TECHNICAL DATA

TENCATE ADVANCED COMPOSITES

TenCate 8020

Flexible cure schedule, structural epoxy component prepreg

PRODUCT TYPE

70°C (158°F) to 130°C (266°F) cure

structural epoxy component prepreg

TYPICAL APPLICATIONS

- Suitable for structural applications in automotive, marine and industrial market sectors

SHELF LIFE

Out Life
30 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 8020 is a new generation of toughened epoxy resin systems offering a balance of mechanical properties and excellent surface finish. The resin system has been developed to offer a long outlife and flexible cure schedules and can be applied to a wide range of high performance fibres. TenCate 8020 is compatible for co-cure with TenCate's resin film, TenCate EF8020, and TenCate's syntactic core, Amlite SC8020A.

TENCATE 8020 PREPREG BENEFITS/FEATURES

- Flexible low to medium cure schedules 70°C (158°F) to 130°C (266°F)
- Suitable for autoclave, vacuum only processing and press moulding
- Excellent handling and processing characteristics tack level; easily laminated onto mould surfaces
- Free-standing post cure capability – Tg steps ahead of cure temperature
- Tg (DMTA – peak tan δ) 143°C (290ºF) after 30 minutes at 120°C (248ºF)
- 30 days shelf life at ambient temperature

TYPICAL NEAT RESIN PROPERTIES

Density ....1.2 g/cm^3 (75.5 lbs/ft^3) at 23°C (73.4ºF)

Tg (DMTA) after 30 mins at 120°C (248ºF).....Onset: 121°C (250°F)

Peak tan δ: 143°C (290ºF)

TYPICAL LAMINATE PROPERTIES

HS0838 – CARBON 205 GSM 2X2 TWILL TR30S T 3K - 0/90° CONFIGURATION WOVEN LAMINATES, CURED 5½ HOURS AT 80°C (176°F).

Property	Condition	Method	Results	
Tensile Strength (Warp)*	RTD	ISO 527-4	935 MPa	136 ksi
Tensile Modulus (Warp)*	RTD	ISO 527-4	68.6 GPa	9.9 Msi
Tensile Strength (Weft)*	RTD	ISO 527-4	876 MPa	127 ksi
Tensile Modulus (Weft)*	RTD	ISO 527-4	67.4 GPa	9.8 Msi
Poisson's Ratio	RTD	0.04		
Compression Strength (Warp)*	RTD	EN2580	674 MPa	98 ksi
Compression Modulus (Warp)*	RTD	EN2580	62.5 GPa	9.1 Msi
Compression Strength (Weft)*	RTD	EN2580	636 MPa	92 ksi
Compression Modulus (Weft)*	RTD	EN2580	60.3 GPa	8.7 Msi
In-Plane Shear Strength	RTD	ISO 14129	80 MPa	12 ksi
In-Plane Shear Modulus	RTD	ISO 14129	3.9 GPa	0.6 Msi
ILSS (Warp)	RTD	ISO 14130	63 MPa	9 ksi
ILSS (Weft)	RTD	ISO 14130	62 MPa	9 ksi

Actual 48.3% Vf

* Results normalised to 55% Vf.

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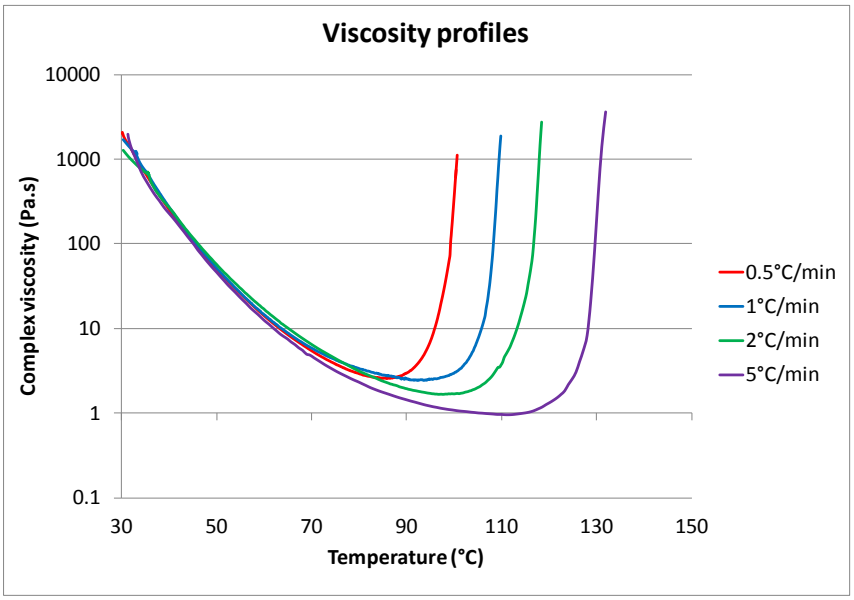

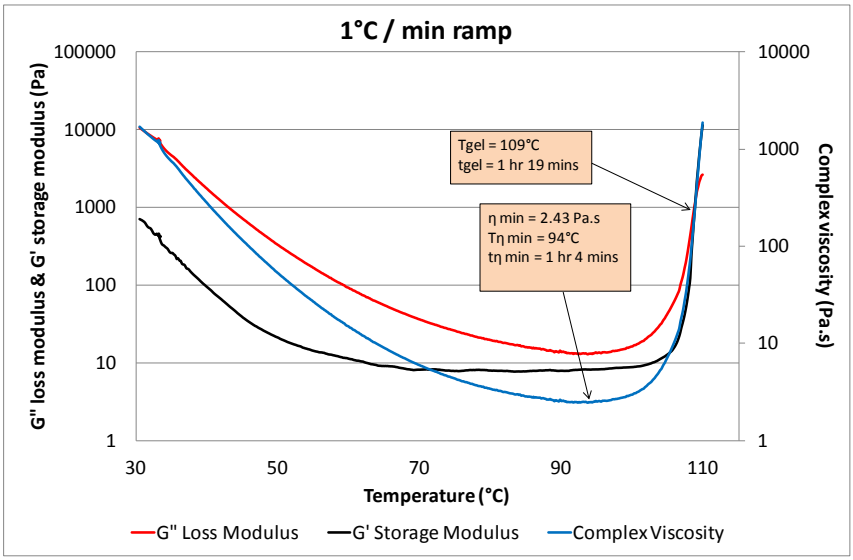

CURE PROPERTIES: VISCOSITY PROFILE (30°C TO 135°C OR 86°F TO 275°F)

Ramp rate [°C (°F)/min]	Min viscosity (Pa.s)	Temp @ min. viscosity °C (°F)
0.5 (1.0)	2.53	86 (187)
1 (1.8)	2.43	94 (201)
2 (3.6)	1.68	98 (208)
5 (9.0)	0.95	111 (232)

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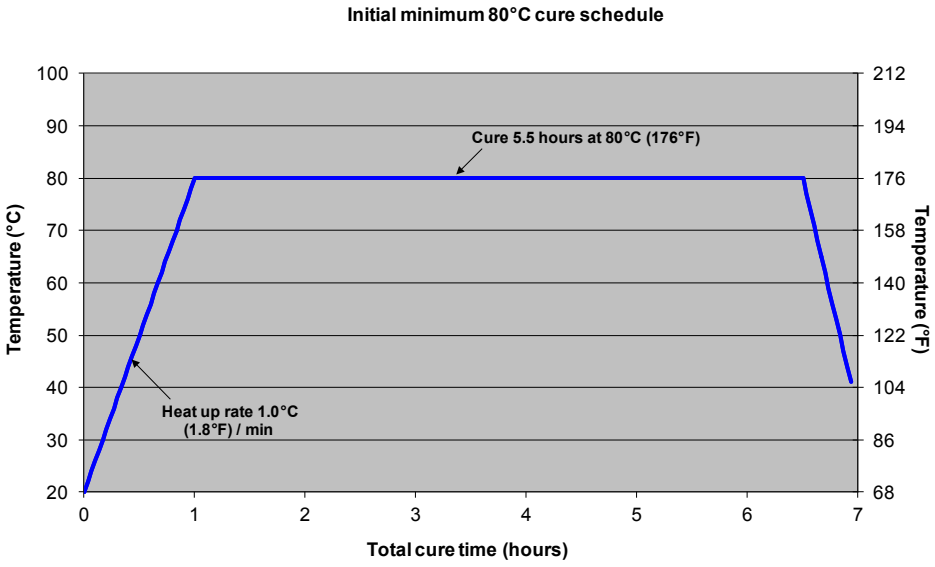
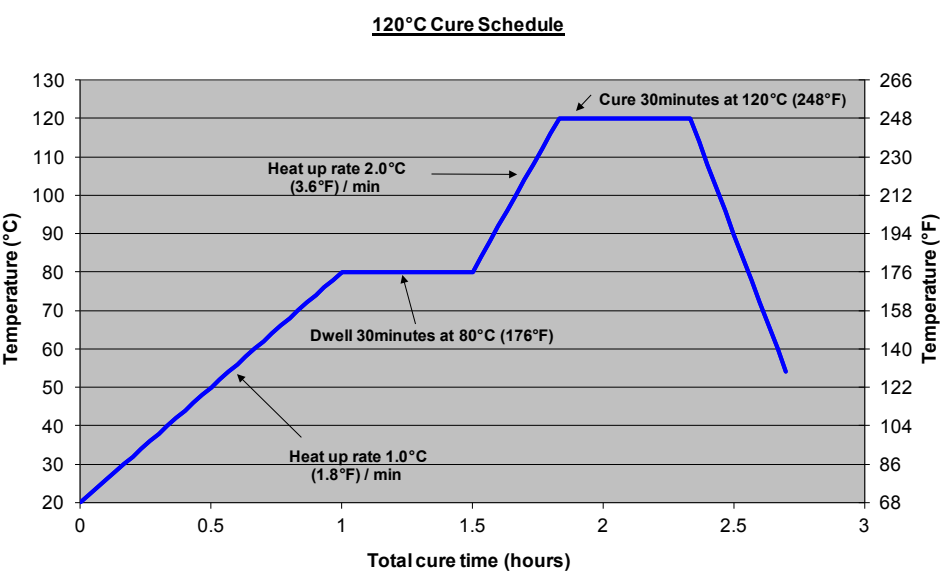
CURING CYCLES



80°C (176°F) Cure Temperature Total Time: 6.5 hours



120°C (248°F) Cure Temperature Total Time: 2.5 hours

POST-CURE

- In applications demanding maximum temperature or environmental resistance, it is essential to develop the glass transition temperature to the maximum level by a suitable post-cure.
- Ramp from initial cure temperature to 120°C (248°F) at 20°C (36°F) / hour and hold for 30 minutes minimum, this post cure will result in a Tg (Peak tan δ) of approximately 143°C (289°F).
- Laminates may be post cured unsupported unless the size, shape and laminate thickness would allow excessive distortion under self-weight.

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PROCESSING

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 ins 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 the prepreg edge is recommended for the cure cycle, a vacuum bag should be installed using standard techniques.

Note: It has been shown to be beneficial to place dry glass tows at approx 0.5m intervals around the edge of the laminate, to provide air paths under the release film into the breather.

EXOTHERM

In certain circumstances, such as the production of thick section laminates rapid heat up rates or highly insulating masters, TenCate 8020 prepreg can undergo exothermic heating leading to rapid temperature rise and component degradation in extreme cases. The risk of exotherm increases with lay-up thickness and increasing cure temperature.

It is strongly recommended that trials, representative of all the relevant circumstances, are carried out by the user to allow a safe cure cycle to be specified.

HANDLING SAFETY

Observe established precautions for handling epoxy resins and fibrous materials - wear gloves.

For further information refer to Material Safety Data Sheet.

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TENCATE ADVANCED COMPOSITES

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