

SA 70

EPOXY ADHESIVE FILM

- **Low temperature cure**
- **Designed for bonding prepreg skins to honeycomb and certain foam cores**
- **Compatible with SE 70 prepregs**
- **Toughened for impact resistance and peel strength**
- **Controlled flow for maximum bond integrity**

INTRODUCTION

SA 70 adhesive film is a toughened epoxy film 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 a 4 week outlife at ambient temperature (21°C).

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 all SE and ST prepreg and SPRINT™ systems and also Ampreg 22, Ampreg 26 and Ampreg Pregel liquid epoxy 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/m² 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 8 hours at 70-75°C. 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 SE70/SA70 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 70 / SA 70 Processing Notes).

FOAM CORES

SAN based polymer foams (Gurit Corecell™) can be processed with SA 70 without the need for any special treatment on the foam. A layer of 250gms glue film should be used for both the first and second skin as a minimum. Usually the lower density needs higher film weight to fill the more open cell structure (PVC foams). Care must be taken if processing temperatures exceed 80°C, as Gurit Corecell™ foam can be dimensionally unstable above these temperatures. SA 70 is not compatible with untreated PVC foams. Contact Gurit Technical Services.

PROPERTIES

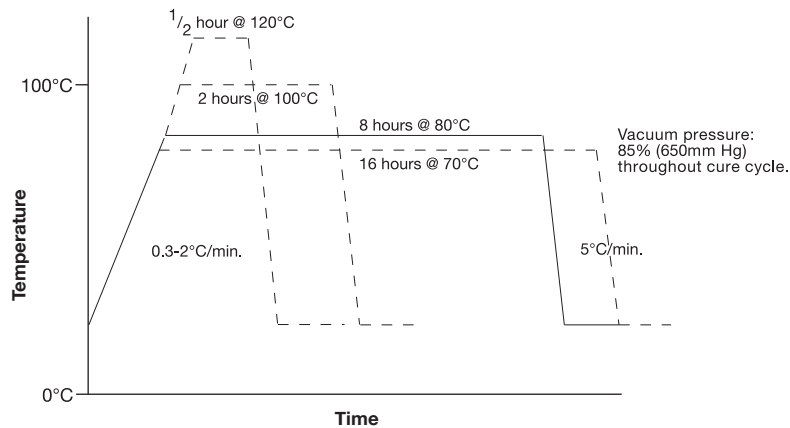
Uncured Resin Properties			
Adhesive Film Weight (standard products)	150gm ²	250gm ²	400gm ²
Glass Carrier Weight	25gm ²	25gm ²	25gm ²
Total Film Weight	175gm ²	275gm ²	425gm ²
Resin Colour	Turquoise blue		
Stability @ 21°C	4 weeks		
Stability @ -18°C	1 year		

CURING SCHEDULE

Cure Cycles	
at 85% vacuum pressure (650mm hg) throughout	
Minimum cure time at 70°C	16 hours
Minimum cure time at 80°C	8 hours
Minimum cure time at 100°C	2 hours
Minimum cure time at 120°C	30 minutes

If the SA 70 is being co-cured with a SE 70 prepreg skin or ST 70 SPRINT™, then the cure cycle used for the SA 70 will also be that of the prepreg in the laminate. Where the required cure cycle of the SE 70 prepreg or ST 70 SPRINT™ and the SA 70 is different, then whichever cure is the longest should be applied.

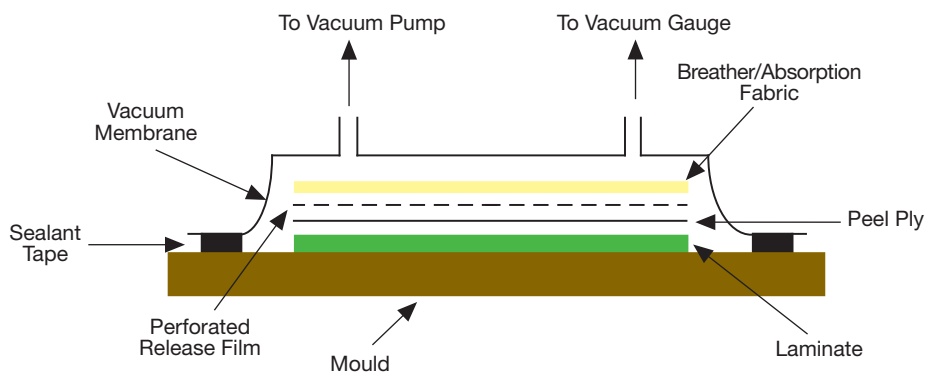
The cure temperature of 70°C must be achieved to generate full performance. 65°C is not sufficient to generate full mechanical properties. Temperatures must be dictated from the trailing (lowest reading) thermocouple, with 70°C taken as the minimum cure temperature. Particular care must be taken to ensure 70°C is hit under thick sections of foam due to insulating effects.



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.



MECHANICAL PROPERTIES

Cure	1 hour @ 120°C	16 hours @ 70°C
Shear Strength on Steel (MPa)	36	35.5
Cleavage Strength on Steel (kN)	9.5	9.25
Tg1 (DMA)	108.3	95.2

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. Overalls or other protective clothing should be worn when mixing, laminating or sanding. Contaminated work clothes should be thoroughly cleaned before re-use.
3. Eye protection should be worn if there is a risk of resin, hardener, solvent or dust entering the eyes. If this occurs flush the eye with water for 15 minutes, holding the eyelid open, and seek medical attention.
4. Ensure adequate ventilation in work areas. Respiratory protection should be worn if there is insufficient ventilation. Solvent vapours should not be inhaled as they can cause dizziness, headaches, loss of consciousness and can have long term health effects.
5. 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 _____
 - before using the lavatory _____
 - after finishing work _____
6. 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. A more detailed guide for the safe use of Gurit resin systems is also available from Gurit, and can be found on our website at www.gurit.com

APPLICABLE RISK & SAFETY PHRASES

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



TRANSPORT & STORAGE

When not in use SA 70 products should be maintained at -18°C. Shelf life for SA 70 is two years at -18°C and 4 weeks at 18-22°C. To avoid condensation on their surfaces, allow rolls to reach room temperature before unwrapping.

NOTICE

All advice, instruction or recommendation is given in good faith but Gurit AG (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: <http://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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