

INSTALLATION GUIDE



THE ULTIMATE
FIBREGLASS ROOFING SYSTEM



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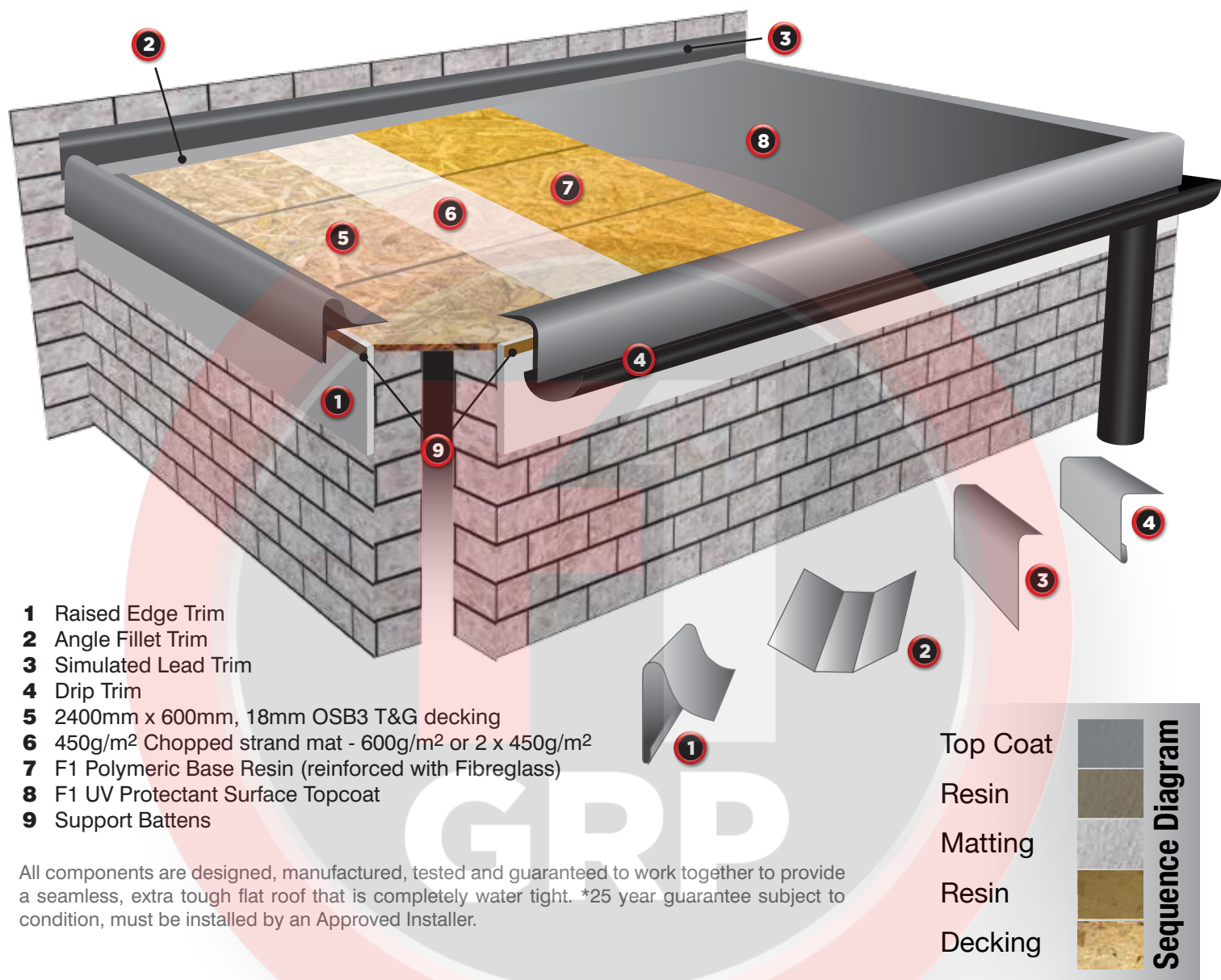
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Training is recommended before using this product

COMPONENTS

EXAMPLE OF A TYPICAL COLD ROOF



All components are designed, manufactured, tested and guaranteed to work together to provide a seamless, extra tough flat roof that is completely water tight. *25 year guarantee subject to condition, must be installed by an Approved Installer.

Products within the F1 GRP range:



4 Key Stages to installing F1 GRP



Stage One
Preparation and Deck Fitting

Remove the old roof and re-deck with T&G OSB3 Stirling Board.



Stage Two
Edge Trims Fitted

Fit GRP trims. A wide range are available to meet any configuration.



Stage Three
Lamination and Cure

Resin and strand matting applied and allowed to cure, ready for sanding.



Stage Four
Topcoat

Topcoat formulated to give a good even layer and can be pigmented to a colour of your choice.

MATERIALS & TOOLS

DECKING BOARDS

- 1) Plywood: Only good 18mm exterior plywood should be used. Never use non-waterproof boards.
- 2) Sterling Boards: Sterling 18mm conditioned T&G expansion gap 8 x 4ft sheets should be used. The expansion joint should always be laid face down.

FIXINGS

Nails for tacking all roofing trims should be galvanised and 12-20mm in length. The preferred method of fixing the decking boards to the roof joists is by countersunk galvanised screws. If nails are used they should be minimum 60mm galvanised or sherardized annular ring shank

TAPE

The adhesive tape to be used should be 25mm masking tape or similar, this should be used to bridge all joints between the decking boards.

RESIN

F1 GRP 130 resin is a specially formulated polymeric coating for this application. For estimating purposes you should allow 1.5kgs per square metre of roof area.

GLASS-FIBRE MAT

F1 GRP Fibre-Mat 090 is available in two weights, 450gsm and 600gsm. It is an emulsion bound chopped strand mat and is used to reinforce and bind the system. The 450gsm is the standard product for most applications and the 600gsm is designed for use in trafficked applications such as balconies and terraces.

TOPCOAT

F1 GRP Topcoat is a specially engineered polymeric surface coating designed to withstand all the elements that a roof may encounter. F1 GRP Topcoat is normally pigmented dark grey, but any colour can be achieved by using our clear topcoat and polyester pigment. For estimating, allow 1kg of Topcoat per 2 square metres.

CATALYST

To enable both Resin and Topcoat to set (cure) you need to add a catalyst / hardener. This is called MEKP which is methyl ethyl ketone liquid; you need to add at a rate of between 1 and 4% by weight depending on the weather conditions.

ADHESIVE SEALANT

Use F1 GRP Dual Purpose MS Polymer sealant and adhesive for fitting the roofing trims and also sealing other areas on the roof. The product is supplied in 310ml tubes which can be used with a standard mastic dispenser. This product will give excellent adhesion and sealing properties and is moisture tolerant.

If for any reason you are unsure contact F1 GRP

TOOLS & ANCILLARIES REQUIRED

The tools listed below are just about all you will need to fit a glass-fibre roof from start to finish.

POWER TOOLS

Power Saw
Cordless S/Driver/Drill
Hand Grinder
Electric Sander

HAND TOOLS

Hand Saw
Screw Driver
Hammer
Stanley Knife / Scissors
Tin Snips
Mastic Gun
Mixing Tools

ANCILLARIES

4 & 2" Brushes
Polyester Roller
Paddle Roller
Abrasive Paper
Sweeping Brush
Mixing Buckets
Hand Cleaner
Disposable Gloves
Masking Tape

Note: you will also need a suitable solvent to clean your rollers and brushes; the best product for this is ACETONE. Read carefully the health & safety data sheet for this product as this product is highly flammable, but safe when used correctly.

STAGE ONE

Preparation and deck fitting

Under no circumstances should a Glass-fibre roof be fitted directly onto any bituminous product. If you were to contaminate either Sentinel resin or topcoat with bitumen you would find they may not cure sufficiently because this product inhibits polyester products. The optimum solution is to completely remove all traces of bitumen, by either stripping the roof or over decking with new boards. If you do decide to strip off the old roof, take into consideration the weather, because Sentinel resin / topcoat will not cure if they come in contact with water. When laying a new deck make sure it is completely dry before you commence.

FITTING A NEW FLAT ROOF

Remove the old decking right back to the joist; check the joists for any traces of rot. Before the deck is fitted, the joists and any supports must be free from any rot. If there are traces of rot they must be removed and new timber fitted. Most flat roofs tend to suffer from pools of water on the surface after a rain fall. Although this is not a problem for a Glass-fibre roof, it is better if you can create a good fall to help eliminate this. The best way to do this is to fix a tapered firring to the joist to give you the required fall before fitted the deck. (See diagram 1)

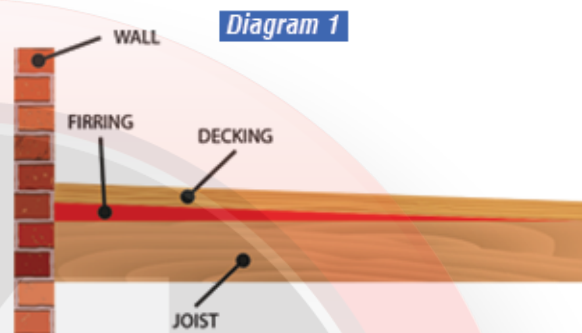


Diagram 1

DECKING AND JOINT PREPARATION

T&G conditioned water resistant sterling board is the preferred decking but exterior plywood can be used as an alternative. The decking boards should be fixed to the timber joists with corrosion resistant ring shank nails or counter sunk screws. If using plywood these will have to be jointed on the joists. Leave 3 to 5mm between the boards to allow expansion of the sheets.

Always stagger the boards as shown in Diagram 2. By staggering the joints, this will help reduce the stress in the roof, which is inevitably concentrated at these points.

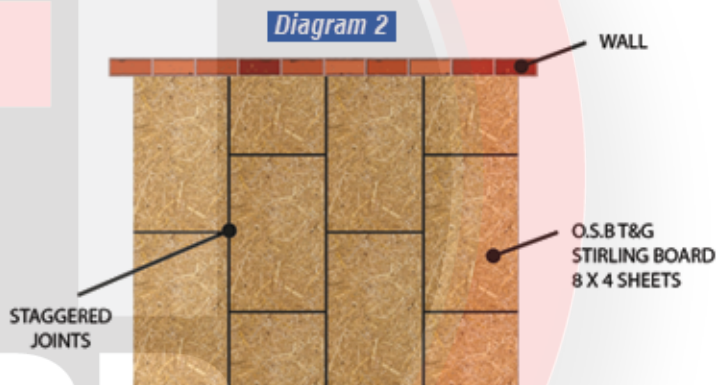


Diagram 2

Fixing should be applied at 300mm centres down the length of each joist covered by the boards

Now your deck is laid and fixed in place, it is essential that all joints between the sheets are taped using 25mm masking tape. By using masking tape, this seals the joints from resin drainage when applying your first layer of Sentinel resin, and also creates a small expansion joint along the deck at the point of the tape.. (See Diagram 3)

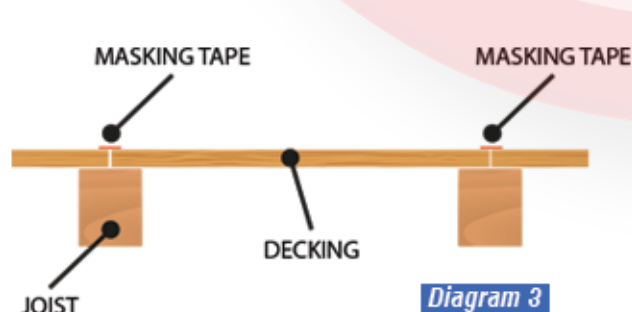


Diagram 3



Cover joints with 25mm masking tape...



...then over laminate with glass fibre bandage tape.

All the masking tape joints should be then over laminated with a Glass-fibre bandage tape.

Alternatively you can cut your own strips of Glass-fibre 75mm wide and as long as the full length of the joint. If it is not possible to over-laminate the prepared deck immediately, then the deck should either be coated with a thin layer of Sentinel resin or covered so as to keep out any moisture. If for any reason the deck does get wet or damp, then the roof should be dried thoroughly before the deck can be coated with the first process of laying the Glass-fibre laminate.

Once you have achieved this you are ready to fit all the required roofing trims.

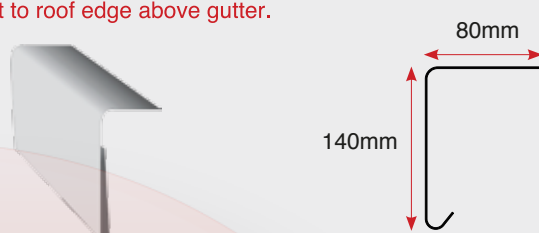
A200 STANDARD DRIP

Flat to roof edge above gutter.



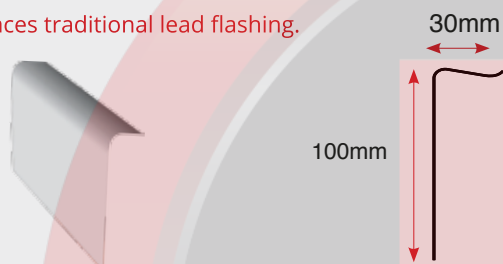
A250 LARGE DRIP

Flat to roof edge above gutter.



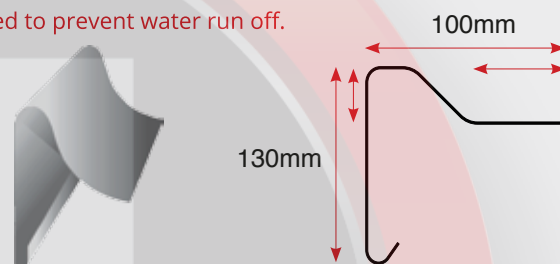
C100 SIMULATED LEAD

Replaces traditional lead flashing.



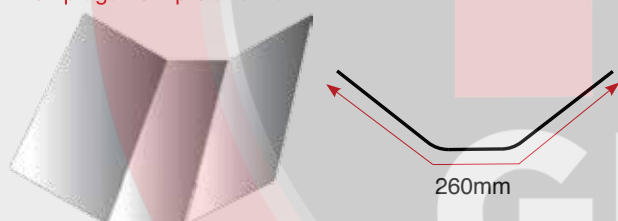
B260 RAISED EDGE

Fitted to prevent water run off.



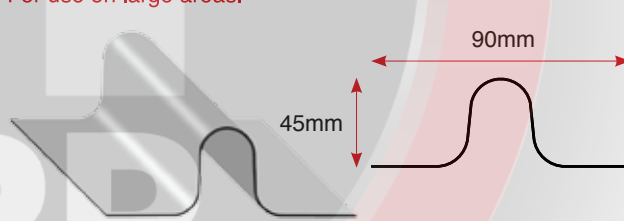
D260 ANGLE FILLET

Buts up against up-stand wall.



E280 EXPANSION

For use on large areas.

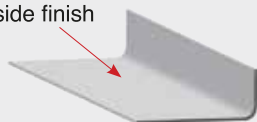


AT195 EXTERNAL & AT195 INTERNAL

Internal and External trim, to be used for gutters floors e.t.c

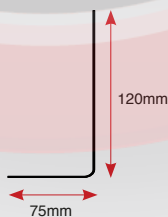
EXTERNAL

Smooth and shiny inside finish



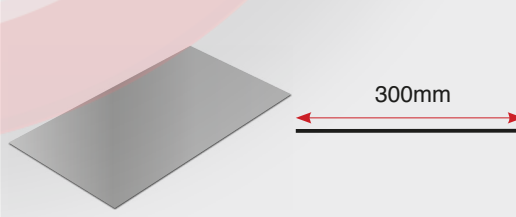
INTERNAL

Smooth and shiny outside finish



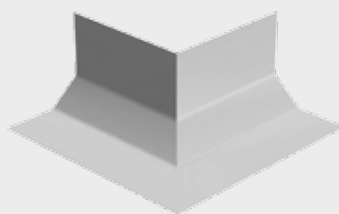
F300 FLAT SHEET ROLLS

300mm flat sheets available in 5 meter lengths.

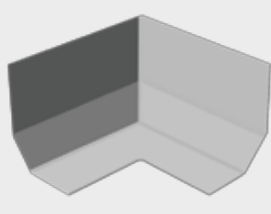


C3 EXT & INT CORNER

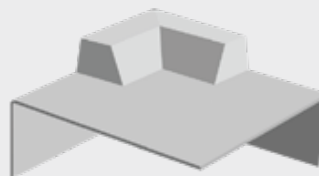
EXTERNAL



INTERNAL



C1 UNIVERSAL EXTERNAL CORNER

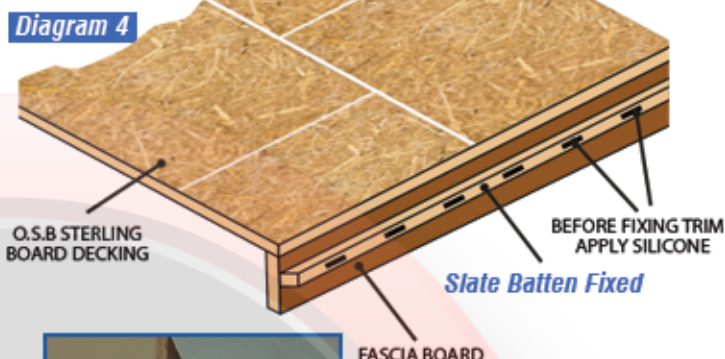


2

STAGE TWO Edge trims and battens fitted

A wide range of GRP Trims are available to suit most applications and different roof configurations. Details of how to choose and fit these are shown below.

Fix a slate batten along the edge of the roof about 25mm below the deck. (Diagram 4) This should be nailed to the fascia board or to the lower side of the protruding edge of the deck sheet. If it is required that the trims stand off the roof further, two battens or a thicker piece of timber may be used.



Where it is required that the run off of water should drain into a gutter the drip fascia trim should be used.

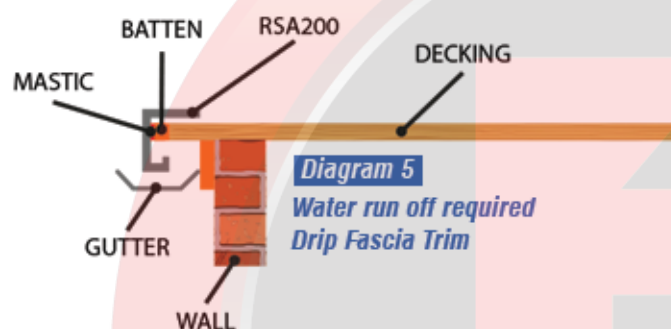
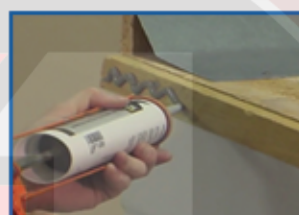


Diagram 5
Water run off required
Drip Fascia Trim



Where water run off is not required the, raised trim should be used (Diagram 6). This is fitted in the same way as described in the previous section and may be jointed in a similar manner. Please note that the fascia must be fixed with sealant as described to ensure that the trim edges will remain in place in all conditions.

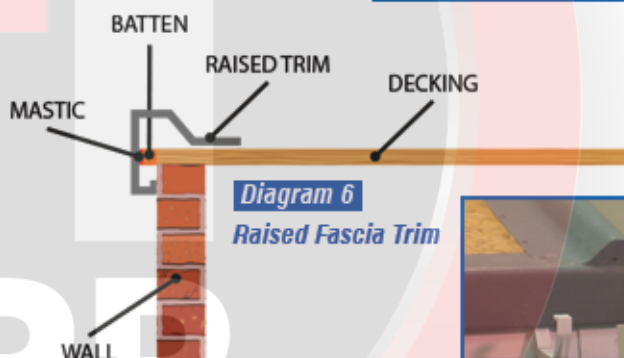


Diagram 6
Raised Fascia Trim



When sealing the roof edge to an abutting wall (See Diagram 7), a fillet section should be used. This should be snugged into the corner formed by the wall and roof deck as shown and fixed onto the roof by nailing with galvanised felt nails. The vertical flange of the trim should not be fixed to the wall since this is a point of movement between the roof and adjoining wall and any fixing here will stress the roof.

The simulated lead trim (Diagram 7) is now fitted into the wall overlapping the vertical flange of the fillet. The simulated lead section may be sealed into the wall, just as traditional lead flashing is fixed, and sealed into place with cement or mastic. Traditional lead is often used for this application rather than a GRP section.

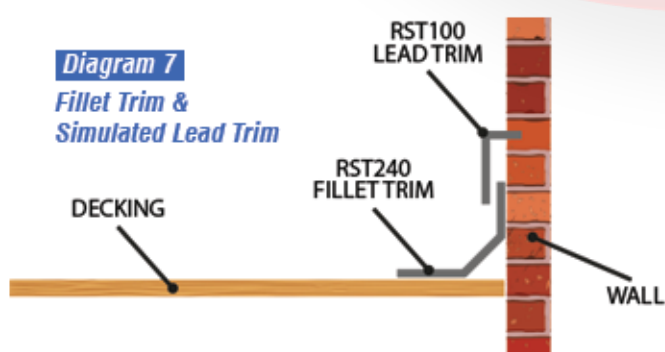


Diagram 7
Fillet Trim &
Simulated Lead Trim

Joints can be made simply by overlapping and must be sealed with mastic in the overlap just like the trim joints.

When sealing to an adjacent pitched roof FS300 flat sheet should be used. The sheet is fed under the slates and slate felt leaving about 50mm of the flashing to show for fixing. Once the flashing is fitted correctly under the slates or tiles, the "tail" should be fixed to the deck by nailing with galvanised felt nails.

Corners may be achieved by mitring the trims and on site and laminating over the joints with 75mm glass fibre bandage. Also the trims should be laminated using the same bandage tape.

Once the trims are fitted, the roof is ready to be laminated. The roof at this stage should have trims fitted to each edge so that the area to laminate is edged by the horizontal flanges of the rims around the perimeter.

3

STAGE THREE Lamination and cure

Forming the glass fibre membrane on the prepared deck is really quite straight forward but requires everything to be prepared before the catalyst is added to the resin.

Ensure that the deck is clean, dry and free from any surface contamination

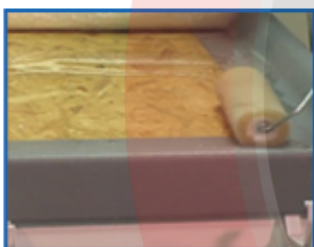
Choose a starting point on the roof and work back towards the exit point. Roll out the glass so that it is cut correctly to overlap the trims by about 50mm. The glass should not overlap the fascias. Cut the glass to the correct length. Roll up each cut length allowing 50mm overlap between each roll.

3A: Pour enough resin for one roll into a clean, empty 20 litre bucket (never mix, more than 20kgs at once). Add catalyst as specified and mix thoroughly.



3A

3B: Apply the resin to the deck with a lambs wool roller at the rate of 1kg per square metre if using the 450gsm Fibre-mat or 1.2kg per square metre if using the 600gsm version, ensuring that the whole area to be covered on this pass is generously wet out with resin.



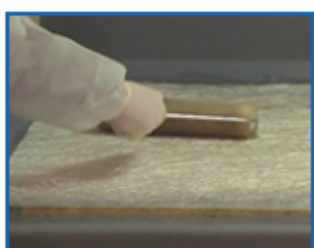
3B

3C: Roll out the glass matting ensuring that there are no folds or kinks and that the trims are correctly overlapped.



3C

3D: Apply more resin over the top of the glass at 0.5Kgs per square metre or 0.6Kgs per metre depending on the weight of matting being used. Ensure that there are no dry spots but if they are present, apply more resin until all of the matting is translucent.



3D

3E: Allow 3 or 4 minutes for the glass to soak up the resin, to wet out, then go over the whole area with a consolidating roller. You must get all the air out of the glass so that the glass fibres disappear and the grain of the timber below becomes apparent as the laminate becomes transparent.



3E

Continue this operation with the next roll of glass, overlapping the first by about 50mm – finish the last section of the roof ensuring that you are able to do so without standing on it.

3F: NOTE - It is good practice to go around the edge over the trim edges stippling with a brush to make sure that the glass is properly consolidated over the trims since this bond is vital to the integrity of the roof.



3F

Now leave the roof to cure, this will take between 30 to 40 minutes depending on the weather conditions. The colder the conditions the longer the resin will take to cure.

If in doubt please consult Sentinel Grp for details.

NOTE

You will find that the resin thickens up at low temperatures and takes longer to wet the glass out. DO NOT be tempted to add more resin because of this. It is very important to achieve an even and correct glass to resin ratio.

**NEVER WORK BELOW 5°C OR ABOVE 30°C
AIR TEMPERATURE**

IMPORTANT!!

NEVER put catalysed Resin or Top Coat back into your vehicle. Always ensure that any catalysed containers are kept separate from other materials on site and allowed to cure.

4

STAGE FOUR Topcoat

Applying the final coating to complete the roof.

Topcoat is formulated to give a good even layer and can be pigmented to a colour of your choice. It is advisable to choose a light colour because this will keep the roof cooler in the summer when in direct sunlight. The standard colour is grey.

Pigmented Topcoat.

The Topcoat is supplied in its pigmented form i.e. a cool grey colour. Alternatively, to achieve the colour of your choice use SENTINEL CLEAR TOPCOAT, mix in the required SENTINEL pigment at the recommended level of 10% i.e. 2Kg per 20Kg.

A GRP laminate has adequate cure when it is impossible to move the glass fibre strands within the laminate. Do not stand on the laminate until it has reached this stage.

We highly recommend the full roof be sanded with an electric sander using 60 to 80 grit disc's, sand off any protrusions that are sticking up e.g. glass strands or pieces of debris, and then finally clean with solvent to ensure the whole roof is completely clean ready for applying the SENTINEL TOPCOAT.

Add the catalyst at the correct level and apply the Topcoat at the rate of half a kilo per square metre.

It is important to keep this layer even since the appearance of the roof will depend on how well it has been applied. It should be free from runs, sags, brush marks and roller marks.

The Topcoat should be applied to the whole of the roof laminate including the edging trims.

Brush or roller on vigorously to ensure an even finish and a good bond.

Always apply the Topcoat within 24 hours of laminating the roof. This will ensure that the Topcoat bonds well to the laminate and the completed roof will gradually continue its cure over the next few days although the roof will withstand light foot traffic within a few hours.



TOPCOAT APPLICATION



REPAIRING AND JOINTING PROCEDURE

If the roof surface becomes damaged by impact or has to be cut for any reason it can be easily repaired using the following procedure.

- 1 Clean off the damaged area with solvent and abrade the GRP surface with a hand grinder for a distance of 100mm from the damaged area or edge to be joined.
- 2 Cut the 450 or 600gm glass to the correct size to cover the affected area and mix sufficient resin with catalyst as previously described.
- 3 Brush resin onto the area to be laminated at the rate of 1 Kilo per square metre, place the glass over the area, wet out the glass with resin at the rate of 0.5KilosPer square metre. Stipple well with the brush or use a paddle wheel roller for larger areas.
- 4 Ensure that the laminate is free of air bubbles, is completely consolidated and allowed to cure.
- 5 Mix the Topcoat with catalyst as previously described and apply with a brush at the rate of 0.5 Kgs per square metre.
- 6 Allow to cure.

This procedure will ensure that the patch or joining piece applied will bond to the original laminate and form a weatherproof patch over the damaged or cut laminate.

The Topcoat is a high performance; modified resin and will behave in the same way as the base coat i.e.

NEVER USE IN WET CONDITIONS

NEVER APPLY BELOW 5°C

KEEP THE COLOUR LIGHT

KEEP THE APPLICATION EVEN

ALWAYS APPLY IMMEDIATELY THE LAMINATE IS CURED

NOTE

In very hot weather it may be necessary to use LPT Catalyst (Long Process time). This can be used on Base Resin and Topcoat. Very fast curing is NOT good practice and especially with Topcoat.












IMPORTANT!!

NEVER put catalysed Resin or Topcoat back into your vehicle. Always ensure that any catalysed containers are kept separate from other materials on site and allowed to cure.

ESTIMATING GUIDE

PROJECT DETAILS:

RANGE OF TRIMS AVAILABLE:

A200 Drip  Qty:	A250 Large Drip  Qty:	C100 Simulated Lead  Qty:	B260 Raised Edge  Qty:	C3 External Corner  Qty:	C3 Internal Corner  Qty:
E280 Expansion  Qty:	F300 Flat Sheet  Qty:	D260 Wall Fillet  Qty:	AT195 Ext & Int  Qty:	C1 Universal External Corner  Qty:	

Catalyst required (millilitres)	Temperature/ Catalyst required	13-19 °C	9-12 °C	5-8 °C
Quantity of resin (Litre)	20-30 °C 1%	2%	3%	4%
1	10ml	20ml	30ml	40ml
2	20ml	40ml	60ml	80ml
3	30ml	60ml	90ml	120ml
4	40ml	80ml	120ml	160ml
5	50ml	100ml	150ml	200ml
6	60ml	120ml	180ml	240ml
7	70ml	140ml	210ml	280ml
8	80ml	160ml	240ml	320ml
9	90ml	180ml	270ml	360ml
10	100ml	200ml	300ml	400ml

ESSENTIAL MATERIALS

Trims have to be calculated for each project/application.

Roof Area (m ²)	F1 GRP Resin required at a coverage rate of 1.5kg/ m ² (allows for 10% wastage)		F1 GRP Topcoat required at a coverage rate of 0.5kg/ m ²		F1 GRP Standard Chopped Strand Matting 450gsm required (33kg covers approx 73 m ²)		Catalyst (1kg) based on 4%	Decking Boards 2.4m x 0.6m x 18mm
	Kg	N. of Tins	Kg	N. of Tins	M ²	Rolls (33kg)	Kg	1.44 m ² /board
		10kg + 20kg		10kg + 20kg				
5	7.5	1 + 0	2.5	1 + 0	5	1	1	5
10	15	0 + 1	5	1 + 0	10	1	1	8
15	22.5	1 + 1	7.5	1 + 0	15	1	2	12
20	30	1 + 1	10	1 + 0	20	1	2	15
25	37.5	0 + 2	12.5	0 + 1	25	1	2	19
30	45	1 + 2	15	0 + 1	30	1	3	23
35	52.5	0 + 3	17.5	0 + 1	35	1	3	26
40	60	0 + 3	20	0 + 1	40	1	3	30
50	75	0 + 4	25	1 + 1	50	2	5	38
60	90	1 + 4	30	1 + 1	60	2	6	46
70	105	1 + 5	35	0 + 2	70	2	7	54
80	120	0 + 6	40	0 + 2	80	2	7	61
90	135	0 + 7	45	1 + 2	90	3	7	69
100	150	1 + 7	50	1 + 2	100	3	7	77

These calculations are based on the recommended coverage rates stated in the above table.

Use approximately 33% more resin when using the 600gsm chop strand matting

RECOMMENDED ANCILLARIES

Roof Size (M ²)	3" Rollers	3" Roller Sleeves	6" Rollers	6" Roller Sleeves	Small laminating rollers	Large laminating rollers	Small Brushes	Large Brushes	Acetone (Litres)	Small Buckets	Large Buckets	Trim Adhesive
5	1	1	1	2	1	1	1	2	5	1	2	1
10	1	2	2	3	1	1	1	2	5	1	2	1
20	1	3	2	4	1	1	2	2	5	1	2	2
40	1	3	2	6	1	1	2	4	5	1	3	3
60	2	4	3	8	1	1	4	6	5	2	3	4
80	2	4	3	10	1	1	4	8	10	2	4	6
100	3	5	3	12	1	2	5	10	10	2	4	7