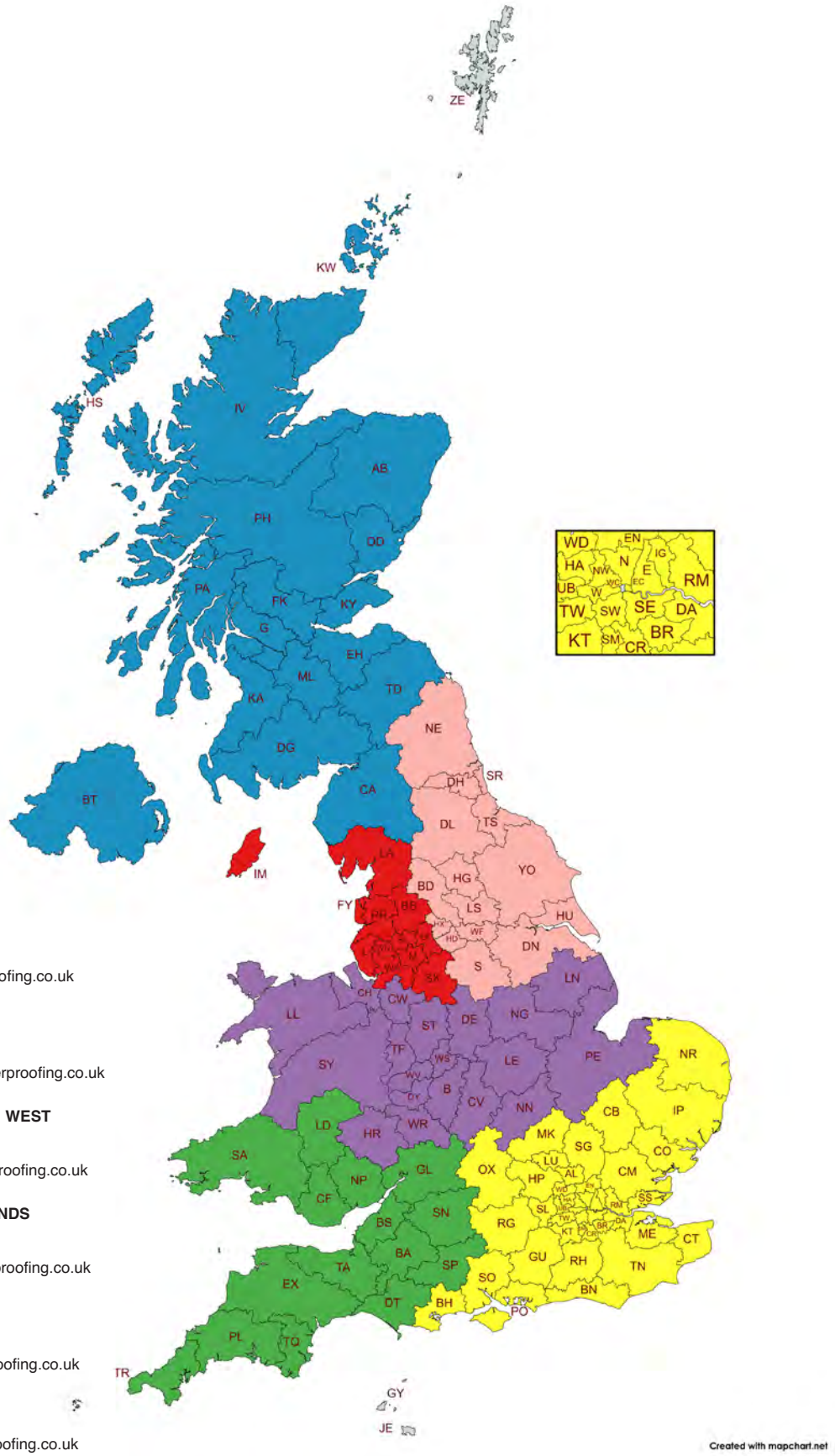
# TUFF STUFF

## FLEXIBLE GRP


# *Application* MANUAL

# Postcode Map




**SCOTLAND**
Kevin McConnell
Tel: 07552 124984
Email: kev.m@tuffwaterproofing.co.uk

**NORTH WEST**
Matt Close
Tel: 07386 679389
Email: matt.close@tuffwaterproofing.co.uk

**SOUTH WALES & SOUTH WEST**
Tracey Aumpu
Tel: 07425 745025
Email: tracey.a@tuffwaterproofing.co.uk

**NORTH WALES & MIDLANDS**
Simon Williams
Tel: 07944287204
Email: simon.w@tuffwaterproofing.co.uk

**SOUTH EAST & LONDON**
Sean Carty
Tel: 07500 662778
Email: sean.c@tuffwaterproofing.co.uk

Andy Sargeant
Tel: 07834 542742
Email: andy.s@tuffwaterproofing.co.uk

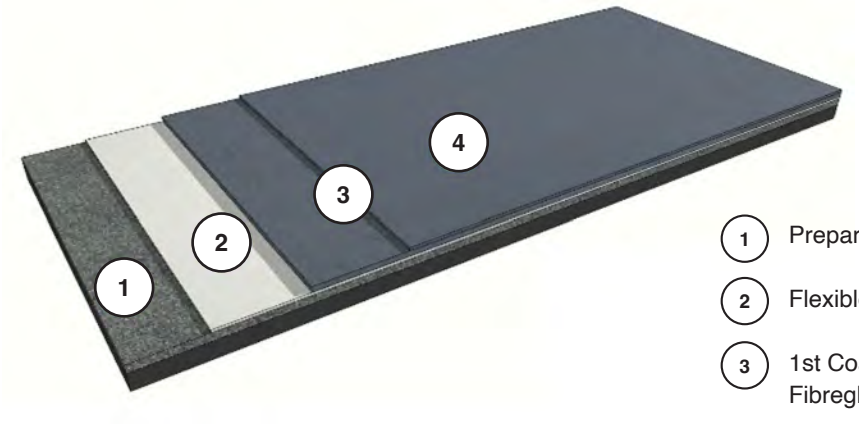
**NORTH EAST**
Jim Mapplebeck
Tel: 07834 542748
Email: jim.m@tuffwaterproofing.co.uk

# Contents

# 1

# Introduction

This is a flexible, single resin GRP system with full overlay and new deck capabilities. Combining the best elements of fibreglass with the versatility of overlay systems, no other flat roof solution performs at this level across so many applications. The illustration below shows a typical installation.




1. Prepared roof surface
2. Flexible GRP Primer (where required)
3. 1st Coat Flexible GRP Resin with 225g/m² Fibreglass CSM reinforcement
4. 2nd Coat Flexible GRP Resin

**Key Benefits**

- Can be applied to almost any roof surface including felt, asphalt, concrete, GRP, PVC single-ply, OSB3 TG4 and metal detailing
- Totally seamless and highly flexible membrane that is suitable for any size or shape roof
- Fully fire tested achieving BS 476-3 Rating: F.AA and EN 13501-5(4) Rating: BROOF(t4) – the highest rating a flat roof system can achieve and allowing for unrestricted use under UK regs.
- Highly resistant to rainfall – once consolidated, the resin will cure through – no more scraping off uncured resins!
- Extremely rapid installation with walk-on times of 30-60 minutes
- Uses 225g/m² fibreglass CSM for even application and an extra tough membrane that lasts decades
- Installations by trained installers are supported by a 20 year materials guarantee
- Anti-slip finish available for balconies and walkways
- Suitable for application on deck in temperatures as low as 1°C (with accelerator) or as high as 40°C with inhibitor
- Manufactured to ISO 9001 and ISO 14001 standards for consistent quality
- Cold applied for maximum safety – no risks from open flames and other hot works
- Single resin system that can be repaired / overcoated without grinding down

# 2

# Before You Start

**Component Checklist**
Before you start check that you have all the items you need. If in doubt consult your distributor.

**Essential System Components**
- ❑ Flexible GRP Resin (consider Accelerator for Low Temp Applications) (Inhibitor for high)
- ❑ Flexible GRP GP Primer (for certain substrates only – see page 18)
- ❑ Granular Hardener (for Flexible GRP Resin and Primer)
- ❑ Fibreglass chopped strand mat (CSM) reinforcement (225g/m$^2$)
- ❑ 75mm 225gsm Bandage (for trim joints and other local reinforcements)
  Acetone (preparation of some surfaces, wiping trims before coating, reactivating membrane if over-coating 7 days later, and cleaning tools)

**Overlay Applications - Additional Components**
- ❑ Power wash to clean roof surfaces (where required)
- ❑ Drying equipment - Industrial wet and dry vacs, clean mops, rags, sponges etc. Fungicidal wash to treat areas of fungal growth or moss

**New Deck Applications - Additional Components**
- ❑ Flexible GRP Primer and Joint Bandage for timber joints
- ❑ OSB3 TG4 deck
- ❑ Treated timber battens (for rigidity to edge trims)
- ❑ Fixings for OSB TG4 deck (suitable flat roofing fasteners)
- ❑ GRP Trims (for new deck applications or where existing edge detailing requires replacement)
- ❑ Tuff Stuff Trim Adhesive (ELH Clouts), for bonding trims. treated timber battens
  (for rigidity to edge trims)
- ❑ Fixings for trims (20mm large headed galvanised clout nails)

**Application Tools & Ancillaries**
- ❑ solvent-resistant, Tuff Stuff rollers
- ❑ Stirrer
- ❑ Application brushes (for difficult to reach areas)
- ❑ Calibrated buckets (for measuring resin quantities and mixing in hardener) or scales for weighing q Infra-Red Laser Thermometer (for measuring resin and deck temperatures)
- ❑ Personal protective equipment (latex gloves, respiratory/dust mask and safety goggles) medium grit sand paper
- ❑ Cloths / rags
- ❑ Protimeter Moisture Meter to measure moisture content of the roof surface
- ❑ Digital Infrared Thermometer for checking deck temperatures

## Assessing the Existing Roof

### Determining Suitability for Over-Coating – Existing Roof Condition

The existing roof build up should be inspected for defects, made good where required and retained. Core samples should always be taken to confirm the exact roof build-up and its condition (see Appendix A for further details). If any wet or saturated insulation or decking is found, careful consideration should be given to a complete strip. Areas where the insulation or underlying substrate has collapsed or is defective or decayed, should be cut out, repaired and reinstated on a like-for-like basis to provide a good solid base for the coating system. For guidance regarding the preparation of existing roof surfaces refer to pages 9-11. For guidance regarding the fitting of new decks refer to Section 4.

### Determining Suitability for Over-Coating – Substrate Compatibility

Flexible GRP is a highly versatile system that can coat a wide range of common roof surfaces that include felt, asphalt, concrete/screed, GRP and PVC single-ply. If the substrate is not described here, or if you are unsure, then you should carry out an adhesion test as described in Appendix B.

### Ponding Water

Remember – if you're overlaying a roof then there will be no improvements to falls or drainage and existing problems with standing water will remain. Although standing water is not detrimental to the Flexible GRP system it could be hazardous to foot traffic in icy conditions. If you're not the end user we strongly recommend discussing this with your client before you start.

### Compliance with Building Regulations

You should ensure that the design of the roof to which the Flexible GRP is to be applied is in accordance with current regulations, codes and good practice. For further guidance consult BS6229 (Code of Practice for flat roofs with continuously supported coverings), BS5250 (Control of Condensation in Buildings), Local Authority Building Control regarding compliance with regulations or seek professional advice.

### Measuring Your Roof

It is important to accurately measure your roof to determine the amounts of materials required. The roof area should include all areas to be coated including upstands and perimeter details e.g. welted drips and trims.

### Storage

Ideally the resins should be protected from extremes of temperature before use. Storing the resin at around 15°C for 24-48 hours before use will ensure optimum performance. For further details on storage consult the product labels.

### Plan Your Installation

It is recommended that you familiarise yourself with the installation procedure before you start. The next sections of this manual will cover in detail all you need to know to carry out the works.

### Uses Advised Against

The Flexible GRP System is not for consumer use and should only be installed by professionals.

3

# Flat Roof Detailing Guidance

- Any redundant roof details are to be removed prior to the commencement of works. The roof area underneath is to be made good as required, ensuring that it matches the build-up of the surrounding roof area.
- Termination details should have a minimum 150mm upstand height above the finished surface of the roof and should be terminated into a chase or have a suitable cover flashing or weathering flange. Any details where this cannot be achieved should be periodically inspected and may require occasional maintenance.
- All detailing surfaces to be coated on and are fully prepared and primed as required.
- The Flexible GRP System should be dressed as far as possible into all outlets.
- Care should be taken to ensure all roof details comply with BS 6229 Guidance (Flat Roofs with Continuously Supported Membranes), NHBC and any other relevant regulations.

# 4

# Preparation of Existing Roof Surfaces

**Drying the Roof**

It is important when applying products that the substrate or intermediate layers to which they are being applied are not wet. Application onto wet substrates is likely to cause a loss of adhesion that could lead to either localised or catastrophic failure.

The substrate should be visibly dry, and when measured with a “Protimeter” moisture meter a maximum moisture content of 20% w.m.e. is allowable for application of the Flexible GRP system.

If the moisture content is greater than this the substrate should either be left to dry naturally or alternatively dying may be aided by using any of the following means.

- Wet and dry vacs
- Squeegees
- Mops
- Rags, towels, and sponges
- Specialised no flame, low heat driers and blowers

When water has been removed by any of the above means it is still possible that the moisture content may be too high to allow application. Rechecks with the “Protimeter” should be carried out. The above methods are equally suitable for drying the substrate and removing moisture between coats.

Gas torches and normal electric driers should not be used as they can damage the substrate and the applied system. These types of heaters can also create a significant fire hazard. Providing the substrate is surface dry the system applied will adhere well to the substrate however the following should be noted.

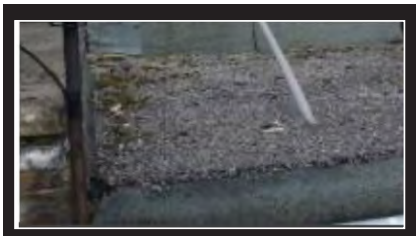
For wet or saturated insulation or decking, careful consideration should be given to the installation of permanent roof ventilation. Areas where the insulation or underlying substrate has collapsed or is defective or decayed, should be cut out, repaired and reinstated to provide a good solid base for the coating system.

**All Surfaces to be Coated**

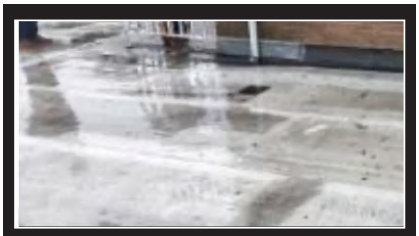
- Remove any chippings from roof surface and any embedded chippings should be removed by a mechanical scabbling device or other means as necessary. Ensure the roof is able to carry the weight of any equipment.
- Special attention should be given to any solar reflective (especially aluminium pigmented) coatings, repair areas or other types of coating. Adhesion tests should be carried out.
(see Appendix B, page 32)
- Thoroughly clean down all areas to be treated, removing any dirt and debris, surface lying water, mould growth, moss, etc.
- Inspect all surfaces to assess soundness of existing substrates including any existing coatings, repairs and any test areas. This is to verify compatibility for the proposed coating system and to assess the need for priming.
- Remove any existing loose or poorly adhering materials and repair where appropriate. Repair, replace and reinstate any defective fixtures and fittings.
- Treat any areas of fungal growth or moss with a fungicidal wash to ensure all spores are destroyed. Powerwash to remove any residues.
- Ensure all surfaces to be coated are suitably

**Felt**

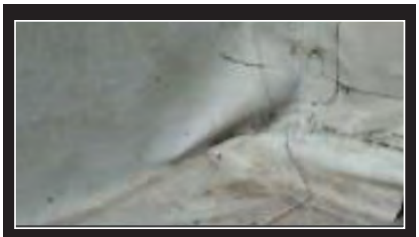
- Areas of badly damaged or decayed felt should be replaced to provide a sound substrate for the system.
- Loose or dis-bonded felt must be re-bonded to the substrate.
- Any blisters should be made good by star cutting and re-bonding to the substrate. Allow to dry out before re-fixing.
- Brush off any loose sand before coating.
- Primer Required: Flexible GRP Primer (Recommended)



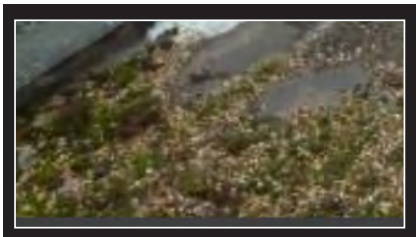
Roof Chippings



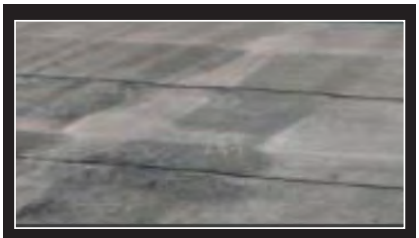
Solar Reflective Paint



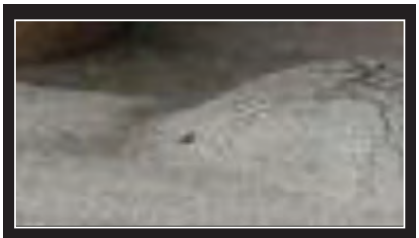
Loose / Poorly Adhered Material



Moss / Vegetative Growth



Smooth Felt with Mineral Felt to Edges



Blister

**Asphalt**

- Any blow holes in asphalt are to be smoothed out or removed and levelled off using a suitable repair compound, i.e. sand cement mix with a suitable hardener.
- All large non-structural cracks and voids should be cleaned out and made good using a suitable repair compound.
- Allow repairs to cure prior to coating (check manufacturer's recommendations).
- Primer Required: Flexible GRP Primer (Recommended)

**GRP**

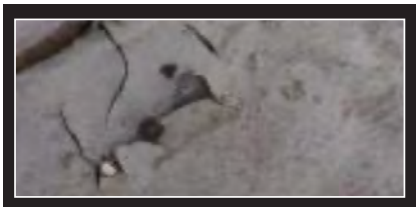
- Mechanically abrade (grind) any loose and flaking GRP topcoat materials back to the base layer to provide a sound firm edge.
- Aged / weathered GRP with a sound topcoat layer will not require abrading, however for GRP with a top coat less than 12 months old, mechanical abrasion will be required to the roof edges.
- Ensure all GRP surfaces are thoroughly scrubbed with clean Acetone prior to coating
- Primer Required: No

**Concrete / Screed & Brickwork**

- Any spalled, loose, unsound concrete or brickwork should be broken out and repaired using a suitable repair mortar.
- All smooth concrete surfaces to be treated should be lightly abraded with suitable equipment (e.g. vacu-blast, diamond disc grind etc) where necessary to remove laitance and/or remove other impervious matter, concrete curing membranes etc, until a clean, dry and open surface is attained.
- All large non-structural cracks and voids should be cleaned out and made good using a suitable repair compound.
- Wet or saturated substrates should be allowed to thoroughly dry out before any products are applied.
- For newly laid concrete/screed, follow general guidelines allowing a curing time of at least 28 days or one week per 25mm, or preferably follow manufacturer's instructions. In the case of polymer modified material, refer to manufacturer's instructions.
- Primer Required: Flexible GRP Primer (Essential)

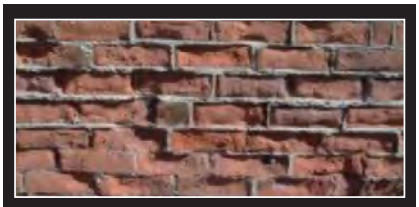
Blowholes

Cracks

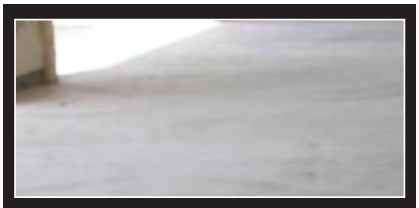


Flaking top coat

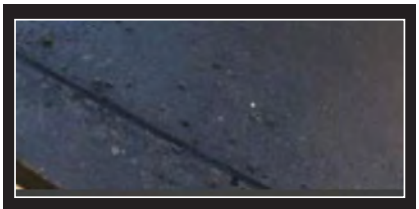
Existing GRP trims



Spalled brickwork



Smooth concrete



Wet concrete roof

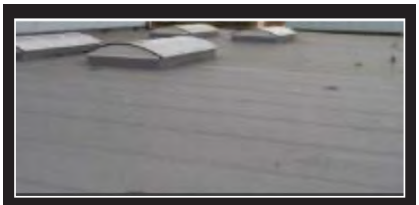
**Single Ply Membranes**

- Note – adhesion tests will be required to determine suitability for over- coating (see page 32 for further details)
- Any localised damage should be repaired or made good as appropriate.
- Ensure all single ply surfaces are thoroughly scrubbed with clean Acetone prior to coating
- Primer Required: SP Primer
  (dependent on adhesion tests results).

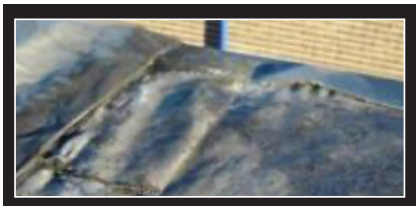
Note some PVC Single-Ply membranes may alternatively be primed using standard Flexible GRP Primer dependent on adhesion test results.

**Metals**

- Flexible GRP should be used to coat small areas of metal (such as detailing work) or where the metal is a small part of an overall roof area. Flexible GRP should not normally be used for coating major areas of metal, and in particular areas where significant movement of joints may take place.
- All rust, loose and flaking materials are to be removed by wire brush or other means and all debris removed. Any areas of significant rusting which cannot be removed should be treated with a suitable proprietary rust converter and allowed to cure prior to final priming.
- To all cleaned and degreased, non-oxidised galvanized steel surfaces, apply by brush Mordant solution and allow to react. A black deposit will indicate surface conversion. After conversion, wash with clean water and allow to dry
- Abrade aluminium surfaces to be coated to get back to bright metal.
- Wet-abrade all lead to be coated to remove oxidation and patination. Dispose of the residues in accordance with current HSE guidelines prior to wiping with acetone
- Abrade all copper surfaces to be coated to get back to bright metal.
- Thoroughly clean all surfaces with acetone prior to application of main system.
- Primer Required: Metal Detailing Primer. IMPORTANT- Refer to primer technical data sheet before use.

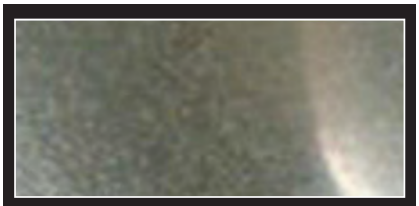


PVC Single-ply roof



Defects require remedying

Typical rust converter



Un-weathered galvanised steel

Aluminium roof trims

Lead outlet

5

# Fitting New OSB3 Decks (Where Required)

**Introduction**

Please note that the following is for guidance and this document should be read in conjunction with the relevant OSB3 board manufacturer's technical data sheets. Particular attention should be given to the board manufacturers recommendations regarding storage, conditioning, moisture content, fixing and protection of boards prior to application of the Flexible GRP System. Important Note – A two coat (20 year) application must be installed when coating OSB3 or any other new deck or porous surface.

TOP TIP

**To avoid contamination of the OSB3 and resin, cut flashing chase before re-decking.**

**Preparation**

The existing roof should be inspected to assess its condition. If the substrate is found to be unsuitable for over-decking (e.g. defective, decayed or structurally unsound) then it will need to be stripped and removed. The timber joists should also be inspected for defects including any wet/dry rot and made good where required.

Standing water should be avoided and if you think there is a potential for this to be a problem then you should consider incorporating falls (ideally a min. 1 in 80). This is normally achieved through the installation of timber furrings above the joists. If the roof is to be walked on then extra consideration should be given to improving the falls as standing water could be hazardous to foot traffic.

**Recommended OSB3 Type & Grade**

This guidance covers 18mm OSB3 TG4 (Tongue and Groove). These boards have 4 tongue and groove edges and are 2400mm x 600mm and are the recommended board to use. OSB3 square edge boards can be used but these require additional reinforcements to the board joints.

**Installation Instructions**

1. 18mm x 2400mm x 600mm OSB3 T&G4 Boards should be fixed at max 200mm centres (4 fixings across the board width) and into every joist, penetrating the joist by a minimum 40mm.
   A minimum of 20 fixings per board will be required. Use suitable flat roofing fasteners in accordance manufacturer's recommendations.

2. Boards can be cut as required to fit the roof area. Care should be taken to not affect the tongue & groove joints – if square edges are present then they will need to be taped later (see Section 7)

3 Boards should be laid staggered (see typical pattern right) with the larger gap in the T&G joint face up.
   This will usually be the writing side up on most boards. Ensure boards are pushed tight to be properly butted together.

4. The minimum expansion gap is 25mm at all abutments. This includes walls, chimneys, roof lights and the like. Flashings to the wall must be kept independent of the roof to allow movement and wall fillet trims must be used.

5. For large roofs (roofs over 50m$^2$ or roofs in excess of 10m in length) special expansion trims will be required. A gap of 25mm should be allowed between the OSB3 boards where expansion trims are to be fitted.

6. Fixings should be minimum 75mm annular ring shank nails when fixing directly to the joists or equivalent screws. For warm roof constructions, specialist warm roof fixings will be required, penetrating the joists by a minimum 40mm. Please consult your Flexible GRP Distributor for advice.

7. TREATING OSB3 TG4 BOARD JOINTS: Add the required amount of Granular Hardener to decanted Flexible GRP Primer (see page 18-20 for guidance), stir thoroughly and apply by brush to all OSB3 TG4 board joints ensuring that primer fills the board joints entirely. This stripe priming process is critical when applying to OSB3 TG4 board joints.

- IMPORTANT: All OSB3 Square Edge Board joints must be locally reinforcing with Flexible GRP Primer and 75mm 225gsm Bandage. Refer to page 20 for details.

8. Boards should be made waterproof as soon as possible, ideally the same day. If this cannot be achieved then they must be suitably protected from the weather at all times to avoid the possibility of becoming wet.

6

# Fixing GRP Trims

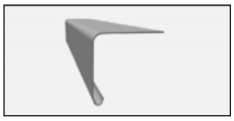
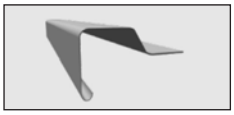
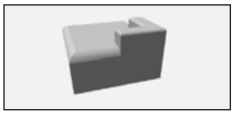
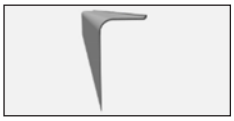
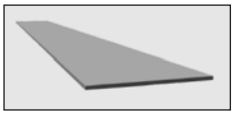
**Introduction**

GRP Trims are required for any new deck application and can be used to replace existing defective detailing.

GRP Trims should be installed at all new deck roof perimeters including exposed edges, wall abutments and at joints to adjacent pitched roofs. The table below details the type of trims available and where they need to be installed.

**Coating and Reinforcing the Trim Joints**

Trims should be thoroughly wiped with acetone before applying the Flexible GRP system. All trim joints and the joint between trims and the substrate will require reinforcement with two layers of bandage (refer to Section 8 details). Trims are then to be encapsulated with Flexible GRP resin (NB: the reinforcement within the first coat can be stopped on the horizontal part of the trim).

| Trim Name | Drawing | Where they are fixed |
|---|---|---|
| **Drip** |  | Installed to any perimeter edge where water runs off into a gutter. |
| **Upstand Fascia** |  | Installed to edges where water does not run off |
| **Corner Piece** |  | Installed at external corners of the roof |
| **Wall Fillet** |  | Installed to any perimeters that abut a wall |
| **Cover Flashing** |  | Used to provide weathering protection for wall abutment details |
| **Flat Sheet** |  | Installed beneath slates/tiles at perimeters that abut a pitched roof |
| **Expansion** |  | Installed for any timber deck roofs over 50m$^2$ or greater than 10m over a 25mm gap between boards |

**Trim Installation Instructions General Guidance**

• Treated timber battens (19mm x 38mm) should be installed as required to the perimeters of the roof (refer to individual trim for batten requirements).

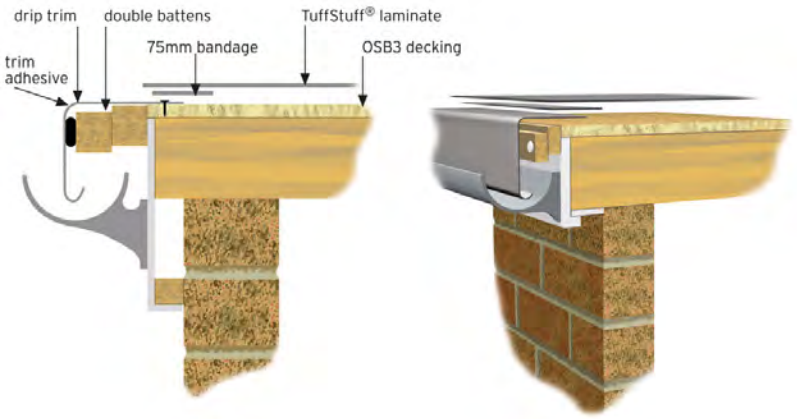
- It is recommended that Tuff Stuff Trim adhesive or equivalent is applied to the timber battens to provide additional security for the trims to protect against wind uplift damage. Ensure the trims are pushed against the adhesive to achieve optimum bonding.

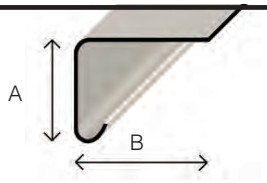
- Trims must be mechanically fixed into the OSB3 deck using 20mm large headed galvanised clout nails at 150mm centres.

- When joining two lengths of trims together, ensure there is a minimum overlap of 50mm and use Tuff Stuff Trim adhesive to secure in place prior to mechanically fixing.

- All joints in the trims and the junction between the trims and the OSB3 deck will need to be locally reinforced with 75mm 225gsm bandage and Flexible GRP resin.

# DRIP EDGE TRIMS

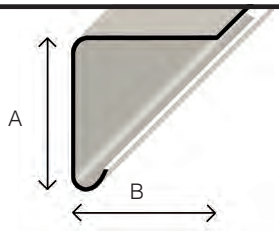



## SMALL DRIP TRIM A170

Dim 'A' 65mm
Dim 'B' 90mm

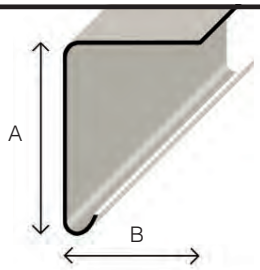
PRODUCT CODE: TST05




## STANDARD DRIP TRIM A200

Dim 'A' 90mm
Dim 'B' 90mm

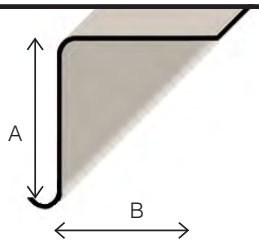
PRODUCT CODE: TST06




## DEEP DRIP TRIM A250

Dim 'A' 145mm
Dim 'B' 90mm

PRODUCT CODE: TST07




## AF200 ADVANCED DRIP EDGE TRIM

Dim 'A' 90mm
Dim 'B' 80mm

PRODUCT CODE: TST06AF

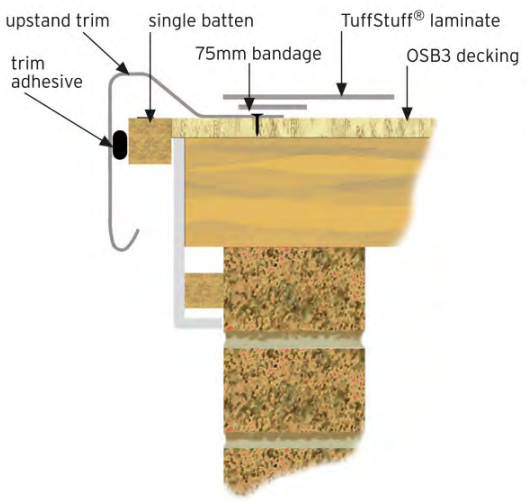
*The new design eliminates water kick-back and only requires a single support batten.*

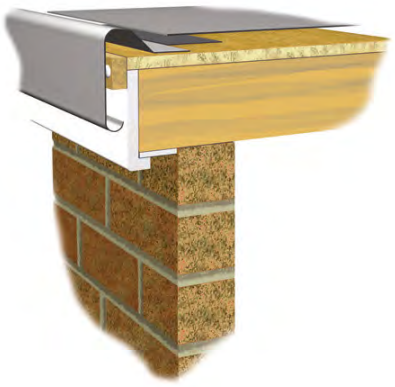
**Drip Trims - A170, A200,AF200 & A250**

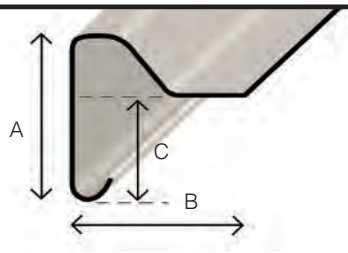
AF200 Trims Only require1 Batten, all other trims will be necessary to install two timber 19mm x 38mmbattens at these edges to ensure that the drip trim is located in the centre of the gutter. The secondbatten should be fixed approximately 10mmlower than the first.

If there is a potential for standing water issues, the qutter side of the OSB3should be marked with the back of the drip trim and carefully rebated before is nailed. The OSB3canthen by nailed and the drip trim fitted so that finishes level with the top of the OSB3(.e. the drip trim is in fact "countersunk" flush with the top of the OSB3).

# UPSTAND (RAISED EDGE) TRIMS



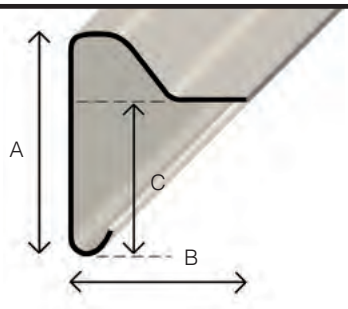






## STANDARD UPSTAND TRIM (RAISED EDGE) B230

Dim 'A' 105mm
Dim 'B' 110mm
Dim 'C' 75mm

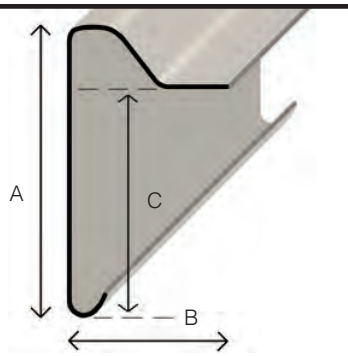
PRODUCT CODE: TST08




## DEEP UPSTAND TRIM (RAISED EDGE) B260

Dim 'A' 125mm
Dim 'B' 110mm
Dim 'C' 95mm

PRODUCT CODE: TST09




## EXTRA DEEP UPSTAND TRIM (RAISED EDGE) B300

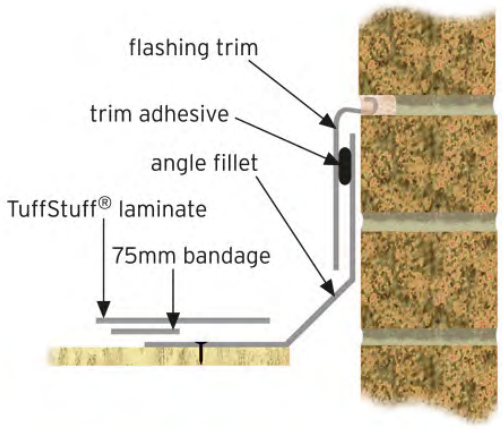
Dim 'A' 175mm
Dim 'B' 110mm
Dim 'C' 145mm

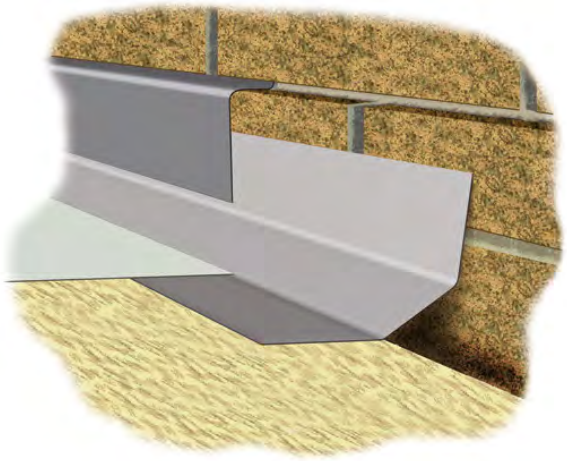
PRODUCT CODE: TST10

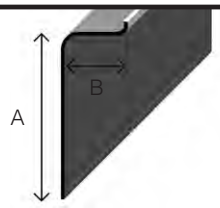
**Upstand Fascia Trims aka Raised Edge - B230,B260 and B300**

Because there is no gutter present at these edges, only one 19mmx 38mmbatten will be required which should be installed to be level with the adjacent fascia board/0SB3 deck.

# SIMULATED LEAD FLASHING TRIM



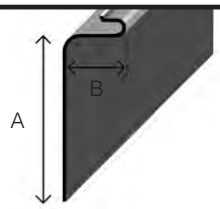






## STANDARD SIMULATED LEAD FLASHING C100

Dim 'A' 100mm
Dim 'B' 30mm

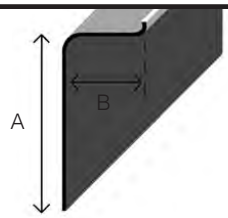
PRODUCT CODE: TST11




## SIMULATED LEAD FLASHING & MOISTURE TRAP C100MT

Dim 'A' 100mm
Dim 'B' 35mm

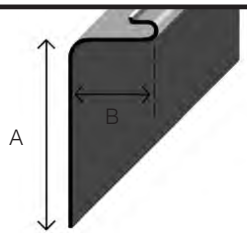
PRODUCT CODE: TST12




## SIMULATED LEAD FLASHING + EXTRA PENETRATION C100L

Dim 'A' 100mm
Dim 'B' 50mm

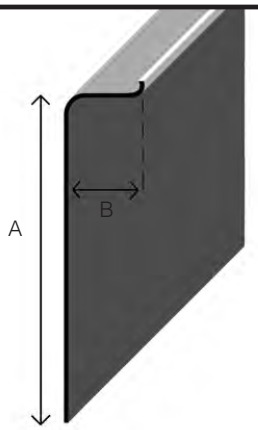
PRODUCT CODE: TST13




## SIMULATED LEAD FLASHING & MOISTURE TRAP + EXTRA PENETRATION C100LMT

Dim 'A' 100mm
Dim 'B' 55mm

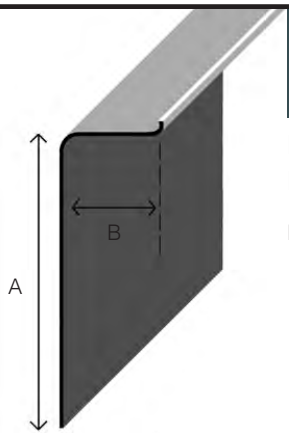
PRODUCT CODE: TST14




## LONG LEG SIMULATED LEAD FLASHING C150

Dim 'A' 150mm
Dim 'B' 40mm

PRODUCT CODE: TST15




## LONG LEG SIMULATED LEAD FLASHING + EXTRA PENETRATION C150L

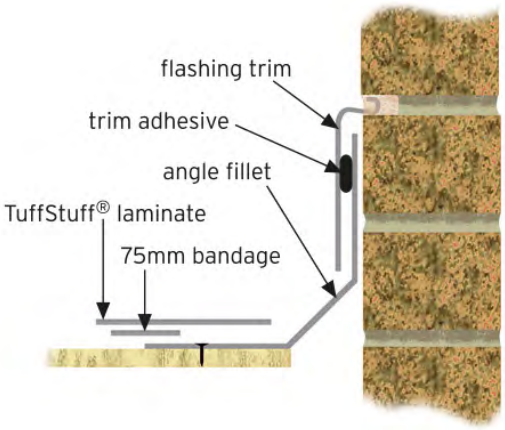
Dim 'A' 150mm
Dim 'B' 50mm

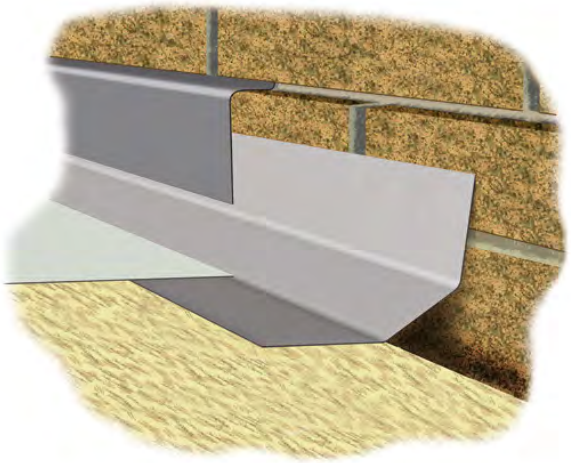
PRODUCT CODE: TST16

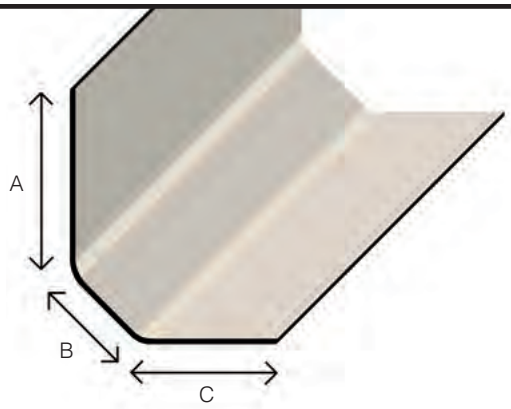
**Cover Flashings - C100, C100MT, C100L, C100LMT**

- The flashing trims should be fixed AFTER the application of the Flexible GRP system.
- Before re-decking, a chase should be cut into the mortar of the brickwork using a suitable grinder into which the trim will be slotted in.
- Before placing the trim into the chase, apply a continuous bead of Tuff Stuff Trim adhesive to the rear of the trim so that it becomes bonded in place.
- Once in place apply clear silicone sealant across the length of chase/trim joint to provide a weatherproof seal.
- NB - If there is already cover flashing in place (such as lead or similar) in sound condition it may not be necessary to install cover flashing trims.

# ANGLE FILLET TRIMS



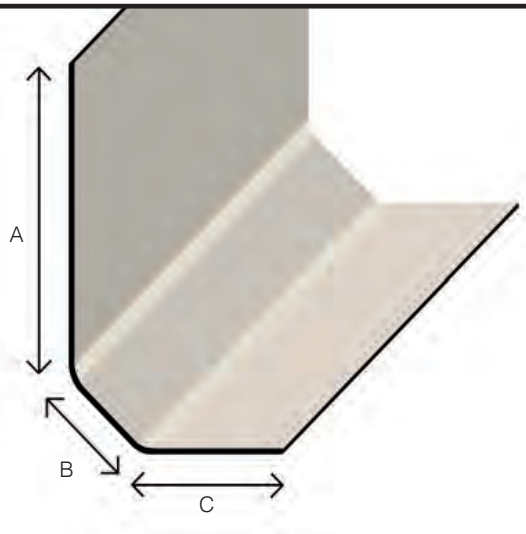






## STANDARD ANGLE FILLET TRIM (WALL FILLET) D260

Dim 'A' 115mm
Dim 'B' 60mm
Dim 'C' 75mm

PRODUCT CODE: TST17




## LONG LEG ANGLE FILLET TRIM (WALL FILLET) D300

Dim 'A' 185mm
Dim 'B' 60mm
Dim 'C' 80mm

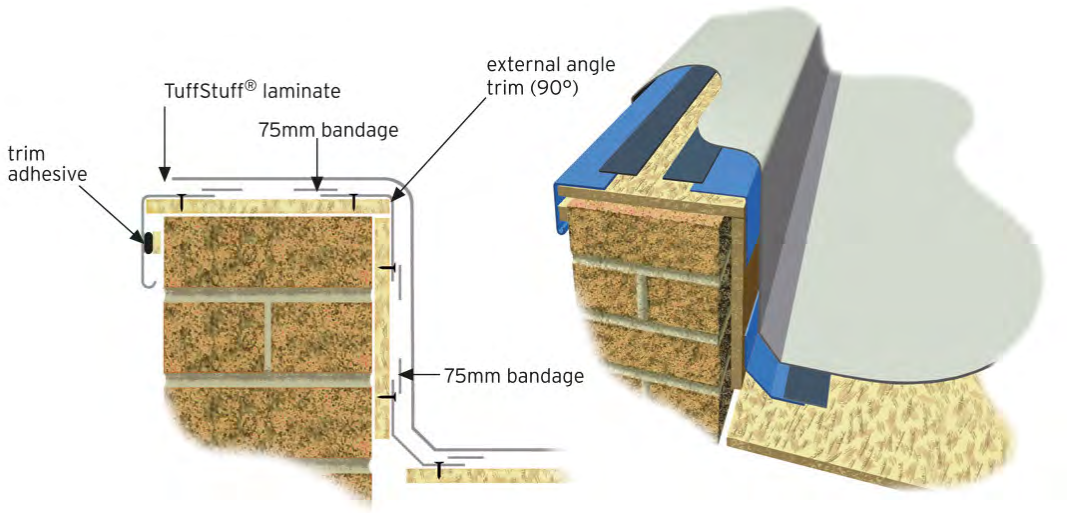
PRODUCT CODE: TST18

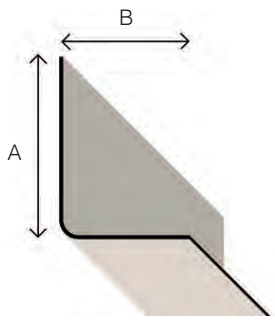
**Wall Fillet - D260 or D300**

Ensure the vertical face of the trim sits parallel to the wall. DO NOTfix the vertical section to the wall.

These trims should also be installed at any other right angle abutments.

# EXTERNAL ANGLE TRIM (90⁰)



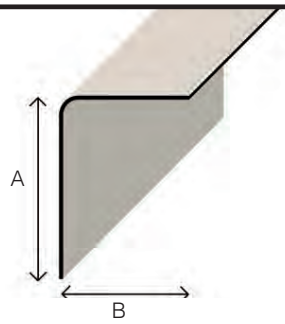




## INTERNAL ANGLE TRIM AT195INT

Dim 'A' 100mm
Dim 'B' 70mm

PRODUCT CODE: TST25

Inside face accepts laminate

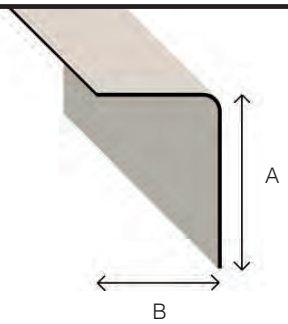



## EXTERNAL ANGLE TRIM AT195EXT

Dim 'A' 100mm
Dim 'B' 70mm

PRODUCT CODE: TST26

*Outside face accepts laminate*




## EXTERNAL ANGLE TRIM AT300EXT

Dim 'A' 240mm
Dim 'B' 90mm

PRODUCT CODE: TST43

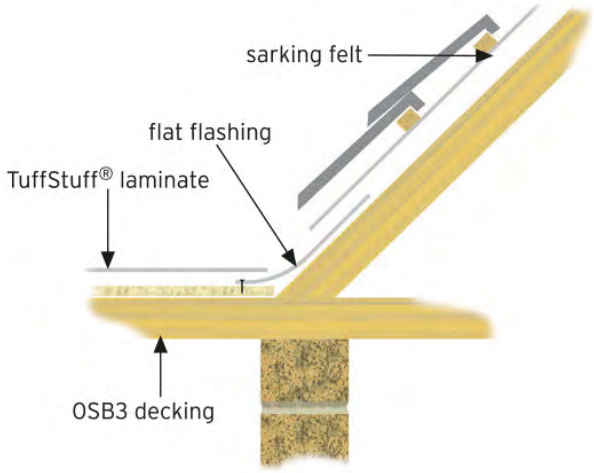
*Outside face accepts laminate*

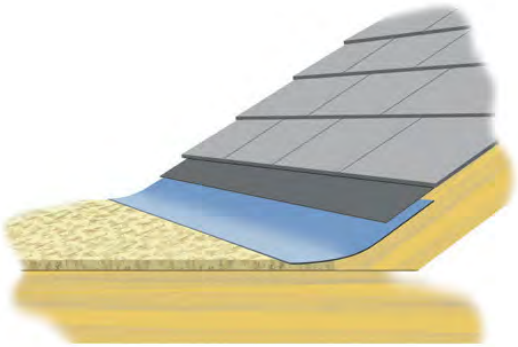
## DESCRIPTION

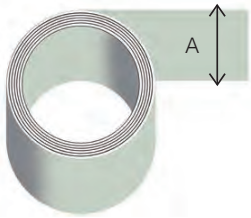
All dimensions are approximate

- Used to trim a right angled corner
- 3 metres long

# FLAT FLASHING ON A ROLL





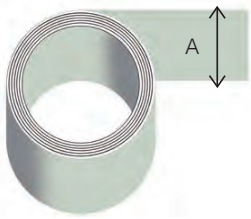

## FLAT FLASHING (ON A ROLL) F300

Dim 'A' 300mm

PRODUCT CODE: TST21

*Flat Flashing - Flat section for use as continuous flashing under slates at a roof junction. It can also be used as a gutter lining.*

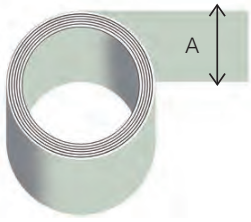
**Steep Pitch Roof**




## FLAT FLASHING (ON A ROLL) F600

Dim 'A' 600mm

PRODUCT CODE: TST22




## FLAT FLASHING (ON A ROLL) F900

Dim 'A' 900mm

PRODUCT CODE: TST23

**Low Pitch Roof**

**Flat Trims to Pitched Roof Abutments - F300, F600AND F900**

The first two courses of slates/tiles should be removed as required and under-slating felt príor to installing the flat sheet trim at pitched roof abutments.

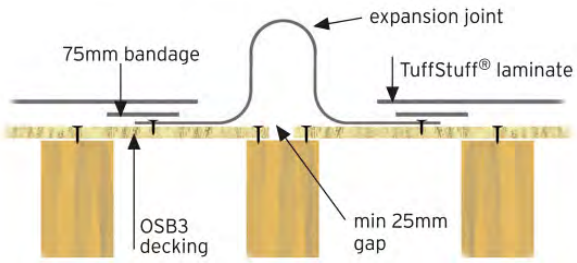
The trim must only be fixed to the OSB3deck so that the section of the trim resting against the pitched roof is free to move during building expansion/contraction movements.

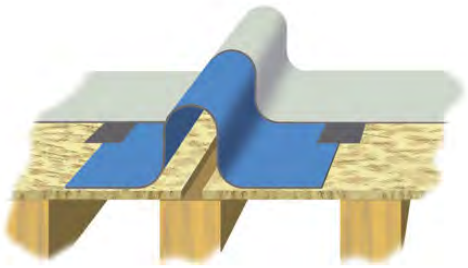
When applying the first coat of Flexible GRP Resin, ensure that the nailed section is covered with reinforcernent.

Flexible GRP Resin should be extended to cover the whole trim.

Replace the under-slating felt and slates/tiles upon completion of works after the system has fully cured.

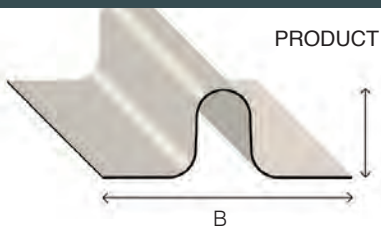
# EXPANSION JOINT (RAISED RIDGE ROLL) + END CLOSURE



## EXPANSION JOINT/RIDGE ROLL E280

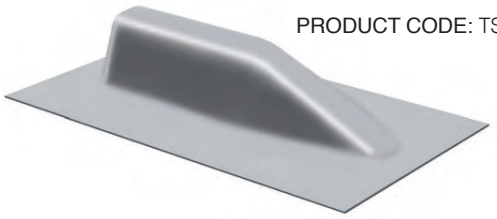
PRODUCT CODE: TST20




Dim 'A' 65mm
Dim 'B' 185mm

## EXPANSION JOINT CLOSURE C5

PRODUCT CODE: TST34

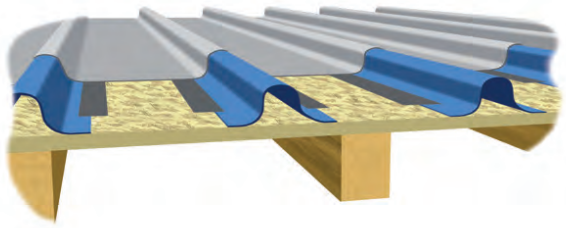


DESCRIPTION

- Used to form expansion joint over 50²M
- Also used on a ridge connecting two sloping roofs
- All 3 metres long

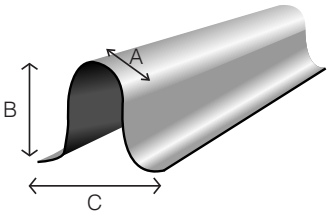
All dimensions are approximate

# SIMULATED LEAD ROLL/ZINC AND END CLOSER



## ER15 SIMULATED ZINC STANDING SEAM TRIM

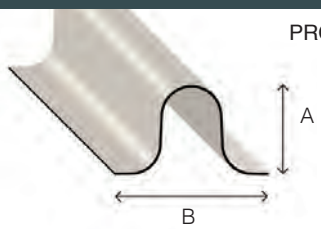
PRODUCT CODE: TST42




Dim 'A' 15mm
Dim 'B' 35mm
Dim 'C' 80mm

## SIMULATED LEAD ROLL E35/40

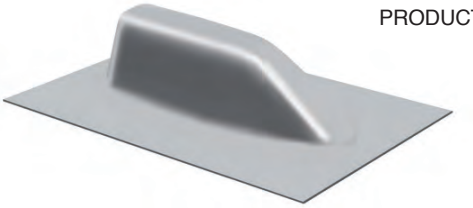
PRODUCT CODE: TST19




Dim 'A' 40mm
Dim 'B' 75mm

## LEAD ROLL END CLOSURE C6

PRODUCT CODE: TST35

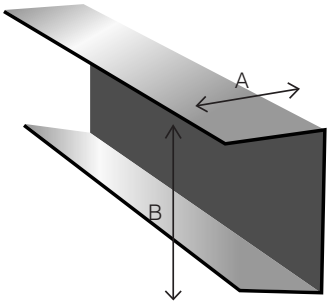


DESCRIPTION

- ER15 - Simulates the appearance and finish of a traditional Zinc standing seam roof
- E35/40 Used to simulate lead rolls on flat decking
- Mechanically fixed through flanges and spaced at appropriate intervals before over laminating
- C6 End Closure available

All dimensions are approximate

# SOFFIT TRIM




## S500 SOFFIT TRIM

Dim 'A' 90mm Dim 'B' 205mm

PRODUCT CODE: TST03

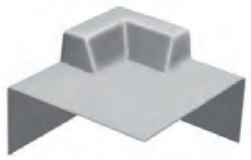
### DESCRIPTION

- To fully encapsulate a concrete edge or similar roof edge detail.

All dimensions are approximate

# PRE-MOULDED CORNER RANGE

- Many corners can be moulded using reinforcing mat and resin, these moulded items provide a quick, pre-made alternative

| UNIVERSAL EXTERNAL CORNER C1 Left handed | ANGLE FILLET TO ANGLE FILLET EXTERNAL CORNER C3EXT | ANGLE FILLET TO TRIM C2L Right handed | UNIVERSAL INTERNAL CORNER C4 |
|---|---|---|---|
|  |  |  |  |
| PRODUCT CODE: TST27 | PRODUCT CODE: TST32 | PRODUCT CODE: TST29 | PRODUCT CODE: TST33 |
| **ANGLE FILLET TO TRIM C2R** | **SIMULATED LEAD FLASHING INTERNAL CORNER C7INT** | **ANGLE FILLET TO ANGLE FIL-LET CORNER C3INT** | **SIMULATED LEAD FLASHING EXTERNAL CORNER C7EXT** |
|  |  |  |  |
| PRODUCT CODE: TST30 | PRODUCT CODE: TST36 | PRODUCT CODE: TST31 | PRODUCT CODE: TST37 |

**Expansion Trims (Only for Timber Deck Roofs over 50m² or Roofs in Excess of 10m in Length)**

- Expansion joint trims should be placed centrally over a 25mm expansion gap between the OSB3 boards and mechanically fixed either side.
- When joining two lengths of trims together, ensure there is a minimum overlap of 50mm and use Tuff Stuff Trim adhesive to secure in place prior to mechanically fixing.
- The joint and the fixings should then be reinforced with bandage and then the full reinforced Base Coat laminate can be applied over the trim.

# 7

# Priming with Flexible GRP Primer

**Important Notes**

**When to Prime**

Flexible GRP Primer is recommended for all porous, bituminous, cementitious, timber and PVC single ply substrates. IMPORTANT - Failure to prime porous surfaces, such as concrete, brickwork, tissue-faced insulation or plywood may result in an under-cure of the Flexible GRP resin and potential system failure. GRP surfaces, including GRP Trims, do not require priming.

**Application Conditions**

Flexible GRP Primer should be applied in dry conditions between 5°C and 30°C ambient air temperature. Do not begin if conditions could fall outside of the temperature range and/or if rain appears likely.

**Coverage Rates & Quantities**

Flexible GRP Primer is applied at a coverage rate of 4-6m²/Litre (3.5 – 5.3m² / kg) depending on surface roughness. Rough or highly porous surfaces will significantly reduce the coverage rate. All coverage rates are indicative only and it is your responsibility to ascertain the exact coverage rates on site. IMPORTANT – A recommended additional 10% wastage should be factored into the figures below.

The table below shows typical quantities of Flexible GRP Primer for various roof area sizes.

| Roof Area | Amount of Flexible GRP Primer Required | | | | | |
|---|---|---|---|---|---|---|
| | Smooth Surfaces | | Medium Surfaces | | Rough Surfaces | |
| | Approx. Weight | Volume | Approx. Weight | Volume | Approx. Weight | Volume |
| 5 m² | 0.9 kg | 0.8 ltrs | 1.1 kg | 1.0 ltrs | 1.4 kg | 1.3 ltrs |
| 10 m² | 1.9 kg | 1.7 ltrs | 2.3 kg | 2.0 ltrs | 2.9 kg | 2.5 ltrs |
| 15 m² | 2.8 kg | 2.5 ltrs | 3.4 kg | 3.0 ltrs | 4.3 kg | 3.8 ltrs |
| 20 m² | 3.8 kg | 3.3 ltrs | 4.6 kg | 4.0 ltrs | 5.7 kg | 5.0 ltrs |
| 25 m² | 4.7 kg | 4.2 ltrs | 5.7 kg | 5.0 ltrs | 7.1 kg | 6.3 ltrs |
| 30 m² | 5.7 kg | 5.0 ltrs | 6.8 kg | 6.0 ltrs | 8.6 kg | 7.5 ltrs |
| 40 m² | 7.6 kg | 6.7 ltrs | 9.1 kg | 8.0 ltrs | 11.4 kg | 10.0 ltrs |
| 50 m² | 9.5 kg | 8.3 ltrs | 11.4 kg | 10.0 ltrs | 14.3 kg | 12.5 ltrs |
| 70 m² | 13.3 kg | 11.7 ltrs | 16.0 kg | 14.0 ltrs | 20.0 kg | 17.5 ltrs |
| 100 m² | 19.0 kg | 16.7 ltrs | 22.8 kg | 20.0 ltrs | 28.5 kg | 25.0 ltrs |

### Granular Hardener Addition Rates

Flexible GRP Primer requires Granular Hardener at a minimum of 2% and a maximum of 4% depending on temperature. To ensure that the curing process is not impeded:

- Never use less than 2% even in hot conditions
- Never use more than 4% even in cold conditions

The table below provides recommended Granular Hardener addition rates depending on Flexible GRP Primer quantities and temperature ranges. Granular Hardener is added to Flexible GRP Primer in the form of level scoops using the scoop provided. IMPORTANT – The temperature ranges shown are to be used as a guide to the amount of Granular Hardener to use. Always test the pot life in the prevailing conditions by performing a test mix at the suggested Granular Hardener level before you start application. Adjust Granular Hardener levels up or down as required to gain the pot life you require. Remember it is always possible to use intermediate levels (e.g. 2.5%) to gain close control of the pot life.

| Recommended Powder Hardener Addition Rate: | | 4% | 3% | 2% |
|---|---|---|---|---|
| Temperature Range: | | 5 - 10°C | 11 - 17°C | 18 - 30°C |
| Amount of Flexible GRP Primer | | Number of Hardener Scoops | Number of Hardener Scoops | Number of Hardener Scoops |
| Volume | Weight | | | |
| 1 ltr | 1.1 kg | 4 | 3 | 2 |
| 2 ltr | 2.3 kg | 8 | 6 | 4 |
| 3 ltr | 3.4 kg | 12 | 9 | 6 |
| 4 ltr | 4.6 kg | 16 | 12 | 8 |

It is not recommended to catalyse more than ~5 kg at a time. When working large areas decant the primer into manageable quantities and always be aware of your pot life.

Decanting into calibrated bucket

### Application of the Flexible GRP Primer

1. Ensure surface to be coated are dry and have been fully cleaned, made good and prepared as in accordance with recommendations
2. Stir the Flexible GRP Primer thoroughly in the original container, mixing from top to bottom.
3. Pour the calculated amount of primer into calibrated bucket / suitable container on weighing scales and replace lid on container to prevent contamination or unnecessary losses to atmosphere. Do not attempt to mix more than 5 kg (4.5 litres) at one time, and during the hot summer months this should be considerably reduced.
4. Add the required number of level Granular Hardener scoops to the decanted Flexible GRP Primer (see the table on page 22 for guidance). Thoroughly stir the Granular Hardener into it is fully dissolved into the resin for a minimum of 2 minutes.

5. Once hardener has been stirred in apply the Flexible GRP Primer by roller (or brush if access restricted) to the prepared surface at the required coverage rate within the range of 4-6m²/Litre (3.5 – 5.3m² / kg). Ensure an even, uniform application across all surfaces. Important – If coating OSB3 TG4 boards, the primer should be applied to the board joints by brush ensuring that the primer fully fills the gaps.

6. Touch in any suspect areas where necessary and then allow to dry before over-coating. The cure time is approximately 30 – 60 minutes depending on application conditions.

7. Ensure the primer is over-coated within 14 days. After this period consult your distributor for advice.

Adding the Granular Hardener

8

# Taping Joints, Details & Other Local Reinforcements

**Trim Joints**

Add Granular Hardener at the required rate to decanted Flexible GRP resin and thoroughly wet in two layers of 75mm 225gsm Bandage prior to application of Flexible GRP resin. NB: New GRP Trims should be thoroughly wiped with acetone prior to coating.

**Local Reinforcements to Roof Details**

To all upstands, internal outlets, protrusions, stepped joints, cracks/splits, dissimilar adjoining substrates or any other detail requiring local reinforcement add Granular Hardener at the required rate to decanted Flexible GRP resin and thoroughly wet and consolidate in 75mm 225gsm Bandage prior to application of the main Flexible GRP system.

Important – to any joints/roof details subject to expansion movements apply 75mm (masking tape or similar) to any joints subject to movement. Any joints subject to extreme movement e.g. metal sheet laps, metal gutters, vibrating protrusions and the like must be treated with caution. If in doubt consult your distributor for further advice.

**IMPORTANT: Any OSB3 square edge board joints should be locally reinforced with Flexible GRP Primer consolidated into 75mm 225gsm Bandage at an approximate coverage rate of 0.25 kg/m² (0.25 litres/m²).**

**Do not use Flexible GRP resin for reinforcing timber square edge board joints.**

Local reinforcement to stanchion

Double reinforced trim joint

Square edge OSB3 joints reinforced with primer and 75mm 225gsm Bandage

9

# Flexible GRP Resin Application

**Important Notes**

Application Conditions

Flexible GRP Resin should be applied in dry conditions between 5°C and 30°C deck temperature. Do not begin if conditions could fall outside of the temperature range and/or if rain appears likely. Below 5° use accelerator. 30-40° use inhibitor.

**Coverage Rates**

- IMPORTANT - The following coverage rates are indicative only and it is your responsibility to ascertain the exact coverage rates on site.
- The amount of Flexible GRP Resin required varies on the roughness of the substrate. Rough or highly porous surfaces will significantly reduce the coverage rate.
- All coverage rates shown below are based on reinforcing the system with 225g/m$^2$ fibreglass CSM reinforcement. If using 450g/m$^2$ fibreglass CSM reinforcement then an additional 0.5 Litres/m$^2$ (0.7 kg/m$^2$) will be required to the first coat application.

| | Approximate Flexible GRP Resin Coverage per Square Metre | |
|---|---|---|
| **Typical Roof Surfaces** | **1st Coat Coverage Rate** | **2nd Coat Coverage Rate** |
| Asphalt - Smooth | 0.85 Litres/m2 (1.2 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| Asphalt - Medium | 1.0 Litres/m2 (1.4 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| Asphalt – Rough/De-Chipped | 1.4 Litres/m2 (2.0 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| Concrete / Screed* | 1.0 Litres/m2 (1.4 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| Felt - Sanded / Smooth | 0.85 Litres/m2 (1.2 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| Felt - Mineral | 1.15 Litres/m2 (1.6 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| GRP | 0.85 Litres/m2 (1.2 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| OSB3 TG4* | 0.85 Litres/m2 (1.2 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |
| PVC Single-Ply | 0.85 Litres/m2 (1.2 kg/m2) | 0.5 Litres/m2 (0.7 kg/m2) |

**Quantities**

The table overleaf shows typical quantities of Flexible GRP Resin for various roof area sizes when using 225g/m$^2$ fibreglass CSM.

IMPORTANT – A recommended 10% wastage allowance should be made in addition to the quantities shown overleaf. Remember, vertical detailing work should be covered here.

### 20 Year Roofing System (Two Coats) - Flexible GRP Resin Quantities

| Roof Area | Amount of Flexible GRP Resin Required | | | | | |
|---|---|---|---|---|---|---|
| | Smooth Surfaces | | Medium Surfaces | | Rough Surfaces | |
| | Approx Weight | Volume | Approx Weight | Volume | Approx Weight | Volume |
| 5 $m^2$ | 9.5 kg | 6.8 ltrs | 11.5 kg | 8.0 ltrs | 13.5 kg | 9.5 ltrs |
| 10 $m^2$ | 19.0 kg | 13.5 ltrs | 23.0 kg | 16.0 ltrs | 27.0 kg | 19.0 ltrs |
| 15 $m^2$ | 28.5 kg | 20.3 ltrs | 34.5 kg | 24.0 ltrs | 40.5 kg | 28.5 ltrs |
| 20 $m^2$ | 38.0 kg | 27.0 ltrs | 46.0 kg | 32.0 ltrs | 54.0 kg | 38.0 ltrs |
| 25 $m^2$ | 47.5 kg | 33.8 ltrs | 57.5 kg | 40.0 ltrs | 67.5 kg | 47.5 ltrs |
| 30 $m^2$ | 57.0 kg | 40.5 ltrs | 69.0 kg | 48.0 ltrs | 81.0 kg | 57.0 ltrs |
| 40 $m^2$ | 76.0 kg | 54.0 ltrs | 92.0 kg | 64.0 ltrs | 108.0 kg | 76.0 ltrs |
| 50 $m^2$ | 95.0 kg | 67.5 ltrs | 115.0 kg | 80.0 ltrs | 135.0 kg | 95.0 ltrs |
| 70 $m^2$ | 133.0 kg | 94.5 ltrs | 161.0 kg | 112.0 ltrs | 189.0 kg | 133.0 ltrs |
| 100 $m^2$ | 190.0 kg | 135.0 ltrs | 230.0 kg | 160.0 ltrs | 270.0 kg | 190.0 ltrs |

### Granular Hardener Addition Rates

Flexible GRP Resin requires Granular Hardener at a minimum of 2% and a maximum of 4% depending on temperature. To ensure that the curing process is not impeded:

• Never use less than 2% even in hot conditions. Summer Inhibitors are available to extend pot life and cure times in hot conditions (refer to separate data sheet for details).

• Never use more than 4% even in cold conditions. Winter Accelerators are available to decrease pot life and cure times in cold conditions (refer to separate data sheet for details).

| Recommended Granular Hardener Addition Rate: | | 4% | 3% | 2% |
|---|---|---|---|---|
| Temperature Range: | | 5 - 10°C | 11 - 17°C | 18 - 30°C |
| Amount of Flexible GRP Resin | | Number of Hardener Scoops | Number of Hardener Scoops | Number of Hardener Scoops |
| Volume | Weight | | | |
| 1 ltr | 1.4 kg | 4 | 3 | 2 |
| 2 ltrs | 2.8 kg | 8 | 6 | 4 |
| 3 ltrs | 4.2 kg | 12 | 9 | 6 |
| 4 ltrs | 5.6 kg | 16 | 12 | 8 |
| 5 ltrs | 7.1 kg | 20 | 15 | 10 |
| 6 ltrs | 8.5 kg | 24 | 18 | 12 |
| 7 ltrs | 10.0 kg | 28 | 21 | 14 |

**Cold Weather**
Applications: See Appendix D for guidance on Winter Accelerators

**Warm Weather**
Applications: See Appendix E for guidance on Summer Inhibitors

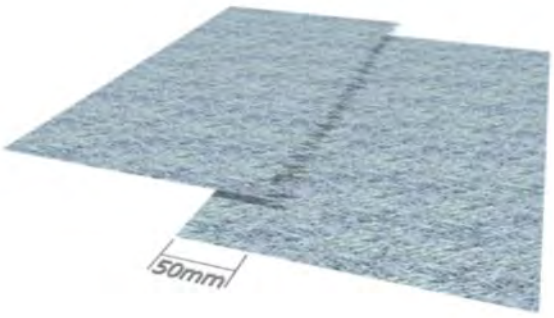
The table on the previous page provides recommended Granular Hardener addition rates depending on Flexible GRP Resin quantities and temperature ranges. Granular Hardener is added to Flexible GRP Resin in the form of heaped scoops using the scoop provided. IMPORTANT – The temperature ranges shown are to be used as a guide to the amount of Granular Hardener to use. Always test the pot life in the prevailing conditions by performing a test mix at the suggested Granular Hardener level before you start application. Adjust Granular Hardener levels up or down as required to gain the pot life you require. Remember it is always possible to use intermediate levels (e.g. 2.5%) to gain close control of the pot life. It is not recommended to catalyse more than ~10 kg at a time. When working large areas decant the resin into manageable quantities and always be aware of your pot life.

**Measuring and Cutting the Fibreglass Mat Reinforcement**

It is important that fibreglass CSM reinforcement is stored in dry conditions. Before use, inspect the mat to ensure there are no damaged, defective or wet areas present.

Carefully measure the roof and assess how many strips of mat are needed, while allowing a 50mm overlap on each width of the mat.

Carefully remove the mat from its polythene bag and lay on a clean dry surface. Roll out the required length - if possible always working with the fall of the roof (matting strips running perpendicular to the fall of the roof to avoid holding water).




Cut with a straight edge and a very sharp Stanley type knife, taking care to protect the roof deck or surface below. Re-roll the cut piece and store in a clean, dry place. Cut all you need for the roof before you start mixing the resin. The matting has one straight cut edge and one feathered (torn) edge. When overlapping rolls of mat, a feathered edge should go over a straight edge. The overlap must not be less than 50mm otherwise a weak spot will be created.

**Flexible GRP Resin Application Instructions**

1. Stir the Flexible GRP resin thoroughly in the original container – mixing from top to bottom. Ensure any settlements are dispersed throughout the liquid.

2. Pour the calculated amount of resin into calibrated bucket / suitable container on weighing scales and replace lid on resin can to prevent contamination or unnecessary losses to atmosphere. Do not attempt to mix more than 10 Kg / 7 litres at one time, and during the hot summer months this should be considerably reduced.

**Tip**

Turn the new unopened tin upside down 30 minutes prior to opening to help with mixing.

3. Add the required amount of Granular Hardener (see table on page 22 for further details) direct into the measured out resin and mix thoroughly, stirring for a minimum 1.5 minutes. Ensure the powder is thoroughly dissolved into the resin.

4. Apply by roller approximately two thirds of the required amount of resin onto the roof surface. Roll out the fibreglass CSM over the resin, ensuring the mat is correctly orientated so the straight cut edge is overlapped by the feathered edge of the next strip. Work the CSM fibres into the Flexible GRP resin before applying the remaining one third of resin. Leave matting to soften for 2 minutes and consolidate with the roller until the matting appears “swirly” and no straight fibres remain. Ensure a closed, pinhole- free surface is achieved.

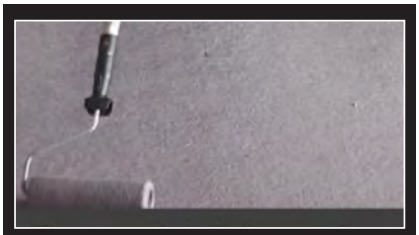
5. Inspect thoroughly and if there appear to be any areas with insufficient resin (voids, prominent fibres or spots remaining white) apply extra resin as required. Allow to cure (30 – 60 minutes depending on conditions) before walking over the membrane.

6. A second coat of Flexible GRP resin should be applied at a minimum coverage rate of 0.5 Litres/$m^2$ (0.7 kg/$m^2$). Decant and add Granular Hardener as previously described, applying by roller ensuring an even and uniform thickness. Allow to cure and then check for pinholes / misses and rectify accordingly. Important – The second coat should be applied as soon as possible. If applying top coat after rain or day after initial install clean roof and scrub with acetone. If more than one tin is required it is advisable to blend tins together so as not to halve shade variations. No longer than 14 days consult your distributor for advice.

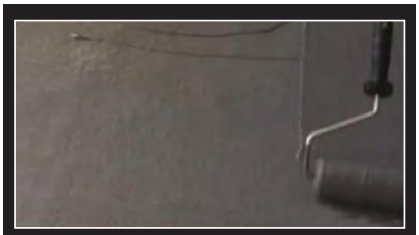
Note: Accelerator Resin will have a slightly different appearance to non accelerated resin.

Hardener added and stirred into resin

Wetting through the fibreglass CSM



Ensure a pinhole-free surface



Second coat applied

**First coat applied at the correct coverage, with the matting fully consolidated and “swirly” in appearance**

**The first coat applied with too little resin or the matting not worked enough, with fibres still straight in appearance**

**Anti-Slip Finishes**

Heavy Duty Foot Traffic – Using Balcony Sealer

Balcony Sealer is an MMA resin used in conjunction with quartz sand and the Flexible GRP System to provide a tough balcony surface suitable for regular foot traffic. The following should be carried out upon completion of the application of the Flexible GRP waterproofing system. The Balcony Sealer resin is Clear and is designed for use with moonstone slate granules anti-slip aggregate:

1. Mask off areas that are not to be trafficked. These areas could include trims and upstands. In the instance where a maintenance pathway is being formed, you should use masking tape to create the designated walkway area.

2. To areas where anti slip will be required, apply an additional third coat of Flexible GRP resin at a coverage rate of 0.5 Litres/$m^2$ (0.7 kg/$m^2$).

3. Whilst wet broadcast dry & clean moonstone granules at a minimum coverage rate of 4.0kg/$m^2$.

**IMPORTANT – remove masking tape before the third coat of Flexible GRP resin has cured.**

4. Once cured remove loose granules. Approximate finished coverage rate of granules will be 2.5kg/$m^2$ and the remaining 1.5kg may be recovered for future use. Reapply the masking tape around the edges of the moonstone ganules.

5. Thoroughly mix Balcony Sealer liquid in its original container before decanting. Add in the required amount of catalyst (refer to Catalyst Addition Chart table on the tin's label) and stir thoroughly for at least 2 minutes.

6. Apply Balcony Sealer Resin using a 225mm Medium Pile Roller at a minimum coverage rate of 0.6Litres/$m^2$ (1.67$m^2$/Litre). Remove masking tape and then allow to cure.

# DO

**Remember the 4 C's to a successful installation:**

1. Coverage: know how much material you should use

2. Catalyst: how much Granular Hardener you need to use

3. Consolidation: ensure matting is fully worked into resin to achieve a "swirly" appearance

4. Care: take time to follow guidance to ensure a high quality finish to the job

Protect nearby surfaces from drips and splashes.

For larger roof areas you should consider "gridding out" the roof with chalk. Work out how many square metres a tin of Flexible GRP resin will cover at the correct coverage rate. Mark out a grid with areas equal to the coverage of a tin to help ensure the correct application volumes.

If the roof gets wet between coats, use a brush/mop to remove any large pools of water. Use a twin motor vacuum available from most hire shops, accompanied by a wet suction head to remove any remaining water. Note: A wet suction head is far more effective than a standard squeegee head. Once the roof is dry, use an acetone wipe* whenever the first coat has been rained upon.

* To acetone wipe: Pour a quantity of acetone into a bucket, soak a clean rag in the acetone, squeeze out any excess until not dripping, and then wipe each area of the first coat with the acetone rag. Change the rag for a clean one frequently to avoid transferring contamination. Work in small areas. Allow the acetone to vaporise off completely before progressing (around 5 minutes) and apply a second coat within 15 minutes of acetone wiping for best effect. Note – Acetone is a highly flammable liquid. Observe all safety precautions.

# DON'T

Apply the a one coat system (without a top coat) to new decks (e.g. OSB3 or concrete/screed) or porous surfaces. You must use the 20 Year System (two coat) application for these surfaces.

Fail to carry out a thorough inspection of the membrane after each coat to ensure a closed, pinhole-free surface has been achieved.

Overlay an old roof without assessing whether it is sound, dry and free from defects. You should always carry out core tests to determine the existing construction and its condition (see Appendix A).

Coat a single-ply roof or an unidentified roof surface without confirming adhesion can be achieved. You should carry out adhesion tests to check this (see Appendix B)

Use a gas torch or any form of heat to dry the membrane.

Pour acetone directly onto the membrane.

10

# Cleaning Tools

**Acetone is the normal solvent for cleaning rollers and tools and for removing spills. Health and Safety information regarding acetone should be noted. Hands should be cleaned with a suitable hand cleaner such as Swarfega or Deb Resinega.**

**Note – Acetone is a highly flammable liquid. Observe all safety precautions. Do not use Acetone close to any naked lights or electrical equipment. Wear appropriate PPE (minimum rubber gloves and safety goggles). Take appropriate precautions when disposing of Acetone soaked rags - remember - flammable vapours can build up in confined spaces and present a fire risk**

11

# Repairs

**Repairs to the completed Flexible GRP system are straightforward. Simply clean the surface then acetone wipe before reapplying a one or two coat system (as per Section 8) including fibreglass CSM reinforcement**

# 12

# Day Work Joints

**Primer Application**

Flexible GRP Primer application may be continued by applying further product, ensuring an overlap of approximately 50 mm onto the previously primed area. If there has been precipitation ensure that all surfaces including the overlap area are dried before commencing. If the primed area has become contaminated it should be thoroughly cleaned prior to application of further primer. Any contamination of the uncoated surface may mean that the surface will need to be prepared again. The primer should ideally be over-coated by Flexible GRP Resin within 48 hrs in order to achieve the maximum adhesion.

**First Coat Application**

Ensure on completion of a day's work that any mat that has been laid is completely embedded in Flexible GRP Resin by extending the application by at least 50mm beyond the edge of the mat. The overlap area should be prepared by cleaning and drying the previously applied Flexible GRP Resin and wiping down with acetone to ensure maximum adhesion. Subsequent application will generally occur by simply applying the Flexible GRP Resin over the top of the existing cured product ensuring that the mat overlaps the existing mat by at least 50 mm. Use masking tape to produce a neat joint and do not attempt to "feather" the application as applying thinly on the edge can result in under-cure.

**Second Coat Application**

The overlap area should be prepared by cleaning and drying the previously applied Flexible GRP Resin and wiping down with acetone to ensure maximum adhesion. Subsequent application will generally occur by simply applying the Flexible GRP Resin over the top of the existing cured product. Use masking tape to produce a neat joint and do not attempt to feather" the application as applying thinly on the edge can result in under-cure.

# 13

# Troubleshooting

**IMPORTANT - The following is guideline advice only. Also consult your distributor for advice.**

### During Application

| Issue | Cause | Remedial Action |
|---|---|---|
| Resin cures too quickly during application | Air or deck temperature is outside of ideal range or too much Granular Hardener has been added | Remix fresh resin. Consider decanting smaller amounts of resin at one time |
| Resin does not harden fully | Granular Hardener not added, or insufficient Granular Hardener added for the conditions | Remove and re-lay affected area taking care on Granular Hardener levels |
| Pitting of the membrane | The resin has been rained on before it has fully cured | Minor / moderate pitting can be overcoated assuming the system has fully cured |
| Resin causing splashes on adjacent surfaces | Lack of masking and care | Wet resin can be wiped off with a solvent such as acetone (take care as some materials will be affected by Acetone). Cured resin can be pinged off glass and other hard surfaces with a sharp item such as a windscreen scraper or other suitable implement. Care should be taken to ensure this process does not cause further damage to the surface. Cured resin may be more difficult to remove from porous surfaces such as brickwork and driveways. This may involve specialist cleaning techniques. |
| Second coat does not harden or remains tacky | Granular Hardener not added, or insufficient Granular Hardener added for the conditions. Alternatively, second coat may have been applied too thinly | Scrape away affected second coat, acetone wipe and re-apply full system, taking care on coverage rate and Granular Hardener levels |
| Second coat does not harden or remains tacky in small patches | Poor Granular Hardener mixing or contamination of the first coat application. Resin may have been applied too thinly. | Scrape away affected second coat, acetone wipe and re-apply second coat mixing carefully. |
| Colour changes observed during application | Resin is at different stages of cure. Temperature differences / direct sunlight may affect colour | Any colour changes noted will diminish upon cure and further still during weathering process. Over time these become unnoticeable. |

**After Installation**

| Issue | Cause | Remedial Action |
|---|---|---|
| Full system has separated from the decking | Decking was dirty, wet or of poor quality | Remove affected area and relay full system including the deck |
| The second coat is flaking away from the base | First coat was dirty or wet. Alternatively first coat may have been left more than 7 days prior to over-coating and not acetone wiped | Scrape away affected second coat, abrade, acetone wipe and relay system complete |
| Pinholes within the cured second coat | The first coat has not been properly consolidated or has been applied too thinly | Acetone wipe affected area and relay system complete |
| Cracking within the second coat | Second coat applied too thick | Acetone wipe and relay system complete, taking care to observe correct second coat application rate |
| Ponding | Deck has not been laid with sufficient falls or structure has deflection | If this is an issue then strip and re-deck roof with correct falls, Do not attempt to level roof by building up resin. |
| Discolouration of membrane | Bitumen leaching / lack of primer | Performance of system not affected. If aesthetics is a problem, reapply full system. To prevent issue ensure bituminous surfaces are fully primed. |
| Membrane delaminates / lifts away from surface | Adhesion tests not performed / incorrect surface preparation / unsuitable substrate / absence or improper use of primer | Remove the membrane, re-assess the surface for suitability of coating (use adhesion tests where necessary). If appropriate reapply system complete as per method identified through adhesion tests. |
| Surface of membrane feels tacky after curing | Applied outside of recommended temperature / incorrect catalyst levels / inadequate stirring of catalyst / cure contaminated with precipitation (rain or dew) / insufficient material applied / “over-rolling” (rolling the resin after cuing process has begun) | Usually, no significant detrimental effect on the waterproofing characteristics or expected lifespan. If left untreated tackiness will typically diminish over time. However, membrane will attract dirt and if aesthetics is an issue then acetone wipe affected areas and relay the full system. Important – with severe tackiness beyond the surface, must acetone wipe and relay full system. |
| Colour variation | Different batches of resin used for top coat application / accelerated resin used alongside non- accelerated resin for top coat application | As you would with paint, always ensure the same batch number is used to avoid any potential differences in colour. If intending to use Winter accelerators, all top coat resin should be accelerated to reduce risk of colour variation. Note - colour difference will diminish over time as the membrane “chalks”. |

# 14

# Safety Precautions

**Material Safety Data Sheets**

You must ensure that the information contained within the MSDS sheets is followed at all times. Material Safety Data Sheets are available from your Flexible GRP Distributor and provide full health and safety precautions for each product. These sheets should be kept on site at all times. Very important information is contained within these sheets for applicators including First Aid, Accidental Release (Spillage), Disposal Considerations, Fire, Transport, Exposure Limits and Personal Protective Equipment.

The use of appropriate PPE is required at all times when working with Flexible GRP resins (goggles, gloves, overalls, vapour mask for any enclosed areas and dust mask when grinding). It is recommended to have a first aid kit available, as well as eye wash bottles in case of splashes in the eyes.

Acetone is particularly hazardous and highly flammable and must not be used near to any potential sources of ignition (e.g. naked flames or electrical equipment) or where concentrations of vapours could build up. Store resin and Granular Hardener in closed containers in well-ventilated areas. Store under dry conditions between 5°C and 25°C, away from direct sunlight. Empty tins containing uncured Flexible GRP Resin or primer are classed as hazardous waste and should be disposed of in accordance with relevant regulations.

# 15

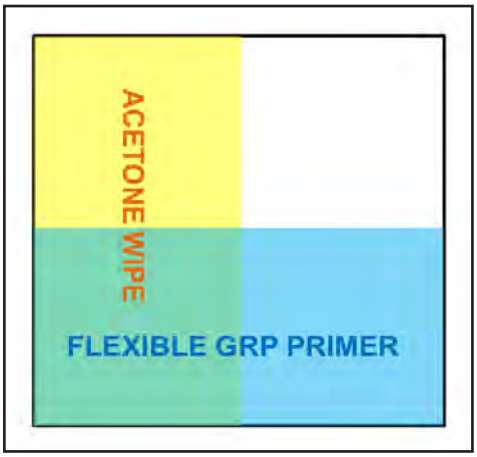
# Appendices

**Appendix A – Performing a Core Test**

Core tests should be carried out prior to any overlay application to ensure that the full roof build-up is in a sound, dry condition and of a proper design in accordance with BS 5250 Guidelines. A hole approximately 75mm wide should be bored through the roof. The tools required to create the hole will vary depending on the roof build-up, e.g. Stanley knife for cutting through felt, hammer and chisel for asphalt or concrete, a core bit drill for timber or a pad saw for insulation.

Once complete, the sample should be removed for inspection to determine whether all layers are totally dry and free from any signs of deterioration or rot. Any wet or defective roof areas are not suitable for over-coating and should be removed and replaced on a like for like basis. Once the sample has been assessed, return it into the hole and apply a one-coat application of Flexible GRP Resin with fibreglass CSM reinforcement to a minimum area of 300mm by 300mm around the centre of the hole, ensuring a fully weatherproof seal has been achieved.

**Appendix B – Performing an Adhesion Test**




Adhesion test methodology will vary depending on the surface to be coated. The following is typical guidance that would be applicable for a single ply or unidentified coating.

Thoroughly clean an area to be tested approximately 300mm x 300mm. Scrub half the sample with acetone and wait until it fully evaporates. Next, decant and add Granular Hardener at the required amount of Flexible GRP Primer and apply to half the sample in the opposite orientation to the acetone wipe. Once the primer has cured, add Granular Hardener at the required rate to decanted Flexible GRP Resin and apply by roller over the sample and embed cut-to-size fibreglass CSM, which should be fully consolidated with resin. IMPORTANT – Make sure to take a sketch, photo or clearly mark around the samples in order to record what preparation has been carried out

Return to the sample 7 days later with a Stanley knife and attempt to dislodge the membrane from the surface, assessing each of the four areas for level of adhesion. If the surface is suitable for over-coating, you will not be able to lift the membrane from at least one of the four areas. If more than one area shows excellent adhesion, chose your preferred surface preparation

**Appendix C - Important Notes on Granular Hardener Levels**

Temperature has a significant impact on the pot life (working time) and cure time of the resins and primers. Be sure to accurately measure the temperature of the deck, air and resin to ensure that you are catalysing at a suitable rate.

Varying Granular Hardener levels can increase or decrease the pot life (working time) of the product. It is very important not to exceed the maximum recommended levels. Doing so has no effect on reactivity and may reduce the final cured properties of the system. Similarly, never add less than the recommended amount of Granular Hardener as this may result in under cure and reduced performance will result. Where conditions are extremely warm it may be necessary to decant smaller quantities at one time to avoid excessive waste.

**Appendix D – Low Temp Applications: Using Winter Accelerators**

**Introduction**

Before working with Flexible GRP Accelerators it is vital to read and understand the separate technical data sheet for full details. Most importantly the accelerator must be thoroughly mixed into the resin before Granular Hardener is added. Accelerator and Granular Hardener must never be allowed to come directly into contact with each other.

**When to use Winter Accelerators**

The winter accelerator is used to speed up the curing of the Flexible GRP Resin or Primer to allow faster working times in cold conditions and to allow the use of materials at deck temperatures as low as 1°C. Accelerator is used in addition to the normal Granular Hardener – not as a replacement. Without accelerator the Flexible GRP Resin or Primer should not be used below 5°C or where the temperature may fall below 5°C before the resin is cured.

**Usable Temperature**

Refer to the full data sheet for further information on temperature ranges and equipment required.:

- Surface Temperature - Surfaces should be between 10C and 100C.
- Resin Temperature - Ideally if possible the resin should be kept between 50C and 100C prior to use. This may not always be possible but you should try and avoid storing at room temperature prior to adding accelerator to avoid a too short working time.

**Method**

Add the whole Accelerator pack to the opened and stirred product in its original container at:

- 15kg Flexible GRP Resin = 1x Flexible GRP Resin Accelerator

IMPORTANT: Winter accelerators are not a replacement for the Granular Hardener. After the Accelerator has been thoroughly stirred into the main products, add the Granular Hardener as described in page 19 (primer) or 22 (resin).

**Important Notes:**

• There may be a minor colour difference evident when accelerator is added. For this reason, accelerated and un-accelerated product should not be used side by side on the same job if such colour difference is likely to be undesirable for the client.

• The accelerator should not be added to products other than Flexible GRP Resin or Primer

• The accelerator must be mixed completely into the resin or primer before adding Granular Hardener

• Store the accelerator well away from Flexible GRP Granular Hardener and other organic peroxides

• Never allow the accelerator to come into direct contact with Flexible GRP Granular Hardener or other organic peroxides

• Read and familiarise yourselves with the TDS and MSDS for each part of the Flexible GRP System

**Appendix E – High Temp Applications: Using Summer Inhibitors**

**Introduction**

Before working with Flexible GRP Inhibitors it is vital to read and understand the separate technical data sheet for full details. Most importantly the inhibitor must be thoroughly mixed into the resin before Granular Hardener is added.

**When to use Summer Inhibitors**

Flexible GRP Summer Inhibitor extends the pot-life of the Flexible GRP Resin which is invaluable when temperatures are high during the summer months. The Flexible GRP Summer Inhibitor can be added to Flexible GRP Resin on site prior to use. It should only be added as temperature ranges permit. IMPORTANT: Flexible GRP Summer Inhibitor is not designed as a replacement for the Granular Hardener. After the Flexible GRP Summer Inhibitor has been added you will still need to add the Granular Hardener (at the minimum rate of 2%) before you use the product.

**Usable Temperature**

Refer to the full data sheet for further information on temperature ranges and equipment required.:

- Surface Temperature - Surfaces should be between 150C and 400C.
- Resin Temperature - The resin in which you will be adding Flexible GRP Summer Inhibitor should not be overly warm. To measure this you will require a good quality probe thermometer. Ideally, if possible the resin should be kept between 150C and 250C prior to use.

**Method**

Add a full tin of Flexible GRP Summer Inhibitor top Flexible GRP Resin as follows:

- Add 1 pot of Summer Inhibitor to 15kg Flexible GRP Resin

IMPORTANT: Summer Inhibitors are not a replacement for the Granular Hardener. After the Inhibitor has been thoroughly stirred into the main products, add the Granular Hardener as described in page 22

**Important Notes:**

- It is advisable to work with smaller mixes in hot weather. The less material you use to make a mix, the less chance there will be product that cures to quickly and goes to waste.
- There may be a minor colour difference evident when inhibitor is added. For this reason, inhibited and un-inhibited product should not be used side by side on the same job if such colour difference is likely to be undesirable for the client.
- The inhibitor should not be added to products other than Flexible GRP Resin
- The inhibitor must be mixed completely into the resin before adding Flexible GRP Granular Hardener
- Store the accelerator well away from Flexible GRP Granular Hardener and other organic peroxides
- Read and familiarise yourselves with the TDS and MSDS for each part of the Flexible GRP System

**Appendix F - Warm Roof Design Guidance**

This is a construction in which the thermal insulation is provided above the roof structure (e.g. timber joists). Insulation is usually in the form of a high performance PIR (rigid) insulation board. Because the structural elements are on the warm side of the insulation, they are less vulnerable to the possibility of condensation and are also protected from extremes of temperature, reducing thermal movement. It is essential that in this type of construction, a vapour control layer is installed below the insulation level. Ventilation is not required to this type of roof, allowing more freedom of design.

**Appendix G - Cold Roof Design Guidance**

This is a construction in which the thermal insulation is laid between the roof structure (e.g. timber joists). Insulation is usually in the form of a loose laid mineral wool or similar. It is essential that in this type of construction, that adequate ventilation is provided in the void between the insulation and the roof deck to reduce the possibility of condensation forming. The void needs to be a minimum 50mm and ventilated at both ends to provide an air flow through the structure.

TUFF STUFF FLEXIBLE GRP ESTIMATOR

# TUFF STUFF

## FLEXIBLE GRP

TUFFSTUFF FLEXIBLE GRP 20-YEAR PRODUCT WARRANTY

**For more information or a no-obligation consultation please contact our friendly sales team**

**Tel: 01977 680250**

BUILDING REGULATIONS COMPLIANT FULL FIRE CERTIFICATE

**www.tuffstuff.co.uk**