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LTC216

Epoxy Tooling Prepreg

Introduction

LTC216 Prepreg is designed to cure at low temperatures whilst giving the potential for high temperature tooling. Typical initial cure cycles are 40 hrs at 45°C or 16 hrs at 55°C, followed by a 200°C post cure. LTC216 can be supplied on a variety of fabrics to meet your cost and manufacturing requirements.

Product variants: LTC216B *Black pigmented, default on all glass reinforcements*
 LTC216-3 *Longer outlife*

Typical applications: *Low CTE tooling*

Key Features & Benefits

- Cure temperature from **45°C to 70°C**
- Service temperature up to **210°C** after post cure
- Low CTE and shrinkage
- Work life at 20°C: **7 days**
- Storage life at -18°C: **12 months**
- Very low VOC content – no added solvents during manufacture
- Excellent handleability in warmer conditions

Available Reinforcements (standard)

Carbon Surface ply	– 200g/m ² 2x2 twill		
Carbon Bulk ply	– 650g/m ² 2x2 twill	For standard 1:8:1 layup	Laminate thickness ~5.5mm
	– 1000g/m ² 2x2 twill	For 1:5:1 layup	Laminate thickness ~5.3mm
Glass Surface ply	– 300g/m ² 8 harness satin		
Glass Bulk ply	– 870g/m ² 2x2 twill	For standard 1:8:1 layup	Laminate thickness ~5.2mm

Note – other reinforcements available on request. Please enquire for details.

Issued 01st August 2019

Note: The information and assistance provided herein is for your consideration without legal responsibility. Users are required to perform verification and testing to confirm that the product meets with their requirements.

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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

Temperature		Duration	Tg
45°C	(minimum)	40 to 50 hours*	55°C
55°C		16 to 18 hours*	65°C
60°C		10 hours	70°C
70°C	(maximum)	5 hours	80°C
200°C	Post cure	8 hours	220°C

**The initial cure duration will depend on part and tool geometry, volume, mass, etc.
Please consult SHD Composites for details.*

- 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 **1.0°C** per minute during **initial cure**.
Ramp rates must not exceed **0.3°C** per minute during **post cure** (free standing).

Volatile content	< 1.0%
Fibre volume fraction	50 to 60%
Voidage (autoclave cure)	< 1.0%

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Material Properties

Tests performed on **LTC216-C(t)200-1250 SHD0081** laminates (SURFACE PLY):

Test	Results	Standard
Tension 0°	Tensile strength	469 MPa
	Tensile modulus	52.8 GPa
	Poisson's Ratio	-
Compression 0°	Compressive strength	647 MPa
	Compressive modulus	48.3 GPa
In Plane Shear ±45°	IPS strength	82 MPa
	IPS modulus	3.00 GPa
Interlaminar Shear Strength 0°	Interlaminar shear strength	60.5 MPa

Tests performed on **LTC216-C(t)650-1250 SHD0082** laminates (BULK PLY):

Test	Results	Standard
Tension 0°	Tensile strength	605 MPa
	Tensile modulus	61.3 GPa
	Poisson's Ratio	0.07
Compression 0°	Compressive strength	511 MPa
	Compressive modulus	55.2 GPa
In Plane Shear ±45°	IPS strength	68 MPa
	IPS modulus	4.18 GPa
Interlaminar Shear Strength 0°	Interlaminar shear strength	38.6 MPa

Tests performed on **LTC216** typical 1-8-1 laminates:

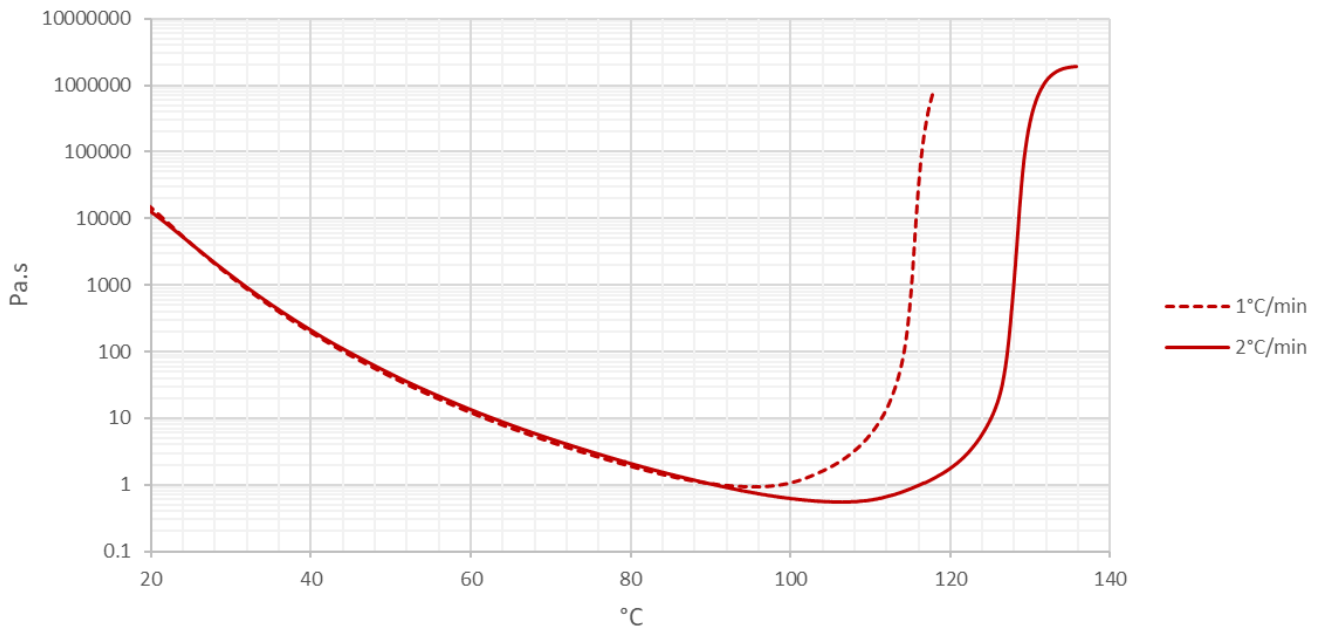
Test	Results	Standard
DMA	Tg E' Onset	218 °C
	Tg Tan δ Peak	242 °C

Mechanical testing carried out at 23±2°C, 50±5% RH. Initial cure 16 hrs @ 55°C @ 1°C/min, 90psi. Post cure 8 hrs @ 200°C @ 0.3°C/min, free standing. All mechanical testing was completed independently by UKAS approved organisations. Complete test reports can be supplied independently upon request. All figures are actual test results and have not been normalised.



Viscosity Profile

Measured 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 prepregs:

- 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 1.0°C/min during initial cure and 0.3°C/min during post cure.

SHD Composite Materials Ltd cannot accept any liability for injury or damage where the above precautions have not been taken or where the material is used for any purpose other than its intended use.

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