

PRODUCT DATASHEET



TENCATE ADVANCED COMPOSITES

TenCate 8020-FR

Flexible cure, flame retardant, toughened epoxy resin component prepreg

PRODUCT TYPE

70°C (158°F) to 120°C (248°F) cure

Flexible cure, flame retardant, toughened epoxy resin system

TYPICAL APPLICATIONS

Structural applications in:

- Motor racing
- General industrial applications
- Marine industries
- Wide range of engineering applications.

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-FR is a modified epoxy resin system suitable for curing between 70°C (158°F) and 120°C (248°F). The medium viscosity resin is pre-impregnated into high performance fibres such as carbon, glass and aramid. TenCate 8020-FR offers excellent structural properties, flame retardance and toughness. TenCate 8020-FR is designed for structural applications in the motor racing, general industrial fabrications and marine industries and is suitable for a wide range of engineering applications.

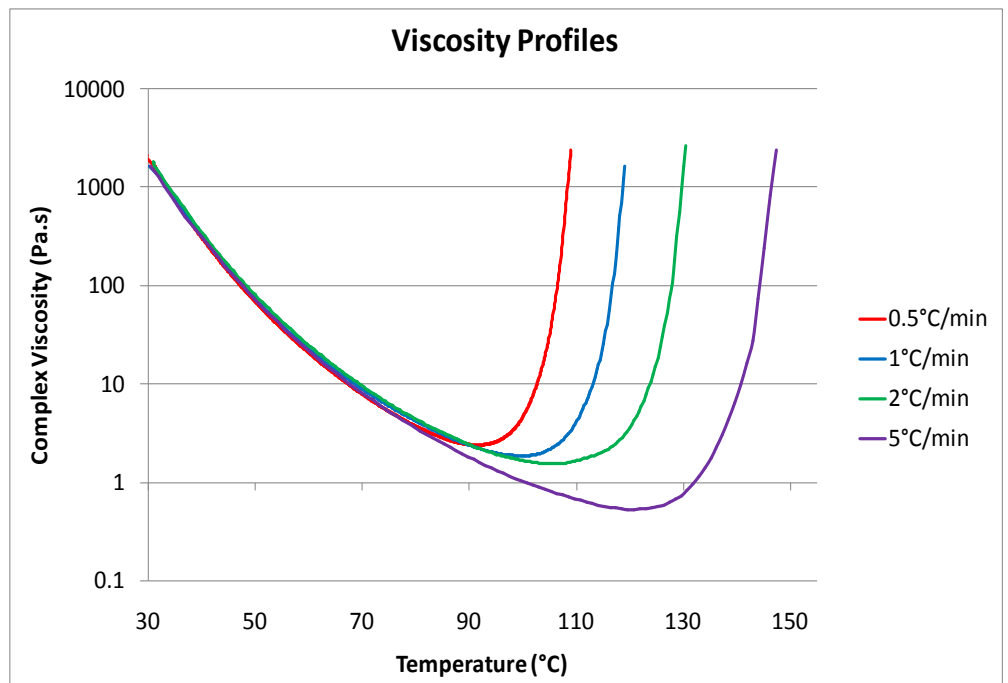
TENCATE 8020-FR PREPREG BENEFITS/FEATURES

- The resin system used in TenCate 8020-FR is fire resistant under FAR25.853 Appendix F-vertical burn material test criteria (i)
- Flexible low to medium cure schedules 70°C (158°F) to 120°C (248°F)
- 30 days shelf life at ambient temperature
- Excellent drape – complex shapes easily formed
- Good adhesive properties - ideal for honeycomb sandwich construction without the use of a resin film
- Medium tack level - easily laminated onto mould surface
- Controlled flow - excellent surface finish
- Low volatile content – no solvents used during processing

TYPICAL NEAT RESIN PROPERTIES

Density1.35 g/cm³ at 23°C (74°F)

Tg (DMTA) after 1 hour at 120°C (248°F).....Onset: 121°C (250°F);
Peak Tan δ: 138°C (280°F)



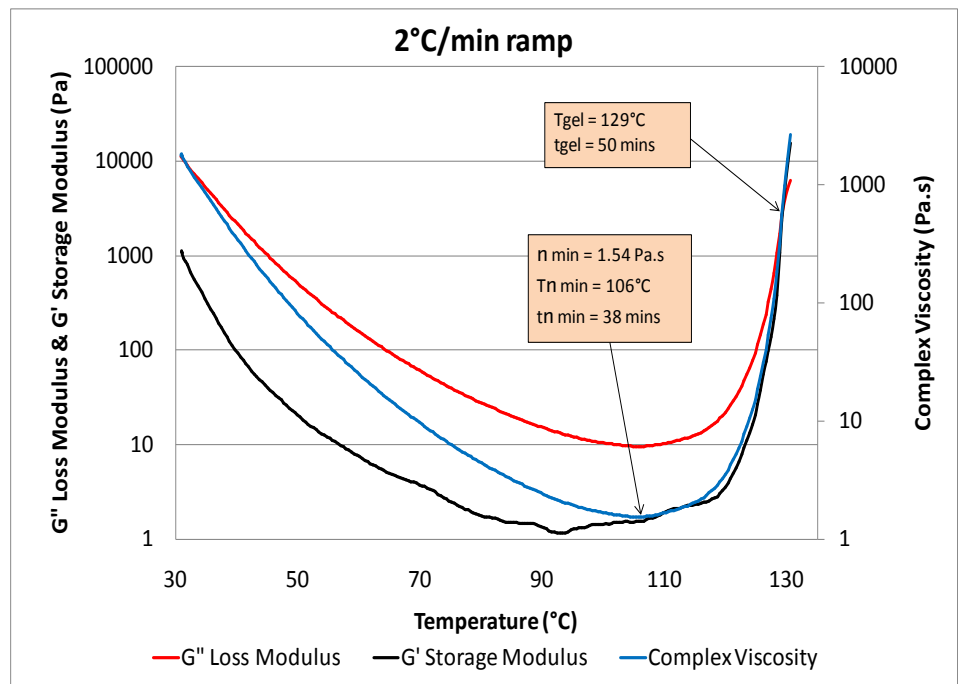
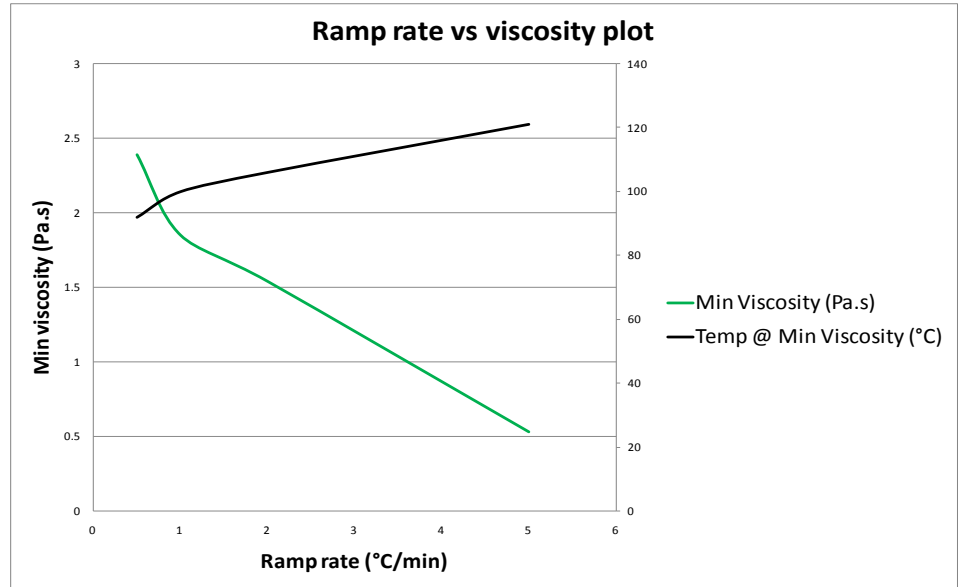
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CURE PROPERTIES: VISCOSITY PROFILE (30°C TO 150°C OR 86°F TO 302°F)

Ramp rate [°C (°F) /min]	Min viscosity (Pa.s)	Temp @ min. viscosity °C (°F)
0.5 (1.0)	2.39	92 (198)
1 (1.8)	1.85	100 (212)
2 (3.6)	1.54	106 (223)
5 (9.0)	0.53	121 (250)

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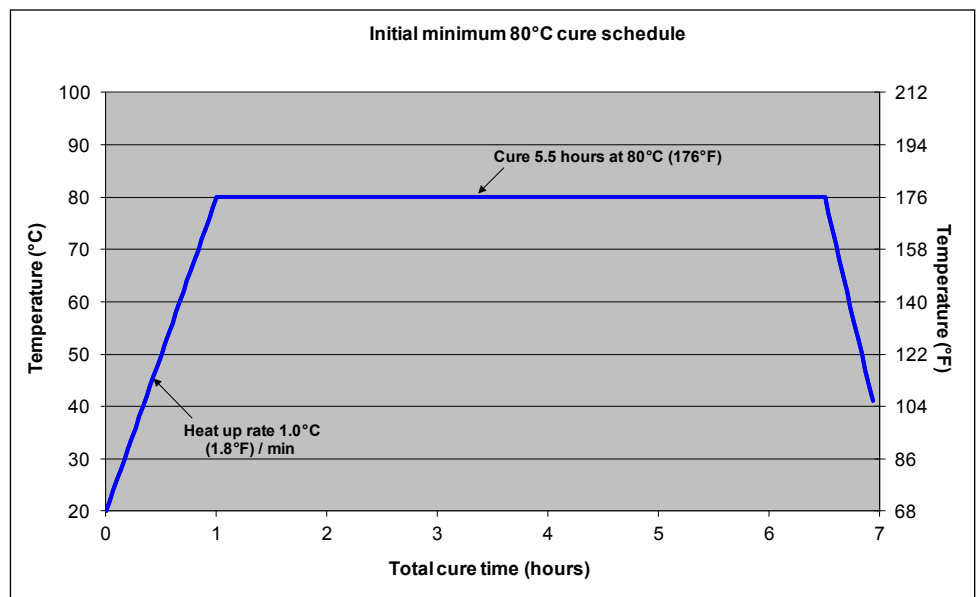
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CURING CYCLES

Increase autoclave pressure to 1.4bar (20psi) with vacuum applied (29 in Hg). Vent to atmosphere and raise pressure to 6.2bar (90psi) (or maximum allowed by core material).

Increase air temperature at 2°C (3.6°F) / min to the required dwell temperature (see table and graph on next page). Dwell for the recommended time period and cool to 60°C (140°F) prior to removal of the pressure.

To obtain the maximum Tg it is essential that a suitable postcure is carried out. E.g. ramp from the cure dwell temperature to 120°C (248°F) at 20°C (36°F) / hour and hold for 1 hour minimum. Cool to 60°C (140°F) at 3°C (5.4°F) per minute. This will produce a laminate with Tg 121°C (250°F) (DMTA Onset)



TENCATE 8020-FR RECOMMENDED CURE TIMES

Cure temperature °C (°F)	Recommended dwell times (hours)
70 (158)	12.0
80 (176)	5.5
100 (212)	2.0
120 (248)	1.0

TenCate 8020-FR

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PROCESSING

TenCate 8020-FR can be successfully moulded by vacuum bag, autoclave or matched die moulding techniques.

Following removal from refrigerated storage, allow the prepreg to reach room temperature before opening the polythene bag, to avoid moisture condensation.

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, 8020-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.

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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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 USA, Inc. has no assurance of how its customers will use the material, the corporation cannot guarantee these properties.

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