SA 80

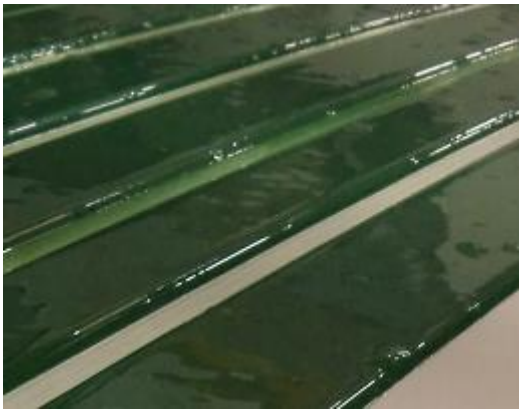
TOUGHENED EPOXY ADHESIVE FILM

- Low temperature cure
- Designed for bonding prepreg skins to honeycomb and foam cores
- Compatible with Gurit SE84LV, SPARPREG, ST94 & ST95 products
- Toughened for impact resistance and peel strength
- Controlled flow for maximum bond integrity
- Lloyd's Register certified formats

INTRODUCTION

SA 80 adhesive film is a toughened film unsupported or on a glass carrier with excellent tack and drape characteristics.

It offers many advantages over traditional wet lay-up techniques for bonding of composite skins to cores, including; consistent bond-line thickness and weight, high strain to failure, high toughness, handling convenience, controlled flow and an 8 week out-life at ambient temperature (18-22ºC/64-72ºF).



INSTRUCTIONS FOR USE

CORE BONDING

Various core materials can be used with the adhesive film system, including certain foams (provided that special procedures are followed) and honeycombs.

The system is fully compatible with Ampreg and Spabond formulated resin systems.

NOMEX OR ALUMINIUM HONEYCOMB CORES

1. Core to First Skin

For bonding honeycomb into place onto a cured laminate, a minimum of a 250g film should be used, with extra resin film used where there are any steps, wrinkles or unevenness in the laminate. Apply the film over the laminate with the paper side uppermost then remove the release paper. Bed in the honeycomb core to the film and splice the core segments with a wrap of at least two layers of film applied to each honeycomb edge. After positioning all the core pieces, vacuum the core in place using at least 80% vacuum and cure the adhesive film for a minimum of 4 hours at 85ºC (185ºF). The full cure required will be achieved when the outer skin is cured and bonded into place, using one of the cure cycles below.

2. Second Skin to Core

One procedure is to co-cure the outer skin together with the core bond. For this, a single layer of 250g adhesive film should be rolled over the honeycomb surface, and bedded well into the cells. In this way it should be possible to reposition misplaced prepreg plies, without disturbing the adhesive layer. With a controlled flow system such as SE 70, care should be taken to ensure that excess resin is not removed from the adhesive interface, by using a fine microporous release film. It is also critical when using this process that adequate precautions are taken to perforate the SA 80 skin to allow air removal from the Nomex prior to gelation. Failure to do so will result in skin blow off (contact Gurit Technical Services or see SE 84LV / SA 80 Processing Notes for details).

PVC FOAM

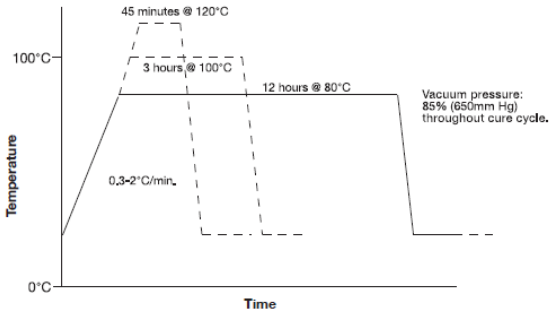
Due to the wide variety of PVC and other foams available and the cure temperatures involved, special procedures have been developed which must be carefully followed when using foam with SA 80. Use of SA 80 with untreated PVC foams is not recommended due to potential inhibition of cure.

CORECELL FOAM

Use of Corecell foam is preferable to PVC.

CURING SCHEDULE

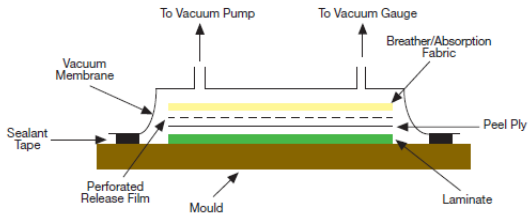
For full cure of SA 80 to be achieved, one of the following cure cycles is recommended. If SA 80 is being co-cured with a prepreg skin, then the cure cycle used for SA 80 will also be that of the prepreg in the laminate. Where required cure cycle of the prepreg being used and the SA 80 is different, then whichever cure is the longest should be applied.



VACUUM TECHNIQUES

Consolidation of the core bond can be obtained either by vacuum or pressure bags. Heating can be economically and effectively achieved with either space heaters under an insulated tent or heated blankets with insulation on top. Details of the various types of system are available from Technical Services.

A schematic diagram of a typical vacuum bag arrangement is shown below.



PRODUCT INFORMATION

AVAILABILITY

SA 80 is available in a variety of fabric forms, normally supplied on a single silicon paper. The product formats listed to the right also benefit from 3rd Party Certification

PRODUCT DESCRIPTION	STATUS	CERTIFICATION
SA 80 Adhesive Film	Valid	Lloyd's Register MATS/4922/1

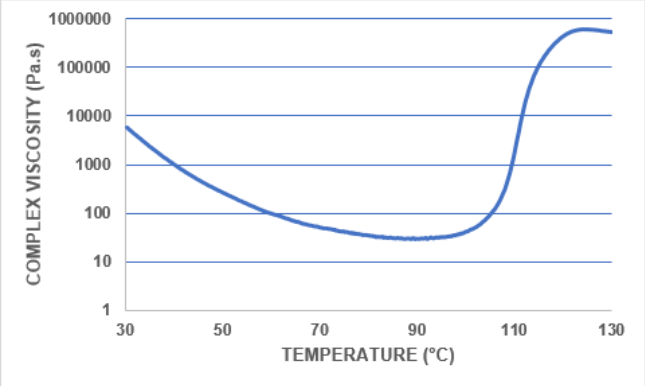
PROPERTY	UNIT	SA 80				
Tack level	-	High				
Colour	-	Green				
Adhesive Film Weight (standard products)	g/m²	100	150	150	250	400
Glass Carrier Weight	g/m²	-	-	25	25	25
Total Film Weight	g/m²	100	150	175	275	425

PREPREG PROPERTIES

RHEOLOGY DATA

SA 80 resin viscosity profile conducted at 1°C (1.8°F) per minute.

PROPERTY	VALUE	
Minimum Viscosity	292 P	
Temperature at Minimum Viscosity	89°C	192°F



TRANSPORT & STORAGE

When stored sealed & out of direct sunlight.

STORAGE TEMP		UNIT	VALUE
-18°C	0°F	months	24
+18-22°C	+64-72°F	weeks	8

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.

HEALTH AND SAFETY

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

MINIMUM CURE TIME & TEMPERATURE

Recommended minimum cure is 12 hours at 80°C (176°F) using vacuum bag processing.

PROPERTY	OVEN / VAC BAG					TEST STANDARD
Typical Ramp Rate	1 – 2°C (2 – 4°F) per minute					-
Cure Temperature	80°C (176°F)	90°C (194°F)	100°C (212°F)	110°C (230°F)	120°C (248°F)	-
Cure Dwell Time	12 hours	6 hours	3 hours	90 minutes	60 minutes	-
Cure Pressure	-1bar (14.5 Psi)					-
Dry Tg_1 (DMA)	99ºC / 210ºF					ISO 6721 (DMA)

LAMINATE PROPERTIES

CURED RESIN PROPERTIES

Oven cured using standard vacuum bag processing techniques and a cure of 60 minutes at 120°C (248°F).

PROPERTY	SYMBOL	SA 80		TEST STANDARD
Tensile Strength	σ_T	48 MPa	7 ksi	ISO 527-2
Tensile Modulus	E_T	2.5 GPa	0.36 Msi	ISO 527-2
Flexural Strength	σ_F	90 MPa	13 Ksi	ISO 178
Flexural Modulus	E_F	2.2 GPa	0.32 Msi	ISO 178

CURED ADHESIVE MECHANICAL PROPERTIES

Oven cured using standard vacuum bag processing techniques and a cure of 60 minutes at 120°C (248°F).

PROPERTY	SYMBOL	SA 80		TEST STANDARD
Cure cycle	-	1 hr / 120ºC (248ºF)		
Adhesive Film Weight (excl. 25g carrier)	-	250g/m^2		
Lap Shear Strength on Steel	τ_{STEEL}	36 MPA	5.2 Ksi	BS 5350 C5
0° Climbing Drum Peel, Tool Face *	σ_{PEEL}	229 N/ 75mm		BS 5350 C13
0° Climbing Drum Peel, Vac Bag Face*	σ_{PEEL}	337 N/ 75mm		BS 5350 C13

** SE84LV / HEC skins either side of 48kg/m^3 Aramid Honeycomb*

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.

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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
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APAC	+65 3158 1412

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