

Evopreg® EPC312FR component prepreg is based on a medium-temperature-curing, flame retardant, toughened epoxy resin system, formulated specifically for fire retardant performance up to UL94V0, high visual quality, and high mechanical properties.

Evopreg® EPC312FR can be supplied with a range of reinforcement fibres and fabric constructions. It can be consolidated by autoclave or press moulding and is designed for a range of applications including automotive, motorsport and general industrial.

KEY FEATURES & BENEFITS

- Flame retardant up to UL94V0 (laminates thickness 0.7mm and 4.1mm)
- Excellent surface finish
- Cure temperature 120°C
- Service temperature up to 120°C
- Suitable for autoclave and press moulding
- Good tack and drape
- Toughened
- Available on a wide range of reinforcement fabrics

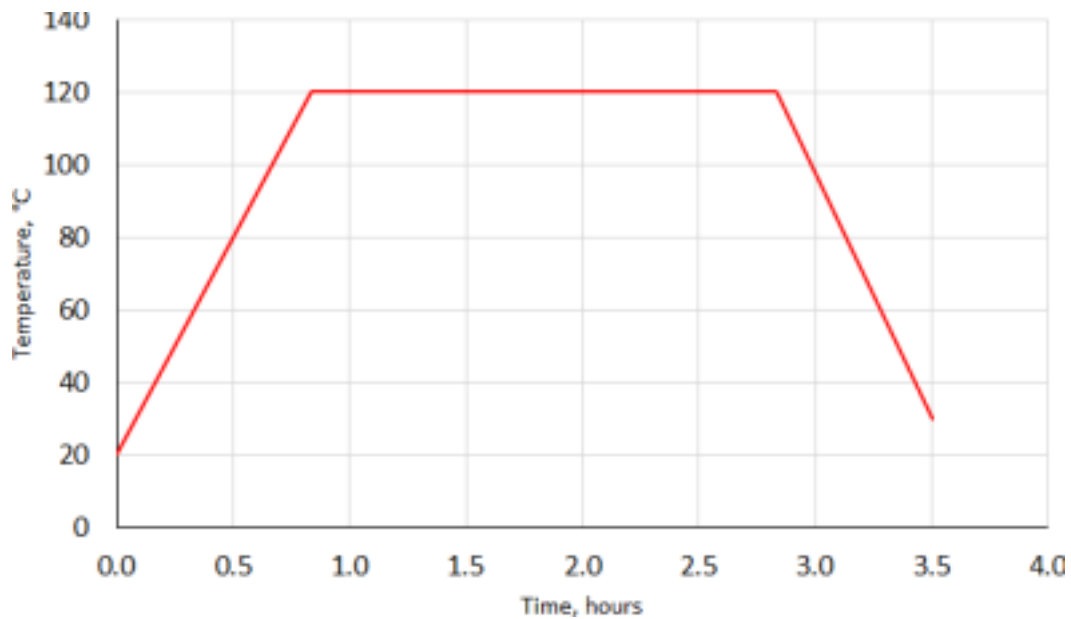
CURE PROFILES

Suggested cure cycles are shown below.

		Glass transition temperature, Tg	
Cure temperature	Minimum cure time	Tg, onset E'	Tg, peak tan δ
120°C	2 hours	118°C	134°C

- Recommended ramp rate 1-3°C/min
- Cure times may need to be extended to account for thermal lag in large tools
- Tg data above for Evopreg® EPC312FR-C205T-HS-3K-45-1250

Suggested cure cycle for standard autoclave cures at 120°C



Evopreg® EPC312FR can have a slightly lower tack level, especially at temperatures below 20°C. If necessary, to increase tack and workability, apply a small amount of heat such as with a heat gun fitted with a low temperature mode.

COMPOSITE PROPERTIES

Mechanical Properties of Monolithic Laminates

Carbon

Evopreg® EPC312FR-C205T: Typical data for laminates made from Evopreg® EPC312FR 205g/m² 2x2 twill high strength carbon fibre prepreg (Evopreg® EPC312FR-C205T-HS-3K-42-1250) cured in an autoclave for 2 hours at 120°C and 6 bar and left to cool overnight.

Property	Result	Result, normalised	Test method
Fibre content by volume, V _f	44%	47%	-
Flexural strength, 0°	677 MPa	720 MPa	ISO 14125
Flexural modulus, 0°	46.1 GPa	49.0 GPa	ISO 14125
Apparent interlaminar shear strength (ILSS), 0°	67.7 MPa	-	ISO 14130

Evopreg® EPC312FR-C380T: Typical data for laminates made from Evopreg® EPC312FR 380g/m² 2x2 twill high strength carbon fibre prepreg (Evopreg® EPC312FR-C380T-HS-12K-40-1250) cured in an autoclave for 2 hours at 120°C and 6 bar and left to cool overnight.

Property	Result	Result, normalised	Test method
Typical fibre content by volume, V _f	48-52%	50%	-
Density	1.49 g/cm ³		-
Cured ply thickness	0.43 mm/ply		
Tensile strength, 0°	1110 MPa	1125 MPa	ISO 527-4
Tensile modulus, 0°	59.0 GPa	59.8 GPa	ISO 527-4
Tensile strength, 90°	998 MPa	998 MPa	ISO 527-4
Tensile modulus, 90°	58.0 GPa	58.0 GPa	ISO 527-4
Apparent interlaminar shear strength (ILSS), 0°	64.9 MPa	-	ISO 14130
Apparent interlaminar shear strength (ILSS), 90°	63.4 MPa	-	ISO 14130
Compression strength, 0°	598 MPa	608 MPa	ASTM D6641
Compression strength, 90°	587 MPa	523 MPa	ASTM D6641
Apparent interlaminar shear strength (ILSS), 0°	67.7 MPa	-	ISO 14130
In-plane shear strength, ±45°	73.8	-	ISO 14129 ¹
In-plane shear modulus, ±45°	4.46	-	ISO 14129
Out-of-plane shear (13) strength	57.7 MPa	-	ASTM D5379-19e1
Out-of-plane shear (13) modulus	3.58 GPa	-	ASTM D5379-19e1

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

Fire Properties of Monolithic Laminates

Carbon

Evopreg® EPC312FR-C205T: Typical data for laminates made from Evopreg® EPC312FR 205g/m² 2x2 twill high strength carbon fibre prepreg (Evopreg® EPC312FR-C205T-HS-3K-42-1250) cured in an autoclave for 2 hours at 120°C and 6 bar and left to cool overnight. Fire testing performed by NADCAP accredited laboratory.

Material	Property	Result	Test method
EPC312FR-C205T-HS-3K-4 2- 1250 0.7mm laminate, 3 ply	Flammability Total burn time 48 h - 23°C ± 2°C and 50% ± 5% HR conditioning.	18s (classification = UL-94V-0)	UL 94 V (2021)
	Flammability Total burn time 168h - 70°C ± 2°C conditioning.	22s (classification = UL-94V-0)	
EPC312FR-C205T-HS-3K-4 2- 1250 1.8mm laminate, 7 ply	Flammability Total burn time 48 h - 23°C ± 2°C and 50% ± 5% HR conditioning.	84s (classification = UL-94V-1)	UL 94 V (2021)
	Flammability Total burn time 168h - 70°C ± 2°C conditioning.	89s (classification = UL-94V-1)	
EPC312FR-C205T-HS-3K-4 2- 1250 4.1 mm laminate, 19 ply	Flammability Total burn time 48 h - 23°C ± 2°C and 50% ± 5% HR conditioning.	0s (classification = UL-94V-0)	UL 94 V (2021)
	Flammability Total burn time 168h - 70°C ± 2°C conditioning.	0s (classification = UL-94V-0)	

STORAGE & OUTLIFE

- To store material, keep it frozen at -18°C in a polythene bag.
- Material must remain in the unopened bag until fully thawed.
- If all material is not used, then reseal in a polythene bag to prevent moisture absorption.
- Outlife at 18°C: 30 days
- Storage life at -18°C: 12 months

HEALTH & SAFETY

Please refer to the Safety Data Sheet (SDS) before use. Suitable PPE should be worn when handling epoxy resin products. This material contains resin and fibres which can cause irritation to skin and eyes, and allergic reactions. Ensure adequate ventilation. Exothermic reactions can occur when curing resins, and particular care must be taken when curing thick laminates.

All data and guidance on this datasheet is provided based on typical processing and testing completed by Simcas Composites. Users should conduct their own testing and processing trials to ensure that this material is suitable for their specific process and application.