

4 Step Guide to Laying a Fibreglass Roof

Always check the local weather forecast to ensure conditions will be acceptable.

- Do not use resin or top coat in temperatures above 35 degrees C.
- Always mix smaller batches of resin than you normally would to give adequate time to apply it before it starts to catalyse.
- Always apply the laminate in the shortest runs possible across a roof. The shorter the length of laminate, the less likely it is that the resin will harden too quickly.
- If possible, topcoat the roof out of direct sunlight or wait until later in the day before applying it, it may mean that the roof will take you longer to complete but it will save you time spent returning to the roof to re-topcoat it at a later date.

Cleaning Tools and Equipment

Buckets can be re-used for many jobs. When each mix is finished with, coat the inside of the bucket. When the resin has cured after approximately 30 minutes it can be peeled out, leaving the bucket like new and ready for the next job.

Paintbrushes can be dropped into a re-sealable container of acetone/harnener and left for the next job. Use only paintbrushes that have unpainted or uncoated handles, as the coatings will come off and contaminate the resin.

Polyester rollers have sleeves that are removable. It is very time consuming to clean the roller sleeves, so unscrew the nut with pliers and drop the used sleeve into the bucket of used resin.

Either use disposable latex gloves when handling catalysts and resins or clean hands with an appropriate hand cleaner. Do not clean hands with acetone.

Painters wipes are also a useful addition to your toolkit. As well as cleaning hands they are good for removing resin from windows and fascias.

1. Preparing the deck

If the substrate is unfit for laying boards onto directly, the surface will need to be removed. When laying decking, it is important to remember that the decking board will absorb moisture if in contact with water. Any moisture trapped within the roof will cause board movement and possibly joint failure. As with laying the laminate, ensure that conditions are dry before decking the roof.



After removing the old decking, check that all roofing joists are sound and free from rot. Replace these as required. If possible, build a fall into the substrate so that the roof can drain completely and remain free from standing water.

Firrings added to aid
run-off >



Why use OSB3 boards?

- 2.4m X 0.6m X 18mm Tongue and Grooved boards.
- Designed to minimise expansion and contraction.
- Easy to handle & carry up ladders.
- Doesn't need edge support between joists.
- Doesn't require the joints to be bandaged.

Laying the deck



18mm OSB3 boards are laid lengthways at 90° to the roof joists. The boards must be laid with the writing side uppermost. Not only does this give a better key for the laminate, it also allows the resin to flow into the board joint to effectively glue the boards together.

Start to lay the boards at the furthest edge from the drip. If the board is laid along a wall, an expansion gap of 25mm should be left. Align the end of the board with the fascia, laying following boards from end to end. Trim the last board in the row flush with the fascia. Using the off-cut (if greater than 400mm,) start to lay the next row of boards by fitting the tongue firmly into the groove of the row already laid. The boards are now staggered and bonded and will form a strong deck.





When two rows have been laid, the boards can be aligned to run straight, fixing them as you go. Continue to lay each row in turn using the off-cut from one row to start the next row. The last row is simply cut off in line with the fascia.

It is essential that the deck is laid correctly. A poorly laid deck may result in porosity in the laminate.

When fixing the boards to timber joists, the most efficient way is to use a compressed air or gas powered nail gun, it also minimises damage to the ceiling below. A 63mm (or longer) galvanised ring shank nail should be used at 200mm centres, usually 4 nails across a 600mm board. The nails must be driven into a joist.

Some installers may wish to use screw guns. This is acceptable providing the screws have a minimum of 40mm penetration into the joist. The boards can also be nailed using a hammer. This is obviously time consuming and will probably lead to internal damage of the ceiling. All ring shank nails must be non-rusting (galvanised or sheradised).

2. Edge Trims



Edge trims are manufactured in GRP. One side has a high adhesion finish (matt finish), the other side has a glossy finish, always bond to the matt finish.

Fixing trims

All trims must be fixed with nails or staples to the decking board. With the exception of the F300 Flat flashing and the D260 Angle fillet, the trims must be bonded in place using Polyurethane (PU) adhesive. Silicone sealant or general-purpose mastics are not suitable adhesives for the fixing of trims.



PU adhesive is applied with a skeleton gun to the batten around the perimeter of the roof. A 30mm bead at 300mm centres is sufficient to hold the trims in place. The trims should be 'rubbed' into place to ensure a good bond.

Trims are either nailed to the decking boards using a 13mm galvanised clout nail or stapled in place with a gas powered or compressed air stapler. After rubbing the trim into place to ensure a good adhesive bond, hold the trim in place ensuring the face is vertical. Drive fixings in at each end, then in the middle and then at 200mm centres thereafter.



Joining trims

To join lengths of trim together, apply a bead of PU adhesive to the inside of one length of the trim and fit it to overlap the other by 50mm.

3. Preparing for laminating

Avoid spillages by masking off the roof properly, a fine spray is caused

when using the consolidator roller and wind can carry this a considerable distance. It is important to ensure that this is considered before the resin is used on the roof. When resin has cured, there is no easy way of removing it from car paintwork without also removing the paint.

Mixing the resin

GRP roofing resin is supplied in tins of 20kg (approximately 18.5 litres.) The mixing buckets are graduated in litres which will allow easy calculation of the amount of catalyst (the hardener which resin requires for it to cure) needed depending on the ambient temperature. To remove the lid from the tin, a 4-6 inch nail is required to bend back the lugs. It is very important to stir the resin before use, ensuring that the styrene & wax that has settled at the bottom of the tin gets thoroughly mixed in.

Prepare enough tins of resin to complete the day's laminating at this stage as mistakes such as using unmixed resin are difficult to rectify later. The resin to CSM ratio is 1.35kg of resin for every m² of glass (though you should allow for 1.5kg for every 1m² allowing for waste and difficult details.)

It is good practice to mix a small quantity resin (1 or 2 litres) to start with to laminate the corners and bandage the trims. This will give the best indication of the curing time of the remaining resin and confirm if the correct amount of catalyst has been added to the mix. Ideally, it is best to aim for a curing time of between 20 to 30 minutes.



Catalyst addition

There are a number of important rules of to follow when deciding how much catalyst to add:

- Never use less than 1% or more than 4% catalyst.
- Never underestimate the effect of temperature. Resins will not cure at or below freezing and will always cure much quicker in direct sunlight.
- When topcoating late in the day, add more catalyst to allow for the lack of sunlight.
- In Winter use fast catalyst, in Summer use standard catalyst, in very hot conditions use LPT (Long Process Time) catalyst.
- Remember: Any catalysed resin left in the bucket will exotherm. Heat is generated as the resin cures, so it should be kept well away from other stored materials. Water can be poured over the resin to suppress the heat gain.
- Always mix the catalyst into the resin thoroughly before using the resin (a couple of minutes for a 10 litre bucket.) Failure to do this can result in 'streaking' on the laminate, where streaks of uncured resin will remain visible and ultimately lead to a failure in the laminate.

Laying the chopped strand mat

Before the chopped strand mat is laid out, the deck must be clean and dry and all the trims fixed in place. The mat has a cut edge and a feathered edge. Always overlap the feathered edge on top of the cut edge.

The mat is usually best laid parallel to the drip trim. Start by rolling the mat out, overlapping the trim by at least 50mm but not over the edge of the trim. Leave the ends long at this stage.

Roll out each 1m wide strip overlapping each time by at least 50mm right across the roof. The ends can be cut off with a Stanley knife into the corner of the trim to leave a straight and neat edge. Decide on the best place to finish laminating the roof from. Roll the mat up to the furthest point from the ladder.

Leave the rolls on the roof where they have been laid out to avoid any mix up if there is a deviation in size or angle from one length of mat to another. Cut 200mm squares of mat for each corner and 200mm strips of bandage for each trim joint.

Corners

For corners, lay a 200mm square piece of mat on the roof deck and 'wet out' on both sides with well mixed, catalysed resin (see catalyst addition chart) using a 2½" polyester roller.

Place the mat on to the face of the corner trim with the bottom edge on the radius of the trim. Fold around the corner and fold over the top of the trim down on to the deck. It will be easier to dress and feather if the mat is cut vertically from the top corner of the trim upwards.

Using the 2½" roller, 2" paint brush and small consolidating roller, feather the corners in to place. Any joint in the trims should be bandaged using the same mix of resin, using the same technique as the corners. If any boards are not completely engaged these joints should be bandaged, even a small gap may cause resin to leak through the boards which will lead to porosity in the laminate. If any nails holding the trims are not going to be covered with the main laminate on the deck or corners they should be laminated with a small piece of mat. The deck of the roof can be laminated before the corners and bandages have cured.

Laying the main laminate

You must follow these instructions to gain the correct ratio of resin to glass.

Unroll 1m of previously cut mat along the lowest part of the roof and align so it can be unrolled across the roof without running off-line. Carefully roll the mat back.

Add 1/3rd resin to board, 2/3rd to mat

To get a ratio of 3:1 (1.5kg resin: 0.45kg CSM) one-third resin should be applied on the board and two thirds resin on the mat. Dip the 7" polyester roller into the bucket of catalysed base resin. Lift the roller out of the bucket and without letting the excess run off, drop 3 rollers



full onto the board and coat 1 square metre. This will ensure that there is a ratio of one-third resin on the board.



Unroll the mat on to the resin coated board. In strips of 7" (1 roller width) wet out the mat by dropping 1 roller full in the middle of each 7" run, push the roller away to the end of the 1 metre run, then pull back over the full 1 metre. This will ensure even coverage.

Continue across the 1m² (approximately 6 runs) and then roll the roller over the whole area again to ensure good even coverage. Wet out the next 1m² of board in the same way, not forgetting to use one third of the resin on the board and two thirds of resin on the mat. Roll out the mat over the next 1m² of wet out board and continue to roll out the resin as previously described.

Let the resin soak into the mat to break down the emulsion binder for 2 to 3 minutes.

Paddling and wetting

Using the paddle roller and applying a little pressure, roll back and forth along the 2 edges and the end of the wetted out mat. Now roll the paddle roller over

the whole of the wet out mat, ensuring the paddle roller makes at least 2 passes over the whole area.

In colder weather the resin will be thicker and will take a little longer to wet out. When a laminate is correctly wetted out it should be transparent, there should be no white or opaque areas.

Things to check for

Take care near the edge of the roof and in windy conditions as a fine spray will be emitted from the roller and this spray can travel a considerable distance.

Make regular close inspections of the laminate as it is consolidated, checking for 'pin holes' and areas short of resin. Pinholes in the laminate will lead to porosity and water penetration.



On all overlaps of the mat, pay extra attention to the 'feathering in' as this will improve the overall appearance of the finished roof.

4. Preparation for Topcoating

Taking care and paying attention at this stage will produce a roof of superb appearance. Using a sanding pad with a 40 grit sand paper, lightly sand the corners and trim bandages. Sand off any unsightly fibres, taking care not to sand too heavily on the corner itself as this may lead to holes appearing. Cut any excess cured mat protruding beyond the trim with a sharp Stanley knife.

Seal any edges with abutting walls using a clear silicone sealant. Fit any C100 simulated lead flashing before top coating and seal off with a clear silicone sealant.

Topcoating the roof

The Topcoat is a resin and should be treated in the same way as the base resin. It requires the addition of catalyst for it to cure.

Always try to apply the topcoat immediately after the laminate is semi-cured (can be walked on, no stickiness.) If this is not possible then ensure topcoating is carried out within 24 hours to gain a good bond with the laminate. If the topcoating is left longer than 24 hours then wash down the laminate with acetone to gain a good cross-polymerisation of the topcoat to the laminate.

Mixing the topcoat

Calculate how much topcoat you will need to use to cover the main body of the roof (topcoat is applied at a rate of 0.5kg/m².) Add the required amount of catalyst and stir well.

If a coloured topcoat is needed rather than the standard pre-pigmented grey, a colour pigment will need to be added to a clear topcoat. A 20 kg tin of topcoat requires 2kg of colour pigment. It is essential to mix the pigment thoroughly into the topcoat to avoid patchiness and uneven colour.



Remove the lid and stir the topcoat well before use. Ensure the styrene & wax at the bottom of the tin is fully mixed in. Pour



enough topcoat out into the mixing buckets to cover the perimeter of the roof (including the edge trims.)

Applying the topcoat

Using the 7" polyester roller, cover the remaining laminate with just enough topcoat for the fibre pattern to be visible. Do not coat the roof too thickly or the topcoat will crack.

Use a 2½" Polyester roller to coat the trims. A roller will get a better and more even finish than a paintbrush. Roll the topcoat along the face of the trim. Hold the roller at an angle to the bottom of the trim to cover half of the radius return on the front of the trim. To protect the fascia from topcoat, hold a piece of flashing trim against it as you topcoat the radius on the underside of the trim.