



LTB310-1

High bio-content Epoxy Tooling Prepreg

Introduction

LTB310-1 is an epoxy resin tooling system with 30% bio content derived from a renewable source and is designed to cure at low temperatures whilst giving the potential for high temperature tooling. It can be supplied on a variety of fabrics to meet your cost and manufacturing requirements.

Typical applications: *Low CTE tooling*

Key Features & Benefits

- **30%** certified bio-derived content
- Cure temperature from **45°C** to **70°C**
- Low resin viscosity ideal for heavyweight reinforcements
- Service temperature up to **200°C** after post cure
- Low CTE and shrinkage
- Work life at 20°C: **4 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 – 1000g/m ² 2x2 twill for 1:5:1 layup
Glass Surface ply	– 300g/m ² 8 harness satin
Glass Bulk ply	– 870g/m ² 2x2 twill

Please consult SHD Technical Team for other reinforcement options including those with flax and flax/carbon hybrids
Note – other reinforcements available on request. Please enquire 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
45°C (minimum)	40 hours	55°C
55°C	16 hours	65°C
60°C	8 hours	70°C
70°C (maximum)	4 hours	80°C
200°C Post cure	8 hours	200°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 **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%

- Typical Tg:

DMA – Dry Tg	55°C for 16hrs (IC)	Tg E' Onset	201 °C	<i>Modified ASTM D7028 (Single Cantilever)</i>
	with 200°C for 2hrs (PC)	Tg Peak Tan δ	230 °C	

Tests performed on **LTB310-1-C(t)650** laminates

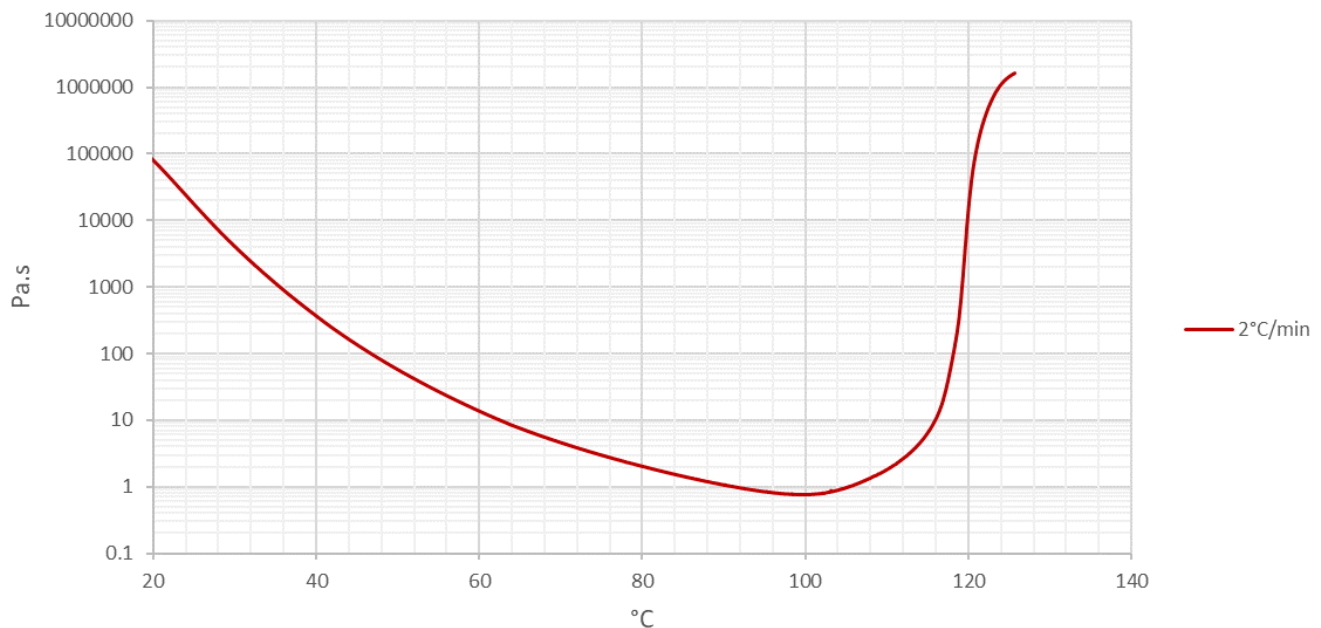
Cured Material Properties

Contact SHD for additional data.



Viscosity Profile

Testing carried out at $23\pm 2^{\circ}\text{C}$, $50\pm 5\%$ RH. Ramp rate: $2^{\circ}\text{C}/\text{min}$.



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 $1.0^{\circ}\text{C}/\text{min}$ during initial cure and $0.3^{\circ}\text{C}/\text{min}$ during post cure.

Disclaimer: Technical advice, instruction, data or recommendation, whether verbal or in writing, is given in good faith. The SHD company providing any such advice gives no warranty or guarantee, whether express or implied, in relation to such advice.

Customers must carry out their own tests and assessments as necessary in order to determine the quality and suitability of the product for their particular application and circumstances. Such testing should be performed under conditions identical to those to which the final component/product may be subjected. Values listed in any SHD document are for typical properties of the product or substance in question and are not intended to be used in establishing either statistical specifications nor engineering basis values. They do not constitute either minimum or maximum values for the product or substance in question.