

EP 141

HIGH PERFORMANCE EPOXY PREPREG

- ▮ High performance toughened and self-extinguishing epoxy resin system
- ▮ Low smoke density epoxy system
- ▮ Good hot-wet properties at 135°C (275°F)
- ▮ Self-adhesive to core materials

INTRODUCTION

EP 141 has been developed for the realisation of extremely light-weight composite structures with high specific mechanical properties, good impact properties and excellent adhesion to honeycomb cores and metallic substrates.

EP 141 resin can be coloured in “mouse grey” according to AIRBUS DAN1200 2.5 to save on painting costs. EP 141 is also available in natural colour.

EP 141 is a 125°C (257°F) system, which means that it can be cured at a temperatures from 120°C (248°F) up to 160°C (320°F).

Both monolithic and sandwich structures can be easily manufactured with this prepreg. The curing can be performed by press, vacuum and autoclave moulding with a pressure of at least 0.7 bar / 10 psi.

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

PRODUCT INFORMATION

EP 141 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 141-G218-40	EP 141-G218-50	TEST STANDARD
Resin	Epoxy	Epoxy	-
Prepreg Weight	317 ± 15 g/m ²	380 ± 15 g/m ²	EN 2329
Volatile	< 1.5 %	< 1.5 %	EN 2330
Resin Flow	> 15 %	> 15 %	EN 2332
Tackiness	Medium to high	Medium to high	-
Fibre Material	S2-glass	S2-glass	-
Fabric Weight	190 g/m ² ± 5 %	190 g/m ² ± 5 %	EN 2331
Weave Style	8H satin	8H satin	-
Service Temperature (Cured State)	-55°C to +90°C (-67°F to +194°F)		-
Resin Content	40.0 +3 %	50.0 +3 %	EN 2331
Typical Roll Length	50 m / 55 yd	50 m / 55 yd	-
Typical Roll Width	1.45 m / 57 in	1.45 m / 57 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 141-G218-40	<ul style="list-style-type: none"> → ABS 5672-05 → AIMS 05-10-034 A (certification) 	<ul style="list-style-type: none"> → FAR 25.853 Flame Test (self-extinguishing) → ABD 0031 NBS Smoke Chamber
EP 141-G218-50	<ul style="list-style-type: none"> → ABS 5672-06 → AIMS 05-10-034 B (certification) 	<ul style="list-style-type: none"> → FAR 25.853 Flame Test (self-extinguishing) → ABD 0031 NBS Smoke Chamber

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 3°C / 5.4°F per min			-
Dwell Temperature	120°C / 248°F	140°C / 284°F	155°C / 311°F	-
Dwell Time	90 min	60 min	30 min	-
Cool-down Ramp Rate	4°C per min / 7.2°F per min			-
Remove material at	< 60°C / 140°F			-

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 (21°C / 70°F)

PROPERTY	SYMBOL	EP 141-G218-40		EP 141-G218-50		TEST STANDARD
0° Tensile Strength	X _T	600 MPa	87 ksi	600 MPa	87 ksi	ISO 527-4
0° Tensile Modulus	E _{T11}	22 GPa	3.2 msi	22 GPa	3.2 msi	ISO 527-4
0° Compressive Strength	X _C	540 MPa	78 ksi	540 MPa	78 ksi	EN 2850
0° Compressive Modulus	E _{C11}	25 GPa	3.6 msi	25 GPa	3.6 msi	EN 2850
0° Interlaminar Tensile Shear Strength	X _{ILTSS}	30 MPa	4.4 ksi	30 MPa	4.4 ksi	AITM 1.0019
0° Interlaminar Shear Strength	X _{ILSS}	35 MPa	5.1 ksi	35 MPa	5.1 ksi	ISO 14130
Climbing Peel Drum*	σ _{PEEL}	-		130 N/75 mm		EN 2243-3
Bending Load*	F _{BENDING}	-		1200 N		AITM 1.0018
Glass Transition Temperature	T _g	125°C	257°F	125°C	257°F	ISO 6721 (DMA)

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

MECHANICAL PROPERTIES AT 80°C (176°F)

PROPERTY	SYMBOL	EP 141-G218-40		EP 141-G218-50		TEST STANDARD
0° Tensile Strength	X _T	540 MPa	78 ksi	540 MPa	78 ksi	ISO 527-4
0° Tensile Modulus	E _{T11}	-	-	-	-	ISO 527-4
0° Compressive Strength	X _C	440 MPa	64 ksi	440 MPa	64 ksi	EN 2850
0° Compressive Modulus	E _{C11}	-	-	-	-	EN 2850
0° Interlaminar Tensile Shear Strength	X _{ILTSS}	20 MPa	2.9 ksi	20 MPa	2.9 ksi	AITM 1.0019
0° Interlaminar Shear Strength	X _{ILSS}	25 MPa	3.6 ksi	25 MPa	3.6 ksi	ISO 14130
Climbing Peel Drum*	σ _{PEEL}	-		150 N/75 mm		EN 2243-3
Bending Load*	F _{BENDING}	-		1000 N		AITM 1.0018
Glass Transition Temperature	T _g	125°C	257°F	125°C	257°F	ISO 6721 (DMA)

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

BURN BEHAVIOUR

PROPERTY	EP 141-G218-40	EP 141-G218-50	TEST STANDARD
Flammability vertical, 60s flaming – Burn length	100 mm	100 mm	AITM 2.0002A
Flammability vertical, 60s flaming – After flame time	0 s	0 s	AITM 2.0002A
Flammability vertical, 60s flaming – After flame time of drips	0 s	0 s	AITM 2.0002A
Max. specific optical smoke density within 4 min	40 Ds	40 Ds	AITM 2.0007A
Heat Release	30 kW m ²	30 kW m ²	AITM 2.0006
Heat Release Rate	35 kW*min m ²	35 kW*min m ²	AITM 2.0006

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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