ER563
EPOXY MATRIX

GENERAL FEATURES

ER563 is a structural toughened epoxy matrix suitable to impregnate carbon fabric, glass fabric and unidirectional.
It is a 180°C (356°F) curing epoxy matrix resin especially designed where very high temperature resistance is required. After suitable post-cure, ER563 offers a maximum Tg of 238°C (460°F).

MAIN CHARACTERISTICS

- Maximum service temperature of >230°C (446°F) after a suitable post-cure
- Toughened epoxy matrix.
- Suitable for high temperature structural and bodywork applications in the motorsport industry.

QUICK REFERENCE TIPS

It is recommended to cure in autoclave 2h@180°C (356°F). Post cure @200°C is required to achieve the maximum service temperature.

OPERATIONAL INSTRUCTIONS

CURE PROCESS RECOMMENDATIONS

This epoxy matrix system can be processed under a very wide range of temperature as described below:

Cure Temperature* °C (°F)	Post-Cure Temperature** °C (°F)	Tg °C (°F) E' DMA	Approx % Cure
2h@180 (356)	-	218(424)	95
2h@180 (356)	2h@200 (392)	238(460)	98

**Cure in autoclave: Ramp rate of 2°C/min to 180°C*

*** Post-cure in oven: Ramp rate of 1°C/min to 200°C*

ALTERNATIVE CURE CYCLES:

Cure Temperature* °C (°F)	Post-Cure Temperature** °C (°F)	Tg °C (°F) DSC	Approx % Cure
6h@135 (275)	-	157 (315)	76.8
6h@135 (275)	2h@200 (392)	217 (423)	99.7
3h@150 (302)	-	172 (342)	84.4
3h@150 (302)	2h@200 (392)	218 (424)	99.5

**Cure in autoclave: Ramp rate 2°C/min*

*** Post-cure in oven: Ramp rate 1°C/min*

RESIN MATRIX

GENERAL PROPERTIES

Property	Unit	Value	Standard
Storage life @ -18°C (0°F)	months	12	
Out life @ 23°C (73°F)	days	21	
Prepreg volatiles	%wt	< 1	ASTM D3530-97R03
Cured resin density	g/cm^3	1.31	ASTM D792-00
Tg E' (DMA)*	°C (°F)	218 (424)	ASTM E1640-09
Max Dry Tg E' (DMA)**	°C (°F)	238 (460)	ASTM E1640-09
Max Wet*** Tg E' (DMA)	°C (°F)	155 (311)	ASTM E1640-09
Tack		Medium	

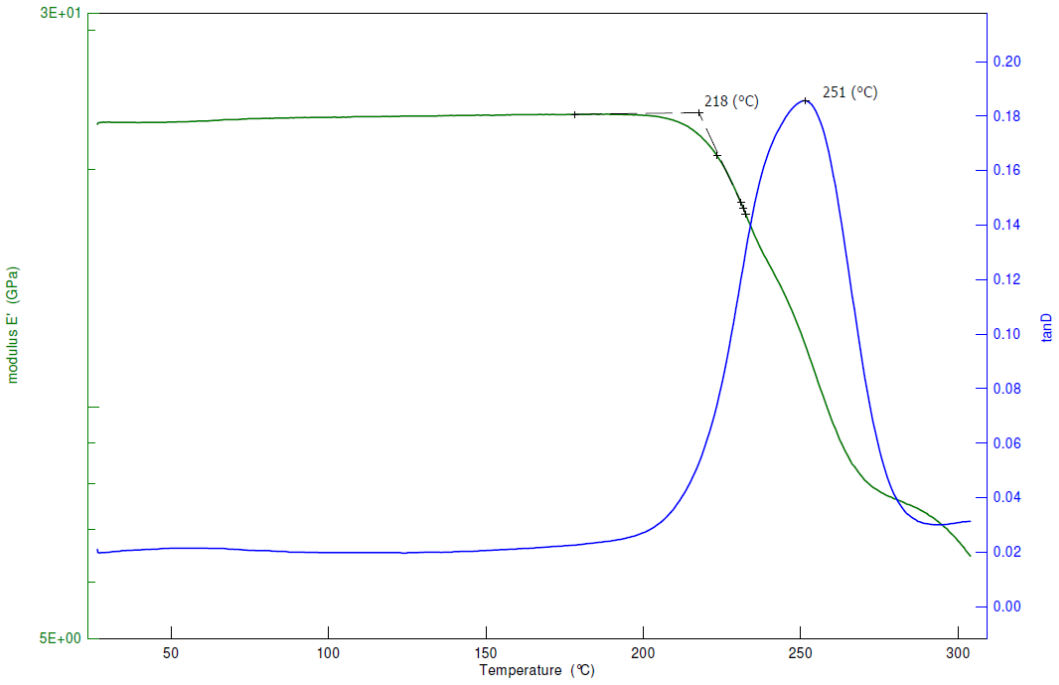
** Laminate cured 2h @ 180°C*

*** Laminate cured 2h @ 180°C + post cured 2h @ 200°C*

**** Laminate conditioned at 70°C / 100%R.H until equilibrium.*

THERMO-MECHANICAL DMA ANALYSIS

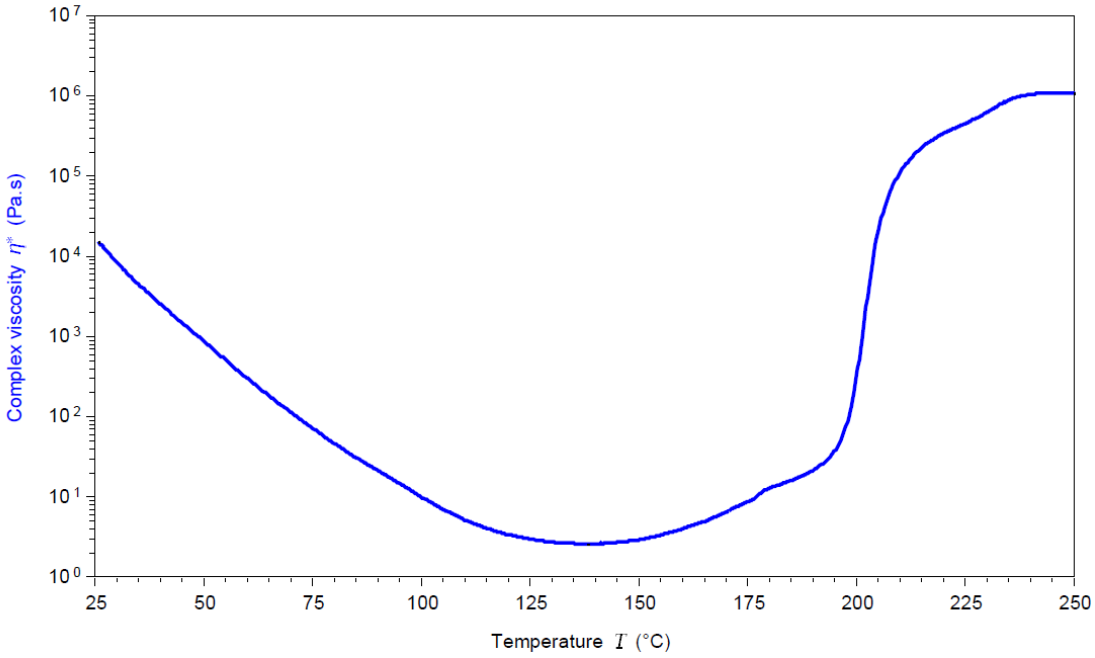
DMA trace of ER563 laminate cured 2h@180°C



DMA Analysis: Temperature vs modulus E' and tanD

Modulus E' is measured under 5°C/min heating rate, 1Hz oscillating frequency.

VISCOSITY PROFILE

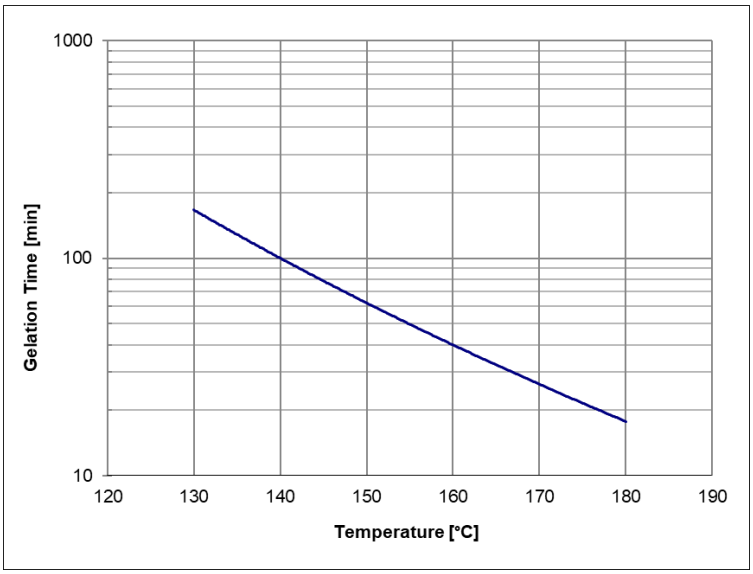


Viscosity profile: temperature vs complex viscosity

Resin complex viscosity is measured under 3°C/min heating rate, 1Hz oscillating frequency.

GEL TIME

***Temperature* (°C)**	***Gel Time* (min)**
130	165
150	64
170	25.5
180	18



CURED PREPREG

MECHANICAL PROPERTIES OF FABRIC PREPREG LAMINATES

CC 204 ER563 42%: 200gsm 2/2 Twill 6K T800 fiber

Test carried out at room temperature
Cure condition: 2 hours @180°C

Cured Material Property	Test method	Units	Actual Values	Values at Vf 55%
Tensile Modulus 0°	ASTM D3039	GPa	67.5	76.4
Tensile Strength 0°	ASTM D3039	MPa	821	929
Compressive Modulus 0°	ASTM D6641	GPa	60.8	68.2
Compressive Strength 0°	SACMA SRM 1R94	MPa	713	797
Flexural Modulus 0°	ASTM D790-03	GPa	58.2	66.8
Flexural Strength 0°	ASTM D790-03	MPa	961	1104
In-Plane Shear Modulus	ASTM D3518	GPa	4.1	-
In-Plane Shear Strength at Failure	ASTM D3518	MPa	109.9	-
In-Plane Shear Strength at 5% shear strain	ASTM D3518	MPa	108.4	-
Interlaminar Shear Strength	ASTM D2344	MPa	84.4	-
Interlaminar Fracture Toughness GIC	ASTM D5528	J/m^2	507	-
On-set E'(DMA)	ASTM E1640-09	°C	218	

SAFETY CONSIDERATIONS

- This product contains epoxy resin, and may cause allergic reaction.
- The use of latex gloves for handling is recommended.
- Waste material should be discarded following national law.

DELIVERY FORM AND PACKAGING

Custom widths, roll size, and packaging are available on request.

Prepreg fabrics: Supplied on 75 mm (3") diameter cardboard cores with release paper on one side and polyethylene film separator on the other side.
Rolls are sealed plastic bags and packed in cardboard boxes.

Standard width: 100 cm (39.4") or 127 cm (50").

Standard length: 50 m (54.7 In yds).

Unidirectional Prepreg: Supplied on 300 mm (12") diameter cardboard cores with release paper on one side and smooth polyethylene film separator on the other side. Rolls are sealed in plastic bags and packed in cardboard boxes.

Standard width: 60cm (23.6"), range from 30cm (11.8") up to 105cm (41.3")
Standard length: 100 m (109 In yds).

HANDLING AND CONDITIONING

- Store rolls at -18 °C, sealed in original packages.
- Shop life at 23°C refers to rolls sealed in original packages.
- Before using the prepreg, remove the roll from the freezer and let it warm up to room temperature for 6 hours sealed in its original package.

IMPORTANT NOTICE:

Details provided in this document have been obtained from carefully controlled samples; data are an overview of this product and should not be intended as technical specification.
Because the properties of this product can be significantly affected by the fabrication and testing techniques employed and since CIT does not control the conditions under which its products are tested and used, CIT cannot guarantee that the properties provided will be obtained with other processes and equipment.
CIT has the right to change any data or information when deemed appropriate.

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