

SF 80FROBL

FIRE-RETARDANT SURFACING FILM

- Provides an effective fire retarding layer to epoxy substrates
- With the correct tooling can provide a high gloss black surface finish
- Resistant to moisture ingress

INTRODUCTION

SF 80FROBL surfacing material is a Fire Retardant Obliterated Black (FROBL) 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.

INSTRUCTIONS FOR USE

1. Ensure SF 80FROBL surfacing material has attained ambient temperature (circa 18-23°C/°F) 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, and a maximum overlap of no more than 5mm.
4. Aim for the surface film to be 5-10mm larger than backing laminate plies. This ensures maximum air evacuation potential from the product as there is a direct route to vacuum via the consumable 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) 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 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 (°F) (Ramp between 0.5°C and 2°C per minute) with a minimum 90% vacuum.
9. Continue to ramp to the final cure temperature required by the resin system and hold for the correct period (see table on next page – Minimum Cure Time and Temperature). Temperature ramp rates should be between 0.5°C (°F) and 2°C (°F) per minute, as before. If ramp rates are in excess of 1/2°C (°F) per minute, a dwell of up to 30 minutes will be required at 70°C (°F). Contact Technical Services for further information.
10. Allow to cool to ambient temperature before removing consumables and de-moulding.

PRODUCT INFORMATION

AVAILABILITY

SF 80FROBL surfacing material is available in a range of formats; please contact Gurit Technical Support for further information.

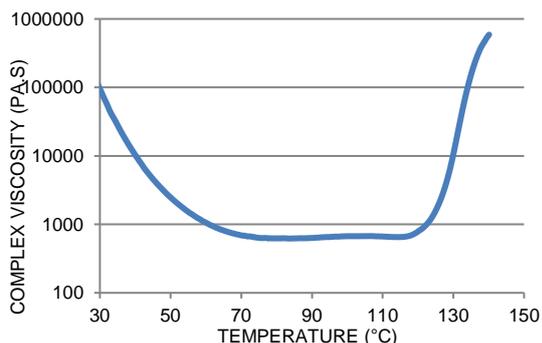
PROPERTY	VALUE	
Colour	Black	
Tack	High	
Carrier	Glass	
Carrier Weight	40 g	0.09 lb
Total Areal Weight	260 g	0.57 lb

PREPREG PROPERTIES

RHEOLOGY DATA

SF 80FROBL resin viscosity profile conducted at 1°C (1.8°F) / minute.

PROPERTY	VALUE	
Minimum Viscosity	621 Pa.s	6210 P
Temperature at Minimum Viscosity	83.8°C	183°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	2

All SPRINT™ 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.

To avoid condensation on the rolls allow it to reach room temperature before unwrapping.

HEALTH AND SAFETY

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

CURING SCHEDULE

TYPICAL CURE PROFILES

The successful use of these cure schedules will depend on part size and laminate construction. Heating ramp up rate and dwell periods need to be tailored to take consideration of oven capacity, thermal mass of tool, laminate construction etc. Data in the table below is based on laminate temperatures, air temperatures may need to be higher. It is recommended that Gurit Technical Support is contacted for further advice before utilising any of the suggested cure cycles.

MINIMUM CURE TIME AND TEMPERATURE

PROPERTY	SLOW CURE CYCLE	STANDARD CURE CYCLE	FAST CURE CYCLE
Processing Method	Vacuum Bag		
Typical Ramp Rate	2°C (3.6°F) per minute	2°C (3.6°F) per minute	2°C (3.6°F) per minute
Cure Temperature	70°C (158°F)	70°C (158°F)	70°C (158°F)
Cure Dwell Time	30 (min)	30 (min)	30 (min)
Post-Cure Temperature	0.5°C (0.9°F) / min to 85°C (185°F)	0.5°C (0.9°F) / min to 100°C (212°F)	0.5°C (0.9°F) / min to 120°C (248°F)
Post-Cure Dwell Time	10 hours	4 hours	1 hour
Cure Pressure	-1 (bar)		

CURED RESIN PROPERTIES

Using vacuum pressure / oven only cure with standard processing techniques and cure cycle specified above as 'fast'.

PROPERTY	SYMBOL	10 HOURS @ 85°C		TEST STANDARD
Cured ply thickness	t_{ply}	0.15 mm	0.006 in	ISO 6721
Taber Abrasion Resistance	L	5 mg	0.0002oz	ASTM D4060 with test wheel CS10 @ 500 Cycles @ 90% Vacuum
Shore D Hardness	S_D	88		ASTM D2240
Tg1 by DMA	T_{g1}	120°C	248°F	ISO 6721 (DMA)

FIRE TESTING BURN BEHAVIOUR

PROPERTY	SF 80FROBL	TEST STANDARD
Max Average Rate of Heat Release (MAHRE)*	25.09 kW/m ²	ISO5660-1 (indicative only)
Fire Rating	Passed	Indicative Gurit method based on FMVSS302

*using a surfacing ply on PHG840 600g woven E-glass

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.

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 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.

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:

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