

# SA 75-90

## TOUGHENED EPOXY ADHESIVE FILM

- Economical Low temperature curing (70°C) with long shelf life
- Designed for bonding prepreg skins to honeycomb and most core types
- Compatible with all Gurit Prepreg & SPRINT products
- Toughened for impact resistance and peel strength
- Controlled flow for maximum bond integrity

### INTRODUCTION

**SA 75-90 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 (18-22°C/64-72°F). SA75-90 has a flexible cure envelope of 70°C (158°F) to 120°C (248°F).



# INSTRUCTIONS FOR USE

## PREPARATION

When preparing the lay-up the film should be removed from the freezer and allowed to thaw in a sealed bag. This may take 6 to 24 hours depending on roll size. This prevents atmospheric moisture from condensing on the film which may cause voiding on cure.

## SECONDARY BONDING & MULTI-STAGE LAMINATING

SA75-90 is ideally suited to improve the bond when laying up prepreg onto pre-cured surfaces. The precured surface must be suitably abraded and cleaned or peel plied before application of 100-200g SA75-90. The adhesive film should be vacuum de-bulked into position to ensure no air is trapped beneath. Subsequent laminates can then be applied as normal.

## CORE BONDING

SA75-90 is ideally suited for core bonding applications. Recommended for use with Gurit Corecell®.

## 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 or use MP75-90 paste. After positioning all the core pieces, vacuum bag and cure the adhesive film. 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 min. 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 very lightweight skins excess resin bleed may need to be controlled, by using a fine microporous release film. It is also critical when using this process that adequate precautions are taken to perforate the SA 75-90 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 Processing Notes for details).

## CORECELL® FOAM

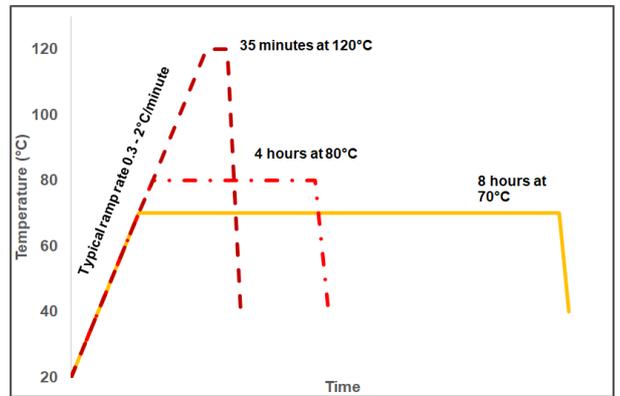
SA75-90 is fully compatible with all types of Corecell® foam. Pin-holed plain sheet or thermoformed Corecell® can be bonded with a minimum 250g/m<sup>2</sup> SA75-90. If using the lowest density grades or sliced sheets, 400g/m<sup>2</sup> film or more may be required. The user should satisfy themselves that sufficient adhesive film is provided to fill any kerfs in cut foam.

## PVC FOAM

Use of SA 75-90 with untreated PVC foams is not recommended. Due to potential inhibition of cure, special procedures have been developed which must be carefully followed when using PVC foam with SA 75-90. For details of these processes, please contact Technical Support.

## CURING SCHEDULE

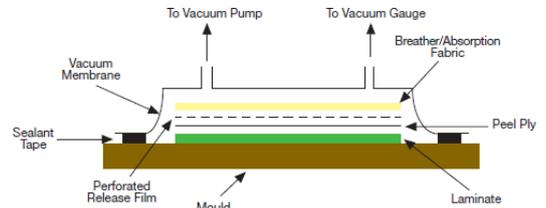
For full cure of SA 75-90 to be achieved, one of the following cure cycles is recommended. If SA 75-90 is being co-cured with a prepreg skin, then the cure cycle used for SA 75-90 will also be that of the prepreg in the laminate. Where required cure cycle of the prepreg being used and the SA 75-90 is 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.

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



## PRODUCT INFORMATION

### AVAILABILITY

SA 75-90 is available with or without a carrier, normally supplied on a single silicon paper.

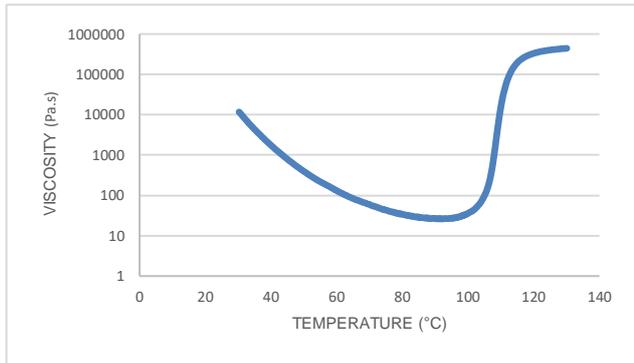
PROPERTY	UNIT	SA 75-90				
Tack	-	High				
Colour	-	Pale Green				
Adhesive Film Weight (nominal)	g/m <sup>2</sup>	100	150	150	250	400
Glass Carrier Weight	g/m <sup>2</sup>	none	none	c. 25		
Total Film Weight	g/m <sup>2</sup>	100	150	175	275	425

### FILM PROPERTIES

#### RHEOLOGY DATA

SA 75-90 resin viscosity profile conducted at 1°C (1.8°F) per minute.

PROPERTY	VALUE	
Minimum Viscosity	26 Pa.s	260 P
Temperature at Minimum Viscosity	92°C	198°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 8 hours at 70°C (158°F) using vacuum bag processing. When co-cured with other products, please refer to each product Technical Datasheet for minimum cure requirements.

PROPERTY	OVEN / VAC BAG				
Typical Ramp Rate	0.3– 2°C (0.5 – 4°F) per minute				
Cure Temperature	70°C (176°F)	80°C (194°F)	100°C (212°F)	110°C (230°F)	120°C (248°F)
Cure Dwell Time	8 hours	4 hours	1 hour	50 minutes	35 minutes
Cure Pressure	-1bar (14.5 Psi)				

## CURED PROPERTIES

### CURED RESIN PROPERTIES

Oven cured resin cast.

PROPERTY	SYMBOL	SA 75-90						TEST STANDARD
Cure cycle	-	8 hrs / 70°C (176°F)		4 hrs / 80°C (176°F)		35 mins/ 120°C (248°F)		-
Tensile Strength	$\sigma_T$	50 MPa	7.3 ksi	56 MPa	8 ksi	50 MPa	7.3 ksi	ISO 527-2
Tensile Modulus	$E_T$	2.6 GPa	0.38 Msi	2.5 GPa	0.36 Msi	2.2 GPa	0.32 Msi	ISO 527-2
Flexural Strength	$\sigma_F$	87 MPa	12.6 ksi	88 MPa	13.0 ksi	77 MPa	11.2 ksi	ISO 178
Flexural Modulus	$E_F$	2.3 GPa	0.33 Msi	2.15 GPa	0.31 Msi	2.12 GPa	0.31 Msi	ISO 178
Tg1	°C	77		91		93		ISO 6721 (DMA)

### CURED ADHESIVE MECHANICAL PROPERTIES

Oven cured using standard vacuum bag processing techniques.

PROPERTY	SYMBOL	SA 75-90						TEST STANDARD
Cure cycle	-	8hrs / 70°C (176°F)		4hrs / 80°C (176°F)		35 mins/ 120°C (248°F)		-
Adhesive Film Weight (excl. carrier)	-	250g/m <sup>2</sup>		250g/m <sup>2</sup>		250g/m <sup>2</sup>		-
Shear Strength on Steel	$\tau$	35 MPa	5.1 ksi	37 MPa	5.4 ksi	38 MPa	5.5 ksi	BS 5350 C5
Shear Strength on Carbon Laminate*	$\tau$	29 MPa	4.1 ksi	31 MPa	4.5 ksi	32 MPa	4.6 ksi	BS 5350 C5
Cleavage Strength on Steel	$\sigma_{\text{CLEAVAGE}}$	14 kN	3214 lbf	17 kN	3821 lbf	13 kN	2922 lbf	BS 5350 C1
0° Climbing Drum Peel**	$\sigma_{\text{PEEL}}$	-		627 N/76mm	-	-		BS 5350 C13
90° Climbing Drum Peel**	$\sigma_{\text{PEEL}}$	-		604 N/76mm	-	-		BS 5350 C13

\* 20 plies ST90/RC416T, peel ply finish

\*\* ST90 Carbon Skins either side of 20mm Nomex Honeycomb

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## TECHNICAL CONTACT INFORMATION

For all other enquiries such as technical queries:

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## 24-HOUR CHEMICAL EMERGENCY NUMBER

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

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