

TECHNICAL DATA



TENCATE ADVANCED COMPOSITES

TenCate E721-FR Mid temperature, fire retardant modified epoxy component prepreg

PRODUCT TYPE

120°C (248°F) cure

Mid temperature, fire retardant modified epoxy resin system

TYPICAL APPLICATIONS

- Motor racing
- Marine industries
- Wide range of engineering applications

SHELF LIFE

Out life

60 days at @ 20°C (68°F)

Storage life

12 months @ -18°C (0°F)

Tack life is the time during which the prepreg retains enough tack, drape and handling for easy component lay-up.

Out life is the maximum time allowed at room temperature before cure.

To avoid moisture condensation:

Following removal from refrigerated storage, allow the prepreg to reach room temperature before opening the polythene bag, to avoid moisture condensation. Typically the thaw time for a full roll of material will be 4 to 6 hours.

PRODUCT DESCRIPTION

TenCate E721-FR is a modified epoxy resin system of medium viscosity for cures at 120°C (248°F), pre-impregnated into high performance fibres such as carbon, glass and aramid. TenCate E721-FR offers excellent structural properties, flame retardancy and exceptional toughness allowing direct lamination to honeycomb without the use of resin film. TenCate E721-FR is designed for structural applications in the motor racing, marine industries and for a wide range of engineering applications. If fire retardant properties are not required, consult separate data sheet for TenCate E720.

TENCATE E721-FR PREPREG BENEFITS/FEATURES

- Excellent adhesive properties - ideal for honeycomb sandwich construction without the use of a resin film
- The resin system used in TenCate E721-FR is fire resistant under FAR 25.853 Appendix F material test criteria (ii)
- Excellent drape - complex shapes easily formed
- 60 days shelf life at ambient temperature
- Medium tack level - easily laminated onto mould surfaces
- Controlled flow - excellent surface finish
- Low volatile content - no solvents in manufacturing process

TYPICAL NEAT RESIN PROPERTIES

Density 1.34 g/cm³ at 23°C (74°F)

Tg (DMTA) after 1 hr at 120°C (248°F)..... Onset: 120°C (248°F);
Peak tan δ: 138°C (280°F)

Gelation time..... 10 minutes at 120°C (248°F)

TYPICAL LAMINATE PROPERTIES

T300 TYPE CARBON 0/90°C WOVEN LAMINATES

Property	Condition	Method	Results	
Flexural Strength	RTD	CRAG 200	1041 MPa	151 ksi
Flexural Modulus	RTD	CRAG 200	60 GPa	8.7 Msi
ILSS	RTD	CRAG 100	56 MPa	8 ksi

* Results normalized to 55% Vf.

TYPICAL ADHESIVE PROPERTIES

Climbing drum peel strength at 20°C (68°F) according to DTD 5577 using 2 plies of 200g/m² T300 carbon 2x2 twill 46% resin content E721-FR on aluminium honeycomb 5.2-¼-25-3003.

Climbing drum peel strength (N/76 mm)

250

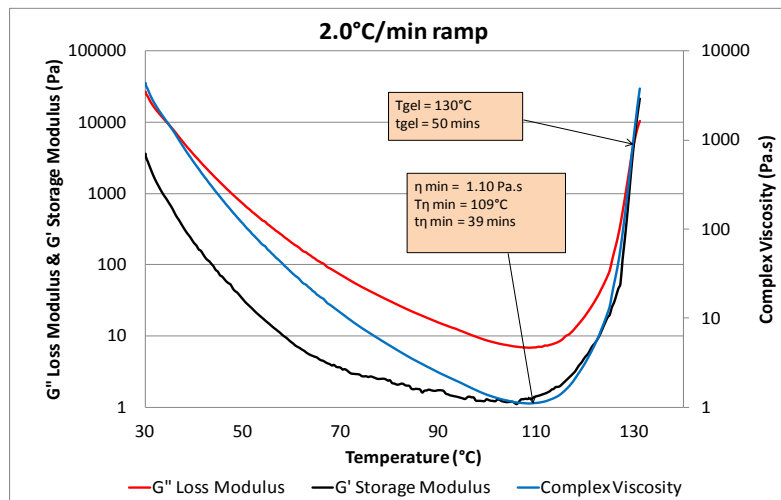
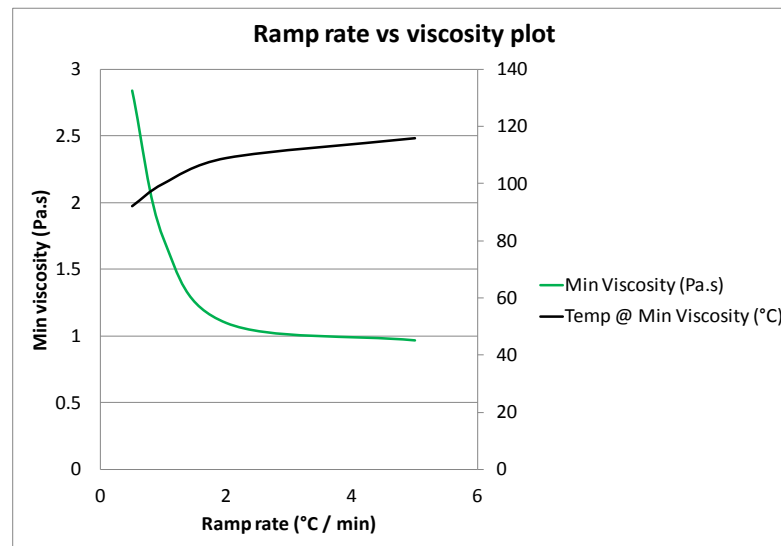
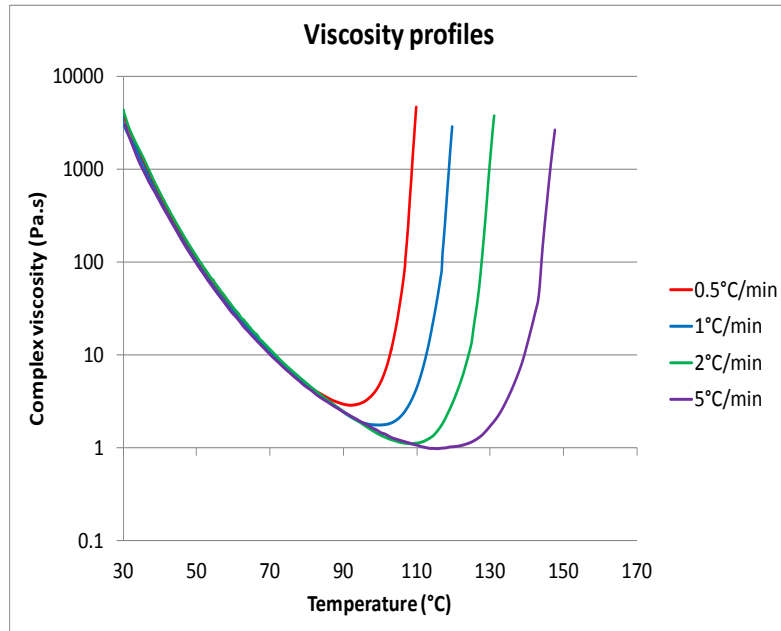
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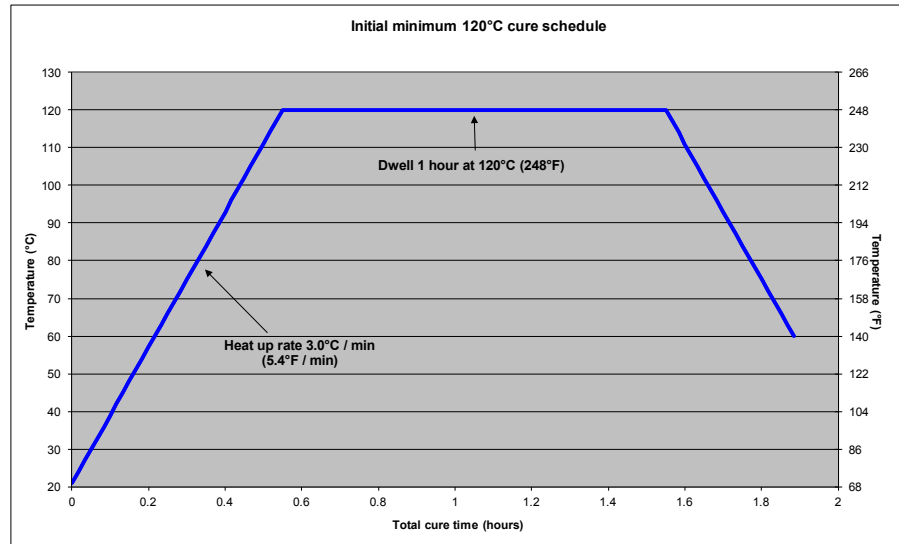
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CURING CYCLES

- Cure for 60 minutes at 120°C (248°F). It is recommended that heat up rates of 2 to 5°C/min (3.6 to 9°F/min), are employed.
- Allow to cool to 60°C (140°F) prior to releasing vacuum and removal from mould.

CURE PROPERTIES: VISCOSITY PROFILE (30°C TO 130°C OR 86°F to 266°F)

Ramp rate [°C (°F) /min]	Min viscosity (Pa.s)	Temp @ min viscosity °C (°F)
0.5 (1)	2.84	92 (198)
1 (1.8)	1.73	100 (212)
2 (3.6)	1.1	109 (228)
5 (9.0)	0.97	116 (241)

PROCESSING

TenCate E721-FR can be successfully moulded by vacuum bag, autoclave, or matched die moulding techniques. In autoclave moulding, pressures up to 6.2 Bar (90 PSI) may be applied.

EXOTHERM

In certain circumstances, such as the production of thick section laminates, rapid heat up rates or highly insulating masters, TenCate E721-FR can undergo exothermic heating leading to rapid temperature rise and component degradation in extreme cases.

Where this is likely, a cure incorporating an intermediate dwell is recommended in order to minimise the risk.

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All data given is based on representative samples of the materials in question. Since the method and circumstances under which these materials are processed and tested are key to their performance, and TenCate Advanced Composites has no assurance of how its customers will use the material, the corporation cannot guarantee these properties.

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