

# PRODUCT DATA SHEET



TENCATE ADVANCED COMPOSITES

## TenCate E732

**Snap cure prepreg**  
**4 minutes at 160°C**  
**= onset T<sub>g</sub> 170°C**

### PRODUCT TYPE

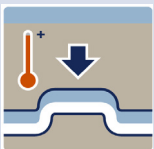
120°C (248°F) to 160°C (320°F) cure

Compression moulding toughened epoxy component prepreg

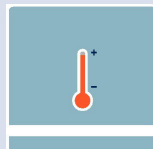
### TYPICAL APPLICATIONS

- Automotive accessories
- Sport and recreation components e.g. bicycle frames and parts

### KEY PROPERTIES



Press moulded



High T<sub>g</sub>

### SHELF LIFE

#### Tack life

14 days @ 18°C (64°F)

#### Storage life

12 months @ -18°C (0°F)

Tack life is time during which the prepreg retains enough tack, drape and handling for easy lay-up.

#### 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 E732 is a snap cure toughened epoxy resin matrix optimised for press curing (compression moulding) prepreg applications. With a cure time of 4 minutes at 160°C, an onset T<sub>g</sub> of 170°C is achieved. At this higher temperature, medium to high production rates can be accomplished, with customers' able to produce beyond 50,000 parts per year.

TenCate E732 is a versatile matrix with a range of processing options allowing a variety of automotive and industrial applications to be realised.

### TENCATE E732 PREPREG BENEFITS / FEATURES

- Hot-in hot-out press processing
- Good surface finish and aesthetics
- Controlled resin flow for ease of processing
- Full T<sub>g</sub> of 170°C (338°F) reached in 4 minutes at 160°C (320°F)
- Short cure cycles between 120°C (248°F) to 160°C (320°F)
- Low tack for easy lay-up

### TYPICAL NEAT RESIN PROPERTIES

Density (ASTM D792-13)	1.24 g/cm <sup>3</sup> (77.4 lbs/ft <sup>3</sup> )
Flow at 100 psi (ASTM D3531 M)	26.3% at 140°C (293°F)
T <sub>g</sub> (DMTA) after 4 minutes at 160°C	Onset: 170°C (338°F); Peak tan δ: 190°C (374°F)
T <sub>g</sub> (DMTA) after 5 minutes at 150°C	Onset: 163°C (325°F); Peak tan δ: 189°C (372°F)
T <sub>g</sub> (DMTA) after 10 minutes at 140°C	Onset: 159°C (318°F); Peak tan δ: 193°C (379°F)

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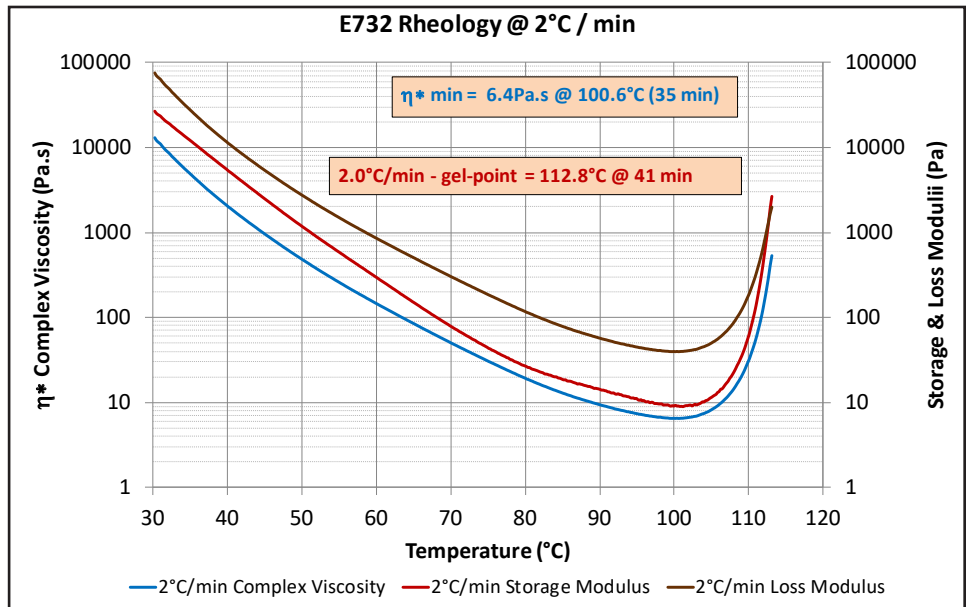
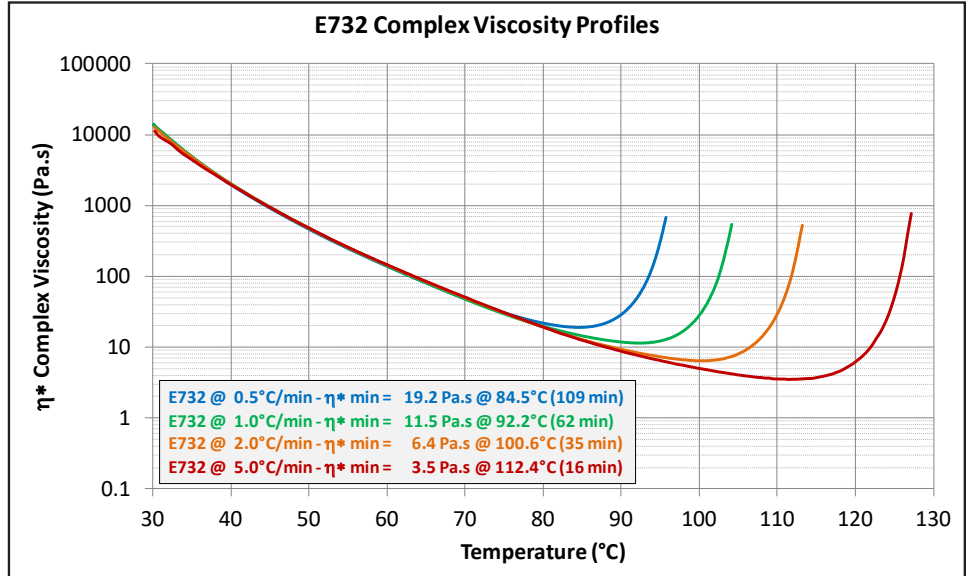


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= onset  $T_g$  170°C

### RHEOLOGY



### 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.

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### CURE CYCLES

During compression moulding the resin will flow until the gel-point (see table below). After the recommended cure time (see table below) a 2 mm part will have generated a T<sub>g</sub> in excess of the cure temperature. The absence of cool-down and heat up rates has obvious benefits for part throughput.

Dwell temperature °C (°F)	Gel time (seconds)	Minimum dwell time (minutes)	Recommended dwell time (minutes)
120 (248)	240	-	20
130 (366)	150	-	15
140 (284)	90	6	10
150 (302)	60	4	5
160 (320)	45	3	4

Alternative cure cycles and moulding techniques may be employed, please consult our technical support staff at our Langley Mill address for advice on specific cure requirements.

### TYPICAL HOT-IN HOT-OUT CURE PROFILES

160°C (320°F) cure temperature		
Dwell	160°C (320°F)	Hold for 4 minutes followed by demould
<b>Total time: 4 minutes</b>		

150°C (302°F) cure temperature		
Dwell	150°C (302°F)	Hold for 5 minutes followed by demould
<b>Total time: 5 minutes</b>		

140°C (284°F) cure temperature		
Dwell	140°C (284°F)	Hold for 10 minutes followed by demould
<b>Total time: 10 minutes</b>		

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### TYPICAL LAMINATE PROPERTIES

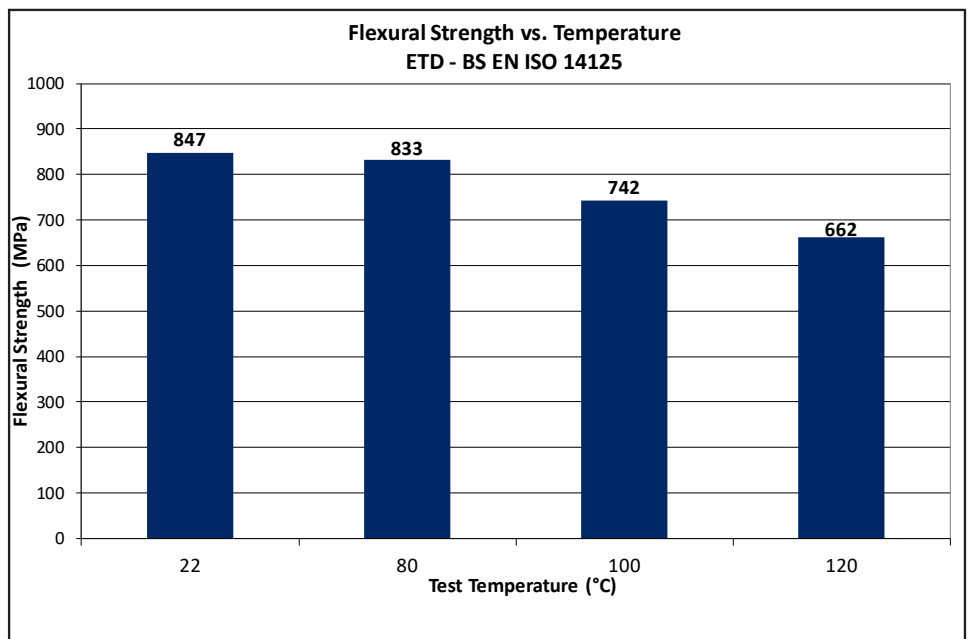
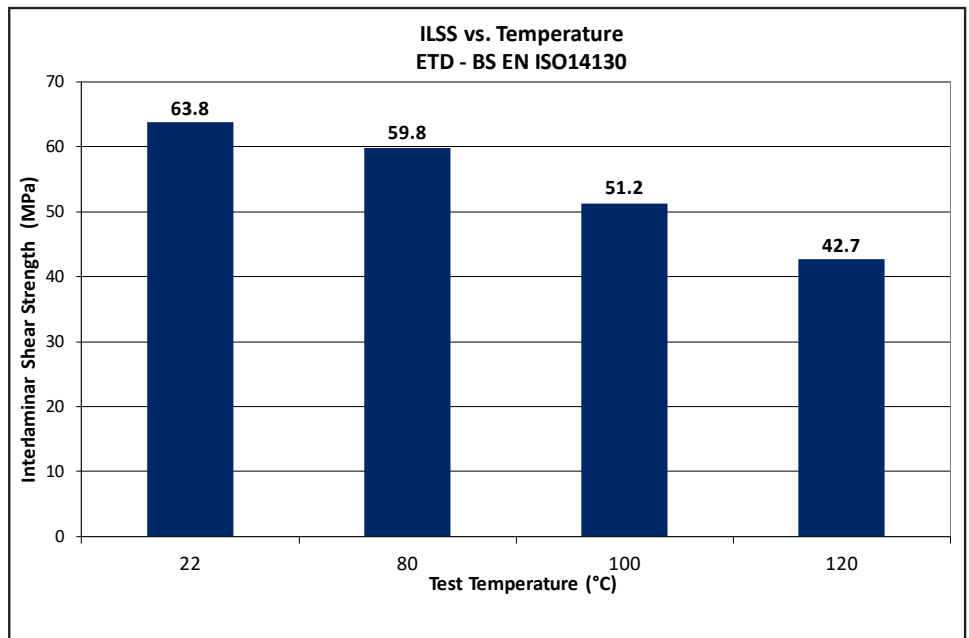
E732-00 HS0838 42% TR30S T 3K CARBON 205 GSM 2x2T PRESS CURED 10 MINUTES AT 140°C (284°F) AT 45 PSI

Property (V <sub>f</sub> 50.9%)	Method	Test Temperature RT
Tensile Strength (MPa) - Warp	BS EN ISO 527-4	713
Tensile Modulus (GPa) - Warp	BS EN ISO 527-4	59.8
Poisson's Ratio - Warp	BS EN ISO 527-4	0.04
Tensile Strength (MPa) - Weft	BS EN ISO 527-4	586
Tensile Modulus (GPa) - Weft	BS EN ISO 527-4	58.4
Poisson's Ratio - Weft	BS EN ISO 527-4	0.06
Compression Strength (MPa) - Warp	prEN2850 B1 & B2	660
Compression Modulus (GPa) - Warp	prEN2850 B1 & B2	50.6
Compression Strength (MPa) - Weft	prEN2850 B1 & B2	675
Compression Modulus (GPa) - Weft	prEN2850 B1 & B2	51.2
Flexural Strength (MPa) - Warp	BS EN ISO 14125	847
Flexural Modulus (MPa) - Warp	BS EN ISO 14125	51.9
Flexural Strength (MPa) - Weft	BS EN ISO 14125	897
Flexural Modulus (MPa) - Weft	BS EN ISO 14125	52.5
In-Plane Shear Strength (MPa)	prEN6031	105
In-Plane Shear Modulus (GPa)	prEN6031	3.86
Poisson's Ratio - Warp	prEN6031	0.8
ILSS Warp (MPa) - Warp	BS EN ISO 14130	63.8
ILSS Weft (MPa) - Weft	BS EN ISO 14130	59.2
G <sub>IC</sub> (J/m <sup>2</sup> )	prEN6033	420

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### RETENTION OF MECHANICAL PROPERTIES AT ELEVATED TEMPERATURE DRY (ETD) PRESS CURED 10 MINUTES AT 140°C AT 45 PSI



Laminate: E732-00 HS0838 42% TR30S T 3K CARBON 205 GSM 2x2T

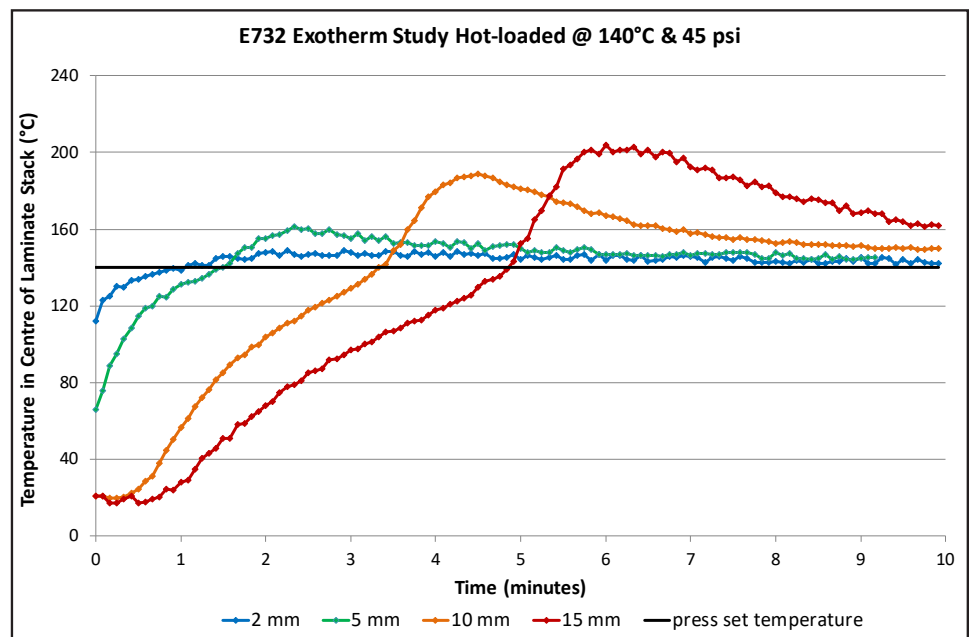
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### EXOTHERM

In certain circumstances, such as the production of thick section laminates rapid heat up rates or highly insulating masters, TenCate E732 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 is recommended in order to minimize the risk.

Caution must be exercised in ensuring safe dwell temperatures and lay-up procedures are adhered to, especially when moulding solid laminates in excess of 5 mm (0.20 in) thickness. Note that the risk of thermal runaway increases with lay-up thickness and cure temperature.



Issued 03/2017

*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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### STORAGE

Tack life is 14 days at ambient temperature 18°C (64°F). Tack life is the time during which the prepreg retains enough tack, drape and handling for easy component lay-up.

Outlife is 21 days at ambient temperature 18°C (64°F). Out life is the maximum time allowed at room temperature before cure.

Refrigerated storage life is 6 months at -18°C (0°F). To avoid moisture condensation:

Following removal from cold storage, allow prepreg to reach room temperature before opening the polythene bag.

### HANDLING SAFETY

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

## TENCATE ADVANCED COMPOSITES

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