



MULTIPREG 8020

Structural Epoxy Component Prepreg With Flexible Cure Schedules

Multipreg 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 fibers.

*Multipreg 8020 is compatible for co-cure with Amber Composites resin film EF8020 and Amber Composites syntactic core Amlite SC8020A.

CHARACTERISTICS:

- > Flexible low to medium cure schedules 70°C (158°F) to 130°C (266°F)
- > Suitable for autoclave, vacuum only processing and press molding
- > Excellent handling and processing characteristics
- > Free-standing post cure capability – Tg steps ahead of cure temperature
- > Tg (DMTA – peak tan δ) 143°C (290°F) after 30 min at 120°C (248°F)
- > 30 days shelf life at ambient temperature
- > 12 months freezer storage life

RESIN PROPERTIES

Density	1.21 g/cm ³ (75.5lbs/ft ³) at 23°C (73.4°F)
Tg (DMTA) after 30 mins at 120°C (248°F)	Onset: 121°C (250°F) Peak Tan δ: 143°C (290°F)



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PROCESSING

Following removal from refrigerated storage, allow 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 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 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.

8020 RECOMMENDED CURE TIMES

Cure temperature °C (°F)	Recommended cure time (hrs)
70 (158)	12
80 (176)	5.5
100 (212)	2
120 (248)	0.5

EXOTHERM

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

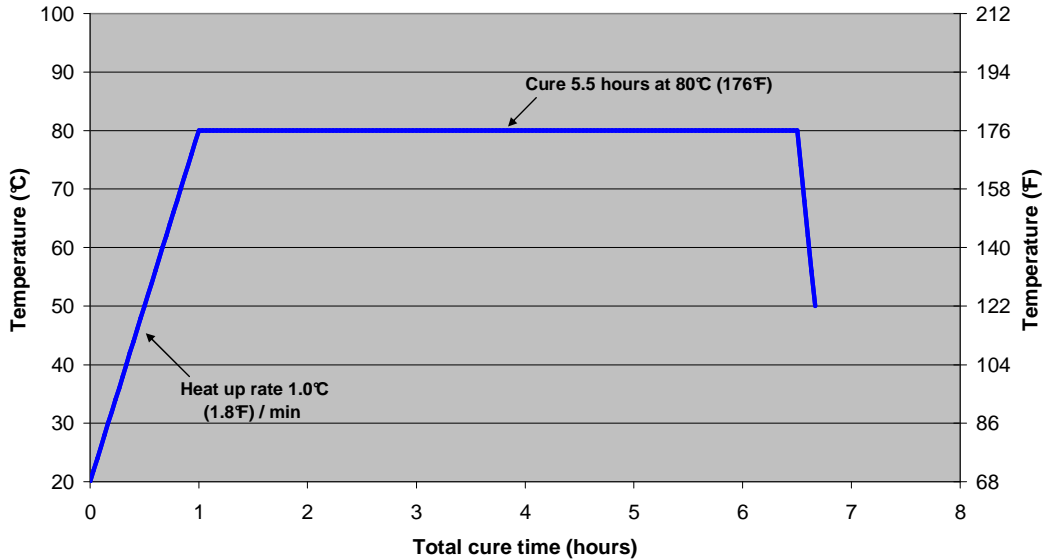


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CURING CYCLES

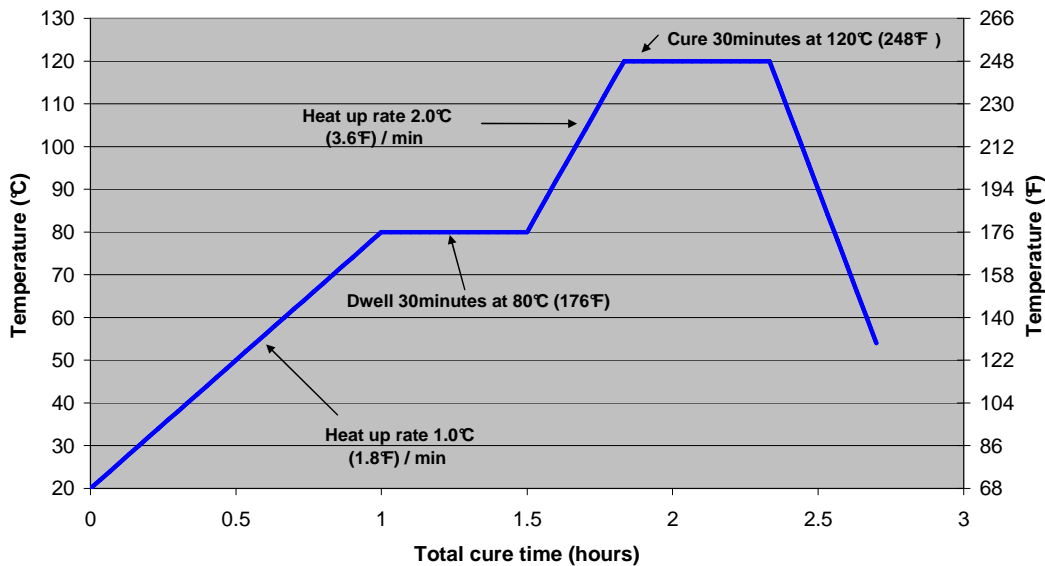
80°C Cure schedule - 8020



80°C (176°F) Cure Temperature

Total Time: 6 ½ hours

120°C Cure Schedule - 8020



120°C (248°F) Cure Temperature

Total Time 2 ½ hours



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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) / hr and hold for 30 minutes minimum, this post cure will result in a T_g (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.

TYPICAL LAMINATE PROPERTIES (at Room Temperature)

200gsm 2/2 twill T300 HS carbon 90° configuration w oven laminates, cured 5.5 hours at 80°C (176°F), results normalised to 55% Vf.

Tensile Strength	735.6 MPa	EN 2597
Tensile Modulus	66.3 GPa	EN 2597
Tensile Poisson's Ratio	0.03	EN 2597
Compression Strength	571.8 MPa	EN 2850
Compression Modulus	62.2 GPa	EN 2850
In-Plane Shear Strength	92.6 MPa	EN 6031
In-Plane Shear Modulus	3.22 GPa	EN 6031
Flexural Strength	1171 MPa	
Flexural Modulus	68.3 GPa	
Apparent ILSS	68.3 MPa	

STORAGE

Shelf life is 30 days at ambient temperature 20°C (68°F)

Refrigerated storage life is 12 months at -18°C (0°F)

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



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HANDLING SAFETY

Observe established precautions for handling epoxy resins and fibrous materials.

For further information refer to Material Safety Data Sheet.

FURTHER INFORMATION

Please contact Amber Composites for additional information.

This is not a specification. The information given in this data sheet in relation to the performance, storage and other characteristics of the product is based on results gained from experience and tests and is believed to be accurate. Given, however, that conditions of use and storage will vary, Amber Composites will not be liable for any loss or damage resulting from reliance upon such information. The purchaser is recommended to carry out his own tests to establish the suitability of the product for its particular purpose. The use of the product in certain processes may require third party consent.