SF 80FROBL

Fire-Retardant Surfacing Film

- **Provides an effective fire retarding layer to epoxy subtrates**
- **Tested to Federal Motor Vehicle Safety Standard 302**
- **With the correct tooling can provide a high gloss black surface finish**
- **Resistance to water ingress**

Introduction

SF 80FROBL surfacing material is a black, filled epoxy film. It provides an effective fire retarding layer capable of withstanding exposure to fire, while preventing the epoxy substrate from combustion. Typical applications include protection of structural components in high risk areas such as engine bays, exhaust runs, and around the fuel system.

SF 80FROBL can be used directly against a suitably release treated mould surface, with prepreg or SPRINT® plies laid up behind it, or as a final layer in the mould. The product is sufficiently tacky to aid placement into vertical surfaces of a mould. SF 80FROBL can be cured with vacuum only processing.

The epoxy system is supplied ready impregnated into a supporting medium and ready catalysed, requiring only a moderate temperature cure.

Availability

SF 80FROBL surfacing material is available in a 220g film weight and supplied on 50lm rolls. It is also available pre-applied to a 600g skewed carbon SPRINT®, considerably reducing component layup time. In this configuration, the product is supplied in rolls of 25lm.

Instructions for Use

1. Ensure SF 80FROBL surfacing material has attained ambient temperature (circa 18-22˚C) before it is removed from its packaging to avoid condensation of water on the surface film whilst defrosting.

2. Apply a single layer of SF 80FROBL surfacing material to a suitably release treated mould surface. When applying directly to a mould, release agents suitable for epoxy resins should be used and tests should be performed by the user to ensure that satisfactory release is obtained.

The use of peel ply between the release treated mould surface and the surfacing material has not yet been tested.

3. The material can be placed into the mould in any size/shape however it is important to include a 2mm overlap at any join interface with, and a maximum overlap of no more than 5mm.

4. Once the mould surface has been covered and before the backing laminate has been added, air paths need to be introduced around the circumference of the part. This is usually achieved by placing glass tows at a 0.5m interval around the perimeter of the part in contact with surface film through to the vacuum stack.

5. Apply SPRINT® or prepreg layers behind the surface film (NOTE: significant improvements in surface stability due to voiding and component quality are obtained if SPRINT® layers are used behind the surfacing film rather than prepreg). The use of glass tows between layers of SPRINT® and the surface film is also recommended (as in 4) above) to aid air breathing.

6. Apply release film and breather suitable for the reinforcing laminate over the laminate stack. Cut and fit as necessary. Overlaps of no more than 10mm are acceptable. Consult SPRINT® or prepreg datasheet for optimum bagging procedure.

7. Apply vacuum bag with minimum 90% vacuum.

8. Heat to 70 ±5°C (ramp between 0.5°C and 2°C per minute) whilst under >90% vacuum.

9. Continue to ramp to the final cure temperature required by the resin system and hold for the correct period (see table opposite - Typical Cure Cycle). Temperature ramp rates should be between 0.5°C and 2°C per minute, as before. If ramp rates are in excess of 1/2°C per minute, a dwell of up to 30 minutes will be required at 70°C. Contact Technical Services for further information.

10. Allow to cool to ambient temperature before removing consumables and demoulding.

Properties

Uncured Resin Properties	
SPRINT® Out-life @ 18-22˚C	14 days
Storage time at -18˚C	2 years
Hazard Definition	Xi, N
Colour	Black
Tack	High
Carrier	Glass
Carrier Weight (g)	40
Total Areal Weight (g)	260

Cured Resin Properties*		
		Test Method
Cured Ply Thickness (mm)	0.15	
Taber Abrasion Resistance (mg)	5	Taber abrasion is carried out to ASTM D4060 with test wheel CS10 @ 500 Cycles @ 90% Vacuum
Shore D Hardness* **	88	Shore D measured to ASTM D2240
Tg1 DMTA (ºC)	120	
Fire Rating	Tested to FMVSS302	

Note:

* Data generated with vacuum pressure / oven only cure specified below as 'fast'

Cure Cycle Parameters	
Minimum cure temperature	85°C
Minimum cure time (at minimum cure temperature)	10 hours
Minimum cure time at 90°C	8 hours
Minimum cure time @ 100°C	4 hours
Minimum cure time @ 110°C	2 hours
Minimum cure time @ 120°C	1 hour

Typical Cure Cycle			
	Slow Cure	**Standard Cure**	**Fast Cure**
Ramp from ambient to:	70ºC @ 2ºC per minute	70ºC @ 2ºC per minute	70°C @ 2°C per minute
Dwell Period	70°C for 30 minute	70°C for 30 minutes	70°C for 30 minutes
Ramp from 70ºC to:	85 @ 1/2ºC per minute	100 @ 1/2ºC per minute	120 @ 1/2°C per minute
	Hold for 10 hours at 85ºC	Hold for 4 hours at 100ºC	Hold for 1 hour at 120ºC
	Cool and demould	Cool and demould	Cool and demould

Health and Safety

Although SPRINT® Materials have improved health and safety characteristics when compared to wet lay-up epoxy systems and conventional prepregs, the following points must still be considered:-

1. Avoid skin contact - wear disposable nitrile gloves.

2. Avoid eye contact. If this occurs, flush with water for 15 minutes and seek medical advice.

3. Ensure good ventilation of vacuum pump exhaust during laminate cure.

4. Avoid inhalation and eye contact with sanding dust. After any sanding operation of reasonable size a shower or bath should be taken and should include hair washing.

5. Wear overalls or other protective clothing. Thoroughly clean or discard soiled garments.

6. Use only resin removing creams/soap and water on exposed skin. Do not use solvents.

Washing should be part of routine practice:

- before eating or drinking
- before smoking
- before using the lavatory
- after finishing work

In the pre-cured state SPRINT® materials contain 'dry' fibres which can be released when the material is being cut or processed. Care should be taken while handling the material to prevent contact with the skin and to control the egress of fibres into the workplace. Products that contain carbon fibres should be treated with particular care as carbon fibre is electrically conductive. Electrical equipment should be protected from carbon dust and fibres.

SP-High Modulus produces a separate full Material Safety Data Sheet for all hazardous products. Please ensure that you have the correct MSDS to hand for the materials you are using before commencing work. A more detailed guide for the safe use of SP-High Modulus resin systems is also available from SP-High Modulus, and can be found on our website at www.gurit.com

Applicable Risk & Safety Phrases

R 36/38, 43, 51/53
S 24, 26, 28, 37/39, 57, 60

Transport & Storage

When not in use SF 80FROBL products should be maintained at -18°C. Shelf life for SF 80FROBL is two years at -18°C and 14 days at 18-22°C.

Notice

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