TECHNICAL DATA

TENCATE ADVANCED COMPOSITES

TenCate E745

Mid temperature curing toughened epoxy component prepreg

PRODUCT TYPE

275°F (135°C) cure

Mid temperature curing toughened epoxy component prepreg

TYPICAL APPLICATIONS

- Side impact structures
- F1 nose boxes
- Mechanically demanding structural applications

SHELF LIFE

Out life
60 days at @ 20°C (68°F)

Storage life
12 months @ -18°C (0°F)

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

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

PRODUCT DESCRIPTION

TenCate E745 is a toughened epoxy resin system developed for impact structures and other mechanically demanding structural applications. The resin system cures at 135°C (275°F) and can be impregnated into a range of fibre and fabric types.

TENCATE E745 PREPREG BENEFITS/FEATURES

- Excellent tack and drape
- 1 hour at 135°C (275°F) cure
- High toughness and impact properties
- 60 days shelf life at ambient temperature
- Excellent surface finish
- Low volatile content - no solvents used during processing

TYPICAL NEAT RESIN PROPERTIES

Density ..... 1.24 g/cm^3 (77.4 lbs/ft^3) at 23°C (73°F)

Tg (DMTA) after 1 hr at 135°C (275°F)..... Onset: 118°C (244.4°F);
Peak tan δ: 131°C (267.8°F)

TYPICAL LAMINATE PROPERTIES

GIC (J/m^2) ..... 1,137 J/m^2

SEA (Dynamic crush test)(J/g) ..... 84.0 J/g

IM0223 - CARBON 200 GSM 2x2 TWILL IM7 GP 6K 42% R.W. CURED 1 HR AT 135°C (275°F)

Property	Condition	Method	Results	
Tensile Strength (Warp)*	RTD	ISO 527-4	1072 MPa	156 ksi
Tensile Modulus (Warp)*	RTD	ISO 527-4	75.9 GPa	11.0 Msi
Poisson's Ratio	RTD	ISO 527-4	0.04	
Tensile Strength (Weft)*	RTD	ISO 527-4	1130 MPa	164 ksi
Tensile Modulus (Weft)*	RTD	ISO 527-4	78.9 GPa	11.4 Msi
Poisson's Ratio	RTD	ISO 527-4	0.81	
Compression Strength (Warp)*	RTD	EN2580	717 MPa	104 ksi
Compression Modulus (Warp)*	RTD	EN2580	70.6 GPa	10.2 Msi
Compression Strength (Warp)*	RTD	EN2580	707 MPa	103 ksi
Compression Modulus (Weft)*	RTD	EN2580	71.4 GPa	10.4 Msi
In-Plane Shear Strength	RTD	ISO 14129	124 MPa	18 ksi
In-Plane Shear Modulus	RTD	ISO 14129	3.9 GPa	0.6 Msi
ILSS Warp	RTD	ISO 14130	70 MPa	10 ksi
ILSS Weft	RTD	ISO 14130	69 MPa	10 ksi

*Results normalized to 55% Vf, otherwise results are at actual 49.3% Vf

TENCATE ADVANCED COMPOSITES

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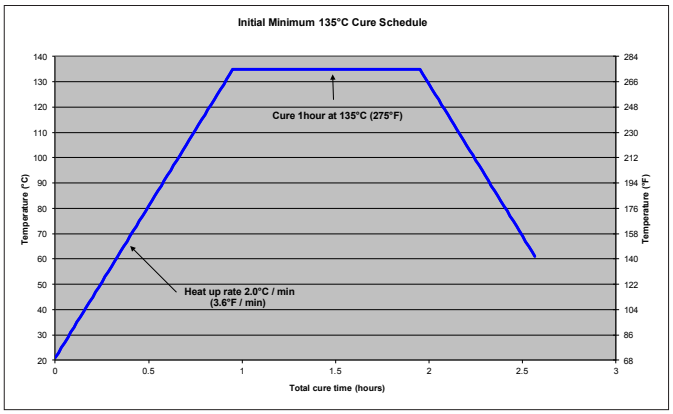
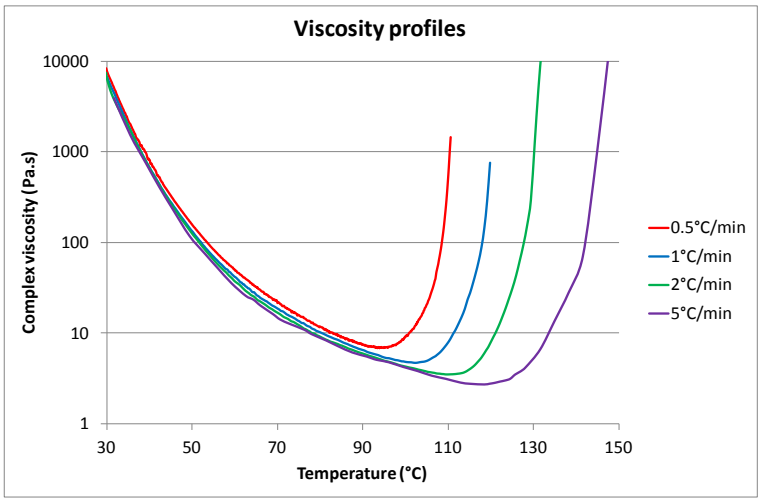
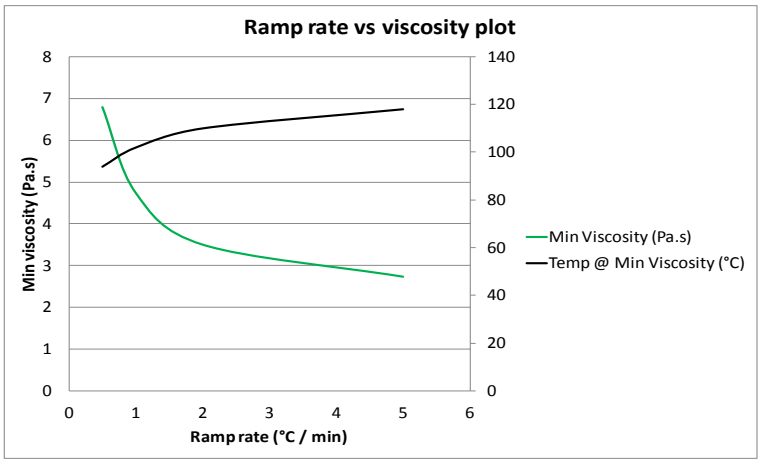
Mid temperature curing modified epoxy resin component prepreg



RECOMMENDED CURE CYCLE

- TenCate E745 can be successfully moulded by vacuum bag, autoclave, or matched die moulding techniques.
- Increase autoclave pressure to 1.4 bar (20 psi) with vacuum applied.
- Vent to atmosphere and raise pressure to 6.2 bar (90 psi) (or max allowed by the core material).
- Increase air temperature at 2°C (3.6°F) /min and hold for 1 hour at 135°C (275°F).
- Allow to cool to 60°C (140°F) before removal of pressure.





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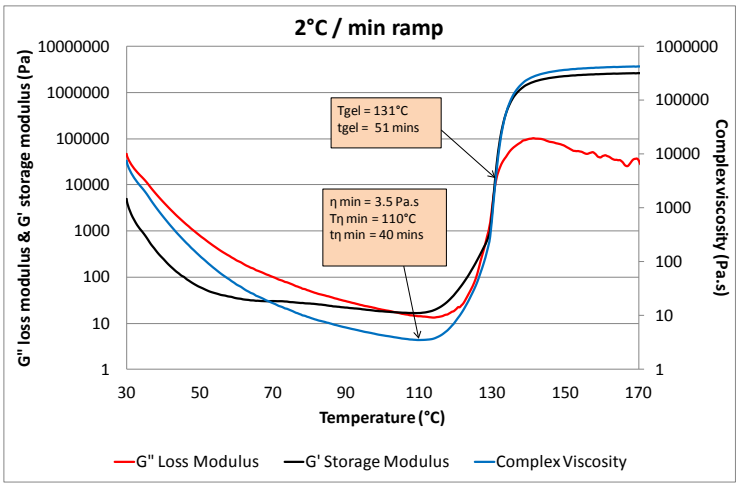

CURE PROPERTIES: VISCOSITY PROFILE (30°C TO 170°C OR 86°F TO 338°F)

Ramp rate [°C (°F)/min]	Min viscosity (Pa.s)	Temp @ min viscosity °C (°F)
0.5 (1)	6.8	94 (201)
1 (1.8)	4.74	102 (216)
2 (3.6)	3.5	110 (230)
5 (9)	2.73	118 (244)

PROCESSING

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.

Cut patterns to size and lay up the laminate in line with design instructions taking care not to distort the prepreg. If necessary, the tack of the prepreg may be increased by gentle warming with hot air. The lay-up should be vacuum debulked at regular intervals using a P3 (pin pricked) release film on the prepreg surface, vacuum of 980 mbar (29 in Hg) is applied for 20 minutes.

For autoclave cures, use of a non-perforated release film on the prepreg surface trimmed to within 25-30mm of prepreg edge is recommended for the cure cycle, a vacuum bag should be installed using standard techniques.

EXOTHERM

In certain circumstances, such as the production of thick section laminates rapid heat up rates or highly insulating masters. TenCate E745 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 minimize the risk.

Revised 08/2013

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.

TENCATE ADVANCED COMPOSITES

www.tencate.com

18410 Butterfield Blvd.
Morgan Hill, CA 95037 USA
Tel: +1 408 776 0700
Fax: +1 408 776 0107

2450 Cordelia Road
Fairfield, CA 94534 USA
Tel: +1 707 359 3400
Fax: +1 707 359 3495

Amber Drive, Langley Mill
Nottingham, NG16 4BE UK
Tel: +44 (0)1773 530899
Fax: +44 (0)1773 768687

G. van der Muelenweg 2
7443 PV Nijverdal NL
Tel: +31 548 633 933
Fax: +31 548 633 299

www.tencateadvancedcomposites.com
www.tencateindustrialcomposites.com
info@tcac-usa.com (USA)
advancedcomposites.europe@tencate.com (Europe)