Technical Data Sheet

Evopreg® EPC300

Medium temperature cure epoxy prepregs for component applications

Introduction

Evopreg® EPC300 component prepregs are based on a medium temperature curing, toughened epoxy resin system, formulated specifically for high performance, ease of lay-up and excellent surface finish.

The prepregs can be supplied with a range of reinforcement fibres and fabric constructions. They can be consolidated by vacuum bagging, autoclave or press moulding and are designed for a range of applications including automotive, motorsport, sporting goods and general industrial.

For details on our ampliTex™ flax reinforced EPC300 prepregs, please refer to our Technical Data Sheet "Evopreg® ampliTex™ EPC300 - TDS".

Key Features & Benefits

- Flexible cure temperature 80-120°C
- Service temperature up to 130°C
- Suitable for vacuum bag/oven, autoclave and press moulding
- 30 days out-life at room temperature
- 12 months storage life at -18°C
- Good tack and drape
- Toughened
- Excellent adhesion to core materials, including honeycomb
- Excellent surface finish
- Available on a wide range of reinforcement fabrics

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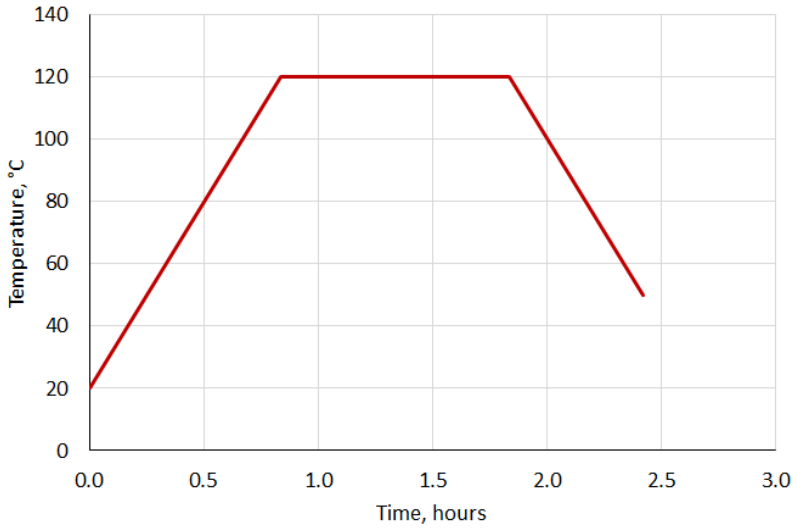
Processing & Curing

The prepregs can be processed using standard techniques including vacuum bag/oven, autoclave and press moulding. Suggested cure cycles are shown below.

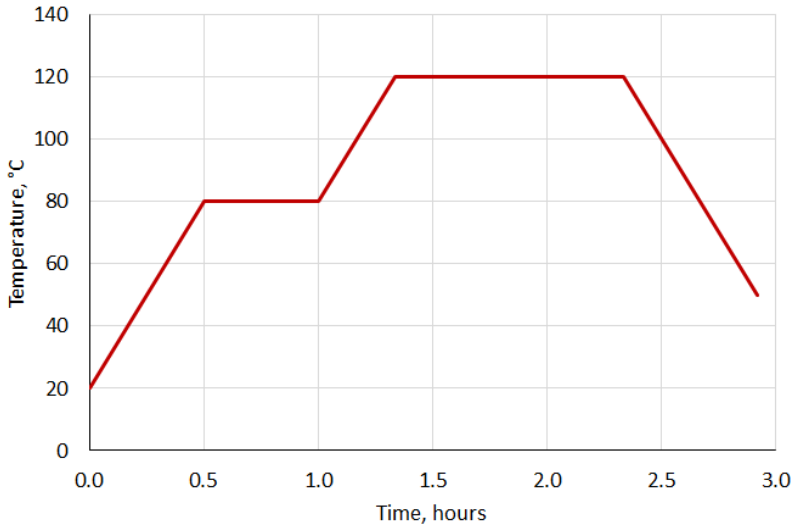
		Glass transition temperature, Tg	
Cure temperature	**Minimum cure time**	**Tg, onset E'**	**Tg, peak tan δ**
80°C	12 hours	88°C	107°C
120°C	1 hour	123°C	142°C

- Recommended ramp rate 1-3°C/min
- Cure times may need to be extended to account for thermal lag in large tools
- Optional post-cure 130°C for 1 hour - Tg onset E' 124°C, Tg peak tan δ 145°C
- Tg data for laminates made from a woven carbon-reinforced epoxy prepreg (Evopreg® EPC300-C205T-HS-3K-42)

Suggested cure cycle for standard autoclave cures at 120°C:

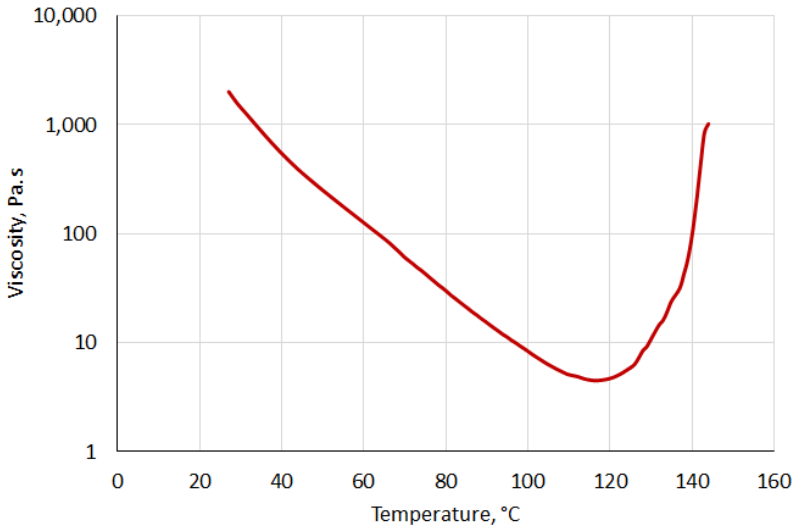


Alternative cure cycle to optimise surface finish for vacuum bag/oven cures at 120°C:



Viscosity Profile

Plate-on-plate, ambient temperature 25°C, shear rate $20s^{-1}$, ramp rate 2°C/min:



Composite Properties

Mechanical Properties of Monolithic Laminates

Carbon

Evopreg® EPC300-C205T

Typical data for laminates made from Evopreg® EPC300 205g/m^2 2x2 twill high strength carbon fibre prepreg (Evopreg® EPC300-C205T-HS-3K-42-1250) cured in an autoclave for 1 hour at 120°C and 6 bar pressure.

Property	Result	Test method
Fibre content by volume, Vf	47 %	-
Density	1.48 g/cm^3	-
Cured ply thickness	0.24 mm/ply	-
Flexural strength, 0°	827 MPa	ISO 14125
Flexural modulus, 0°	48.2 GPa	ISO 14125
Tensile strength, 0°	617 MPa	ISO 527-4
Tensile modulus, 0°	59.2 GPa	ISO 527-4
Compressive strength, 0°	631 MPa	ISO 14126
Compressive modulus, 0°	49.2 GPa	ISO 14126
Apparent interlaminar shear strength (ILSS), 0°	70.8 MPa	ISO 14130
In-plane shear strength, ±45°	73 MPa	ISO 14129[1]
In-plane shear modulus, ±45°	2.9 GPa	ISO 14129
Out-of-plane shear (13) strength	71 MPa	ASTM D5379-19e1
Out-of-plane shear (13) modulus	2.7 GPa	ASTM D5379-19e1

1. No clear failure, value taken at 5% strain

Evopreg® EPC300-C380T

Typical data for laminates made from Evopreg® EPC300 380 g/m^2 2x2 twill high strength carbon fibre prepreg (Evopreg® EPC300-C380T-HS-12K-40-1250) cured in an autoclave for 1 hour at 120°C and 6 bar pressure.

Property	**Result**	**Test method**
Typical fibre content by volume, Vf	48%	-
Density	1.44 g/cm^3	-
Cured ply thickness	0.44 mm/ply	-
Tensile strength, 0°	648 MPa	ISO 527-4
Tensile modulus, 0°	57.2 GPa	ISO 527-4
Compressive strength, 0°	434 MPa	ASTM D6641
Apparent interlaminar shear strength (ILSS), 0°	56 MPa	ISO 14130
In-plane shear strength, ±45°	64 MPa	ISO 14129 [1]
In-plane shear modulus, ±45°	3.5 GPa	ISO 14129
Out-of-plane shear (13) strength	66 MPa	ASTM D5379-19e1
Out-of-plane shear (13) modulus	2.6 GPa	ASTM D5379-19e1

1. No clear failure, value taken at 5% strain

Evopreg® EPC300-C650T

Typical data for laminates made from Evopreg® EPC300 650g/m^2 2x2 twill high strength carbon fibre prepreg (Evopreg® EPC300-C650T-HS-12K-38-1250) cured in an autoclave for 1 hour at 120°C and 6 bar pressure.

Property	**Result**	**Test method**
Fibre content by volume, Vf	51%	-
Density	1.49 g/cm^3	-
Cured ply thickness	0.69 mm/ply	-
Flexural strength, 0°	737 MPa	ISO 14125
Flexural modulus, 0°	46.0 GPa	ISO 14125
Tensile strength, 0°	709 MPa	ISO 527-4
Tensile modulus, 0°	55.0 GPa	ISO 527-4
Compressive strength, 0°	402 MPa	ASTM D6641
Apparent interlaminar shear strength (ILSS), 0°	57.3 MPa	ISO 14130
In-plane shear strength, ±45°	64 MPa	ISO 14129 [1]
In-plane shear modulus, ±45°	3.4 GPa	ISO 14129
Out-of-plane shear (13) strength	68 MPa	ASTM D5379-19e1
Out-of-plane shear (13) modulus	3.0 GPa	ASTM D5379-19e1

1. No clear failure, value taken at 5% strain

Glass

Evopreg® EPC300-G300S

Typical data for laminates made from Evopreg® EPC300 300g/m^2 8HS 7781 style glass fibre prepreg (Evopreg® EPC300-G300S-7781-38-1270) press cured for 1 hour at 120°C and 3.5 bar pressure.

Property	Result	Result, normalized 50% Vf	Test method
Fibre content by volume, Vf	55-58%	50%	-
Density	1.98 g/cm^3	-	-
Cured ply thickness	0.21 mm/ply	-	-
Flexural strength, 0°	781 MPa	676 MPa	ISO 14125
Flexural modulus, 0°	29.8 GPa	25.8 GPa	ISO 14125
Tensile strength, 0°	519 MPa	471 MPa	ISO 527-4
Tensile modulus, 0°	31.0 GPa	28.2 GPa	ISO 527-4
Apparent interlaminar shear strength (ILSS), 0°	60.7 MPa	-	ISO 14130

Available Products

Evopreg® EPC300 prepregs are available with a wide range of reinforcements, including woven, non-woven, non-crimp stitched and unidirectional fabrics in the following fibres:

- Carbon
- Glass
- ampliTex™ Flax (see separate Technical Data Sheet for details)
- Aramid
- Hybrids

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 - 76mm (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 full roll is 4-6 hours. Keep the material sealed in the polythene bag when not in use to prevent moisture absorption. The cable tie that seals the polythene bag is reusable. Out-life at room temperature is 30 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.