

# PRODUCT DATA SHEET



TENCATE ADVANCED COMPOSITES

## TenCate EF8020 Modified epoxy structural film adhesive

### PRODUCT TYPE

70°C (158°F) to 130°C (266°F) cure  
Modified epoxy structural film adhesive

### TYPICAL APPLICATIONS

- Metal-to-metal or sandwich core-to-skin bonds
- Has a strong self-filleting action in honeycomb-to-skin bonds

### 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 the freezer, allow the TenCate EF8020 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.

### PRODUCT DESCRIPTION

TenCate EF8020 adhesive film is a high strength epoxy adhesive formulation supplied in the form of a light weight flexible film. It is intended for metal to metal or sandwich core to skin bonds and has a strong self-filleting action in honeycomb-to-skin bonds.

The 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. TenCate EF8020 is compatible for co-cure with TenCate's 8020 prepreg and 8020 RAPI-PLY series.

### TENCATE EF8020 BENEFITS/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 metallic and composite structures
- Suitable for press moulding, autoclave and vacuum bag cure
- No solvents, low volatile content
- Available in a range of surface weights (100g/m<sup>2</sup>, 200g/m<sup>2</sup> and 300g/m<sup>2</sup>)

### TYPICAL NEAT RESIN PROPERTIES

Density .....1.20 g/cm<sup>3</sup> at 23°C (73°F)

T<sub>g</sub> after 1 hour at 120°C (DMA).....Onset: 102°C (215°F)

Peak tan δ: 116°C (240°F)

### TYPICAL ADHESIVE PROPERTIES

TENCATE EF8020 RESIN FILM WEIGHT (g/m <sup>2</sup> )	TEST DESCRIPTION	CONDITION	METHOD	RESULT
100	Tensile lap shear (LS)	RTD	ASTM D1002	27.3 MPa / 4.0 ksi
300	Climbing drum peel (CDP)	RTD	ASTM D1781-98	430 N / 75 mm
300	Tensile lap shear (LS)	RTD	ASTM D1002	38.1 MPa / 5.5 ksi

Climbing drum peel (CDP) RTD at 20°C (68°F)

Moulding conditions for the test samples were as follows:  
Heated for 2 hours at 120°C (248°F). 30 P.S.I. vented vacuum pressure applied.

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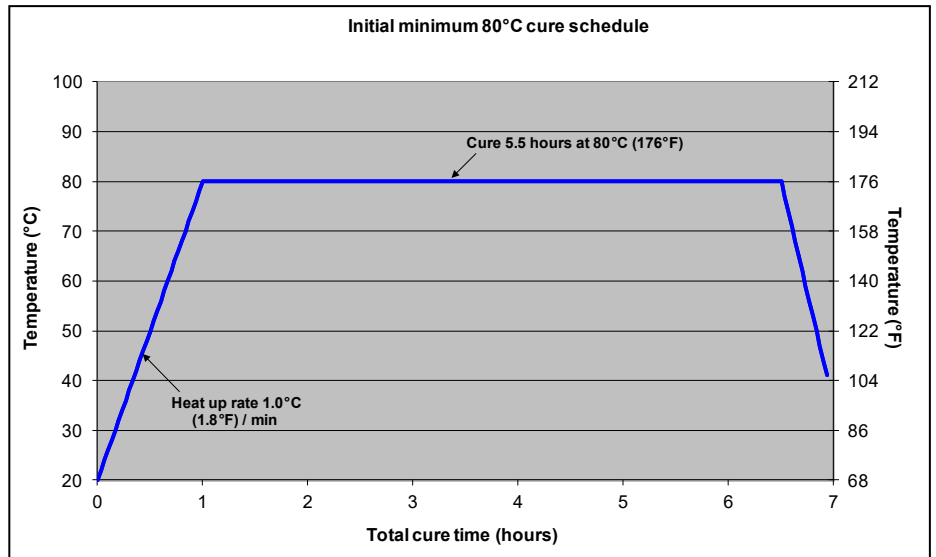
### TYPICAL CURE PROFILES

#### 80°C (176°F) cure temperature

Total Time: 6 ½ hours

1.0°C (1.8°F) / minute ramp to 80°C (176°F)

5 ½ hours dwell @ 80°C (176°F)



#### 120°C (248°F) cure temperature

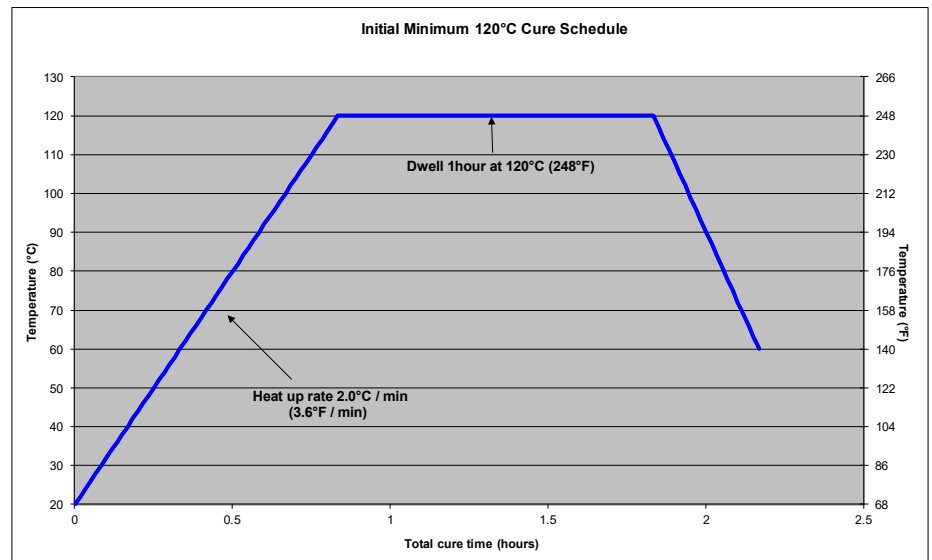
Total Time: 2 hr 20 min

1.0°C (1.8°F) / minute ramp to 80°C (176°F)

30 minute dwell @ 80°C (176°F)

2.0°C (3.6°F) / minute ramp to 120°C (248°F)

60 minute dwell @ 120°C (248°F)



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structural film adhesive

### RECOMMENDED CURE 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)	1.5

**Caution:** TenCate EF8020 resin film 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 E.g. 120°C (248°F) service temperature, it is essential to develop the glass transition temperature to the maximum level by a suitable postcure.
- Ramp from initial cure temperature to 120°C (248°F) at 20°C / hour and hold for 30 minutes minimum, this postcure will result in a  $T_g$  (peak  $\tan \delta$ ) of approximately 116°C (240°F).

### PROCESSING

- It is important that all substrates to be adhered are de-greased and free from contamination before use.
- TenCate EF8020 can be successfully cured by vacuum-only, autoclave or press moulding processes.

### STANDARD ROLL QUANTITIES

TENCATE EF8020 RESIN FILM WEIGHT INCLUDING POLYESTER CARRIER (g/m <sup>2</sup> )	ROLL LENGTH [LINEAR m (ft)]	WIDTH [m (ft)]
100	20.5 (67)	1.25 (4)
200	20.5 (67)	1.25 (4)
300	20.5 (67)	1.25 (4)

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.

### HANDLING SAFETY

Observe established precautions for handling epoxy resins and fibrous materials.

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

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

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Page 3 of 3 TENCATE\_EF8020\_V5\_DS\_2017-03-29

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