

# PRODUCT DATASHEET



TENCATE ADVANCED COMPOSITES

## TenCate E720

**Mid temperature curing,  
honeycomb bondable,  
epoxy component  
prepreg**

### PRODUCT TYPE

120°C (248°F) cure  
Toughened epoxy resin system

### TYPICAL APPLICATIONS

- Motor racing
- Marine industries
- General aircraft fittings
- Sporting equipment
- Wide range of engineering applications

### SHELF LIFE

#### Out life

60 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 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.

### PRODUCT DESCRIPTION

TenCate E720 is a toughened epoxy resin system for cures at 120°C (248°F), pre-impregnated into high performance fibres such as carbon, glass and aramid. It is designed for structural applications in the motor racing and marine industries, TenCate E720 would also suit general aircraft fittings, sporting equipment and a wide range of engineering applications. TenCate E720 is compatible for co-cure with TenCate's 120°C (248°F) cure resin film EF72 and TenCate's syntactic core Amlite SC72A. If fire retardant properties are required, consult separate data sheet for TenCate E721-FR.

### TENCATE E720 PREPREG BENEFITS/FEATURES

- Excellent adhesive properties - ideal for honeycomb sandwich construction without the use of a resin film
- Medium tack level - easily laminates to mould surface
- Good impact resistance
- 60 day shelf life at ambient temperature
- Available in woven fabric and unidirection fibres
- Good surface finish
- Low volatile content - no solvents used during processing

### TYPICAL NEAT RESIN PROPERTIES

Density ..... 1.2g/cm<sup>3</sup> (75 lbs/ft<sup>3</sup>) at 23°C (73°F)

Tg (DMTA) after 1 hr at 120°C (248°F)..... Onset: 110°C (230°F); Peak tan δ: 121°C (250°F)

### TYPICAL LAMINATE PROPERTIES

#### HIGH STRENGTH CARBON 280 GSM 5HS T300 (3K) - 0/90° CONFIGURATION WOVEN LAMINATES, CURED 1 HOUR AT 120°C (248°F), RESULTS NORMALISED TO 55% VF.

Property	Condition	Method	Results	
Tensile Strength	RTD	EN ISO 524-4	621 MPa	90 ksi
Tensile Modulus	RTD	EN ISO 524-4	58.4 GPa	8.47 Msi
Poisson's Ratio			0.05	
Compression Strength	RTD	EN 2850	488 MPa	71 ksi
Compression Modulus	RTD	EN 2850	70 GPa	10.0 Msi
In-Plane Shear Strength	RTD	EN ISO 14129	99 MPa	14 ksi
In-Plane Shear Modulus	RTD	EN ISO 14129	3.5 GPa	0.51 Msi
Flexural Strength	RTD	EN ISO 14125	801 MPa	116 ksi
Flexural Modulus	RTD	EN ISO 14125	52.4 GPa	7.6 Msi
ILSS	RTD	EN ISO 14130	62.1 MPa	9 ksi

Tensile strain to failure was 0.9%

#### INTERMEDIATE MODULUS CARBON 276 GSM 2X2 TWILL T800 (6K) - 0/90° CONFIGURATION WOVEN LAMINATES, CURED 1 HOUR AT 120°C (248°F), RESULTS NORMALISED TO 55% VF.

Property	Condition	Method	Results	
Tensile Strength	RTD	EN ISO 527-4	1062 MPa	154 ksi
Tensile Modulus	RTD	EN ISO 527-4	68.2 GPa	9.9 Msi
Poisson's Ratio			0.05	
Compression Strength	RTD	EN 2855	530 GPa	77 ksi
Compression Modulus	RTD	EN 2855	84.1 GPa	12.2 Msi
In-Plane Shear Strength	RTD	EN ISO 14129	109 MPa	16 ksi
In-Plane Shear Modulus	RTD	EN ISO 14129	3.7 GPa	0.54 Msi
Flexural Strength	RTD	EN ISO 14125	866 MPa	126 ksi
Flexural Modulus	RTD	EN ISO 14125	63 GPa	9.1 Msi
ILSS	RTD	EN ISO 14130	60.6 MPa	9 ksi

Tensile strain to failure was 1.4%

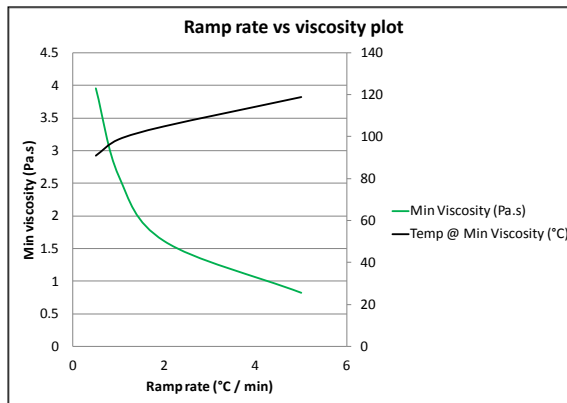
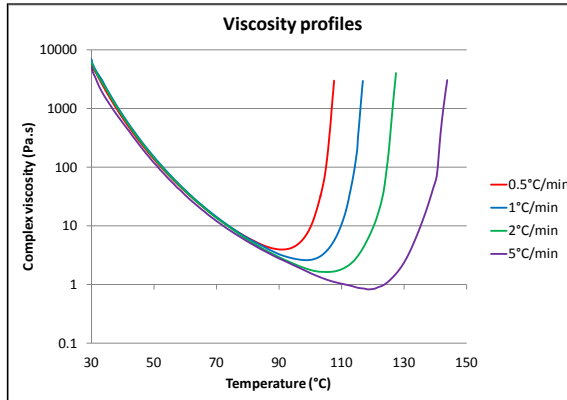
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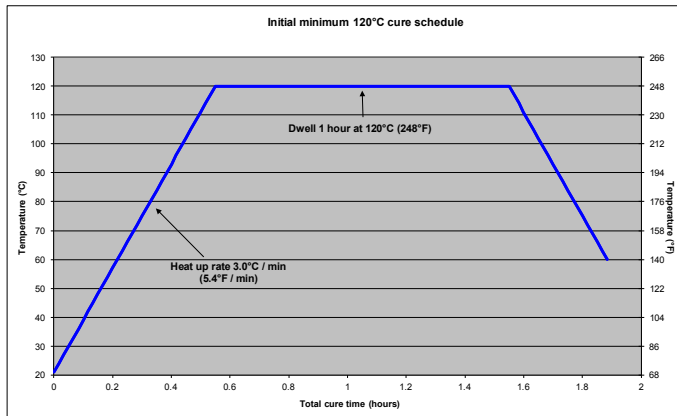
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### RECOMMEND CURE CYCLE

- TenCate E720 can be successfully moulded by vacuum bag, autoclave, or matched die moulding techniques.
- Increase autoclave pressure to 1.4 bar (20 psi) with vacuum applied.
- Vent to atmosphere and raise pressure to 6.2 bar (90 psi) (or max allowed by the core material).
- Increase air temperature at 3°C (5.4°F) /min and hold for 1 hour at 120°C (248°F).
- Allow to cool to 50°C (122°F) before removal of pressure.



### CURE PROPERTIES: VISCOSITY PROFILE 30°C TO 150°C

Ramp rate [°C(°F) /min]	Min viscosity (Pa.s)	Temp @ min viscosity °C (°F)
0.5 (1)	3.95	91°C (196°F)
1.0 (1.8)	2.61	98.7°C (210°F)
2 (3.6)	1.61	105°C (221°F)
5 (9)	0.82	119°C (246°F)

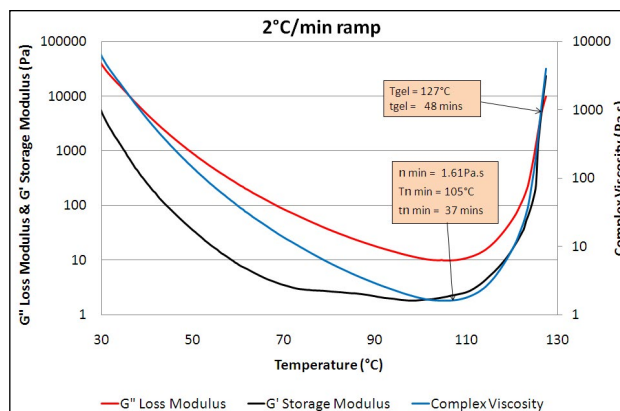
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### TYPICAL ADHESIVE PROPERTIES

Climbing drum peel strength at 20°C (68°F) according to DTD 5577 using 2 plies of 200 g/m<sup>2</sup> TenCate E720 on Aluminium honeycomb 5.2-¼-25-3003.

### HS CARBON 200 GSM 2X2 TWILL T300 TYPE 46% R.W.

Surface	Peel strength N/76mm (in-lb/3 in)
Top	280 (31.5)
Bottom	340 (38)
Mean	310 (35)

Ramped at 2°C /min from 30°C (86°F) – 120°C (248°F)  
Held at 120°C (248°F) for 1 hour 25 P.S.I. pressure applied

### EXOTHERM

In certain circumstances, such as the production of thick section laminates rapid heat up rates or highly insulating masters, TenCate E720 can undergo exothermic heating leading to rapid temperature rise and component degradation in extreme cases.

Where this is likely, a cure incorporating an intermediate dwell of 1 hour at 90°C (194°F) is recommended in order to minimize the risk.

### PROCESSING

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 in 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.

TenCate E720 may also be used for single shot production of sandwich structures incorporating honeycomb or foam cores.

### HANDLING SAFETY

Observe established precautions for handling epoxy resins and fibrous materials – wear gloves. For further information refer to Material Safety Data Sheet.

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