

PRODUCT DATA SHEET

DESCRIPTION

Toray MicroPly™ EF8020 is a modified, high-strength, structural epoxy film adhesive for honeycomb core and laminate bonding. EF8020 has a strong self-filleting action in honeycomb-to-skin bonds.

Toray MicroPly™ EF8020 adhesive film is protected on one side by a release paper and on the other by a polythene separator. A lightweight polyester carrier is incorporated into the adhesive film to ensure easy handling whilst cutting and positioning.

Toray MicroPly™ EF8020 is compatible for co-cure with Toray's 8020 prepreg and SC8020 syntactic core.

FEATURES

- ▶ Flexible low-to-medium cure schedule 70°C (158°F) to 130°C (266°F)
- ▶ Accurate control of adhesive distribution
- ▶ Ideal for honeycomb sandwich construction
- ▶ Bonding in both composite and metallic structures
- ▶ Suitable for press molding, autoclave, and vacuum bag cure
- ▶ No solvents, low volatile content
- ▶ Available in a range of surface weights (100g/m², 200g/m², and 300g/m²)

PRODUCT TYPE

70–130°C (158–266°F) Cure

Modified Epoxy Structural Film Adhesive

TYPICAL APPLICATIONS

- ▶ Composite and metallic skin bonding to lightweight cores

SERVICE TEMPERATURE

121°C (250°F)

SHELF LIFE

Out Life: 30 days at 20°C (68°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 the cold storage, allow the adhesive film to reach room temperature before opening the polythene bag. Typically, the thaw time for a full roll of material from storage at -18°C (0°F) will be 4 to 6 hours.

TYPICAL NEAT RESIN PROPERTIES

Density	1.20 g/cm ³ at 23°C (73°F)
T _g after 1 hour at 120°C (DMA)	Onset: 102°C (215°F) Peak tan: 116°C (240°F)



Contact us for more information:

North America/Asia/Pacific

e explore@toraytac-usa.com

t +1 408 465 8500

Europe/Middle East/Africa

e explore@toraytac-europe.com

t +44 (0)1773 530899

MicroPly™

TORAY_MicroPly_EF8020_PDS_v7_2021-02-09

Page 1/4

PRODUCT DATA SHEET

TYPICAL ADHESIVE PROPERTIES

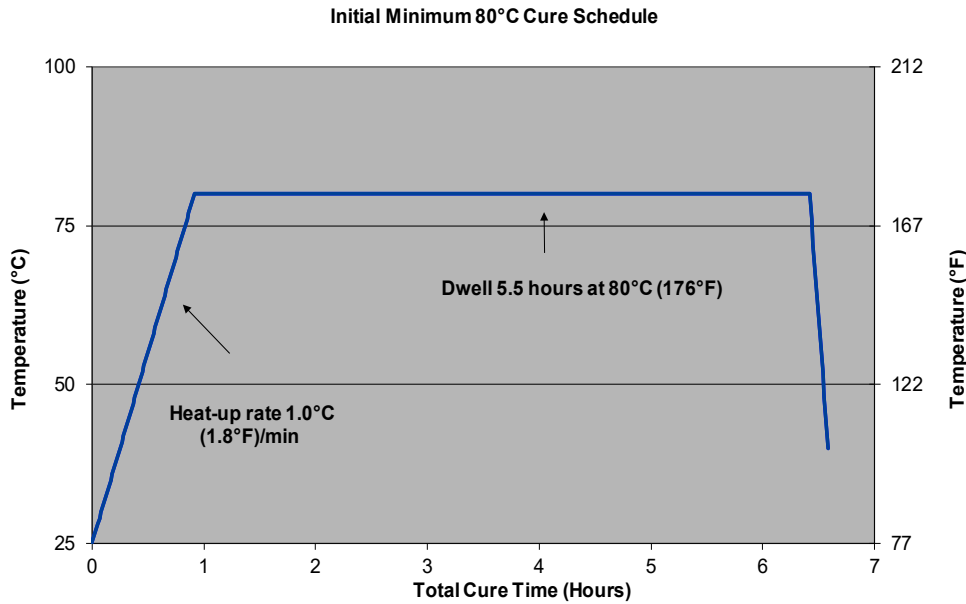
Resin Film Weight (gsm)	Test Description	Condition	Method	Result
100	Tensile Lap Shear (LS)	RTD	ASTM D 1002	27 MPa/4.0 ksi
300	Climbing Drum Peel (CDP)	RTD	ASTM D 1781-98	430 N/75 mm
300	Tensile Lap Shear (LS)	RTD	ASTM D 1002	38 MPa/5.5 ksi

Climbing Drum Peel (CDP) at Room Temperature Dry (RTD) 20°C (68°F)
 Molding conditions for the test samples were as follows: Heated for 2 hours at 120°C (248°F). 30 psi vented vacuum pressure applied.

The film is supplied on rolls with a polyester carrier. The film is protected by release paper on one side and polythene separator on the other.

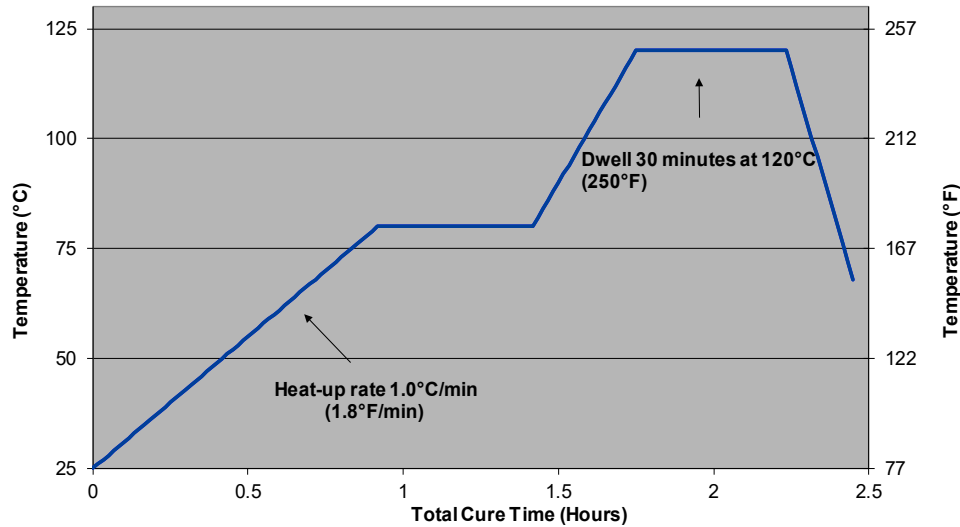
TYPICAL CURE PROFILES

80°C (176°F) Cure Temperature		
Ramp	1.0°C (1.8°F)/min to 80°C (176°F)	Dwell for 5 hours 30 minutes
Total time: 7 hours		



PRODUCT DATA SHEET

Initial Minimum 120°C Cure Schedule



120°C (248°F) Cure Temperature		
Ramp	1.0°C (1.8°F)/min to 80°C (176°F)	Dwell for 30 minutes
Ramp	2.0°C (3.6°F)/min to 120°C (248°F)	Dwell for 30 minutes
Total time: 2 hours 20 minutes		

RECOMMENDED DWELL TIMES

Recommended Cure Temperature °C (°F)	Recommended Cure Times (Hrs)
70°C (158°F)	8
80°C (176°F)	5.5
100°C (212°F)	2
120°C (248°F)	0.5

Caution: EF8020 film adhesive contains a reactive resin system and care must be taken to avoid exothermic heating during the initial cure

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/hour and hold for 30 minutes minimum, this post cure will result in a T_g (peak tan) of approximately 116°C (240°F)

PRODUCT DATA SHEET

PROCESSING

- ▶ It is important that all substrates to be adhered are de-greased and free from contamination before use
- ▶ Following removal from refrigerated storage, allow film adhesive to reach room temperature before opening the polythene bag, to avoid moisture condensation
- ▶ EF8020 can be successfully cured by vacuum-only, autoclave, or press molding processes

HANDLING SAFETY

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

For further information refer to the Safety Data Sheet, available from Toray Advanced Composites, Langley Mill.

TORAY_MicroPly_EF8020_PDS_v7_2021-02-09 Page 4/4

© 2019–2021 Toray Advanced Composites. 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 Toray Advanced Composites has no assurance of how its customers will use the material, the corporation cannot guarantee these properties. Toray®, (Toray) AmberTool®, (Toray) Cetex®, (Toray) MicroPly™, and all other related characters, logos, and trade names are claims and/or registered trademarks of Toray Industries Inc. and/or its subsidiary companies in one or more countries. Use of trademarks, trade names, and other IP rights of Toray Industries Inc. without prior written approval by such is strictly prohibited.