



# VTC401

## Epoxy Component Prepreg

### Introduction

VTC401 is an epoxy resin system designed to give an initial cure at low temperatures or snap cure at high temperatures with enhanced toughness, honeycomb bondability and higher service temperature, giving greater flexibility in component manufacture. It can be supplied on a variety of fabrics in UD format to meet your cost and manufacturing requirements.

**Typical applications:** *General purpose – Visual*

**Available variants** – *VTC401B, black pigmented*  
– *VTC401LV, high tack*

### Key Features & Benefits

- Cure temperature from **65°C to 140°C**
- Service temperature up to **120°C**
- Low CTE and shrinkage
- Work life at 20°C: **21 days**
- Storage life at -18°C: **12 months**
- Very low VOC content – no added solvents during manufacture
- **Snap cure** available for hot press moulding – consult SHD for details

### Storage & Out Life

This material should be kept frozen at -18°C. It must be kept sealed in a polythene bag which must not be opened until fully thawed to room temperature. If the material is not fully used, then the material must be resealed in the polythene bag to prevent moisture absorption.



## Cure Cycles & performances

### CURE CYCLE OPTIONS:

Temperature	Duration	Tg
65°C (minimum)	16 hours	75°C
80°C	4 hours	90°C
100°C	1 hour	110°C
120°C	45 minutes	130°C
140°C (maximum)	15 minutes	130°C

- Curing Schedule is meant to be a guide only and is subject to local conditions.
- To avoid exotherm particular care must be taken with thick laminates.  
Ramp rates must not exceed **3.0°C** per minute during **initial cure**.  
Ramp rates must not exceed **0.3°C** per minute during **post cure** (free standing).

- Typical Tg:

<b>DMA – Dry Tg</b>	120°C for 1hr	Tg E' Onset	<b>130 °C</b>	<i>Modified ASTM D7028 (Single Cantilever)</i>
		Tg Peak Tan $\delta$	<b>139 °C</b>	

Tests performed on **VTC401-G280T-42%RW-1250** laminates



## Cured Material Properties

Tests performed on **VTC401-C245T-HS-3K-42%RW** laminates

(245gsm 2x2 twill, T300 3k carbon fabric)

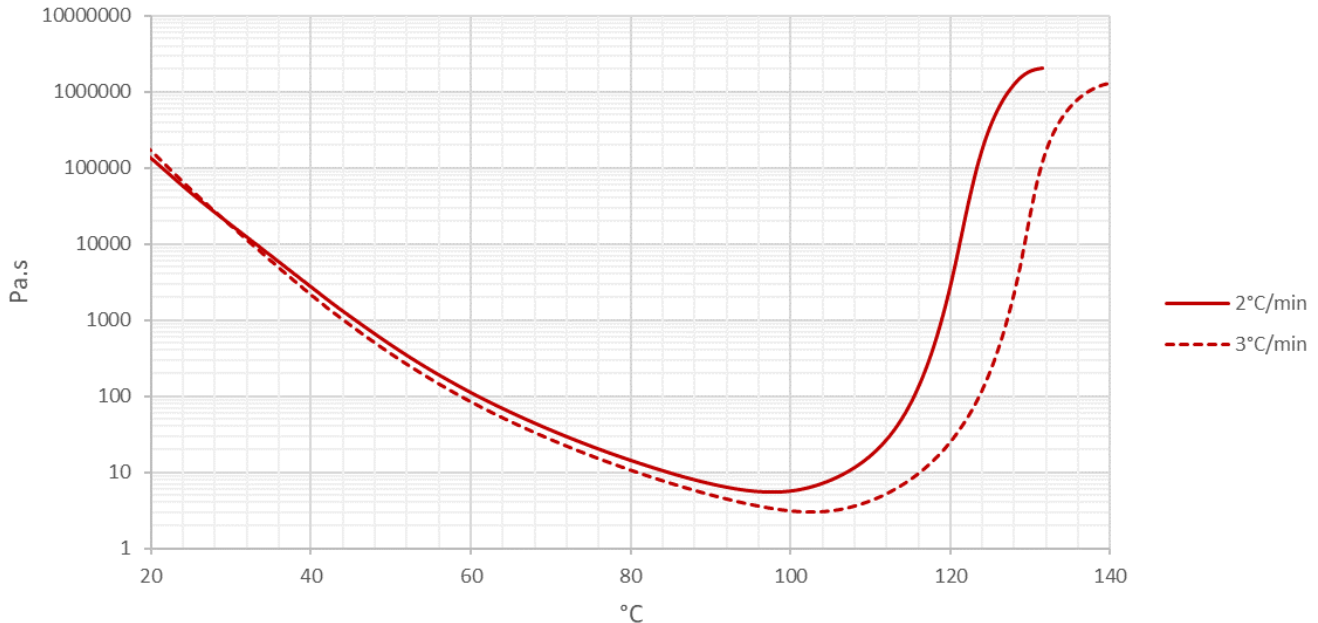
Test	Results	Standard		
<b>Vf</b>	Fibre volume fraction	<b>48.84</b>	<b>%</b>	<i>BS EN ISO 14127 Method B</i>
<b>CPT</b>	Cured ply thickness	<b>0.285</b>	<b>mm</b>	<i>BS EN ISO 14127 Method B</i>
<b>Tensile 0°</b>	Tensile strength	<b>634</b>	<b>MPa</b>	<i>BS EN ISO 527-4</i>
	Tensile modulus	<b>55.7</b>	<b>GPa</b>	
<b>Tensile 90°</b>	Tensile strength	<b>638</b>	<b>MPa</b>	
	Tensile modulus	<b>55.1</b>	<b>GPa</b>	
<b>Compressive 0°</b>	Compressive strength	<b>684</b>	<b>MPa</b>	<i>prEN 2850 Type B</i>
<b>Compressive 90°</b>	Compressive strength	<b>598</b>	<b>MPa</b>	
<b>Flexural 0°</b>	Flexural strength	<b>873</b>	<b>MPa</b>	<i>BS EN ISO 14125</i>
	Flexural modulus	<b>51.2</b>	<b>GPa</b>	
<b>Flexural 90°</b>	Flexural strength	<b>854</b>	<b>MPa</b>	
	Flexural modulus	<b>49.4</b>	<b>GPa</b>	
<b>In-Plane Shear ±45°</b>	In-Plane shear strength (ultimate)	<b>121.6</b>	<b>MPa</b>	<i>BS EN ISO 14129</i>
<b>Interlaminar Shear 0°</b>	Interlaminar shear strength	<b>71.3</b>	<b>MPa</b>	<i>BS EN ISO 14130</i>
<b>Interlaminar Shear 90°</b>	Interlaminar shear strength	<b>72.2</b>	<b>MPa</b>	
<b>DMA – Dry Tg</b>	Tg E' Onset	<b>123</b>	<b>°C</b>	<i>Modified ASTM D7028 (Single Cantilever)</i>
	Initial cure Tg Peak Tan δ	<b>134</b>	<b>°C</b>	

Mechanical testing carried out at 21±2°C. Initial cure: 10mins at 80°C followed by 45mins at 120°C, autoclave 6bar. All figures in this report are actual test results and have not been normalised. Testing was either completed by SHD Composites laboratories, or independently by UKAS approved organisations. Complete test reports can be supplied independently upon request.



## Viscosity Profile

Testing carried out using a rotational rheometer.



## Health and Safety

This material contains epoxy resin which can cause allergic reactions with skin contact and must avoid repeated and prolonged skin contact.

Please refer to the product Safety Data Sheet before using this material. The following precautions must be taken when using epoxy resin preregs:

- Overalls must be worn.
- Impervious gloves must be worn.
- Curing schedule is meant to be as a guide only and is subject to local conditions.
- To avoid exotherm, particular care must be taken with thick laminates.
- Ramp rates must not exceed 3.0°C/min during initial cure and 0.3°C/min during post cure.

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