

CONSTRUCTION TECHNOLOGIES



GRP

Flat Roof System

The latest technology in roof covering is the Glass Reinforced Polyester flat roof system. It is a fully integrated seamless system where all the components are designed to work together. It can be used on virtually all types of flat roofs up to and including vertical surfaces for example the cheeks of a dormer or the inside face of a mansard or parapet roof. It is ideally suited for refurbishment of existing roofs.

Below we describe step by step application of Tuff-Stuff® system, which is available to buy in IBB POLISH BUILDING WHOLESALE. It has been specifically engineered for distribution to the flat roof market in the UK however, it is not only ideal for flat-roofing. It is highly versatile and can be used for almost any application of any size or complexity. Sloping roofs, green roofs and balconies can all be easily accommodated, as can pools, ponds or water tanks. It is also fully integrated – all components are designed to work with each other to produce a robust, heavy-duty membrane for faultless waterproof performance. With no seams or joints which are prone to leakage in other roof systems, that seamless membrane is formed in situ and

fully bonded to the roof deck. You can confidently expect a lifetime of leak-free, maintenance-free protection from its installation. The membrane is extremely hard wearing structure installed onto a new timber decking tolerates light foot traffic and resists attack from ultra violet light.

The system is available as standard in dark grey but a range of different colours are available on request. A slip-resistant finish can also be specified. It can adapt to existing or new features such as parapet walls, skylights, vent pipes, sunpipes and balustrades. Support structure such as solar panels or air conditioning units can also be integrated either during or after installation.



Roof in its original leaking state

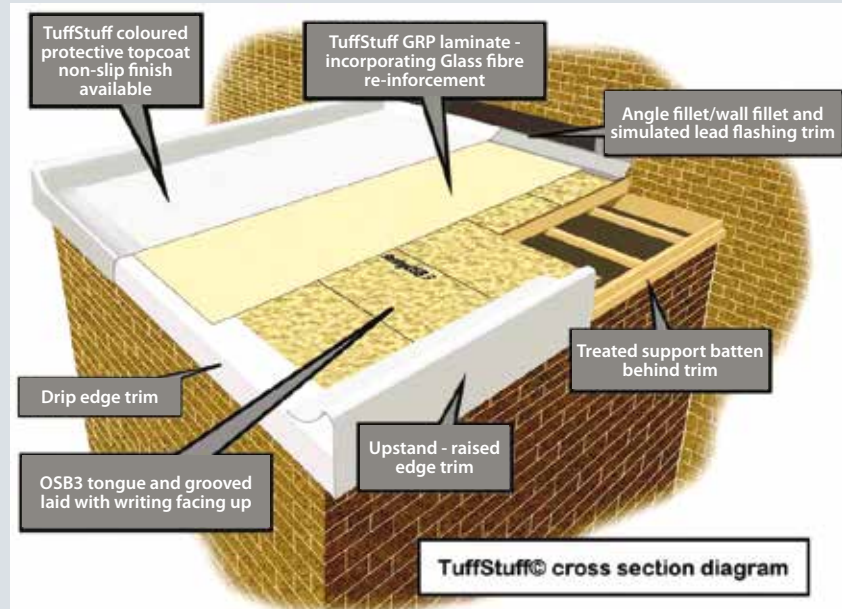


Roof after the TuffStuff® treatment

An understanding of GRP flat roofing system

A TuffStuff® GRP roof is a wet laid, single ply GRP laminate made up of two layers of catalysed base coat resin sandwiching a layer of chopped strand glass fibre reinforcing mat (450/600gsm). It is applied to a good quality new OSB 3 or WBP plywood deck. Profile GRP edge trims are applied to the roof edges and abutments and the roof is finished with a coat of catalysed pigmented top coat resin.

The system is available with two levels of reinforcement: 450gsm for areas of occasional foot traffic and 600gsm for areas with heavy foot traffic in conjunction with slip resistant finish. Insulation can be used in a cold roof or warm roof configuration to comply with current part L of building regulations.



Preparing and laying a deck

COLD ROOF CONSTRUCTION

Cold roof construction is where the insulation is laid between the joists and supported by ceiling, with the 50mm gap from the top to the underside of the decking for ventilation. Prior to laying the decking boards, ensure they are dry as TuffStuff® will not bond to wet or damp boards. Using 2400x600x18mm OSB3 Smartply T&G boards lay them at 90° to the joists, laid with the writing side uppermost. This will ensure that when basecoat resin is applied, the joints will fill with resin to help bond the boards together. Begin laying the boards at the furthest edge from the draining edge. Where the board is laid along a wall, an expansion gap of 18 - 25mm between board and wall should be allowed. Square off the short edge of the board with the fascia and laying the

boards end to end until they reach the opposite edge. Trim the last board to fit and use the off cut (if it is larger than 400mm) to begin the next row, thus creating staggered joints. Ensure that the tongues of each board are correctly engaged with the grooves of its neighbours. Proceed in this manner, cutting and shaping where necessary until the roof is fully decked. The recommended methods of fixing are either a gas powered nail gun using 65mm sheradised ring shank nails, or screw gun using plated/passivated woodscrews min 65mm. Fixings should be inserted at 200mm spacing (4 fixings across 600mm width) on every joist. If over boarding (i.e. laying a new deck on top of an existing one) it is important that your fixings locate into the joists. If you are fixing into steel, there are proprietary fixings that will be suitable. When laminated, the roof surface will reflect any imperfections in the deck. Good deck - good roof!

WARM ROOF CONSTRUCTION

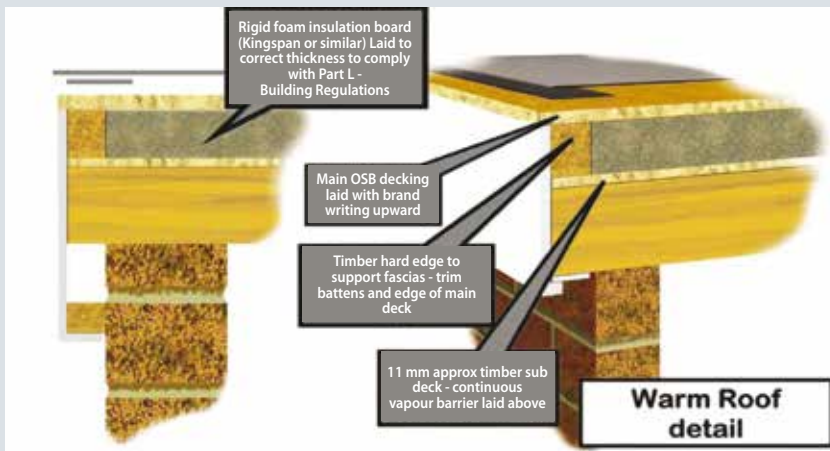
If a 'Warm Roof' is required (insulation placed above the joists) it will be necessary to create a sub-deck (either 11mm Plywood or 11mm OSB3) to carry the insulation, fastened to the joists/firings in the previously described manner. It is then recommended that a continuous vapour barrier i.e. visqueen, is laid onto the sub deck, any overlaps or joints taped with a waterproof tape.

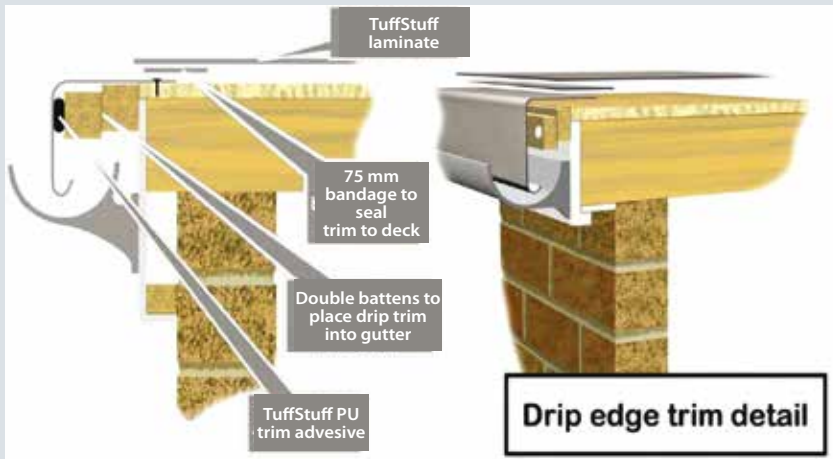
Foil faced insulation board (PUR or PIR) is then placed onto the sub deck long edges at 90° to the long edges of the sub deck and a 'top deck' of OSB3 2400x600x18mm laid on top as per the decking instructions and fixed through to the joists using fixings of the appropriate length. A timber 'hard edge' may be necessary at the perimeter, depending on the roof layout, to facilitate the fixing of battens, fascia's and trims.

Trimming

Edge trims are manufactured in GRP and are 100% compatible with TuffStuff® roofing resins. One side has a matt finish for high adhesion and the otherside a glossy finish. Always bond to the side with the matt finish any laminate applied direct to glossy side will delaminate.

All trims can be fixed in place using 15mm clout (felt) nails or staples. First, battens (19mm x 38mm treated) should be fixed around the roof perimeter in a position suitable for each trim profile and prior to fixing the trim in place, short beads of polyurethane trim adhesive approximately 30mm at 300mm centres should be applied to the battens. The trim





can now be positioned and 'rubbed' into place to ensure the face is vertical and that the adhesive is engaged. Mechanical fixing, using clouts or staples can now take place. When using the drip edge trims (A170, A200 and A250) it may be necessary to 'double batten' to ensure the bottom edge of the trim is located as close to the centre of the gutter as possible.

Application of TuffStuff® SYSTEM

TuffStuff® Base Coat resin is supplied in 15kg cans which equates to approximately 13.5 litres. This typically has a coverage rate of 10 square me-

tres, also allowing a small amount for detailing etc.

The correct ratio of base coat resin to glass fibre reinforcing mat (450gsm) is 1.2 litres of resin per m² of mat. For 600gsm mat your base coat resin usage will be approximately 30% higher – the thicker the mat the more resin usage. Resins will not cure without the addition of the correct liquid catalyst. The target working time used for each mix of the resin is 20-30mins.

Laminating procedure step by step is described next (see black box). Before laminating, always ensure that the weather will remain dry at least until the laminate has cured. After the first 2m² of mat has been laid and impregnated, the paddle roller is used to evenly distribute the resin across the

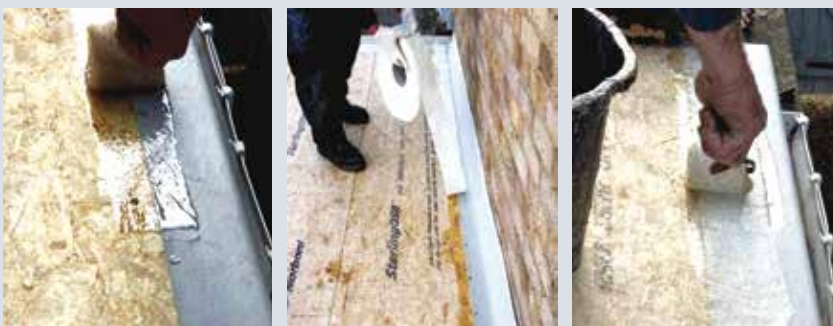
LAMINATING STEP BY STEP

1. Ensure all debris, tools etc. are removed from the roof and the roof is swept clean and is completely dry!
2. Cut the reinforcing mat for detailing work.
3. Prepare bandage for sealing all trims to new roof deck.
4. Roll out and cut mat for the whole roof surface (remembering 50mm overlap)
5. Roll up strips of mat and place adjacent. Keep dry!
6. Prepare tools, i.e. synthetic lamb's wool application rollers (3" + 7") metal paddle rollers (3" + 6") laminating brushes, mixing buckets.
7. Select an area on the ground, adjacent to the ladder for mixing. Protect the mixing area from spills or splashes using either an off cut of decking or a plastic sheet preferably both!
8. Mix a small batch (1-2 litres) for detailing and bandaging. This is an ideal opportunity for assessing the quantity of catalyst you are using and whether you need a longer working time (less catalyst) or shorter working time (more catalyst)
9. Mix and apply base coat resin and reinforcing mat for whole roof area including consolidation
10. When cured, sand down in preparation for topcoating.
11. Topcoat application.

Secure corners with mat and resin



Bandage trims and apply resin





Apply resin onto deck



Lay out first strip of mat along lowest point



Apply resin on the first layer of mat



Continue overlapping each strip by 50 mm



Repeat this process until the whole roof is laminated.



Apply top coating

mat. Using the paddle roller, apply light pressure to the wetted mat and using long, even strokes, make sure that the whole area of the mat is worked until transparent. Any area that is white or opaque will require more resin applied. Continue until the whole flat area of the roof is laminated and consolidated.

Using a sanding pad or sandpaper (40-60 grit) lightly sand the corners, taking care not to create 'holes'. Any unsightly fibres can be trimmed off using a Stanley knife. If a hole in the laminate is found this should be 'patched' with a square of reinforcement and resin before proceeding.

If the roof requires the use of C100/C150 flashing trims, these should be inserted prior to topcoating, sealing in place using a good quality clear (translucent) silicone (neutral curing, low modulus).

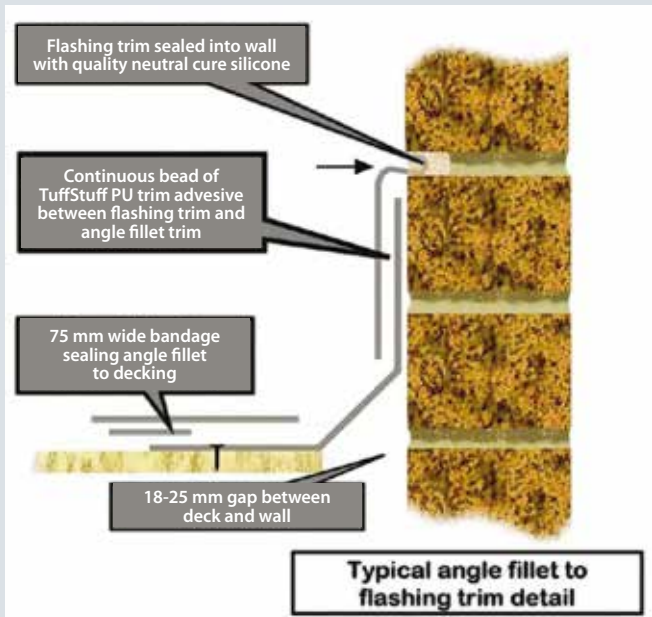
Topcoat

TuffStuff® Topcoat (colour coat) is supplied in 15kg cans which equates to approximately 30 square metres of coverage and 5kg cans equating to 10 square metres giving you flexibility and reducing wastage. All cans must be thoroughly stirred and if separate cans are being used mixed together to avoid any possibility of colour variations between batches.

If a non-slip aggregate is to be added, this needs to be sprinkled by hand as the roof is topcoated. It can be left uncoated to give a 'mineral' finish or encapsulated with topcoat to give a textured finish.

For an 'ultra neat' finish use masking tape to define the edges of the aggregated areas. When the topcoat has fully cured "grabbing" the aggregate, sweep off the excess and discard.

This advanced roofing technology is a cost effective and long term solution for



both new and old roofs. Totally seamless it reduces the problems of maintenance so common with a traditional roof covering method. What's more, it offers durable and neat looking finish with various trims available.

Fast installation on new or old roof constructions makes the GRP flat roofing system very efficient.

IBB Builders Merchants offers assistance for anyone interested in the above roof covering solution. (Source and photo: Tuffstuff)