SE 180

5 MINUTE CURING PREPREG

- Epoxy Prepreg Optimised for Press Moulding Applications
- Developed for Automotive Component Production
- Good Surface Finish
- Net Shape Components
- Hot-in, Hot-out Press Processing
- 5 Minute Cure Time at 150°C

INTRODUCTION

SE 180 Prepreg has been specifically developed for high volume press moulding applications and enables users to perform cycle times of 5 minutes.

The products characteristics facilitate simple preforming prior to moulding and the ability to fill edged detail during moulding, allowing net shaped parts to be manufactured.

PRODUCT INFORMATION

SE 180 is available in a range of product formats, including AFP tape formats. Please consult your local sales contact for further information. Full contact details can be found at www.gurit.com.

PROPERTY	UNIT	HEC195	RC380T	TEST STANDARD
Tack	rating	Low	Low	-
Nominal Resin Content (by weight)	%	39	42%	ISO 1172
Nominal Fibre Weight	g/m^2	195	380	ISO 1172
Nominal Areal Weight	g/m^2	320 +/- 15	656 +/-39	ISO 1172
Backer	-	Paper / Embossed Poly Backer	Paper / Embossed Poly Backer	-

PREPREG PROPERTIES

PROCESING INFORATION

SE 180 can be cured at varying temperatures above 130°C. Cure times are shown in the table below. Press closure cycle needs to be determined by users as optimum press cycle will depend on part and mould shape. Press closure needs to occur before gelation of the resin, indicative gelation times are given below.

HOT IN HOT OUT CURE TEMPERATURE / TIME	TIME TO 1000Pa.s RESIN GEL TIME
Cure = 130°C for 20 minutes	190 Seconds
Cure = 140°C for 10 minutes	110 Seconds
Cure = 150°C for 5 minutes	70 Seconds

TRANSPORT & STORAGE

Store sealed & out of direct sunlight. Frozen transport should be used when transferring between sites.

The storage time at 21°C is determined as the point that changes in handling characteristics of the prepreg are evident (tack and drape). As the prepreg resin reacts at room temperature (21°C) changes in resin flow and minimum viscosity can be observed this could affect the processing characteristics of the prepreg.

STORAGE TEMP		UNIT	VALUE
-18°C	0°F	months	18
+21°C	+70°F	weeks	4

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 After removal from cold storage prepreg should be allowed to warm to room temperature before plastic bag is removed to prevent condensation.

HEALTH AND SAFETY

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

MINIMUM CURE TIME & TEMPERATURE

PROPERTY	PRESS MOULDING		TEST STANDARD
Typical Laminate	6 x HEC195 Layers		-
Typical Ramp Rate	N/A – Load press hot at cure temperature		-
Cure Temperature	130°C (266°F)	150°C (302°F)	-
Cure Dwell Time	20 min	5 min	-
Cure Pressure	> +8bar (116Psi)		-
Cure Vacuum	-		-
De-mould Temperature	130°C (266°F)	150°C (302 °F)	-
Dry Tg_1 (DMA)	-	175°C (347°F)	ASTM D7028
Wet Tg_1 (DMA) - 24hrs at 100°C	-	144°C (291°F)	ASTM D7028

LAMINATE PROPERTIES

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

CURED LAMINATE PROPERTIES

Cured using standard processing techniques and a minimum cure time of 5 minutes at 150°C (302°F).

PROPERTY	SYMBOL	HEC195		RC380T		TEST STANDARD
Fabric / Fibre Description	-	HEC = High Elongation Carbon (Fibre strength >4.8GPa Fibre Modulus 242±15GPa)		2 x 2 Woven Carbon Fibre Twill, 380 ±15g/m^2 T700 fibre, 12k tow, Carbon (Fibre strength >4.5GPa Fibre Modulus 230±9GPa)		-
Resin Content	-	39 ± 3%		42 ± 3%		-
Cure Method	-	Press Moulded at 15 bar (217Psi)		Press Moulded at 15 bar (217Psi)		-
Cure Schedule	-	5 minutes at 150°C (266°F)		5 minutes at 150°C (266°F)		-
Cured Ply Density	ρ_{ply}	1.54 g/cm^3	0.055 lb/in^3	TBC	TBC	Archimedes
Glass Transition Temperature	Tg_1	175 - 178^{0}C (347 - 352°F)				ISO 6721 (DMA)
Fire Resistance	-	Passes Federal Motor Vehicle safety Standard No.302 (Laminate test was 2.4mm thickness)		N/A		FMVSS No.302
Cured Ply Thickness	t_{ply}	0.21 mm	0.0083 in	0.40 mm	0.0157 in	ASTM D 3171 Method II
Fibre Volume Fraction	V_f	50-55 %		53-55 %		ASTM D 3171 Method II
0° Tensile Strength*	X_T	2186 MPa	317 Ksi	1158 MPa	168 Ksi	ISO 527
0° Tensile Modulus*	E_{T11}	136 GPa	20 Msi	70 GPa	10 Msi	ISO 527
0° Compressive Strength*	X_C	1322 MPa	191 Ksi	750 MPa	109 Ksi	SACMA SRM1-94
0° Compressive Modulus*	E_{C11}	123 GPa	18 Msi	64 GPa	9.3 Msi	SACMA SRM1-94
90° Tensile Strength**	Y_T	49 MPa	7.1 Ksi	1076 MPa	156 Ksi	ISO 527
90° Tensile Modulus**	E_{T22}	7.9 GPa	1.14 Msi	64 GPa	9.3 Msi	ISO 527
90° Compressive Strength**	Y_C	218 MPa	32 Ksi	727 MPa	106 Ksi	SACMA SRM1-94
90° Compressive Modulus**	E_{C22}	8.2 GPa	1.18 Msi	65 GPa	9.4 Msi	SACMA SRM1-94
0° Flexural Strength	X_F	1723 MPa	249 Ksi	782 MPa	115 Ksi	ISO 14125
0° Flexural Modulus	E_{F11}	108 GPa	16 Msi	56 GPa	8.1 Msi	ISO 14125
±45° In-Plane Shear Strength	τ_{12}	68 MPa	9.9 Ksi	78 MPa	11 Ksi	ISO 14129
±45° In-Plane Shear Modulus	G_{12}	3.3 GPa	0.48 Msi	4.0 GPa	0.58 Msi	ISO 14129
±45° In-Plane Shear Poisson's Ratio	ν_{12}	0.8		0.74		ISO 14129
0° ILSS	X_{ILSS}	96 MPa	13.9 Ksi	45 MPa	6.5 Ksi	ISO 14130

** normalised to 60% fibre volume fraction*

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NOTICE

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The Company strongly recommends that Customers make test panels in the final process conditions and conduct appropriate testing of any goods or materials supplied by the Company prior to final use 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. Due to the varied nature of end-use applications, the Company does, in particular, not warrant that the test panels in the final process conditions and/or the final component pass any fire standards.

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 is continuously reviewing and updating literature. Please ensure that you have the current version by contacting your sales contact and quoting the revision number in the bottom left-hand corner of this page.

TECHNICAL CONTACT INFORMATION

For all other enquiries such as technical queries:

Telephone	+ 44 1983 828000 (08:30 – 17:00 GMT)
Email	technical.support@gurit.com

24-HOUR CHEMICAL EMERGENCY NUMBER

For advice on chemical emergencies, spillages, fires or exposures:

Europe	+44 1273 289451
Americas	+1 646 844 7309
APAC	+65 3158 1412

E customer.support@gurit.com

W www.gurit.com