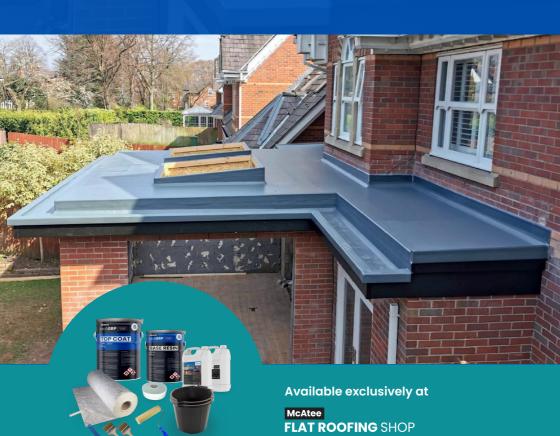
McAtee

MCAGRP STANDARD SYSTEM

# Complete Installation Guide





- 1 B260 Raised edge trim
- 2 C100 Simulated lead flashing
- 3 D260 Wall fillet
- 4 A200 Drip trim
- 5 C4 Universal internal cover
- 6 C1 Universal external cover
- 7 OSB3 Tongue and groove decking (2400mm x 600mm)
- 450g/m2 or 600g/m2 CSM (Chopped Strand Mat)
- McAGRP base coat (Resin Reinforced by CSM)
- 10 McAGRP top coat
- 11 Support battens
- 12 Fascia board
- 13 Gutter system
- 14 F300 Flat flashing

## **Product Information**

McAGRP is a premier waterproofing system, formulated and manufactured specifically for flat roofing applications. Due to its advanced technology and versatility, McAGRP will create a long-lasting watertight solution for all new and renovated flat roofing projects.

McAGRP is easily applied to OSB sheeting to create a guaranteed roofing system. McAGRP offers easy and efficient installation, and its weatherproof, durable and insulating properties come with a 20-year materials guarantee.

# **Tools & Components Checklist**

## **Tools Required**

- · Claw hammer
- · Sealant gun
- · Strong shovel
- 4" & 10" angle grinder
- · Stone blade
- · Diamond blade
- · Crow bar
- Circular saw
- Jigsaw
- · Roll of Visqueen
- Nail gun / drill driver
- Infrared thermometer
- · Sweeping brush

## **Key Components**

- McAGRP top coat
- · McAGRP base coat
- McAGRP liquid catalyst
- McAGRP 450g / 600g CSM
- McAGRP Trims
- · Trim adhesive
- Mixing bucket
- · CSM bandage
- · Paint brushes
- 4" & 7" wool rollers
- Consilidating rollers
- Disposable gloves
- Acetone

Available at

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**FLAT ROOFING SHOP** 

## **Other**

- · Finishing tissue
- Roof baton
- OSB3 decking (T&G)
- · Ring-shank nails
- · Clout nails
- · Silicone
- Eyewash
- Protective goggles
- Sandpaper (40 grit)
- Strirrer
- Cloths / rags
- · Weighing scales
- · Application brushes

## **General Information**

McAGRP resin is available in light grey and dark grey.

Use 450g/m2 chopped strand mat for roofs, and 600g/m2 chopped strand mat for areas subject to heavy footfall, such as: balconies, walkways and verandas.

Our liquid hardener can compensate for all seasons, with an optional standard or winter catalyst.

## **Safe Working Environment**

Before you begin installation, ensure a safe working environment for your workforce and the general public.

# McAGRP (Standard) Installation Guide

# Step 1 Pre-Installation

Ensure all tools and materials (as per page 3) are present prior to starting. It is **absolutely vital that the weather conditions are dry**, this is very important for the resin and topcoat to catalyse and cure. It is also important that the roof surface temperature is above 0°, resins and topcoats are temperature sensitive, so they must be stored at a room temperature of around 15 C.

Due to the product curing by deck temperature, we highly recommend that you apply the product with an adequate number of sunlight hours for the initial curing process to complete. Also, bear in mind that wind can carry airborne particles that could be very difficult to remove once cured.

# **Step 2** Preparing the Roof Area

Completely remove the old existing roof covering from the timbers, should the existing sub-roof reveal its self to show signs of deterioration and broken down, then this must be replaced with quality OSB3 tongue and groove sheets. **We recommend 18mm thick with a grooved edge**, these measure 2400mm x 600mm. Inspect both rafters and joists show no signs of deterioration, are level, parallel and are clear of debris. We highly recommend that you treat roof sub-roof structure with a water-based preservative before commencing installation.

# **Step 3** Installing the OSB3 Sheets

New OSB3 boards should be laid at a 90 angle (length-ways and opposite to the direction of roof joists) and in a straight line. We recommend fixings of at least 50mm screws with a maximum 150mm centres for all rafters, joists and batons. We recommend that you use a powered nail gun to eliminate internal ceiling damage. When laying a deck, **stagger the joints** in order to create a rigid structure. Trim the last board in the first row so that it is flush with the fascia as guide for installing the remaining boards. Starting with the cut-off, lay the next row of boards by fitting the tongue firmly into the groove of the row that is already laid. Continuing in this way will ensure the boards have a staggered formation and will remain structurally strong. If the board is laid against a wall/upstand, then it is necessary to leave a 50mm expansion gap. If possible, we advise that the boards incorporate a fall that is directed away from the building to ensure running water can be drained into a gutter.

NOTE: If thermal insulation is being installed, please refer to the latest building regulations.

# Step 4 Support Battens & Flash Preparation

Roof batons should be applied and fixed around the perimeter of the roof, this will allow the guttering system to sit flush behind the drip trim. We advise that you **use 25mm x 40mm roof battens prior to installing trims**. For drip trims, two battens should be fixed; Ensure the first batten sits flush to the top of the roof with the second batten fixed to the first batten and staggered 1 0mm lower (this allows for the curvature of the drip trim to clear the drop, preventing pooling). For the raised edge trim, ensure the single batten is fixed 10mm below the top of the roof deck.

Where applicable, using an angle grinder create a chase along any connecting walls, allowing the simulated lead flashing be inserted and sealed with the appropriate sealant.

# Step 5 Cut and Fix the Roof Trims

The McAGRP Trims should be securely fixed to the perimeter, upstands and abutment walls. Using clout nails, fix the appropriate trims to the deck for creating the drainage system. When using a drip and raised edge trim, **use a structural adhesive** between the trim and batten to prevent movement in windy conditions. When joining the 3m lengths of trim, apply a structural adhesive and create a 50mm overlap of adjoining trim, press together the trims firmly to provide a good strong bond. (See page 7 of this installation manual for an overview of how the trims are installed).

# **Step 6** Laminating the Joints

Now that the roof trims are fitted in the correct positions, **it is required that all joints are basecoated**. All trims must be taped with polyester resin, reinforced with 75mm taping mat to prevent any stress along the joints. Mix the resin and catalyst (See page 14 of this installation manual to see the catalyst addition chart for the correct volume of catalyst). Apply the mixed resin to the trim and board joints using a small lambswool roller, then embed the taping mat along the roof resin that has just been applied, then apply an additional coat of the resin to the taping mat, allowing the resin the breakdown the binder which bonds the fibres together. Ensure the entire roof is consolidated once the binder has broken down. This process should be carried out on all: outlets, channels, soil pipes and roof fittings.

If OSB3 boards with a tongue and groove edge are NOT installed, it is a requirement that you install a 75mm taping mat with the resin to provide the necessary reinforcement.

# Step 7 Waterproofing the Roof

The catalysed resin may be applied before or after the fully wet out taping mat has cured. During hotter weather conditions, we always advise that you remember that **our resin will have a faster curing procedure than normal** (See page 15 of this installation manual to see the catalyst addition chart for the correct volume of catalyst).



Dependent on the roof area, cut the specified 450g or 600g matting to the exact length of the roof. Roll it back up to provide easier handling when laminating. Once you have mixed together the resin and catalyst, you will visually notice that the resin will become a different colour (this is to indicate the resin has been catalysed). If the resin becomes thick and too dark, stop using immediately as this is a sign that the resin has started to cure and that your working time has been greatly reduced (decant some fresh resin, catalyse and continue to work).

Waterproof the tongue and groove OSB3 boards by using a **lamb's wool roller**, insert the roller into the resin which should have been decanted into a large bucket (1 OL) and roll the resin over both the flat surface of the deck and the GRP trims. Without waiting, unroll 1.0 metres of CSM glass, aligning it from the lowest part of the roof to ensure that it runs inline once the CSM is fully unrolled. Basecoat a further resin over the CSM glass by using an optional lamb's wool roller or a **75mm paint brush** for difficult areas, such as: crevices, outlets, soil pipes, etc. After laminating the roof, it is vital that there are no dry patches visible and the CSM is completely saturated with resin.

When waterproofing the roof, it is important that you roll over the Basecoat a number of times using a consolidating roller. It is essential any trapped air bubbles are released. After applying the resin and reinforcing the mat, all will appear transparent. Following this process, consolidate and move along the roof, waterproofing the board whilst rolling out more glass. Continuing the lamination, begin a new run and overlap the fibreglass matting by 50mm, making sure that the feathered edge is applied first. No foot traffic should be present whilst the GRP waterproofing system is curing.

# **Step 8** The Curing Process

The base coat must be left **60-120 minutes to fully cure**. You can test the base coat has properly cured by using your fingers and applying pressure down onto the Basecoat. Once cured, it is advisable that light foot traffic is kept to a bare minimum, during application of the topcoat.

# **Step 9** Applying the Topcoat

At this stage, both CSM and resin should be fully cured and reinforced. Sand where necessary the base of the resin and apply the top coat by using a lamb's wool roller. Before laminating the optional topcoat, **thoroughly stir**; allowing both the pigment and resin to blend. Using a bucket (1 0L), catalyse the topcoat (refer to Catalyst Addition Chart, Page 15) and begin the laminating process as your

working time will be limited due to the curing process. It is essential that an even thickness of 0.51tr/m2 is applied across the surface of the cured roof. If the thickness of the topcoat is measured to be too thin, there is a possibility that it will not cure accurately.

Throughout the procedure, topcoat should be applied across the whole roof and over the roof trims. If weather conditions have prevented the topcoat from being applied and the cause of this has meant that it has to be done at a later date (preferably within 24 hours), thoroughly wipe down the Basecoat with acetone, whereby this will sustain a good bond for when applying the topcoat.



# **Step 10** Simulated Lead Flashing

Using the previously grinded out chase as per step 4, apply the simulated lead flashing with **the face vertically sitting on top of the wall fillet.** Secure the back of the flashing with a structural adhesive, using a sealant gun and then apply a waterproof silicone into the chase for a complete seal.

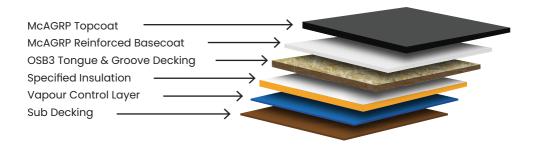
# Step 11 Cleaning of your Tools

If you wish to re-use a number of tools, **clean immediately with acetone** to remove any uncured resin and/or topcoat. Resin and topcoat can also be knocked out of your buckets once cured, allowing you re-use the bucket.

# Step 12 The Finished Roofing Application

On completion the roof will need to be left for a number of days, enabling the curing process to fully complete, allowing any kind of foot traffic to be granted. Whenever necessary, we advise that cleaning the roof with **soap and warm water** is the best approach. NEVER USE ANY ALKALINE-BASED PRODUCTS OR BLEACH ON A GRP FLAT ROOF

## **Typical GRP Warmroof System**



## **McAGRP Warmroof Installation**

The illustration on the left provides a guide to the layers that form a warmroof. Prior to installation, we strongly recommend you thoroughly check the current building regulations. New build projects generally require A250 and B300 GRP edge trims.

All roofing trims are manufactured in the UK for McAGRP. A combination of strength and flexibility is achieved with a McAGRP warmroof.

A warmroof substantially improves the U-value of a room by eradicating any cold bridging, improving the efficiency of a property and reducing heating costs. Warmroofs are beneficial all year round, as they maintain heat in winter, and deflect heat during the summer.

## **McAGRP Trims Overview**





#### **McAGRP Trims Installation Information**

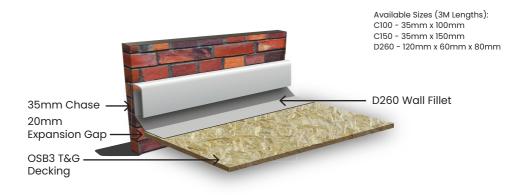
For drip trims two roof battens should be nailed to the fascia board, the first being flush with the roof and the second fixed to the first batten 10mm staggered where it will sit underneath the drip trim and allow for space so that the gutter can be fixed behind the trim. Structural adhesive should be applied to both the roof batten and inside the trim so that once the trim is fixed, a bond is created. Joining two lengths of drip trim together you should apply structural adhesive to the inside of one of the trims and overlap by 50mm, this will create a strong bond before fixing the drip trims to the deck.

The drip trims should then be fixed down to the OSB3 sheets using clout nails at the lowest point of the roof - this will enable rainwater to drain into the gutter system. Cutting a strip of 75mm taping mat, you should then bandage the joints and basecoat with catalysed McAGRP resin and allow space for the gutter to be fixed behind the trim for the basecoat to cure.

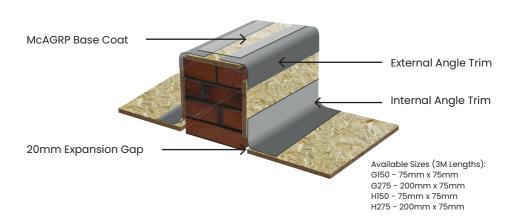
The raised edge trims should be fixed and used mainly for draining water into a gutter system. A single batten should be nailed to the fascia boards allowing the raised edge trim to sit comfortably off the fascia board (no need for two battens as there should be no gutter for a raised edge trim to sit in). Structural adhesive should then be applied to either the single batten or the raised edge trim so that a bond is created on the vertical face. Nails should not be used on the face of a raised edge trim as it will clearly show through the topcoat once applied and cured.

Joining two lengths of raised edge trim together, you should apply structural adhesive to the inside of the trim and overlap by 50mm, this will create a bond once fixed to the deck. Cut a strip of 75mm taping mat and embed the CSM tape over the joints.

## **McAGRP Trims Overview**







#### **McAGRP Trims Installation Information**

The D260 wall fillet is mainly used with C100 and C150 simulated lead flashings. The horizontal face of the D260 wall fillet trim should be nailed to the deck and the vertical face should be up against any abutment walls. The D260 wall fillet should allow for an expansion gap around the perimeter of the wall in case of any movement within the structure.

Joining two lengths of raised edge trim together, you should apply structural adhesive to the inside of the trim and overlap by 50mm, this will create a bond once fixed to the deck. Cutting a strip of 75mm taping mat, you should then bandage the joints and basecoat with catalysed McAGRP resin and allow for the basecoat to cure. The simulated lead flashings (C100 and C150) come in 3m lengths, the two trims have different depths depending on the application.

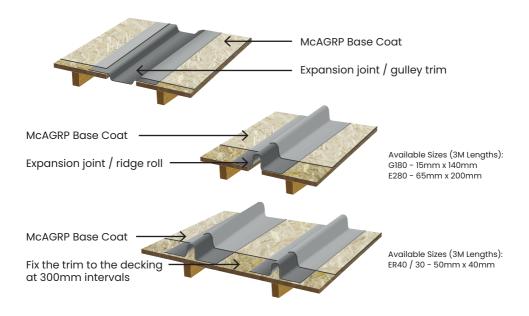
The flat flashing consists of three different widths and come in 20m rolls. Flat flashing is mainly used for when a sloped / pitched roof meets an existing flat roof or balcony terrace. Position the flat flashing on the roof deck and fix using clout nails. The remaining trim should run up onto the pitched roof underneath the existing breathable felt, tile or slate. Flat flashing can also be used around soil pipes or any other vertical system arising from the structure of the flat roof.

All joints should be bandaged and reinforced with our McAGRP Resin and 75mm taping mat. Once cured our McAGRP Topcoat can be applied, providing a UV resistant finish.

External / internal trims are used for features such as upstand walls, adjacent walls and for sections under patio / sliding doors and kitchen doors. The external trims should be nailed on the outer face and fixed to OSB3 deck, while internal angle should be nailed on the opposite, inner face.

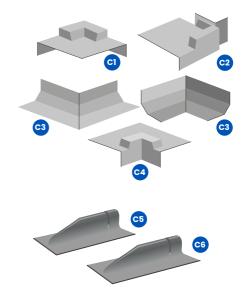
Overlap all joints by 50mm and reinforce the joint with 75mm tape matting. Then basecoat with catalysed McAGRP resin and allow for the base coat to cure.

## **McAGRP Trims Overview**



- Creates a left or right corner. Use with A or B McATrims.
- Fillet to corner trim

  Apply where a flat roof meets an adjoining wall. Use with A. B and D260 McATrims.
- External / internal fillet corner trims
  Preformed external or internal corners. Use
  with D260 McATrims.
- Universal internal corner trim Forms a left or right hand corner. Use with A and B McATrims.
- Roof ridge closure
  Ridge closure to the end of a roof ridge
  section. Use with E280 McATrims.
- Rolled rib closure
  Use with ER40 / 30 McATrims.



#### **McAGRP Trims Installation Information**

When waterproofing a commercial roof, expansion joints will be required. The G180 and E280 should. When installing the expansion joint/ ridge roll trim, allow for the OSB3 deck to be cut so that the G180 and E280 can be fixed into position. Nail down the trim and bandage the joints with 75mm taping mat and basecoat with catalysed McAGRP resin.

The G 180 will act as a guttering system draining all water from the roof and away to all running outlets, while the ridge roll trim can be used to create a raised detail within the application, preferably conservatories and sloped roofing structures. Apply structural adhesive when overlapping any joints / trims and when joining the closure of the C5 trim to the E280 ridge roll trim.

The ER40 / 30 is used to replicate the appearance of raised rolled lead joints. The trims should be applied using clout nails, ensuring that the heads of the nails are bandaged and then the whole trim base coated to provide a smooth finish. Finish by capping the ends of each rib with C6 closures.

All corner trims should be applied using clout nails, ensuring that the heads of the nails and joints are bandaged to provide a smooth finish. They should also be bonded to the edge trims using a structural adhesive. The whole trim should then be basecoated and consolidated before the main base coat is applied.

You may need to cut down the corner trims if using shallower height edge trims. The trims have been manufactured to allow for this.

Apply a structural adhesive to the joint, overlap the trims by 50mm and nail down to the deck to create a bond. Bandage the joint with 75mm tape matting and base coat with catalysed McAGRP resin.

#### **McAGRP Trims**



#### A170/A200/A250/A200A Drip Trim

A170 - 75mm x 84mm A200 - 90mm x 90mm A250 - 140mm x 90mm A200A\* - 90mm x 90mm (\*A200 with return)

Fitted to the roof edge to provide drainage



#### B240/B260/B300 Raised Edge Trim

B240 - 105mm x 100mm B260 - 125mm x 130mm B300 - 180mm x 110mm

Fitted to the roof edge to retain and direct water to the guttering system



#### C100/C150 Simulated Lead Flashing

C100 - 100mm x 35mm C150 - 150mm x 35mm

Provides a replacement for traditional lead, although it will never deteriorate



#### D260 Wall Fillet

D260 - 120mm x 60mm x 80mm

Used against adjoining wall to allow for exapnsion and ventilation



#### E280 Raised Edge Roll

E280 - 65mm x 200mm

Provides a ridge and expanion joints on large roofs



#### ER40/30 Pre-formed Rib Detail

ER40/30 - 50mm x 40mm

Provides n appearance of raised rolled lead joints



#### G150/G275 External 90° Angle

G150 - 75mm x 75mm G275 - 75mm x 200mm

Provides a perfect 90° outer face flashing



#### H150/H275 Internal 90° Angle

H150 - 75mm x 75mm H275 - 75mm x 200mm

Provides a perfect 90° inner face flashing



#### F300/F600/F900 Flat Flashing

F300 - 300mm x 20m roll F600 - 600mm x 20m roll F900 - 900mm x 20m roll

Provides a continuous flashing under slates at a roof junction, guarantees a 90° outer face flashing



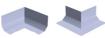
#### **C1 Universal External Corner**

Forms a right hand or left hand corner



#### C2L/C2R Left or Right Fillet to Trim

Forms a right hand or left hand corner where a flat roof meets an adjoining wall



#### C3 External/Internal Fillet Corner

Provides a perfect 90° inner and outer corner bend



#### **C4 Universal Internal Corner**

Forms a right hand or left hand inner corner



#### C5 Roof Ridge Closure

Provides a closure for E280 trims



#### **C6 Rolled Rib Closure**

Provides a closure for ER40/30 trims

## **Catalyst Addition Chart**

Deck/Resin	5-10°C	11-20°C	21-30°C	31-40°C					
% of Catalyst	4%	3%	2%	1%					
Table of Percentage = Measured in Millilitres, Per Weight of Resin Used									
Resin	Liquid Catalyst	Liquid Catalyst	Liquid Catalyst	Liquid Catalyst					
500g	20ml	15ml	10ml	5ml					
1kg	40ml	30ml	20ml	10ml					
2kg	80ml	60ml	40ml	20ml					
3kg	120ml	90ml	60ml	30ml					
4kg	160ml	120ml	80ml	40ml					
5kg	200ml	150ml	100ml	50ml					
6kg	240ml	180ml	120ml	60ml					
7kg	280ml	210ml	140ml	70ml					
8kg	320ml	240ml	160ml	80ml					
9kg	360ml	270ml	180ml	90ml					
10kg	400ml	300ml	200ml	100ml					
11kg	440ml	330ml	220ml	110ml					
12kg	480ml	360ml	240ml	120ml					
13kg	520ml	390ml	260ml	130ml					
14kg	560ml	420ml	280ml	140ml					
15kg	600ml	450ml	300ml	150ml					
16kg	640ml	480ml	320ml	160ml					
17kg	680ml	510ml	340ml	170ml					
18kg	720ml	540ml	360ml	180ml					
19kg	760ml	570ml	380ml	190ml					
20kg	800ml	600ml	400ml	200ml					

## **Catalyst Advice**

- Using an infrared thermometer, accurately measure the temperature of the roof top surface.
- 2. Ensure that a minimum of 1% catalyst is used to achieve a complete cure.
- 3. Never use more than 4% of catalyst, the curing time will not be reduced by adding any additional amounts.
- 4. Temperature is very important! Inaccurate readings (especially if below freezing) will result in the resin not curing.
- 5. If you are applying the resin towards the end of the day, ensure that additional accelerator is added to compensate for the lack of sunlight. Acknowledge at all times if any resin is left in a mixing bucket, exothermic heat will be produced due to the chemical reaction of the resin compound. If you have finished with the contents in the bucket, water can be used to mask the heat and keep it down to a safe temperature (do not use this resin after the water has been added).

## **Materials Estimation Chart**

Roof Size (m²)	McAGRP Base Coat Required		McAGRP Top Coat Required		McAGRP CSM Required		Bandage Required (1 Roll =	Decking Boards	Ancillaries Required					
	KG	20KG Cans	KG	20KG Cans	KG	35KG Rolls	(1 Roll = 60m)	(8' x 2')	Rollers	C-Rollers	Brushes	Acetone (Litres)	Buckets	Catalyst (5L @ 4% usage)
5	7.5	<b>½</b>	2.5	1/4	2.5	1/4	1	4	1	1	1	5	2	1
10	15	1	5	1/4	5	1/4	1	7	1	1	2	5	2	1
15	22.5	1½	7.5	<b>½</b>	7.5	1/3	1	11	1	1	2	5	2	1
20	30	11/2	10	<b>⅓</b>	10	1/3	1	14	1	1	2	5	2	1
25	37.5	2	12.5	3/4	12.5	<b>⅓</b>	1	18	2	1	2	5	2	1
30	45	21/2	15	3/4	15	<b>½</b>	1	21	2	1	2	5	2	1
35	52.5	3	17.5	1	17.5	1/3	1	25	2	1	4	5	4	1
40	60	3	20	1	20	1/3	2	28	2	1	4	5	4	1
45	67.5	31/2	22.5	1¼	22.5	3/4	2	32	2	1	4	5	4	1
50	75	4	25	1¼	25	3/4	2	35	2	1	4	5	4	1
55	82.5	41/2	27.5	1½	27.5	1	2	39	2	1	4	5	4	1
60	90	41/2	30	1½	30	1	2	42	2	1	4	5	4	1
65	97.5	5	32.5	1¾	32.5	1¼	2	46	2	1	6	5	6	1
70	105	5½	35	1¾	35	1¼	2	49	2	1	6	5	6	1
75	112.5	6	37.5	2	37.5	11/3	2	53	2	1	6	5-10	6	1
80	120	6	40	2	40	11/3	2	56	2	1	6	5-10	6	2
85	127.5	61/2	42.5	21/4	42,5	11/2	2	60	2	1	6	5-10	6	2
90	135	7	45	21/4	45	11/2	2	63	2	1	6	5-10	6	2
95	142.5	<b>7</b> ½	47.5	2⅓	47.5	1¾	2	66	2	1	6	5-10	8	2
100	150	71/2	50	21/2	50	1¾	2	69	2	1	6	5-10	8	2

## **Materials Estimation Guidance**

We strongly advise when calculating the area of the roofing application (m2) that you always allow for an **extra 10% for materials** to account for any wastage or problems that may occur. Our guidance provided below, detailed within the estimation chart will depend on the existing detail of the proposed roof surface. Quanitities based on OSB3 decking board provide an exact calculation of the area that you wish to cover for each board.



# **Comparing Waterproofing System**

Attributes	Typical GRP System	Re-Blend GRP System	McAtee McAGRP STANDARD SYSTEM
Reduced styrene emissions, providing less odour and lower VOC's	•	3	<b>Ø</b>
Consistent formulation provides consistent application properties	•	3	<b>Ø</b>
Can sustain foot traffic 30-60 minutes after application	<b>©</b>	3	<b>Ø</b>
Necessary waterproofing strength and capabilities	•	3	<b>©</b>
Thoroughly manufactured from controlled polyester base ingredients	•	3	<b>O</b>
Manufactured to a tight roofing specification, ensuring every batch has quality waterproofing performance	8	8	<b>Ø</b>
Thixotropic resin prevents the base coat sagging from vertical upstands	<b>3</b>	8	•
Thoroughly reinforced system, lowers the risk of weak points and eliminates cracking	8	8	•
Quality adhesion to OBS3 T&G roofing deck	8	8	•
Bespoke catalysing suitable for cold temperatures during winter	8	8	•
Strengthened, crack-resistant system	8	8	<b>②</b>
High quality waterproofing system specifically manufactured for flawless roofing performance	8	*	•
Consistently meets the appropriate requirements to cure at a range of temperatures	8	8	•
Formulated to last at least 20 years	8	8	•



# McAtee FLAT ROOFING SHOP

**Online Orders** 

www.flatroofingshop.co.uk

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