get better surface.

3. Impregnating Condition

- Temperature between 80-100°C. Increase the temperature properly if the impregnation is NOT sufficient. The temperature varies with different production speed and product thickness.
- Note that the resin is easy to cure above 100°C.
- Adjust the tension, gap, pressure and other conditions according to the fiber and weight per unit area.

Prepreg Shelf Life

Temperature (°C)	Time
25	4 Weeks
0	3 Months
-18	1 Year

Resin Properties

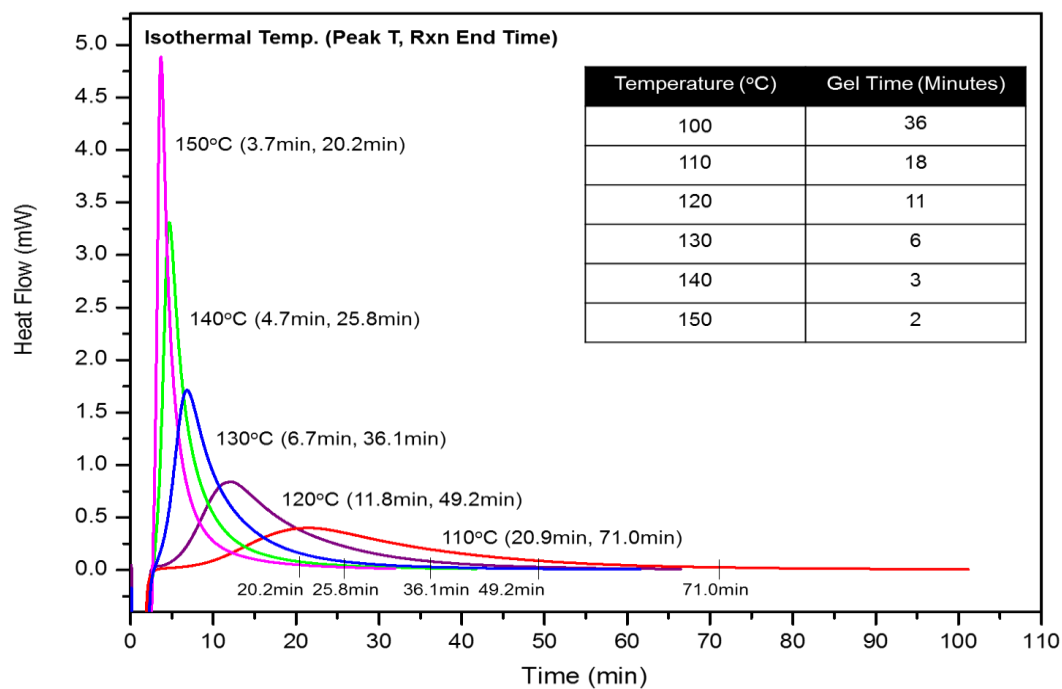
– Viscosity

	Viscosity (mPa.s, @70°C)	Viscosity (mPa.s, @80°C)
WP-S5001	28,000-38,000	10,000-15,000

— Gel Time

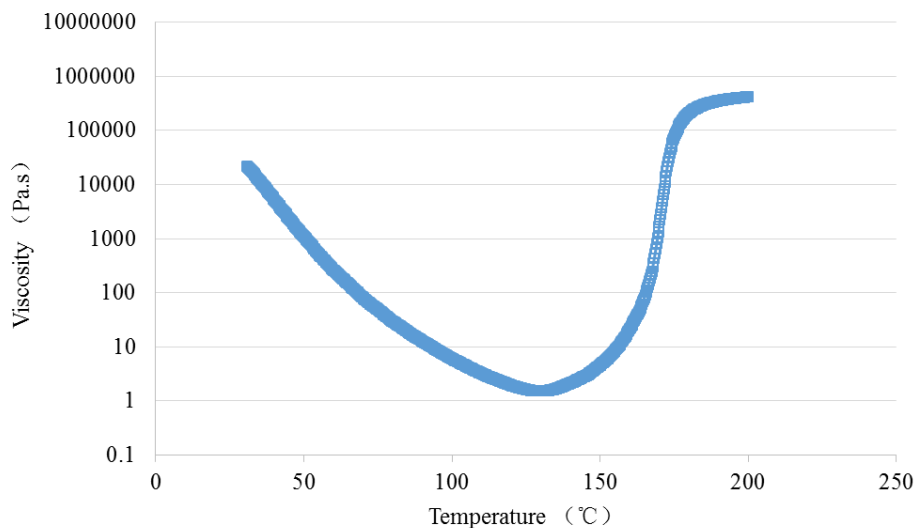
	Gel Time (s, @120°C)
WP-S5001	580-780

Isothermal DSC Curve and Gel Time



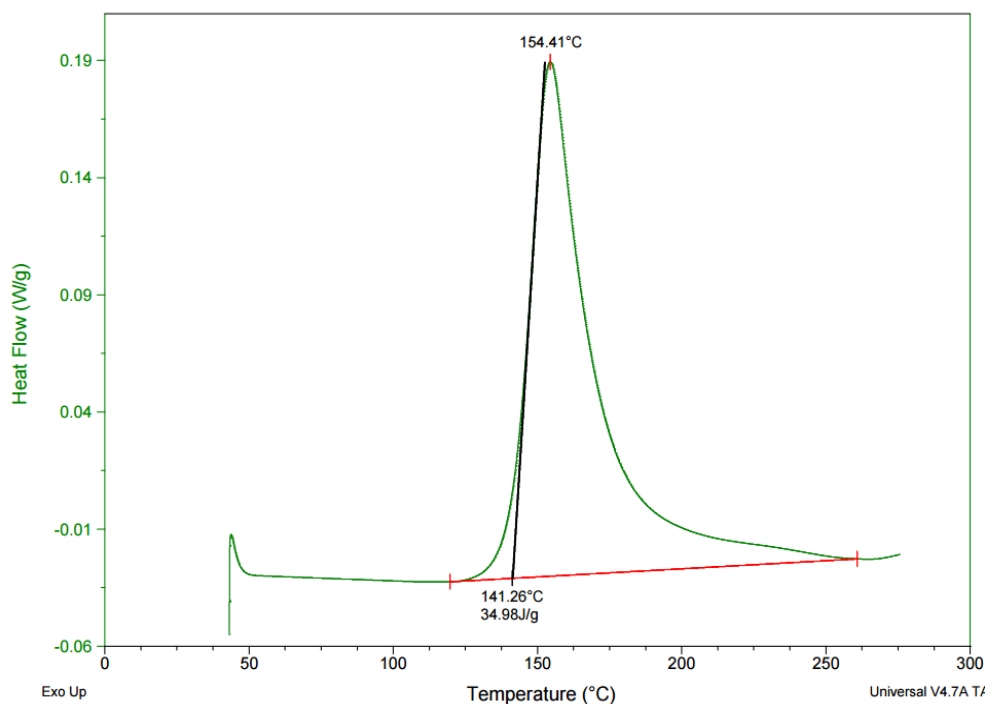
Temperature- Viscosity Curve

— Heating Rate (3°C/min)



DSC Curve (Curing)

— Heating Rate (10°C/min)



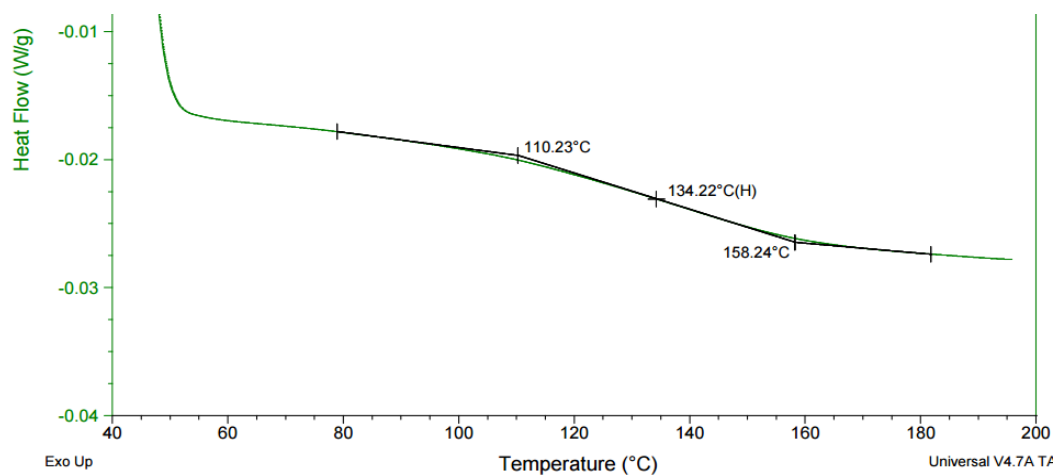
Cured Resin Properties

— Density

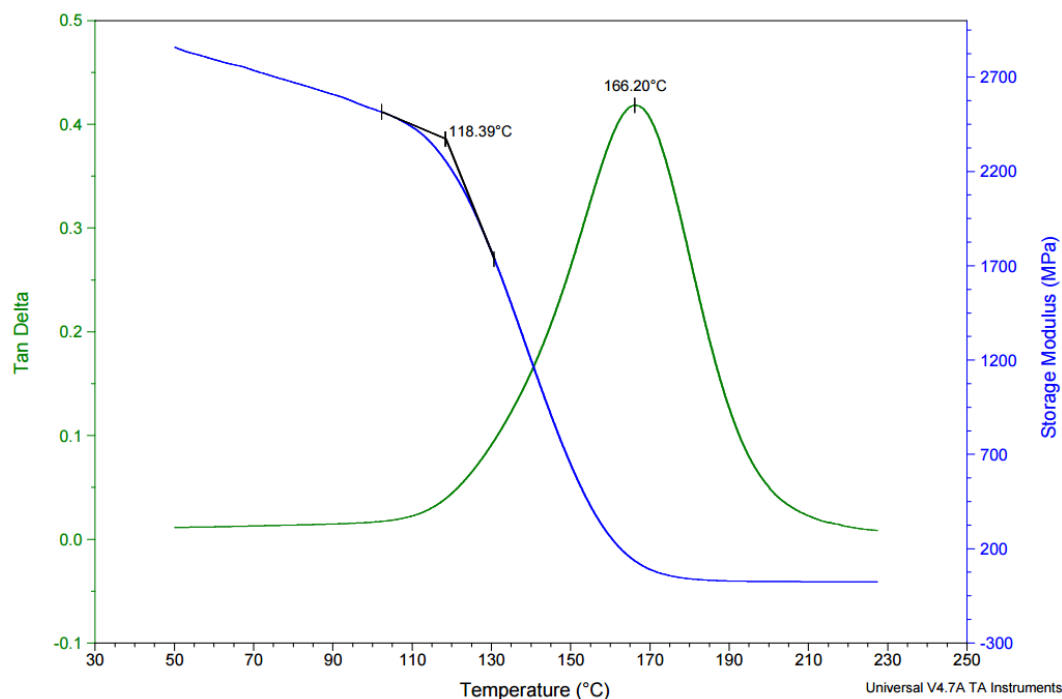
Property	WP-S5001
Density	1.20 g/cm ³

Glass Transition Temperature (T_g)

— By DSC (GB/T 19466.2-2004):137°C



- By DMA (ASTM E1545): 118°C (Onset of Storage), 166°C (Tan delta Peak Max)



Mechanical Properties

Test	Method	Unit	Value
Tensile Strength	GB/T 2567	MPa	76
		(psi)	(1.1 x 10 ⁴)
Tensile Modulus	GB/T 2567	MPa	2956
		(psi)	(4.3x 10 ⁵)
Elongation at Break	GB/T 2567	%	3
Flexural Strength	GB/T 2567	MPa	146
		(psi)	(2.1 x 10 ⁴)
Flexural Modulus	GB/T 2567	MPa	3494
		(psi)	(5.1 x 10 ⁵)
Impact Strength	GB/T 2567, Unnotched Charpy	KJ/m ²	20

Package

Resin

Carton box

25kg/box

Handling Precautions

- | | | |
|---|----|---|
| Personal Protection Equipment... | 1. | Wear protection gloves to avoid direct contact with skin. |
| Respiratory Protection..... | 2. | No special protection. |
| Eyes Protection..... | 3. | Chemical anti-spattering goggles and face guard are recommended. |
| Body Protection..... | 4. | Use a protection coat which can be resisted, protection shoes, gloves, coat and emergency shower equipment according to situations. |

First aid

- | | | |
|------------------------|----|--|
| Skin..... | | Wash with warm soap water for at least 5 minutes or the contaminant removed. |
| Eyes..... | 1. | Contamination of the eyes by resin, hardener or mix should be treated immediately by flushing with clean, running water or physiologic saline for 20 minutes or the contaminant removed. |
| | 2. | A doctor should then be consulted. |
| Inhalation..... | 1. | Anyone taken ill after inhaling vapors should be moved outdoors immediately. |
| | 2. | In all cases of doubt, call for medical assistance. |

Important notice:

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