Unit 4
The Reservation
Sleaford Enterprise Park
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LTC210

Epoxy Tooling Prepreg

Introduction

LTC210 Prepreg is designed to cure at low temperatures whilst giving the potential for high temperature tooling. Typical initial cure cycles are 24 hrs at 45°C or 10 hrs at 55°C, followed by a 200°C post cure. LTC210 can be supplied on a variety of fabrics to meet your cost and manufacturing requirements.

Product variants:	*LTC210B*	*Black pigmented, default on all glass reinforcements*
	LTC210-1	*Lower viscosity, Higher tack*

Typical applications: *Low CTE tooling*

Key Features & Benefits

- Cure temperature from **45°C** to **70°C**
- 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	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.

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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

CURE CYCLE OPTIONS:

Temperature		Duration		Tg
45°C	(minimum)	24 to 40	hours*	55°C
55°C		10 to 16	hours*	65°C
60°C		8	hours	70°C
70°C	(maximum)	4	hours	80°C
200°C	Post cure	8	hours	210°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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Cured Material Properties

*Tests performed on **LTC210-C(t)200-1250 SHD0127** laminates (SURFACE PLY):*

Test	Results			Standard
Tension 0°	Tensile strength	**516**	**MPa**	*BS EN ISO 527-4*
	Tensile modulus	**50.6**	**GPa**	
	Poisson's Ratio	**0.05**		
Compression 0°	Compressive strength	**641**	**MPa**	*prEN 2850 Type B*
	Compressive modulus	**46.8**	**GPa**	
In Plane Shear ±45°	IPS strength	**73**	**MPa**	*EN 6031*
	IPS modulus	**2.90**	**GPa**	
Interlaminar Shear Strength 0°	Interlaminar shear strength	**50.4**	**MPa**	*BS EN ISO 14130*

*Tests performed on **LTC210-C(t)650-1250 SHD0128** laminates (BULK PLY):*

Test	Results			Standard
Tension 0°	Tensile strength	**667**	**MPa**	*BS EN ISO 527-4*
	Tensile modulus	**60.5**	**GPa**	
	Poisson's Ratio	**0.07**		
Compression 0°	Compressive strength	**399**	**MPa**	*prEN 2850 Type B*
	Compressive modulus	**56.3**	**GPa**	
In Plane Shear ±45°	IPS strength	**57**	**MPa**	*EN 6031*
	IPS modulus	**3.90**	**GPa**	
Interlaminar Shear Strength 0°	Interlaminar shear strength	**33.9**	**MPa**	*BS EN ISO 14130*

*Tests performed on **LTC210** typical 1-8-1 laminates:*

Test	Results			Standard
DMA	Tg E' Onset	**202**	**°C**	*AITM 1-0003 Issue 3*
	Tg Tan δ Peak	**221**	**°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.

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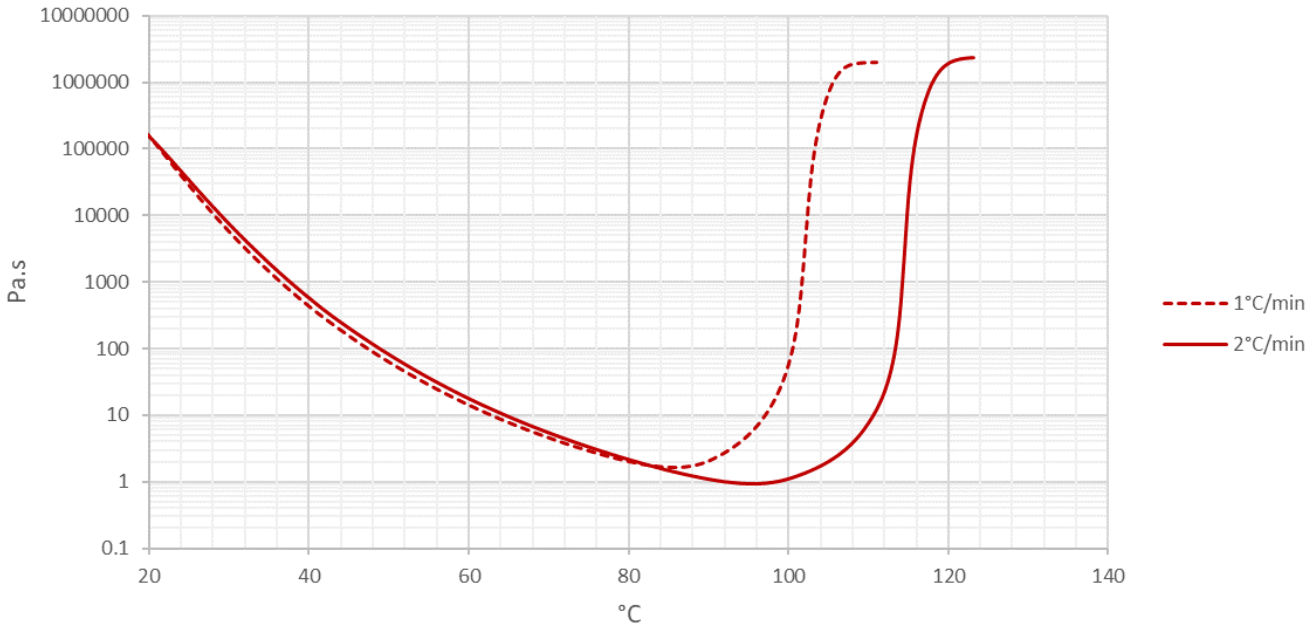
Viscosity Profile

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.