

Technical Data Sheet

Evopreg[®] EPT120

Long outlife, flexible cure temperature epoxy prepreg for tooling applications

Introduction

Evopreg[®] EPT120 tooling prepregs are designed to help composite tooling manufacturers improve the flexibility and efficiency of their tooling manufacturing operations, by providing a combination of extended out-life and flexible curing cycles.

With an out-life of 10 days, Evopreg[®] EPT120 prepregs are ideally suited to the production of larger, more complex tools, or to the batch production of multiple tools, ahead of a single (e.g. weekly) scheduled cure. For applications where rapid turnaround is critical, Evopreg[®] EPT120 prepregs can be fully cured in a single-shot ramped cure.

The prepregs can be supplied with a range of reinforcement fibres and fabric constructions. They require low pressure autoclave processing for optimum surface finish and are suitable for a range of applications including automotive, motorsport, sporting goods and general industrial.

Evopreg[®] EPT120 prepregs are supplied with a black pigmented resin as standard.

Key Features & Benefits

- Flexible cure temperature 50-150 °C
- Service temperature up to 150 °C (after post-cure, or high temperature ramped cure)
- 10 days out-life at room temperature
- 12 months storage life at -18 °C
- Good tack and drape
- Toughened
- Excellent surface finish
- Available on a range of reinforcement fabrics

Processing & Curing

To optimise surface finish:

- Autoclave cure recommended with a low pressure e.g. 3.5 bar (50 psi).
- Vacuum debulking is recommended after the 1st or 2nd ply and then every subsequent 4-5 plies.
- A suitable debulking stage is 30 minutes at room temperature using a perforated release film and breather fabric.
- For the final cure a non-perforated release film should be used with a layer of breather fabric.

The times indicated in the tables below are minimum cure times. If in doubt regarding the accuracy of the temperature controller or process it is recommended to add extra time.

- Cure times may need to be extended to account for thermal lag in large tools.
- Oven cure with vacuum only pressure (1 bar) is possible with this system at 65 °C. However some surface pitting may occur which may need filling afterwards. Please contact us for more details.

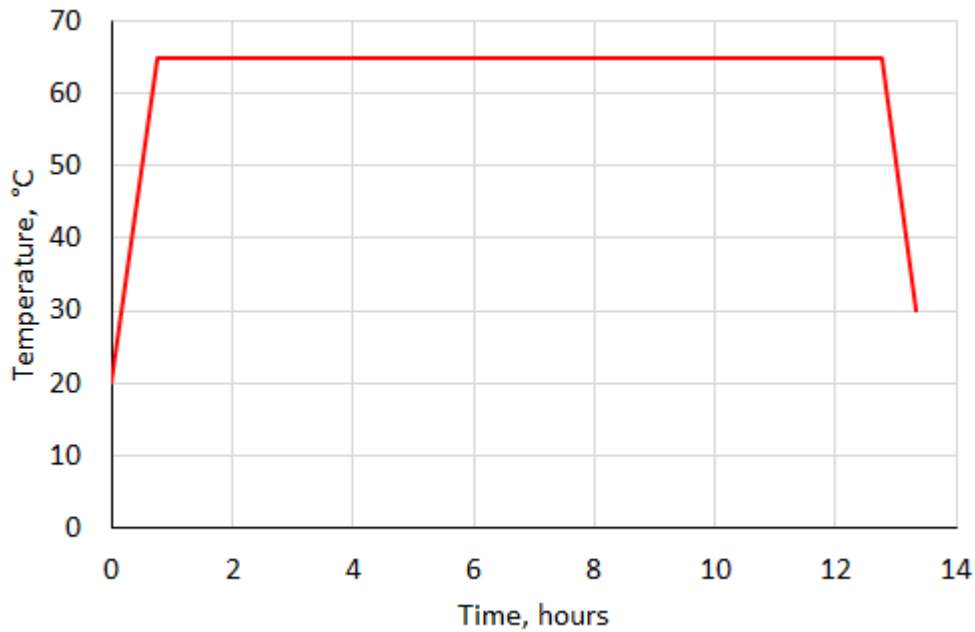
Initial Cure

Suggested initial cure cures (on-pattern) are shown below:

Cure temperature	Ramp rate	Minimum cure time	Glass transition temperature, Tg	
			Tg, onset E'	Tg, peak tan δ
50 °C	1 °C/min	40 hours	57 °C	74 °C
55 °C	1 °C/min	24 hours	63 °C	81 °C
65 °C * (recommended)	1 °C/min	12 hours	81 °C	101 °C

* Lowest temperature suitable for out-of-autoclave cure

Suggested initial cure cycle (ramp rate 1 °C/min, dwell 12 hours at 65 °C):



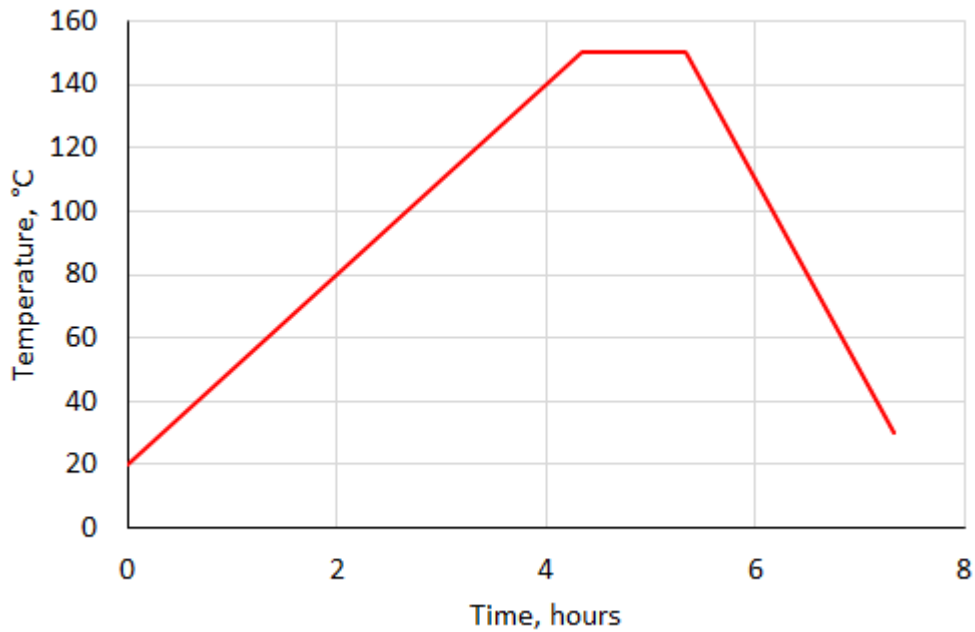
Post-Cure

Suggested free-standing post-cures (off-pattern):

			Glass transition temperature, DMA Tg	
Post-cure temperature	Ramp rate	Minimum cure time	Tg, onset E'	Tg, peak tan δ
130 °C	0.5 °C/min	1 hour	141 °C	170 °C
150 °C	0.5 °C/min	1 hour	158 °C	176 °C

- Ramp rate for post-cure should not exceed 0.5 °C/min.
- Care should be taken to heat slowly and steadily to avoid distortion during post-cure, larger moulds may require additional support.

Suggested post-cure schedule (ramp rate 0.5 °C/min, dwell 1 hour at 150 °C):

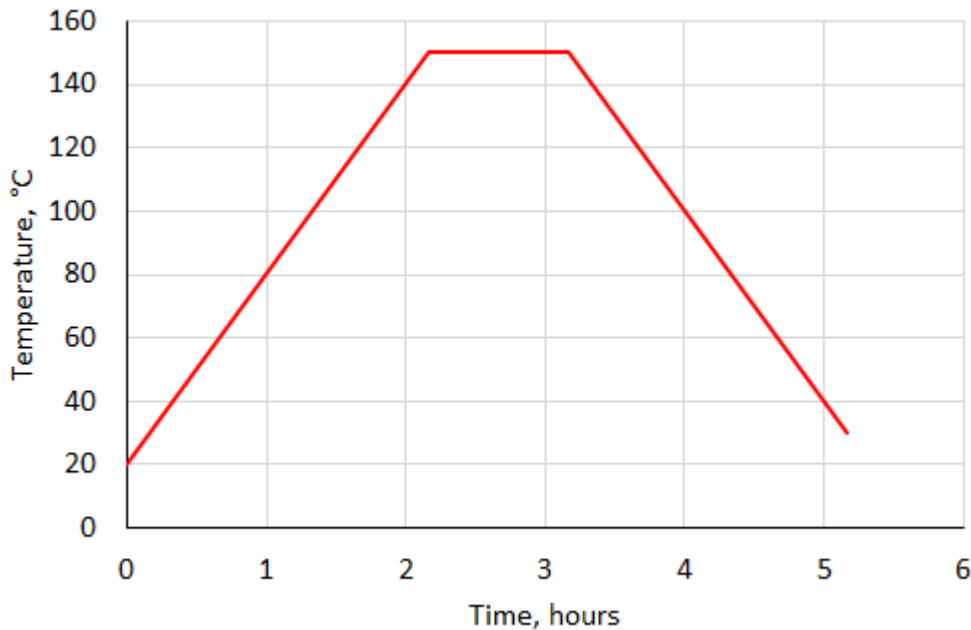


Single-shot cure

Suggested single-shot cure options for faster turnaround tooling where thermal expansion is not critical and pattern is not sensitive to thermal shock (e.g. metallic patterns).

Cure temperature	Ramp rate*	Minimum cure time	Glass transition temperature, Tg	
			Tg, onset E'	Tg, peak tan δ
130 °C	1 °C/min	1 hour	142 °C	181 °C
150 °C	1 °C/min	1 hour	157 °C	179 °C

Suggested single-shot cure schedule (ramp rate 1 °C/min, dwell 1 hour at 150 °C):



Available Products

Evopreg® EPT120 prepregs are available with a wide range of reinforcements, including woven, non-crimp stitched and unidirectional fabrics. Standard products are as follows:

- Carbon 205 g/m² 2x2 twill 3K surface ply
- Carbon 650 g/m² 2x2 twill 12K bulking ply

For other reinforcements, including glass and ampliTex™ flax, please contact us.

Packaging

The material is typically delivered in rolls and with a silicone coated release paper on the bottom and a polythene release film on the top. Typical packaging - 76 mm (3") diameter cardboard core, polythene bag, reusable cable ties, cardboard box and end supports. Where relevant, multiple boxes are typically stacked on a standard wooden pallet, strapped and covered with stretch wrap. Other packaging may be available on request. We recommend retaining the boxed packaging to protect the material during storage.

Storage

The material should ideally be stored in a freezer at -18°C and sealed in a polythene bag. To protect the material, we recommend storing it in its original box with the end supports. To avoid moisture condensation, allow the material to defrost fully and reach room temperature before opening the polythene bag. Typical thaw time for a full roll is 4-6 hours. Keep the material sealed in a polythene bag when not in use to prevent moisture absorption. Out-life at room temperature is 10 days. Storage life at -18°C is 12 months.

Health & Safety

Please refer to the Safety Data Sheet (SDS) before use. This material contains epoxy resin and fibres which can cause irritation to skin and eyes and allergic reactions. Wear appropriate PPE including overalls and impervious gloves, and ensure adequate ventilation. Exothermic reactions can occur when curing epoxy resins, and particular care must be taken when curing thick laminates.

Disclaimer

The information provided here is believed to be accurate but should be considered indicative only. It is the responsibility of the customer to check the suitability of the product for their specific application prior to use.

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