



MTC700

Enhanced Structural Component Material

Introduction

MTC700 is an outstanding high strain, highly toughened epoxy prepreg system with dual cure and high Tg capabilities. Designed for high load bearing structures within the motorsport, high-performance automotive and aerospace markets.

MTC700 performs excellently with a range of fibres, offering high energy absorbing, G1c crack propagation and interlaminar properties, combined with high strain-to-failure characteristics. The maximum Tg Onset of MTC700 is circa 200°C after a post-cure and 160°C after initial cure only.

MTC700 is supported by an extensive mechanical database and is available in both woven fabric and unidirectional formats on typically short lead-times.

Key Features & Benefits

- Cure temperature from **135°C to 180°C**
- Proven mechanical integrity up to **150°C**
- Work life at 20°C: **30 days**
- Storage life at -18°C: **24 months**
- Very low VOC content – no added solvents during manufacture
- High strain-to-failure epoxy matrix
- Designed to maximise fibre properties



Processing, Cure Cycles & Properties

MTC700 prepreg materials have been optimised for autoclave cure.

CURE CYCLE OPTIONS:

Cure option	Temperature	Duration	Tg
Initial cure	135°C	3 hours	~160°C
Post cure	180°C	2 hours	~200°C

- Curing schedules to be used as a guide only and is subject to local conditions.
- Alternative cure cycles are possible, please consult SHD technical for further information.
- 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:

DMA – Dry Tg	Cure: 135°C for 3hr	Tg E' Onset	165 °C	<i>Modified ASTM D7028 (Single Cantilever)</i>
		Tg Peak Tan δ	178 °C	
	Cure: 135°C for 3hr	Tg E' Onset	203 °C	<i>Modified ASTM D7028 (Single Cantilever)</i>
	Post cure: 180°C for 2hrs	Tg Peak Tan δ	212 °C	

Tests performed on **MTC700-C200T-T800-6K-38%RW** laminates



Cured Material Properties

Material 1: **MTC700-C200T-IM7-6K-42%RW-1250**

Material 2: **MTC700-UD140-M46J-33%RW-300P**

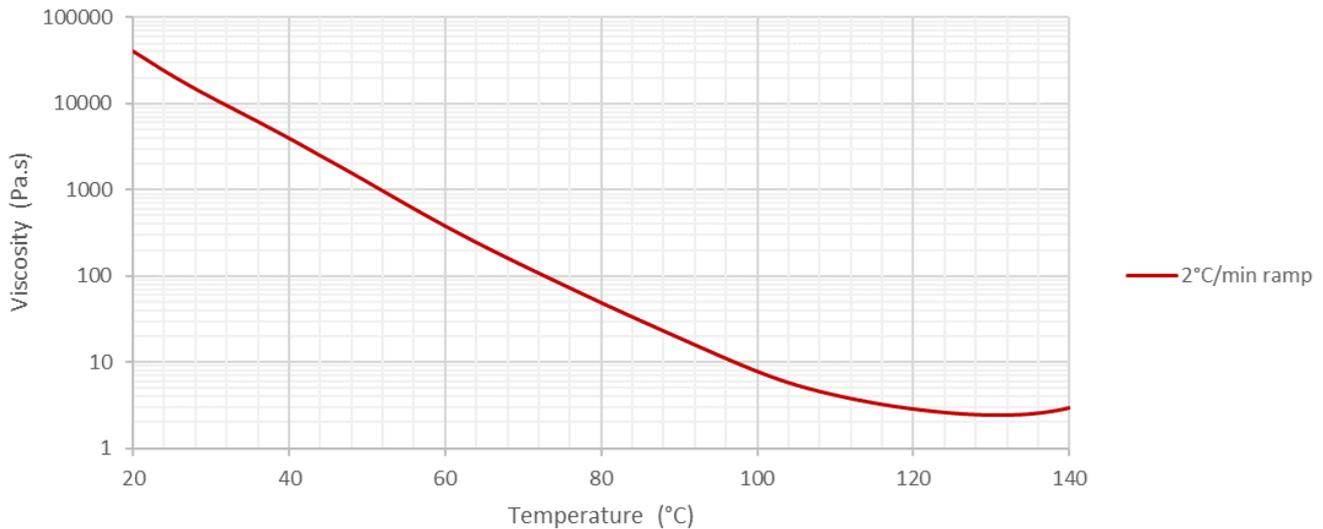
Test	Results	Material		Unit	Standard
		1	2		
Vf	Fibre volume fraction	51.57	57.15	%	<i>BS EN ISO 14127 Method B</i>
CPT	Cured ply thickness	0.222	0.133	mm	<i>BS EN ISO 14127 Method B</i>
Tensile 0°	Tensile strength	1177	1994	MPa	<i>BS EN ISO 527-4</i>
	Tensile modulus	68.2	226.6	GPa	
	Poisson's ratio	0.06	0.26	-	
Compressive 0°	Compressive strength	910	1030	MPa	<i>prEN 2850 Type B</i>
	Compressive modulus	62.2	207.3	GPa	
Flexural 0°	Flexural strength	1156	1328	MPa	<i>BS EN ISO 14125</i>
	Flexural modulus	64.3	222	GPa	
In-Plane Shear ±45°	IPS strength (5% strain)	98.3	-	MPa	<i>BS EN ISO 14129</i>
	IPS strength (ultimate)	152.7	77.2	MPa	
	IPS modulus	4.95	5.17	GPa	
Interlaminar Shear 0°	Initial Cure – RT Testing	96.4	90.5	MPa	<i>BS EN ISO 14130</i>
	Post Cure – RT Testing	94.0	87.2	MPa	
G1c Fracture Toughness	Initial Crack	328	145	J/m ²	<i>ASTM D5528-13</i>
	Actual Crack	793	123	J/m ²	
	Propagation	853	198	J/m ²	
DMA – Dry Tg	Tg E' Onset	162	166	°C	<i>Modified ASTM D7028 (Single Cantilever)</i>
	Initial cure	Tg Peak Tan δ	173	177	
DMA – Dry Tg	Tg E' Onset	198	202	°C	
	Post cure - 180°C 2hrs	Tg Peak Tan δ	207	211	

Mechanical testing carried out at 21±2°C. "Autoclave" curing schedule: initial cure of 3hrs at 135°C, 6bar pressure. Post cure of 2hrs at 180°C, free-standing. 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.

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.

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.