SA75-90

Toughened Epoxy Adhesive Film

SA75-90 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 - 20ºC (64 - 68ºF). SA75-90 has a flexible cure envelope obetween 70 and 120°C (158 - 248ºF).

- Economical low-temperature curing 70°C (158°F) with long shelf life at 20°C (68°F)
- Designed for bonding prepreg skins to all core types including honeycombs
- Compatible with all Gurit Prepreg and SPRINT™ products
- Toughened for impact resistance and peel strength
- Controlled flow for maximum bond integrity
- Lloyds Register certified formats available

INSTRUCTIONS FOR USE

PREPARATION

When preparing the lay-up the prepreg 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 prepreg which may cause voiding on cure.

SECONDARY BONDING AND 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 SA75-90 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 will all types of Corecell® foam. Pin-holed plain sheet or thermoformed Corecell® can be bonded with a minimum 250g/m² SA75-90. If using the lowest density grades or sliced sheets, 400g/m² 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 SA75-90 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 SA75-90. For details of these processes, please contact Technical Support.

PRODUCT INFORMATION

AVAILABILITY

SA75-90 is available with or without a carrier, normally supplied on a single silicon paper.

Please contact Gurit for 3rd Party Certification or see Lloyds Register websites.

PROPERTY	UNITS	SA75-90					
Tack	-	High					
Colour	-	Pale Green					
Adhesive Film Weight	g/m²	100	150	150	250	300	400
Glass Carrier Weight	g/m²	none	none	25	25	25	25
Total Film Weight	g/m²	100	150	175	275	325	425

Other film weights are also available with or without glass carrier, please enquire.

TRANSPORT AND STORAGE

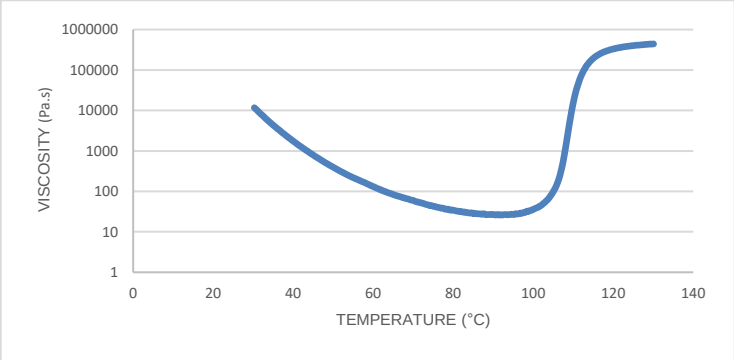
STORAGE TEMPERATURE		UNIT	VALUE
- 18°C	(0°F)	Months	24
+ 18 - 20°C	(64 - 68°F)	Weeks	8
+ 25°C	(77°F)	Weeks	4
+ 30°C	(86°F)	Weeks	3

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.

FILM PROPERTIES

RHEOLOGY DATA

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



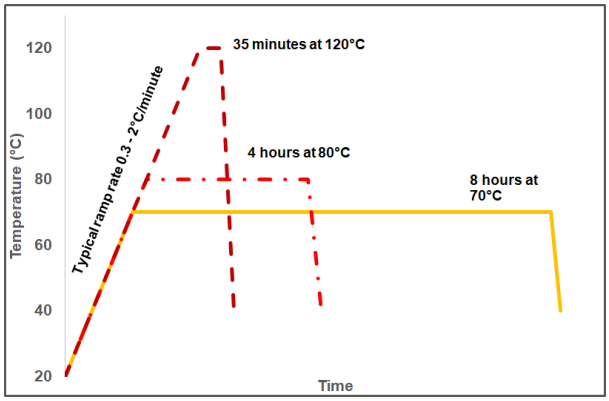
PROPERTY	UNITS	VALUE
Minimum Viscosity	Pa.s (P)	26 (260)
Temperature at minimum viscosity	°C (°F)	92 (196)

TYPICAL CURE TIME AND TEMPERATURES

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.

PROPERTY	OVEN/VACUUM BAG				
Typical Ramp Rate	0.3 – 2°C (0.5-4°F) /minute				
Cure Temperature	70°C (158°F)	80°C (176°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 (14.5psi)				

* **Please refer to each product Technical Datasheet for minimum cure of ancillary products SA75-90, SFG75-90, SF75-90 and MP75-90.**



CURED PROPERTIES

CURED RESIN PROPERTIES

Resin cast oven cured, mean values.

PROPERTY	SYMBOL	UNITS		8 HOURS AT 70°C (158°F)	4 HOURS 80°C (176°F)	35 MINS. 120°C (248°F)	TEST METHOD
Cured resin density	ρ_{cured}	g/cm²	(oz/in³)	1.13 (0.65)	1.13 (0.65)	1.13 (0.65)	Archimedean principle
Tensile Strength	σ_T	MPa	(Ksi)	50 (7.25)	56 (8.12)	50 (7.25)	ISO 527-2
Tensile Modulus	E_T	GPa	(Msi)	2.6 (0.38)	2.5 (0.36)	2.2 (0.32)	ISO 527-2
Flexural Strength	σ_F	MPa	(ksi)	87 (12.6)	88 (12.8)	77 (11.1)	ISO 178
Flexural Modulus	E_F	GPa	(Msi)	2.3 (0.33)	2.15 (0.31)	2.12 (0.31)	ISO 178
Glass Transition	Tg_1	°C	(°F)	77 (170)	91 (196)	93 (199)	ISO 6721 (DMA)

CURED ADHESIVE MECHANICAL PROPERTIES

Oven cured using standard vacuum bag processing techniques.

PROPERTY	SYMBOL	UNITS		SA75-90			TEST METHOD
Cure cycle				8 hrs 70°C	4 hours 80°C	35 minutes 120°C	
Adhesive Film Weight		g/m²		250	250	250	
Shear Strength on Steel	τ	MPa	(ksi)	35 (5.08)	37 (5.37)	38 (5.51)	BS 5350 C5
Shear Strength on CFRP*	τ	MPa	(ksi)	29 (4.21)	31 (4.50)	32 (5.51)	BS 5350 C5
Cleavage Strength on Steel	$\sigma_{CLEAVAGE}$	kN	lbf	14 (3147)	17 (3821)	13 (2922)	BS 5350 C1
0° Climbing Drum Peel**	σ_{PEEL}	N/76mm	Lbf/2.95"	-	627 (141)		BS 5350 C13
90° Climbing Drum Peel**	σ_{PEEL}	N/76mm	Lbf/2.95"	-	604 (136)		BS 5350 C13

*20 plies ST90/RC416T, peel ply surface

**ST90 Carbon skins either side of 20mm 3.2mm 48kg Nomex

HEALTH AND SAFETY

The following points must be considered:

1. Skin contact must be avoided by wearing protective gloves. Gurit recommends the use of disposable nitrile gloves for most applications. The use of barrier creams is not recommended, but to preserve skin condition a moisturising cream should be used after washing.
2. If the skin becomes contaminated, then the area must be immediately cleansed. The use of resin-removing cleansers is recommended. To finish, wash with soap and warm water. The use of solvents on the skin to remove resins etc must be avoided.

   Washing should be part of routine practice:
   - ¬ before eating or drinking
   - ¬ before smoking & vaping
   - ¬ before using the lavatory
   - ¬ after finishing work
3. The inhalation of sanding dust should be avoided and if it settles on the skin then it should be washed off. After more extensive sanding operations a shower/bath and hair wash is advised.

Gurit produces a separate full Safety Data Sheet for all hazardous products. Please ensure that you have the correct SDS to hand for the materials you are using before commencing work.

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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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.

CONTACT INFORMATION

Please see local contact information at www.gurit.com

24-HOUR CHEMICAL EMERGENCY NUMBER

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