

PRODUCT DATA SHEET

DESCRIPTION

Toray AmberTool® HX42 is a low temperature curing epoxy resin system that can be pre-impregnated into high performance fibers such as carbon and glass. It is an exceptional and well-proven system that exhibits a high end use temperature and extended out life. After a suitable post cure, an end use temperature of 210°C (410°F) is achieved.

FEATURES

- ▶ Low initial cure temperature
- ▶ High end use temperature of 210°C (410°F)
- ▶ Excellent drape for complex shapes
- ▶ 5 days out life at 18°C (64°F)
- ▶ Capable of freestanding post cure
- ▶ Low prepreg volatile content
- ▶ Low coefficient of thermal expansion (CTE)
- ▶ Surface machinable following post cure
- ▶ Excellent resistance to phenolic resins

PRODUCT TYPE

50–75°C (122–167°F) Low Temperature Curing Epoxy Tooling Prepreg

TYPICAL APPLICATIONS

- ▶ Proven pedigree in aerospace tooling
- ▶ Suitable for autoclave or vacuum bag cure

SHELF LIFE

Out Life:	5 days at 18°C (64°F)
Storage Life:	12 months at -18°C (0°F)

Out life is the maximum time allowed at ambient 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.

TYPICAL NEAT RESIN PROPERTIES

Density	1.23 g/cm ³ (76.7lbs/ft ³) at 23°C (73.4°F)
T _g (DMTA) after 190°C (374°F) post cure	Onset: 211°C (412°F); Peak tan δ: 230°C (446°F)
Max. T _g achievable following a 200°C (392°F) post cure	Onset: 219°C (426°F); Peak tan δ: 234°C (453°F)
Typical CTE for a carbon	3.0 (1.65) x10 ⁶ /°C (°F)*

*CTE is dependent on construction and processing. Figures quoted are based on standard 1-8-1 quasi-isotropic tooling laminates.



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AmberTool®

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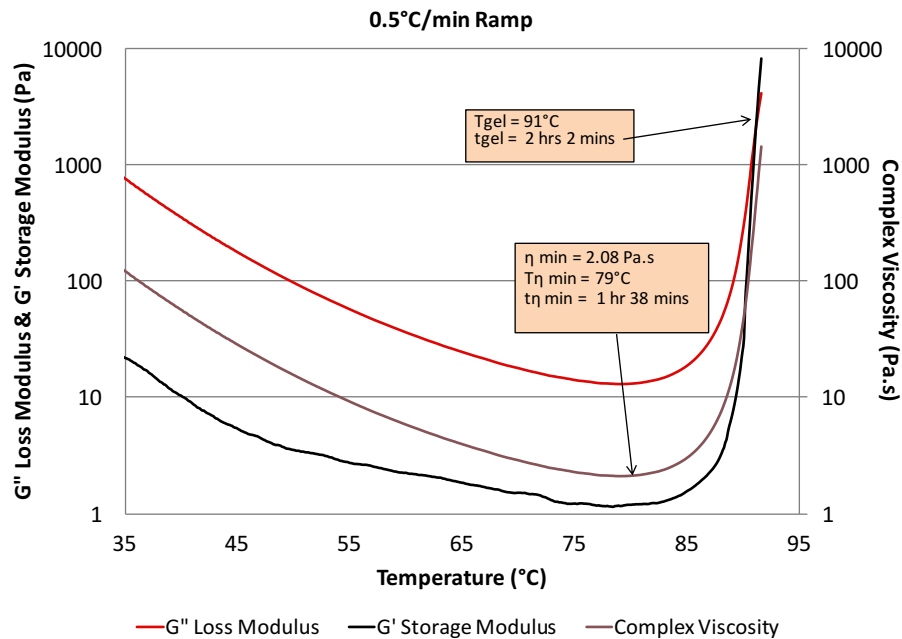
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REINFORCEMENTS AVAILABLE

Fiber Type	Weight (gsm)	Weave Style	Standard Resin Content w/o
Standard modulus 3K carbon	205	2 x 2 twill	46 (surface ply)
Standard modulus 12K carbon	650	2 x 2 twill	35
E-glass (EC9 yarn)	280	2 x 2 twill	38 (surface ply)
E-glass (EC9 yarn)	300	8 harness satin	38 (surface ply)
E-glass (1200 tex WR)	870	2 x 2 twill	28

Other fabrics and resin weights available on request

RHEOLOGY

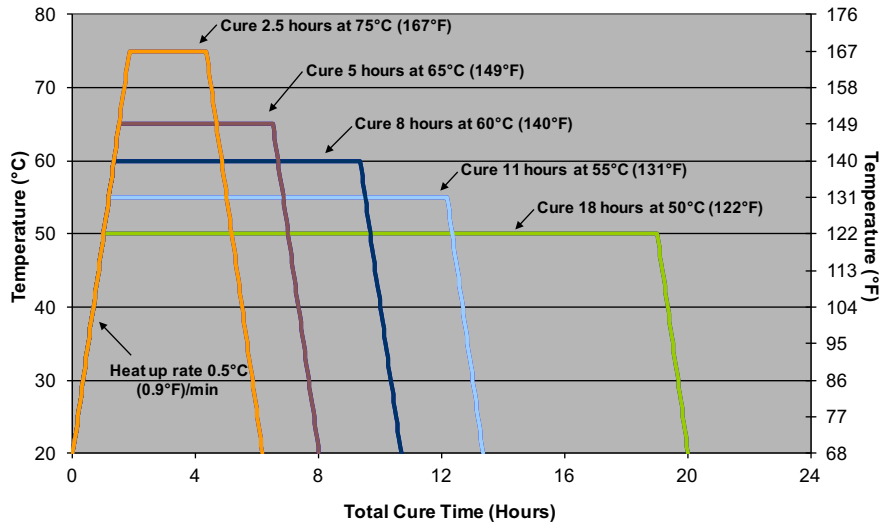


INITIAL MINIMUM CURE TIMES

Temperature	Time (hrs)
50°C (122°F)	18
55°C (131°F)	11
60°C (140°F)	8
65°C (149°F)	5
75°C (167°F)	2.5

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INITIAL MINIMUM CURE SCHEDULE

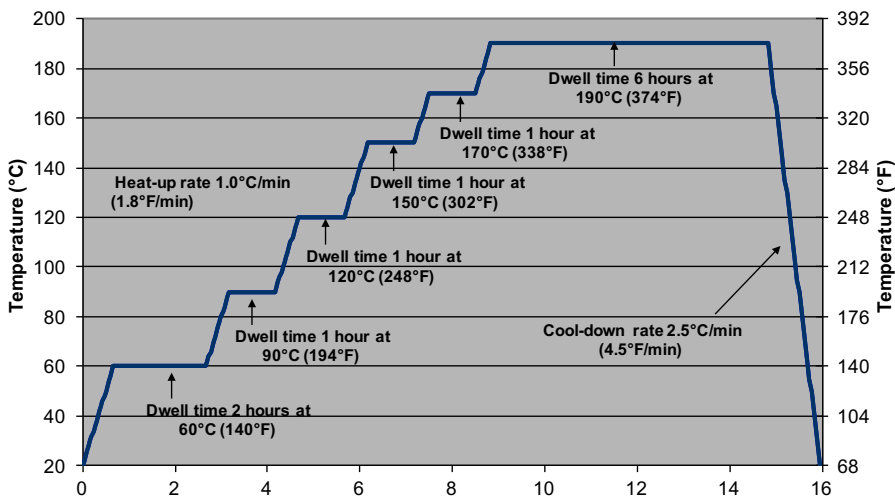


Caution: Toray AmberTool® HX42 prepreg contains a reactive resin system and care must be taken to avoid exothermic heating during the initial cure.

POST CURE TIME

Post Cure Schedule A		
Ramp	1°C (1.8°F)/min to 60°C (140°F)	Dwell for 2 hours
Ramp	1°C (1.8°F)/min to 90°C (194°F)	Dwell for 1 hour
Ramp	1°C (1.8°F)/min to 120°C (248°F)	Dwell for 1 hour
Ramp	1°C (1.8°F)/min to 150°C (302°F)	Dwell for 1 hour
Ramp	1°C (1.8°F)/min to 170°C (338°F)	Dwell for 1 hour
Ramp	1°C (1.8°F)/min to 190°C (374°F)	Dwell for 6 hours
Cool to 50°C (122°F) at 2.5°C/min (4.5°F/min)		

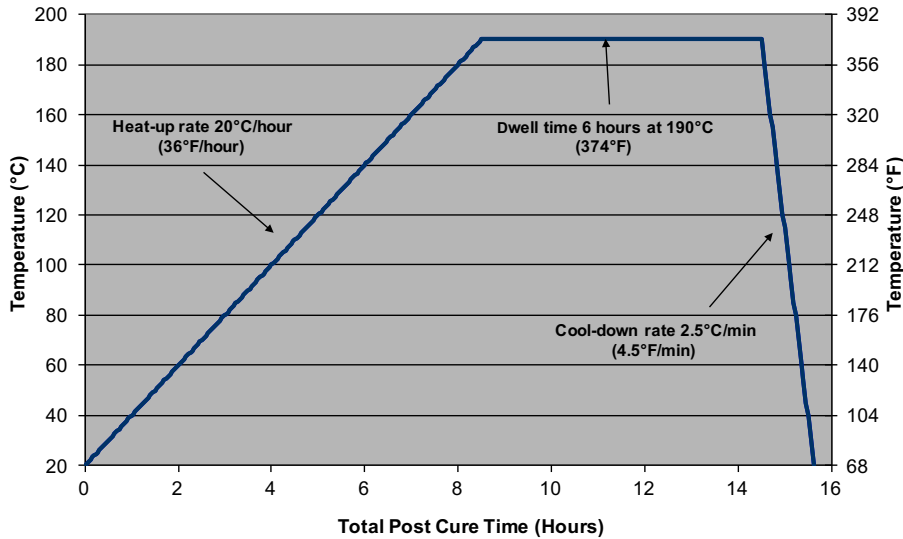
POST CURE SCHEDULE A



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POST CURE SCHEDULE B

An alternative post cure schedule may also be used as follows.



HANDLING SAFETY

Observe established precautions for handling epoxy resins and fibrous materials. Ensure adequate ventilation and wear gloves and protective clothing. For further information, refer to our Safety Data Sheet available from Toray Advanced Composites.

PROCESSING

Processing parameters and instructions are provided in the Toray AmberTool® material processing information guide from Toray Advanced Composites at www.toraytac.com/tooling.

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