EP 137

LOW SMOKE EPOXY PREPREG

- Low smoke, highly toughened and self-extinguishing epoxy resin system
- Improved hot/wet stability
- Controlled resin flow
- Excellent adhesion to core materials
- Shop life of 15 days at room temperature, 21ºC (70ºF)

INTRODUCTION

EP 137 prepreg resin system is a 125ºC (257ºF) curing system with a high degree of flame-retardancy and low smoke behaviour. EP 137 also provides excellent properties such as high interlaminar shear strength, adjustable tackiness and flow control during processing.

EP 137 is suitable for high performance light-weight composite structures required to meet the highest structural requirements for interior applications. For example, passenger aircraft floors, where EP 137 is used as a top layer to avoid electro-galvanic corrosion of the carbon-aluminium structure and improve overall impact behaviour of the panels.

Both monolithic and sandwich structures can be easily manufactured with EP 137 prepreg. The curing can be performed by press, vacuum and autoclave moulding at a temperature range between 120ºC (248ºF) and 155ºC (311ºF) and a pressure of at least 0.7 bar / 10 psi.

Such composite structures can be exposed easily to temperatures in the range of -55ºC (-67ºF) up to +90ºC (194ºF).

PRODUCT INFORMATION

EP 137 epoxy prepreg is available in a range of product formats. Please consult your local sales contact for further information. Full contact details can be found at www.gurit.com.

PROPERTY	EP 137-03-40	EP 137-C509-180-G138-50P	TEST STANDARD
Resin	Epoxy	Epoxy	-
Prepreg Weight	80 +10/-3 g/m²	410 ± 15 g/m²	EN 2557
Volatile	< 1.5 %	< 2.0 %	EN 2330 / EN2558
Resin Flow	> 4 %	> 5 %	EN 2332 / EN 2560
Tackiness	Medium to high	Medium to high	-
Fibre Material	E-glass	12k HTS + E-glass	EN 2559
Fabric Weight	48 g/m² ± 4 %	180 + 25 (scrim) ± 5 g/m²	-
Weave Style	plain weave	unidirectional	-
Service Temperature (Cured State)	-55ºC to +90ºC (-67ºF to +194ºF)		-
Resin Content	40 ± 3 %	50 ± 3 %	EN 2559
Typical Roll Length	50 m / 55 yd	>100 m/ 110 yd	-
Typical Roll Width	1.55 m / 61 in	1.0 m / 39 in	-

PREPREG PROPERTIES

TRANSPORT & STORAGE

When stored sealed & out of direct sunlight.

All prepreg materials should be stored in a freezer when not in use to maximise their useable life, since the low temperature reduces the reaction of resin and catalyst to virtually zero. However, even at -18°C (0°F), the temperature of most freezers, some reaction will still occur. In most cases after some years, the material will become unworkable.

STORAGE TEMP		UNIT	VALUE
-18°C	0°F	months	6
+21°C	+70°F	days	15

HEALTH AND SAFETY

Please refer to product SDS for up to date information specific to this product.

QUALIFICATIONS / FIRE PERFORMANCE

PRODUCT	QUALIFICATIONS	FIRE PERFORMANCE
EP 137-03-40	¬ ABS 5672-01 ¬ AIMS 05-10-024 (certification)	¬ FAR 25.853 Flame Test (self-extinguishing) ¬ ABD 0031 NBS Smoke Chamber
EP 137-C509-180-G138-50P	¬ ABS 5671-26 ¬ AIMS 05-20-005	¬ FAR 25.853 Flame Test (self-extinguishing)

CURING CONDITIONS

PROPERTY	STANDARD CURE			TEST STANDARD
Cure Process	Press / Autoclave / Vacuum-bag			-
Cure Pressure	0.7 – 4 bar / 10 – 58 psi			-
Heat-up Ramp Rate	Max 3ºC / 5.4ºF per min			-
Dwell Temperature	120ºC / 248ºF	140ºC / 284ºF	155ºC / 311ºF	-
Dwell Time	90 min	60 min	30 min	-
Cool-down Ramp Rate	4ºC per min / 7.2ºF per min			-
Remove material at	< 60ºC / 140ºF			-

LAMINATE PROPERTIES

All data presented in this datasheet is based on the mechanical testing of a single batch of material.

MECHANICAL PROPERTIES AT ROOM TEMPERATURE (21ºC / 70ºF)

PROPERTY	SYMBOL	EP 137-03-40		EP 137-C509-180-G138-50P		TEST STANDARD
0º Flexural Strength	X_F	600 MPa	87 ksi	1100 MPa	160 ksi	ISO 178
0º Flexural Modulus	E_{F11}	19 GPa	2.8 msi	100 GPa	14.5 msi	ISO 178
0º Tensile Strength	X_T	500 MPa	73 ksi	-	-	ISO 527-4
0º Tensile Modulus	E_{T11}	20 GPa	2.9 msi	-	-	ISO 527-4
0º Interlaminar Tensile Shear Strength	X_{ILTSS}	40 MPa	5.8 ksi	60 MPa	8.7 ksi	AITM 1.0019
Climbing Drum Peel*	σ_{PEEL}	-		110 N/75mm		EN 2243-3
Bending Load*	$F_{BENDING}$	-		800 N		AITM 1.0018
Glass Transition Temperature	Tg	125ºC	257ºF	125ºC	257ºF	ISO 6721 (DMA)

**sandwich structure: 2 plies per side; core 3.2-48kg/m³ 9.4mm (honeycomb)*

MECHANICAL PROPERTIES AT 80ºC (176ºF)

PROPERTY	SYMBOL	EP 137-03-40		EP 137-C509-180-G138-50P		TEST STANDARD
0º Flexural Strength	X_F	500 MPa	73 ksi	-	-	ISO 178
0º Flexural Modulus	E_{F11}	16 GPa	2.3 msi	-	-	ISO 178
0º Tensile Strength	X_T	-	-	-	-	ISO 527-4
0º Tensile Modulus	E_{T11}	-	-	-	-	ISO 527-4
0º Interlaminar Tensile Shear Strength	X_{ILTSS}	35 MPa	5.1 ksi	40 MPa	5.8 ksi	AITM 1.0019
Climbing Drum Peel*	σ_{PEEL}	-		125 N/75mm		EN 2243-3
Bending Load*	$F_{BENDING}$	-		650 N		AITM 1.0018
Glass Transition Temperature	Tg	125ºC	257ºF	125ºC	257ºF	ISO 6721 (DMA)

**sandwich structure: 2 plies per side; core 3.2-48kg/m³ 9.4mm (honeycomb)*

BURN BEHAVIOUR

PROPERTY	EP 137-03-40	EP 137-C509-180-G138-50P	TEST STANDARD
Flammability vertical, 60s flaming – Burn length	110 mm	-	AITM 2.0002A
Flammability vertical, 60s flaming – After flame time	3 s	-	AITM 2.0002A
Flammability vertical, 60s flaming – After flame time of drips	0 s	-	AITM 2.0002A
Max. specific optical smoke density within 4 min	60 Ds	-	AITM 2.0007A

NOTICE

All advice, instruction or recommendation is given in good faith but the Company only warrants that advice in writing is given with reasonable skill and care. No further duty or responsibility is accepted by the Company. All advice is given subject to the terms and conditions of sale (the Conditions) which are available on request from the Company or may be viewed at the Company's Website: www.gurit.com/terms-and-conditions.aspx.

The Company strongly recommends that Customers make test panels and conduct appropriate testing of any goods or materials supplied by the Company to ensure that they are suitable for the Customer's planned application. Such testing should include testing under conditions as close as possible to those to which the final component may be subjected. The Company specifically excludes any warranty of fitness for purpose of the goods other than as set out in writing by the Company. The Company reserves the right to change specifications and prices without notice and Customers should satisfy themselves that information relied on by the Customer is that which is currently published by the Company on its website. Any queries may be addressed to the Technical Services Department.

Gurit are continuously reviewing and updating literature. Please ensure that you have the current version, by contacting Gurit Marketing Communications or your sales contact and quoting the revision number in the bottom right-hand corner of this page.

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