

PRODUCT DATA SHEET

DESCRIPTION

Toray AmberTool® HX32-1 is an epoxy composite tooling prepreg. After a suitable post cure, an end use temperature of 140°C (284°F) is achieved. Toray AmberTool® HX32-1 prepreg is ideal for large tooling applications.

FEATURES

- ▶ Long out life of 30 days at 18°C (64°F) for large tooling applications
- ▶ Versatile curing options from 65–80°C (149–176°F)
- ▶ Recommended cure of 12 hours at 70°C (158°F)
- ▶ Capable of free standing post cure
- ▶ 140°C (284°F) end use temperature
- ▶ Low volatile content giving excellent surface finish from an autoclave cure
- ▶ Controlled tack for improved handleability

PRODUCT TYPE

65–80°C (149–176°F) Curing Epoxy Tooling Prepreg

TYPICAL APPLICATIONS

- ▶ Large tooling applications such as marine and wind energy applications requiring long out life

SHELF LIFE

Out Life: 30 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.

TYPICAL NEAT RESIN PROPERTIES

T _g (DMTA) 6 hrs at 150°C (302°F) post cure	Onset: 162°C (323°F) Peak tan δ: 181°C (357°F)
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T _g (DMTA) 6 hrs at 120°C (248°F) post cure	Onset: 137°C (278°F) Peak tan δ: 156°C (312°F)
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T _g (DMTA) 6 hrs at 105°C (221°F) post cure	Onset: 121°C (249°F) Peak tan δ: 143°C (289°F)
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AmberTool®

HX32-1_PDS_v2_2019-04-18

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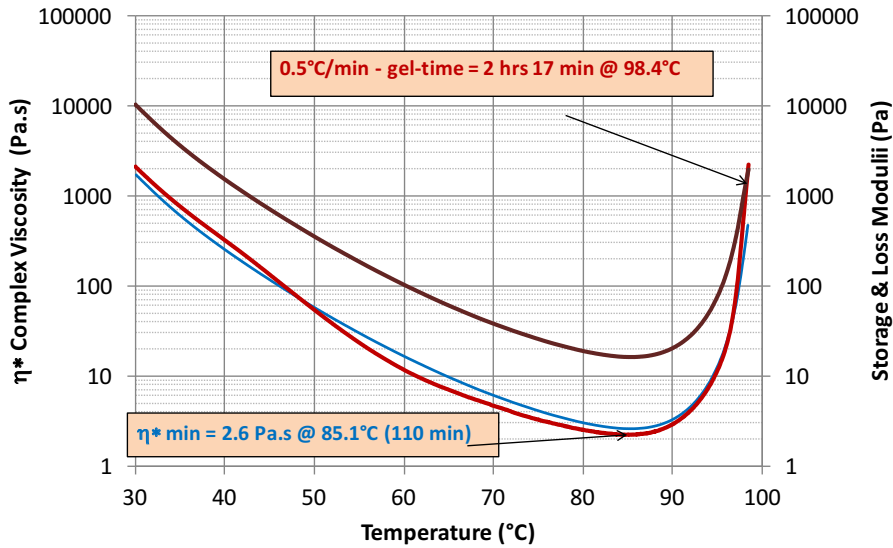
REINFORCEMENTS AVAILABLE

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	37
E-glass (EC9 yarn)	280	2 x 2 twill	38 (surface ply)
E-glass (1200 tex WR)	870	2 x 2 twill	28

Other fabrics and resin weights available on request

RHEOLOGY

Rheology @ 0.5°C/min

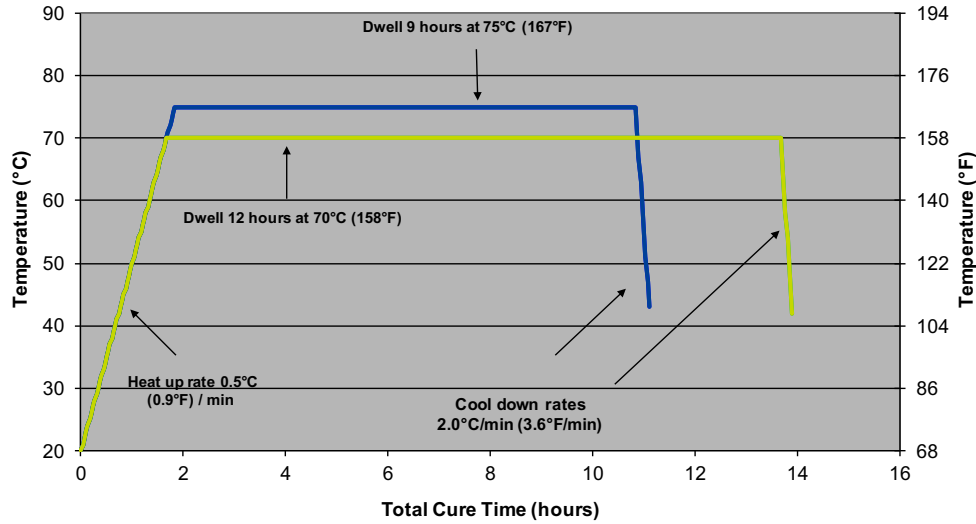


—0.5°C/min Complex Viscosity —0.5°C/min Storage Modulus —0.5°C/min Loss Modulus

INITIAL MINIMUM CURE TIMES

Temperature	Time (hrs)
65°C (149°F)	20
70°C (158°F)	12
75°C (167°F)	9
80°C (176°F)	6

INITIAL MINIMUM 70°C & 75°C CURE SCHEDULES

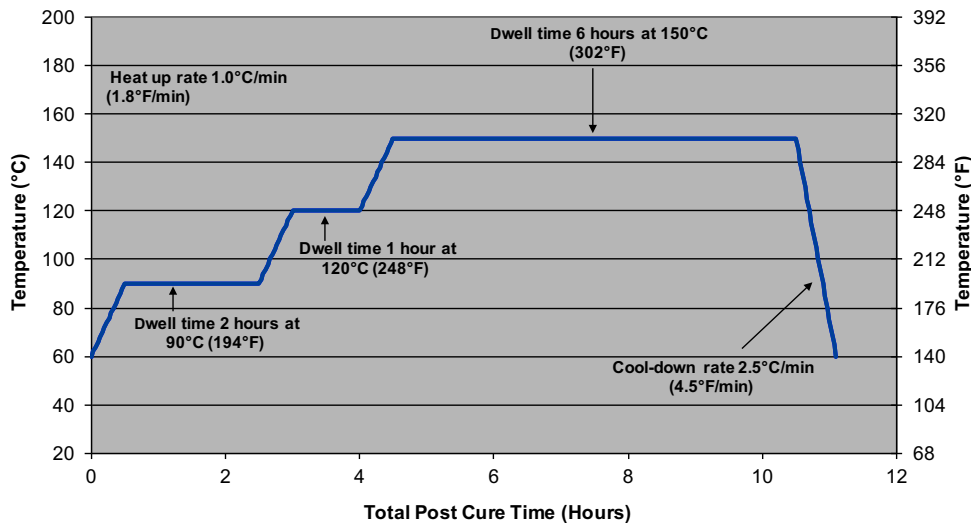


Caution: Toray AmberTool® HX32-1 contains a reactive resin system and care must be taken to avoid exothermic heating during the initial cure. Avoid exceeding 80°C (176°F) for the initial cure.

POST CURE TIME

Post-cure schedule A:		
Ramp	1°C (1.8°F)/min to 90°C (194°F)	Dwell for 2 hours
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 6 hours
Cool to 60°C (140°F) at 2.5°C/min (4.5°F/min)		

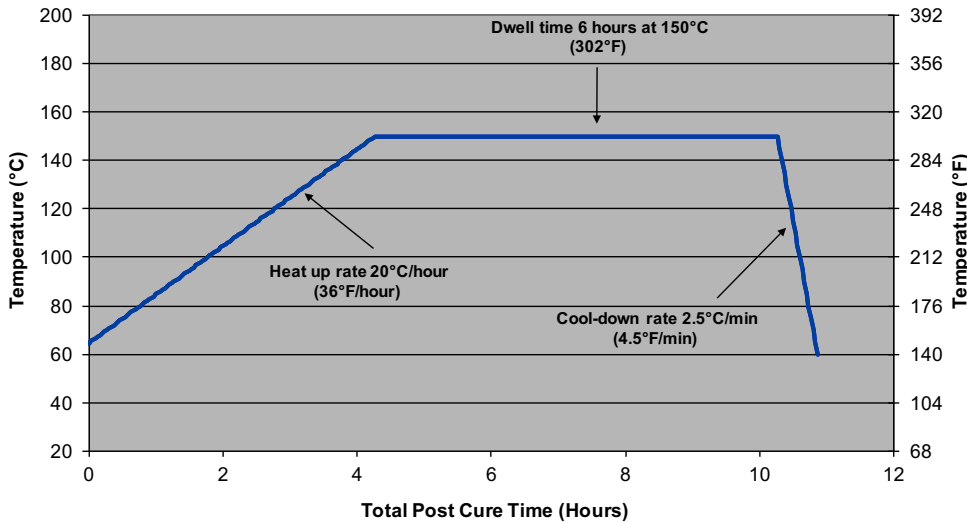
POST CURE SCHEDULE A



PRODUCT DATA SHEET

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.