MarleyEternit

April 2017



Clay plain tiles
fixing guide

Clay Plain tiles
fixing guide

Clay plain tiles are part of Marley Eternit's 'Roof System'. We offer more roofing elements from one supplier, more integration between components, more accountability and better more durable roofs.

This fixing guide gives comprehensive details on how to install Marley Eternit Clay plain tile roofing systems.



Contents

General advice

5 Storage and handling
6 Loading out
8 Underlays
10 Universal underlays
12 Battens
14 JB-Red battens
16 Cutting tiles
18 Flashings and weatherings

General fixing

21 Setting out the roof
26 Eaves
28 Verges
30 Hips
32 Valleys
36 Ridges
40 Vertical tiling

Dry fix and ventilation systems

52 Universal eaves vent systems
58 Plain tile dry verge
64 Plain tile cloak verge
70 Universal HipFast system
80 Universal dry valley system
86 Universal RidgeFast system
96 Individual dry soakers
100 Clay in-line vent terminal
104 Bonding gutters

General advice

5 Storage and handling
6 Loading out
8 Underlays
10 Universal underlays
12 Battens
14 JB-Red battens
16 Cutting tiles
18 Flashings and weatherings



Storage and handling

Provision should be made for proper storage and handling of materials to avoid deterioration in quality and appearance, to avoid breakage or distortion, and to minimise wastage.

General

1 Store roof underlays on end on a firm, clean base protected from direct sunlight and in accordance with manufacturers' instructions.

2 Store battens and counterbattens on sufficient bearers to prevent sagging or twisting.

3 Protect battens and counterbattens from water saturation when stored in bales or bundles horizontally.

4 Store roof accessories in a safe, weatherproof store/location.

Pallets and crates should be transported using appropriate lifting machinery, i.e. fork lift or mechanical grab. Unload and handle tiles, slates and fittings with care to avoid damage, soiling and breakage. Avoid loading pallets onto scaffolding unless a safe access platform has been provided.

Most Marley Eternit products are provided palletised, banded and shrink wrapped, and can be delivered direct to site by a fleet of modern transport with mechanical off-loading facilities.

Clay plain tiles are packed on pallets or in crates and shrink wrapped.

Storage of clay plain tiles

Tiles should be stored in a safe location and should be kept protected from damage on site. Pallets should be stored on a smooth, level base capable of supporting their weight.

Do not stack tiles more than 3 pallets high in stockyards or 2 pallets high on site.

Loading out

General

1 Before tiling commences, check delivered products against initial order and report any discrepancies or defective materials to the site agent or manufacturer.

2 Pallet loads should be checked for batch codes to ensure consistency on large roof areas.

3 Special fittings should be checked against matching tiles to ensure suitability before tiling commences.

Loading the roof with tiles or slates

- Load slates, tiles and fittings out on roof safely, support by battens to avoid slippage and distribute evenly to prevent overloading of roof structure (Figs. 1-2).
- All slates and tiles, especially variegated and granular faced tiles, should be mixed from different pallet loads whilst the roof is being loaded to enhance the appearance when laid.

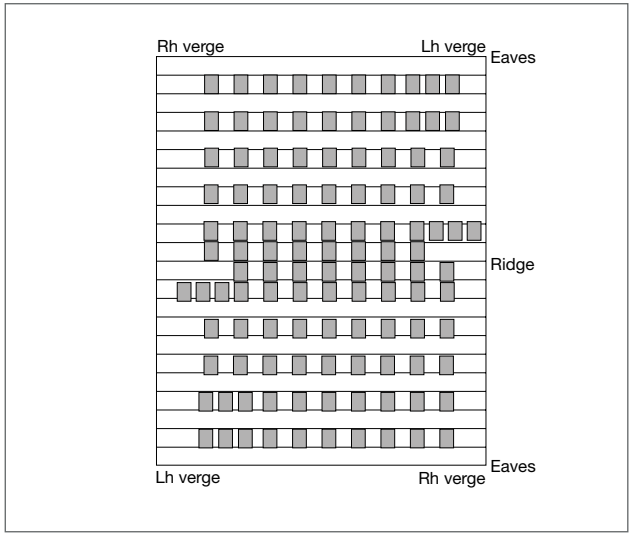


Fig. 1 – Loading roof evenly with tile/slate stacks

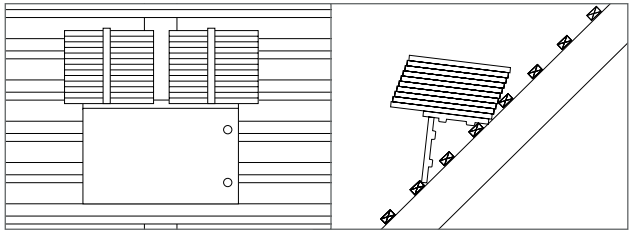


Fig. 2 – Stacks of plain tiles

GENERAL ADVICE | LOADING OUT

Underlays

General

Underlays for use beneath tiles and slates are either fully supported over boarding, sheathing or sarking, or unsupported draped over rafters/counterbattens and should meet the following:

Fully supported underlays

1 HR* underlay to BS EN 13859-1 Class W1 water penetration classification with third party certification for the use intended.

2 LR† underlay to BS EN 13859-1 Class W1 water penetration classification with third party certification for the use intended.

Unsupported underlays

1 BS 8747 Class 1F Reinforced Bitumen or Class 5U polyester reinforced bitumen.

2 HR* underlay to BS EN 13859-1 Class W1 water penetration classification with third party certification for the use intended.

3 LR† underlay to BS EN 13859-1 Class W1 water penetration classification with third party certification for the use intended.

* HR (high water vapour resistance) underlay - > 0.25MN.s/g

† LR (low water vapour resistance) underlay - < 0.25MN.s/g
LR underlays are sometimes referred to as 'vapour permeable' or 'vapour open'.

General laying recommendations

1 Lay specified roofing underlay parallel to eaves or ridge with horizontal overlaps as specified in the table below. Vertical side laps should be 100mm (min).

2 Minimise gap at laps resulting from different tautness between underlay courses. Drape in underlay between supports to be no less than 10mm and no greater than 15mm.

3 Fix underlay with fixings specified, keeping number of perforations to a minimum.

4 Handle and fix underlay with care to ensure no tears or punctures. Repair any tears or punctures prior to tiling.

5 Ensure that underlay does not obstruct flow of air through ventilators located at eaves, ridge or in main roof.

6 Weather appropriately all holes formed in underlays for soil vent pipes etc.

7 A nominal 10mm drape should be provided between supports to allow a drainage path for moisture and to prevent excessive deflection under wind load.

8 Underlay laps should be covered by a batten and where necessary, the lap of the underlay adjusted to coincide with the nearest slating or tiling batten. Laps may also be sealed using proprietary means in accordance with manufacturers' instructions. Where a proprietary sealant is used, its durability should meet the same recommendations as the underlay. Refer to geographical wind zones for wind pressure resistance figures.

9 Contact should be avoided between the underlay and the underside of the slates or tile to prevent the wind uplift load being transmitted to the slates or tiles.

Minimum horizontal lap for underlays

Rafter pitch	Not fully supported	Fully supported
15° to 34°	150mm	100mm
35° and above	100mm	75mm

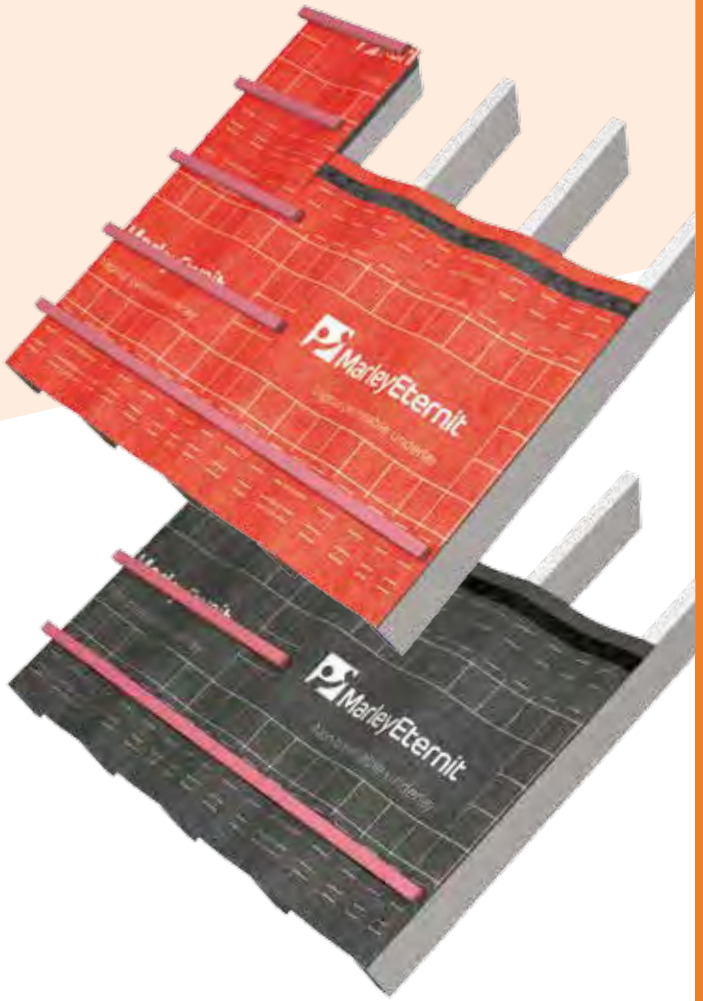
BS 5250 and BS 5534 give advice on the installation of underlays and roof ventilation requirements.

GENERAL ADVICE | UNDERLAYS

UNIVERSAL underlays

Marley Eternit underlay can form part of our complete 'Roof System' and should be laid horizontally across the rafters, starting at the eaves. It should not be stretched taught over the rafters, but draped as shown, in order to allow for small temperature movements and to ensure a gap between the tile batten and underlay for drainage down to the gutter.

Marley Eternit vapour permeable underlay must always be fixed with the PRINTED side facing outwards.
Seal laps with integral tape.



Minimum lap

Roof pitch	15-34°	Over 35°
Horizontal lap	150mm	100mm

Zonal compliance

Summary of test results for wind uplift resistance of Universal non-breathable underlay to BS 5534 Annex A.

Geographical wind zones	
250mm batten gauge taped lap using integral tape	354mm batten gauge taped lap using integral tape
Zones 1-5	Zones 1-5

GENERAL ADVICE | UNIVERSAL UNDERLAYS

Battens

Choosing battens

1 Roofing battens must meet the recommendations stated in BS 5534 in terms of their species, permissible characteristics and defects (knots, fissures and splits, wane, slope of grain, rate of growth, distortion, decay and insect attack, sap stain, resin pockets and moisture content), including minimum dimensions and grading requirements.

2 To help meet these minimum standards, roofing battens delivered to site should be graded with the following information in accordance with the standard:

a) Name of supplier (the company that graded the roofing battens NOT the company that cut them)

b) Origin

c) Graded in accordance with BS 5534

d) Basic size

e) Type of preservative (if applicable)

3 All roofing battens must now conform to the new requirements set out in BS 5534: 2014 and must be checked prior to installation. Failure to do so, risks increasing unnecessary waste, invalidating warranties and introducing a health and safety hazard on site.

JB-Red battens from Marley Eternit are fully compliant with BS 5534 and are part of our Clay plain tile 'Roof System'.

See pages 14-15 for more information

Choosing counterbattens

1 It is important to note that counter battens need not be marked or graded where they are fully supported by the rafters. In cases where they are used to restrain insulation boards and are subject to upward bending loads they should be graded.

2 However, if counter battens are used to provide a ventilation gap beneath the roof covering, there is a potential risk of high levels of moisture, and it may be advisable for them (and the roofing battens fixed above) to be preservative treated in order to provide the required durability.

Recommended batten sizes (BS 5534)

1 One of the biggest issues with roofing battens is under-sizing. To avoid this, there is now a clear tolerance limit for the minimum depth of a roofing batten, which is +3mm/-0mm. Also, roofing battens cannot be less than 25mm deep and where the span between supports exceeds 600mm, calculations must be completed to determine their correct dimensions for structural integrity.

Tile type	**Basic minimum sizes**			
Rafters/supports	**450mm span**		**600mm span**	
	width	**depth**	**width**	**depth**
Plain pitched/vertical	38	25	38	25
Single lap interlocking tiles/slates	38	25	50	25
Fibre cement slates	38	25	50	25

All dimensions subject to re-sawing allowance: width + 3mm depth 0 or + 3mm based on measurement at a reference moisture content of 20%.

GENERAL ADVICE | BATTENS

JB Red battens

JB Red battens, available from Marley Eternit, and part of our complete 'Roof System' are a sure way of ensuring compliance. They not only fully comply with BS 5534, but are also recognised by third party conformity certification. Each batten is laser scanned and graded prior to delivery, providing all the assurances required to comply with the British Standard – ensuring the highest quality of batten available with the least waste and lowest risk to health and safety.



Marley Eternit JB Red battens comply with BS 5534

The RED colour means that JB Red battens are highly visible on site, therefore Local Authority Building Control, NHBC and other inspectors can see that high quality, pre-graded and compliant product been used.

JB RED roofing battens have full chain of custody (FSC or PEFC) certification.

JB RED have the following benefits:

- Pre-graded to all the size and strength requirements of BS 5534:2014 for roofing battens
- Marked according to BS 5534: 2014 showing supplier name, origin/species, grade and size
- The product and process is UKAS third party assessed by the BBA with a BBS agreement certificate
- JB Red is LABC registered and is approved for use by local authorities
- Manufactured from slow grown, high grade timber
- Only kiln dried sideboard timber is used to ensure stability and dimensional accuracy
- Treated to BS 8417: 2011 Usage Class 2, using Koppers MicroPro™ with a unique red colour
- Carries a 60 year lifetime guarantee against insect attack and wood rotting fungi (when installed correctly in accordance with the requirements of Usage Class 2)
- Reduced wastage during manufacture through state of the art mechanical grading, means reduced wastage on site

GENERAL ADVICE | JB RED BATTENS

Cutting tiles

All cutting and drilling of tiles and slates should be carried out in well ventilated areas to prevent the inhalation of dust, in accordance with Health and Safety recommendations.

1 Wherever possible, avoid dust inhalation by using cutting equipment fitted with dust extraction or dust suppression.

2 Always wear appropriate personal protective equipment (goggles/protective clothing/ear defenders/and approved respirator) when mechanically cutting tiles.

See HSE guidance on Respiratory Protective Equipment (RPE) at www.hse.gov.uk

3 After cutting or drilling tiles and slates, brush off all dust from the surface to avoid staining.

Product Data Sheets which comply with the Control of Substance Hazardous to Health (COSHH) regulations are available for all Marley Eternit roofing products.

4 Avoid cutting tiles that are laid in situ, particularly open valleys, as this may cause damage to the valley lining, and is also a health and safety hazard.

Clay plain tiles

1 Traditionally, tiles for hips and flashings are cut using a hammer or pincers (Fig. 3) and tile cropper (Fig. 4).

2 Tiles cut to rake or mitre in open details, e.g. valleys, external angles, should be trimmed with a specialist disc cutter. Specialised cutting discs are required for clay tiles

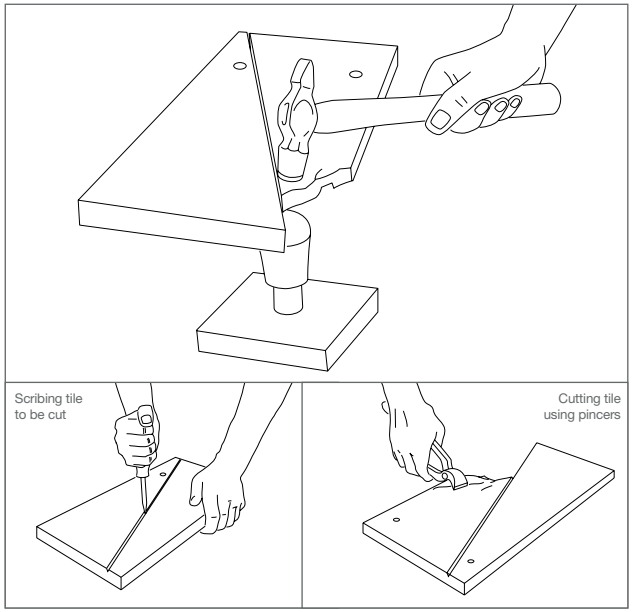


Fig. 3 – Cutting methods for plain tiles

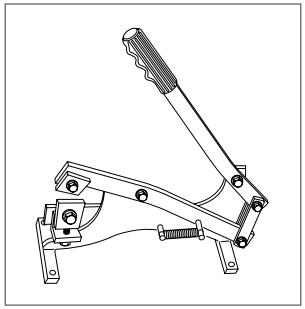


Fig. 4 – A typical tile cropper

More

COSHH product data sheets

Tel: 01283 722588

web: www.marleyeternit.co.uk/downloads

GENERAL ADVICE | CUTTING TILES

Flashings and weatherings

Introduction

Whilst lead sheet is the most common material for flashings and weatherings for tiled and slated roofs, pre-formed flashings and other lead replacement products are growing in popularity. These represent a much lower material cost and can be installed without the need for specialist tradesmen.

As part of our 'Roof System' Marley Eternit offers a range of pre-formed, plastic tile soakers and GRP systems greatly reducing the requirement for specialist labour and expensive lead material.

Lead is malleable and can be easily dressed to fit the multi-curved contours of profiled interlocking tiles or flat slates and tiles. BS EN 12588* gives the specification for lead for use in roof flashings and weatherings as summarised in the table.

Lead sheet for building purposes to BS EN 12588

Code No.	Colour code	Thickness (mm)	Weight (kg/m²)	Max. length (mm)	Uses
3	Green	1.32	14.97	1.0	Soakers
4	Blue	1.80	20.41	1.5	Flashings Inclined valley Gutters Saddles
5	Red	2.24	25.40	1.5	Horizontal valley gutters

For information on individual dry soakers

See page 96.

The following rules apply when using lead as a flashing and weathering:

1 Single pieces should be limited in size (the thinner the piece, the smaller the size) so that natural expansion and contraction is kept to a minimum and the risk of severe distortion (with associated risks of fatigue cracking) is avoided.

2 Fixings (while not restricting thermal movement) must be adequate to support the lead and (dependent on exposure) retain it in position.

3 Joints must allow for thermal movement, yet remain weathertight for the location in which they are used.

Flashings at the head of slated or tiled roofs should lap the top course slates or tiles by a distance which will vary according to the pitch of the roof (see Fig. 5).

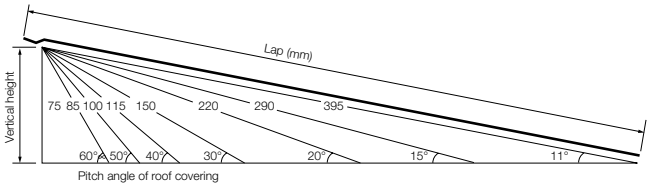


Fig. 5

General fixing

21 Setting out the roof
26 Eaves
28 Verges
30 Hips
32 Valleys
36 Ridges
40 Vertical tiling



Setting out the roof

It is important that the tiler should set out the roof prior to fixing. This will help to save time and avoid unequal overhangs at verges and expensive labour costs in cutting tiles at abutments (Fig. 6).

Position of top and bottom battens

1 Batten gauge required must be worked out on site. Fix eaves course batten first and position using one of the following methods:

The eaves batten should be set to ensure that the tail of the tile extends over the fascia board by no less than 50mm on the rake (Fig. 7).

Or

Position first full course tile batten at eaves and measure distance from top edge to outside edge of fascia. This distance should approximately equal length of tile less nib depth and gutter overhang.

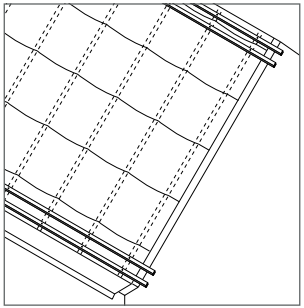


Fig. 6 – Setting out eaves/top course battens

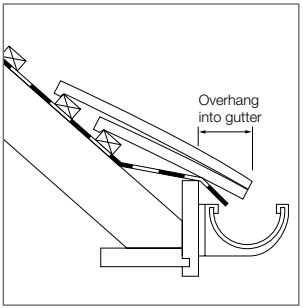


Fig. 7 – Measuring gutter overhang

Setting out the roof

2 Position an additional eaves tile batten below the first full plain tile batten.

3 Fix the first full plain tile top course batten so that the ridge tile provides a minimum 65mm cover (Fig. 8).

Calculating the batten gauge

1 Measure distance between top of full tile batten at eaves and top of full tile batten at ridge/apex.

2 Divide distance by maximum gauge of tile being used. Gauge is determined by length of tile less required headlap divided by two, i.e. $\frac{265 - 65}{2}$ = 100mm (for clay plain tiles)

3 Round figure up to give number of courses up slope as a whole number.

4 Divide measured distance by number of courses to give batten gauge.

5 The practice of adjusting gauge over last few courses at eaves or ridge is technically acceptable, provided maximum gauge for tile is not exceeded.

6 If necessary, tiles should only be cut in ridge course, drilled and nailed.

7 Re-check the accuracy of the lap by measuring the exposed margin, which is equal to the gauge required (see above).

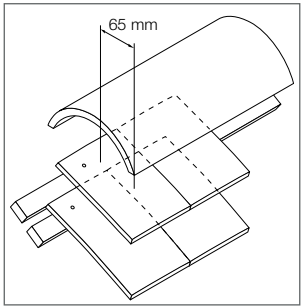


Fig. 8 – Setting out top (ridge) course

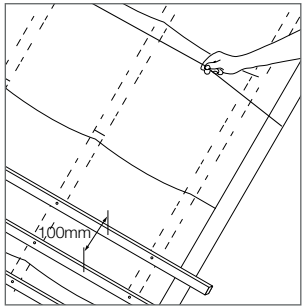


Fig. 9 – Striking chalk lines

Horizontal alignment

There are several ways of achieving true horizontal alignment:

1 Strike a chalk/ochre line at 90° to perpendicular line (Fig. 9).

2 Measure two pieces of timber, each the length of the batten gauge minus width of one batten (advantageous for vertical tile hanging).

3 Drive nails through a length of timber the distance of batten gauge apart and protruding approximately 5mm. Scribe required gauge onto underlay.

GENERAL FIXING | SETTING OUT THE ROOF

Setting out the roof

Perpendicular alignment

1 Set out roof along eaves starting with correct overhang at right-hand verge.

2 Allow a 3mm gap between adjacent Plain tiles.

3 Overhang at verges should not be more than 50mm.

4 On short eaves, tiles may require cutting where possible. Cut tiles at verges should be avoided but if used should be at least half the width of a full tile.

5 Strike perpendicular chalk or ochre lines over eaves to ridge at three tile intervals to coincide with edges of tiles.

6 A gauge rod the width of three tiles can be used as an alternative to actual tiles.

Completion of tiling

1 Load out all tiles on the roof evenly before commencing tiling (see pages 6-7).

2 Work from right to left (Fig. 10). Depending on fixing specifications, you may leave out third and fourth tiles from left-hand verge and make use of tile battens as a ladder enabling upper part of roof to be reached for fixing ridges.

3 On a hipped roof, cut tile and half tiles so that end tiles of each course align with rake of hip.

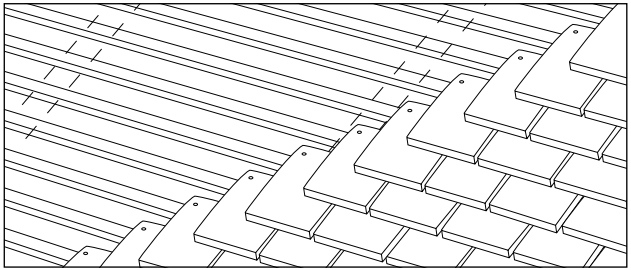


Fig. 10 – Completion of tiling

Setting out check points

- Never exceed maximum gauge for tile used at recommended pitch.
- Avoid cutting tiles wherever possible.
- Never cut bottom edge of a tile.
- Vertical cuts should never be less than half a tile width.
- On adjacent roof slopes of varying pitch, set batten gauge to the lower roof pitch to ensure alignment at intersections.
- Ensure ridge tiles provide a minimum 65mm cover to top course of full length tiles.
- Eaves tiles should lie over the fascia board 50mm on the rake.

GENERAL FIXING | SETTING OUT THE ROOF

Eaves

Eaves have a double course throughout their length using purpose-made eaves tiles for the undercourse.

1 Twice nail both courses.

2 Eaves course to overhang fascia board so that water discharges into centre of the gutter.

3 If gutter is not fixed, an overhang of 50mm should be allowed (Fig. 11).

4 A sprocketed eaves detail may be used, provided it is not below 35˚ pitch (subject to minimum pitch of tile*).

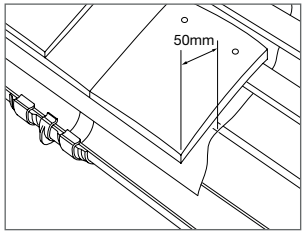


Fig. 11 – Ensure sufficient overhang into gutter

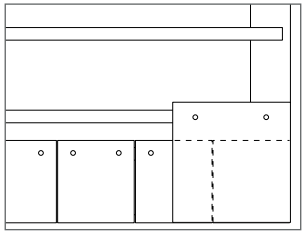


Fig. 12 – Setting out eaves with eaves course

Eaves fascia heights without ventilation

The table opposite, calculated using a 19mm thick timber fascia board with tile projecting 50mm beyond the front plane of the fascia (Fig. 13). Heights shown will be affected where rigid sarking and counterbattens (Scottish practice) are used or where there is variation in batten thickness, tile overhang, fascia thickness or pitch.

* i.e 30° for Acme and Hawkins single camber tiles

Pitch	15°	20°	30°	40°	50°	60°	70°
Fascia height (x)	–	–	–	45mm	50mm	58mm	76mm

* The nominal dimensions given are for guidance only and may need to be adjusted to suit site requirements by ensuring that the eaves course of tiles or slates is laid at the same pitch as the main body of the roof.

The eaves course of tiles must be in the same plane as the remainder of roof.

1 For measurements using the Marley Eternit Universal 10mm and 25mm Eaves ventilation systems, please refer to tables on page 57.

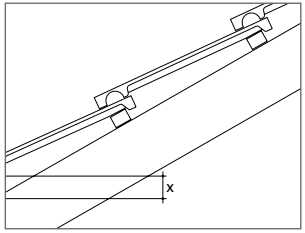


Fig. 13 'x' = Fascia height setting

Eaves check points

- Twice nail all eaves tiles.
- Supply support for under-eaves course and eaves course tiles using tilting fillet or fascia board.
- Make allowance for strip ventilators fitted to the top of the fascia when calculating the pitch of the eaves course (see page 57).
- Ensure bottom courses overhang into gutter 50mm.

Verges

1 A plain tile undercloak can be used in place of a fibre cement strip.

2 Lay face down with tail edge facing outwards (Fig. 14).

Note: Do not use Plain tiles as an undercloak below 30° pitch (subject to minimum pitch of tile).

3 Lay verges broken-bond with full tiles and tile-and-a-half in alternate courses.

4 Bed tiles projecting maximum 50mm over the gable walls or bargeboard.

5 Strike off bedding mortar and neatly point in one operation (see Fig. 15).

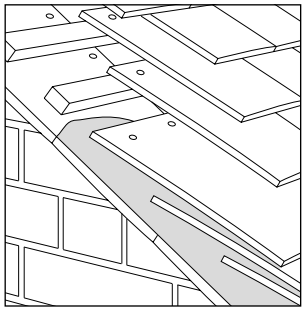


Fig. 14– Undercloak using Plain tiles

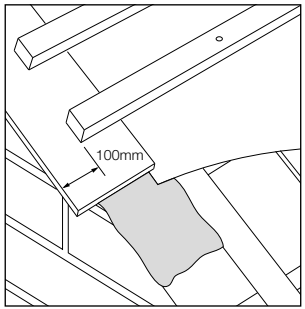


Fig. 15 – Undercloak using fibre cement strip

6 Alternatively, bed tiles in mortar onto a fibre cement undercloak.

7 When laid on brickwork or masonry, bed undercloak in mortar and strike off flush with external face of wall, leaving top surface finished smooth and straight; bed tiles forming verge on this undercloak.

8 When laid over gable ladder or bargeboard, nail each undercloak with at least two nails at centres of not more than 300mm.

Verge check points

- Nail all verge tiles.
- All verge tiles must be twice mechanically fixed.
- Always continue underlay across wall cavity and below undercloak (where appropriate).
- Mortared verges should have an overhang of 38 to 50mm.
- Undercloak should have an outward tilt on mortared verges.
- Avoid pointing with a separate mix of mortar.

GENERAL FIXING | VERGES

Hips

Hip tiles cannot be used where two roof slopes with different pitches intersect*.

Third Round Hip tiles

1 Edge-bed third round hip tiles onto close mitred tiles with a solid bedding at butt joints.

2 Fix a galvanised hip iron at foot of hip as support (Fig. 16).

3 Mechanically fix all hip tiles. For full details, please see 'Roof Systems Sitework Guide - security hip fixing.

Bonnet Hip tiles

1 Fix supplementary batten to hip tree where required to ensure alignment of bonnet hip tiles and avoid excessive mortar depth.

2 Bed in mortar during fixing. Strike bedding off smoothly at lower edges of hip tiles or keep slightly back and point.

3 At eaves, solidly bed bonnet hip and fill with dentil or tile slips where possible.

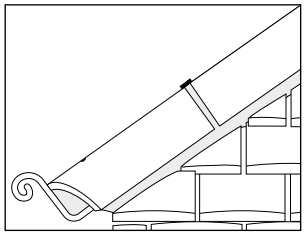


Fig. 16 – Bedded and mechanically fixed third round third hip ridge tiles used as hip capping with hip iron

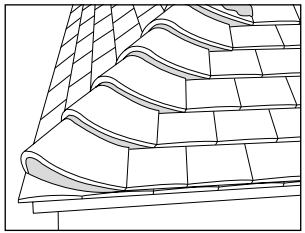


Fig. 17 – Bedded and mechanically fixed bonnet hip tiles

* plus or minus 1°

4 Straight cut tiles adjacent to each side of bonnet hip to maintain bond and fix with 70mm x 3.35mm aluminium nails (Fig. 17).

5 Use tile-and-a-half tiles where necessary, to facilitate cutting adjacent to bonnet hip tiles

Close-fitting Arris Hip and purpose-made hip tiles

1 Fix close-fitting hip tiles with 65mm x 3.35mm aluminium nails penetrating at least 25mm into hip rafter or supplementary batten.

2 Spot bed top of hip tiles to provide seating in mortar.

3 Lay and fix bottom hip tile in line with under eaves course.

Mitred hips

1 Where tiling does not meet at right angles on plan, cut tile-and-a-half tiles to a close rake to hip line.

2 Cut Code 3 lead soakers to extend a min. 100mm either side of hip and fix as required.

Hip check points

- Fix a suitable hip iron to the base of rafter.
- Close mitre roof tiles where they meet hip and ensure each tile is twice nailed.
- Replace small cuts with tile and a half tiles.
- Mitre hip tiles at ridge junctions ensuring that the end tile does not ride up.
- Cut bottom hip tile to align with eaves.

Valleys

Valley tiles cannot be used where two roof slopes with different pitches intersect.

Valley tiles

Valleys with plain tiles may be formed with purpose-made valley tiles or open construction, using metal lined valleys.

1 For trussed rafter roofs, support tiling battens at valley where roof slopes intersect.

2 Fix timber valley boards between rafters to provide support for tiling battens and valley tiles.

3 Lay a strip of underlay at least 600mm wide up length of valley. Overlap on each side with main roofing underlay.

Lay valley tiles without nailing or bedding to main roof tiling (Fig. 18).

1 Lay bottom valley tile first and butt adjacent eaves tile to it.

2 Keep a true line between valley tiles and main roof tiles.

3 Avoid small cut pieces of tile adjacent to valley tile by using tile-and-a-half tiles.

* plus or minus 1°

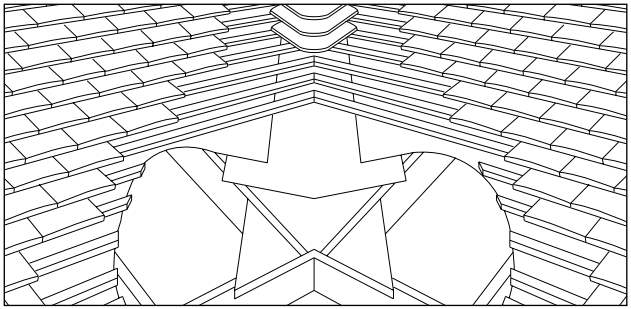


Fig. 18 – Laying valley tiles

Minimum widths of valley gutter for different roof pitches and plan areas - lead or GRP open valleys

	Design rainfall rate 225mm/h		Design rainfall rate 150mm/h	
Roof pitch	**<25m² on plan (mm)**	**25-100m² on on plan (mm)**	**<25m² on plan (mm)**	**25-100m² on on plan (mm)**
15° - 17°	150	250	125	200
17.5° - 22°	125	200	125	150
22.5° - 29.5°	100	150	100	125
30° - 34.5°	100	125	100	100
> 35°	100	100	100	100

	Design rainfall rate 75mm/h	
Roof pitch	**<25m² on plan (mm)**	**25-100m² on on plan (mm)**
15° - 17°	125	150
17.5° - 22°	100	125
22.5° - 29.5°	100	100
30° - 34.5°	100	100
> 35°	100	100

Valleys

Minimum width of lead to line valley gutters for different roof pitches and plan areas

Degrees (°)	Area to be drained 25m² and less on plan (mm)	Area to be drained over 25m² up to 100m² on plan (mm)
15° - 17°	550	650
17.5° - 22°	525	600
22.5° - 29.5°	500	550
30° - 34.5°	500	525
> 35°	500	500

Metal valleys

Metal valleys may also be used with plain tiles. Exposed raking cut tile and a half tiles should not be bedded in mortar. If concealed mortar is used within the tiling, it should not block the laps.

1 Use tile-and-a-half tiles to minimise use of small tile sections at valley.

2 Nail all tiles and cut pieces adjacent to valley (Fig. 19).

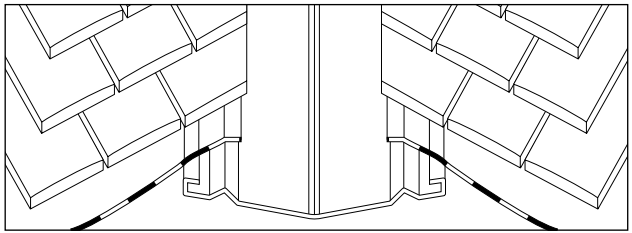


Fig. 19 – Metal valley construction for plain tiles

Valley weatherings

1 At head of valley, fix a saddle of minimum Code 4 lead. Length of lap of saddle over valley should be at least 200mm.

2 Where ridge intersects a roof slope, step the ridge back where it meets head of intersecting valley; dress a saddle of minimum Code 4 lead under adjacent tiling, and over both valley linings.

3 When a valley discharges onto a roof slope (e.g. at dormers), a lead saddle will be required at base of the valley to dress onto adjacent tiling, (see flashings and weatherings page 18).

Valley check points

- Keep an open channel between cut edges of roof tiles (125mm minimum).
- Don't block laps of tiles with mortar since this may cause damming.
- Don't lay bituminous underlay directly beneath a lead valley; heat causes underlay to expand. This may split lead.
- Don't apply mortar direct to lead.
- Nail all tiles either side of valley.
- Valley tiles cannot be used where two roof slopes of different angles intersect.

GENERAL FIXING | VALLEYS

Ridges

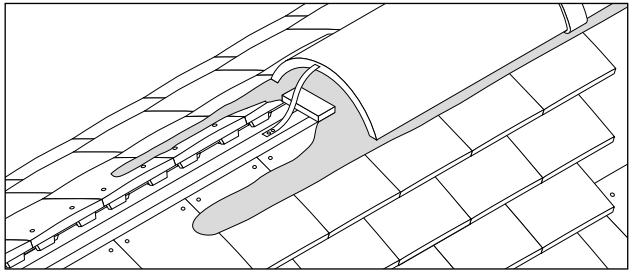


Fig. 20 – Typical bedded ridge with traditional galvanised security wire

Duo-pitch ridges

Ridges should be covered using ridge tiles of complementary colour, or contrasting, and texture to that of main roof tiles. Always check that the ridge tile design suits the pitch and type of roof tile being used.

1 Edge-bed ridge tiles onto the top course tiles with solid bedding at butt joints (Fig. 20).

2 A minimum of 65mm cover should be provided over the last full course tiles.

3 Exposed mortar should be neatly pointed.

4 Ensure ridges are mechanically fixed using security ridge tiles or the mortar bedded security ridge kit.

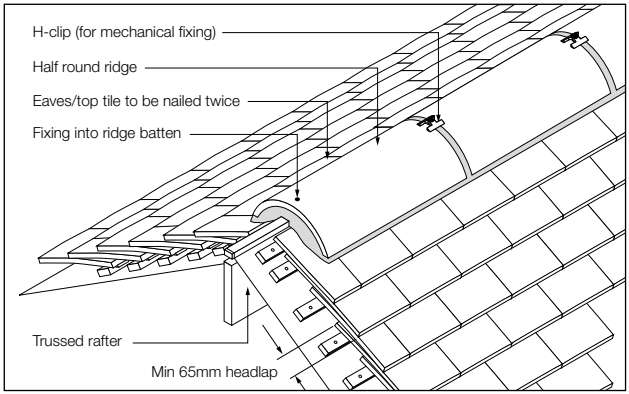


Fig. 21 – Clay bedded ridge using the mortar bedded security ridge kit

Mechanically fixing mortar bedded ridges

Marley Eternit offer a Mortar bedded security ridge fixing kit to ensure that all mortared ridges are mechanically fixed and meet the requirements of BS 5534 (Fig. 21)

For full installation details of these kits, see full Sitework Guide.

Ridges at gable ends (alternative to security ridge fixing kit)

2 It is recommended to secure a length of batten along the ridge apex to provide a means of mechanical fix.

3 Either drive a nail into the batten to secure a galvanised security ridge wire, or drill a hole – 100mm from the open end – and secure the ridge using a 75mm stainless steel screw

4 Fill fair ends of ridges with mortar inset with pieces of Plain tile and neatly point.

Ridges

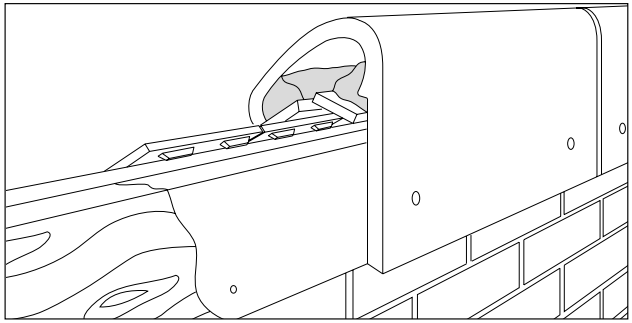


Fig. 22 – Bedded mono-ridge with 2 mechanical fixings

Mono-ridge (concrete)

1 Carry roofing underlay over ridge and cut below vertical leg of mono-ridge tile.

2 Lay mono-ridge tiles for Plain and Interlocking profiles as standard ridge tiles and mechanically fix each by using 2 No. 50mm x 10g stainless steel screws (supplied) to timber fascia behind vertical leg (Fig. 22).

Clay Plain tile ridge

1 Suitable for clay plain tiles.

2 Security ridge straps are available to attach to clay fittings.

3 Maximum rafter pitch 60°. Suitability can vary.

4 Fix metal strap to ridge board or supplementary batten (Fig. 20, page 36).

5 Provides mechanically fixed ridge tile in line with BS 5534 fixing guidelines

Top courses (Figs. 23 & 24)

1 The top course should be nailed into the top course batten.

2 If required, the top course batten can be turned on its side.

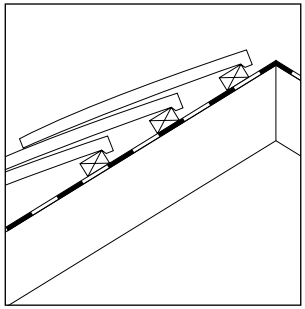


Fig. 23 – Setting out top course

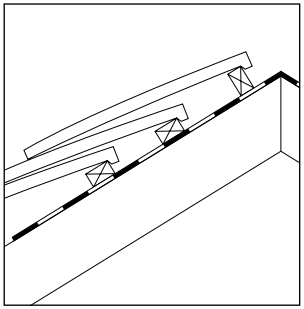


Fig. 24 – Top course batten position option

Ridge check points

- Nail/clip all top course tiles either side of ridge (clay or concrete).
- Overlap ridge underlay by minimum 150mm.
- Ensure minimum 65mm cover by ridge tile over top course of full length tiles.
- Keep ridge tiles set in a true line.
- Do not over-tighten screws of mono-ridge fixings.
- Mechanically fix all ridges.
- Consideration should be given to tile slips if mortar is greater than 25mm depth.

GENERAL FIXING | RIDGES

Vertical tiling

The use of plain tiles for the vertical cladding of buildings is traditional in the south east of England where timber framed construction is common.

Elsewhere, plain tiling is often fixed to the external surface of a single leaf masonry wall and comprises decorative pattern tiles which provide both an aesthetic and weatherproof cladding.

Underlay

A moisture barrier should be provided for all vertical tiling applications, and with brick and blockwork construction, an HR (high water vapour resistance) underlay is adequate. For timber framed wall application, an LR (low water vapour resistance) breather membrane with third party certification is recommended.

Underlay should be lapped 75mm horizontally and 150mm vertically and secured with clout nails. Ensure that the distance of the fixing at the edge is not less than 50mm from the edge of the tiles.

Battens

There should be battens and counter battens fixed to the wall structure and consideration should be given to the use of proprietary fixings such as ‘Rawlplug’ or ‘Hilti’ type bolts/fixings for dense concrete and stone masonry walls.

1 Provide a moisture barrier for vertical applications. With brick and blockwork, roofing underlay is generally used.

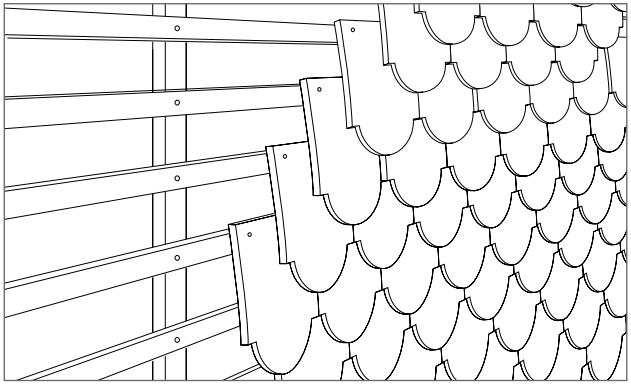


Fig. 25 – Feature tiles laid over battens and counter-battens

2 Lap underlay 75mm horizontally and 150mm vertically and secure with clout nails.

3 On timber frame constructions, fix battens to a maximum gauge of 115mm and secure with wire nails to timber studding. Battens to be at least 1.2m in length, sufficient to be supported at each end and intermediately by at least three studs or walls.

4 Stagger butt joints over intermediate supports so that not more than three battens are joined in any twelve consecutive supports. Batten ends must be sawn.

GENERAL FIXING | VERTICAL TILING

Vertical tiling

Fixing

1 Lay vertical plain and feature tiles to a minimum lap of 35mm, maximum gauge 115mm.

2 Fix each tile with 2 No. 38mm x 2.65mm aluminium nails.

Eaves

1 Lay a double course of tiles at eaves. Form by laying a first course of eaves tiles with a course of full tiles laid broken bond on top.

2 Tilt eaves tile a minimum of 65mm from face of groundwork by using a timber fillet.

3 Twice nail both eaves courses using 38mm x 2.65mm aluminium nails.

Top courses

1 For top tiles, use a course of eaves/tops tiles, twice nail each tile as before.

2 Where a top course is formed under a window sill, dress a lead flashing down over top course tiles for at least 100mm, cut level or to an approved finish.

Angles

1 **Use purpose-made internal or external angle tiles at all corners. Where necessary, clay angle tiles may require packing to maintain a 'true' line with adjacent plain tiles.**

2 Left and right hand angles of 90° (or other angle to suit) are available to provide a broken bond with main tiling, to be twice nailed (Figs. 26 and 27).

3 For impractical situations i.e. sprocketed tiling, close mitre tiles at corner(s) and weather with lead soakers.

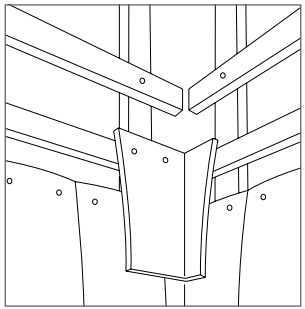


Fig. 26 – Internal angle with Internal Angle tiles

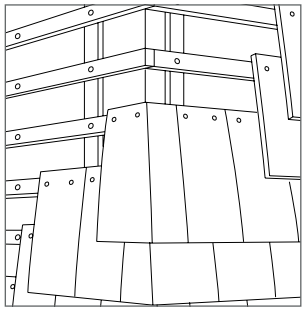


Fig. 27 – External angle with External Angle tiles

GENERAL FIXING | VERTICAL TILING

Vertical tiling

Gables: 'Winchester' cut

This technique avoids the use of small triangular pieces of tile and ensures the secure fixing of the last tile against the main roof verge, by the use of a tile-and-a-half at the end of each course.

'Winchester' cutting is best suited for gable ends where the roof pitch is 40° or more. For lower pitches, the tiling gauge may need to be reduced to 100mm or 90mm in order to avoid too great a splayed cut.

It is likely that two tile-and-a-half tiles adjacent to one another will be needed to overcome this.

1 Leave battening short of rake of verge. This allows fixing of a batten parallel to, but below rake line. The top face of this batten must be flush with the tiling battens so that tiles do not tilt up (Fig. 28).

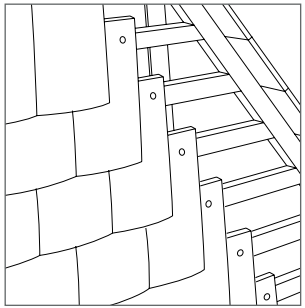


Fig. 28 – Fix battens parallel

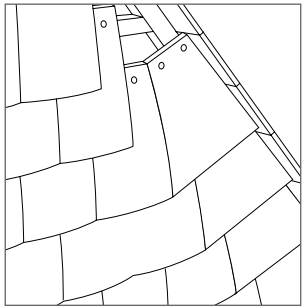


Fig. 29 – Cut tile-and-a-half tile

2 Cut tile-and-a-half tiles to angle of rake for each vertical course, keeping cut edge parallel to and below rake (Fig. 29).

3 Once tile-and-a-half tiles are positioned, cut adjacent tile to fit. All tile-and-a-half tiles should be twice nailed. This may mean drilling an extra hole after cutting to shape.

4 At apex of gable, use a tile-and-a-half tile turned through 45° (subject to roof pitch) and cut to shape to finish (Fig. 30).

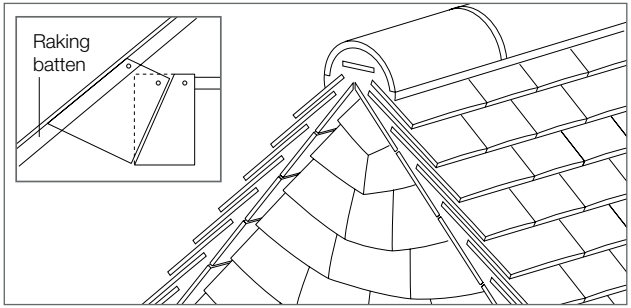


Fig.30– Apex of gable

Vertical tiling

Gables: Soldier course

This method is used for low pitch roofs below 35º where 'Winchester' cutting is impractical.

1 After felting, fix a raking batten close to undercloak/soffit positioned to allowed the tiles to hang on their nibs.

2 Cut vertical tiles to meet raking batten using tile-and-a-half tiles at end of each course (Fig. 31).

3 Fix courses of eaves/tops tiles to raking batten (Fig. 32).

4 A cover flashing can be used to cover the soldier course tile nail holes and to the apex.

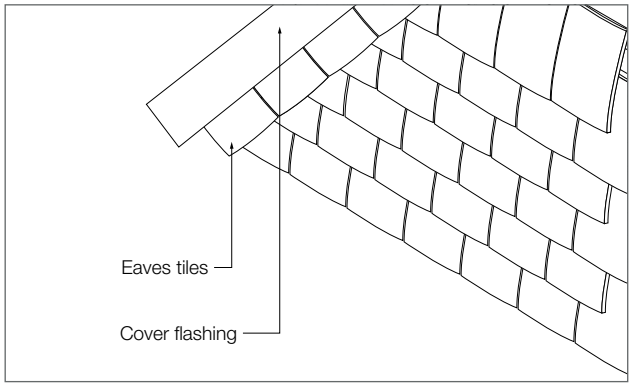


Fig. 31 – Cut tile to meet rake of verge

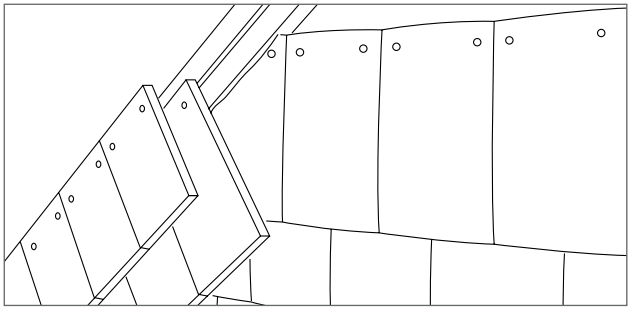


Fig. 32 – Fixing double soldier course of tiles to raked batten

Gables: Double soldier course

An alternative to the single soldier course, where additional protection is required.

1 After felting, fix two raking battens close to undercloak/soffit positioned so as to allow the tiles to hang by their nibs.

2 Cut vertical tiles to meet lower taking batten using tile-and-a-half tiles at the end of each course.

3 Fix courses of standard Plain tiles to lower of two raked battens, then fix course of eaves tiles to remaining (top) raked batten (Fig. 32).

4 A cover flashing can be used to cover the soldier course tile nail holes and up to the apex.

Note: Spot bedding is recommended beneath the laps of cut tiles to prevent wind chatter and damage.

It is not recommended that feature tiles are used for gable ends. If they are, however, use plain tile-and-a-half tiles to complete course beneath rake of the verge.

Vertical tiling

Gables: Sussex cut

1 Fix an additional batten onto face of vertical tiling battens and parallel to the verge to allow fixing of cut tiles.

2 Form raking cuts using tile-and-a-half tiles as necessary (Fig. 33).

3 Fix edge tile close to undercloak/soffit, securing by spot bedding and double nailing into raking batten (Fig. 34).

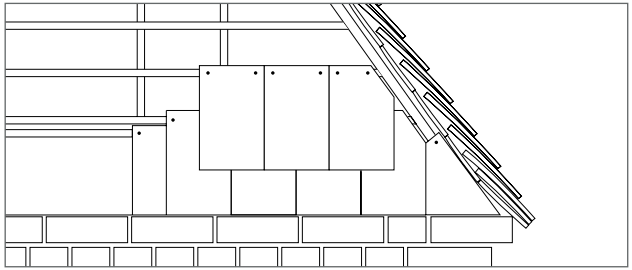


Fig. 33 – Cut tile to meet rake of verge

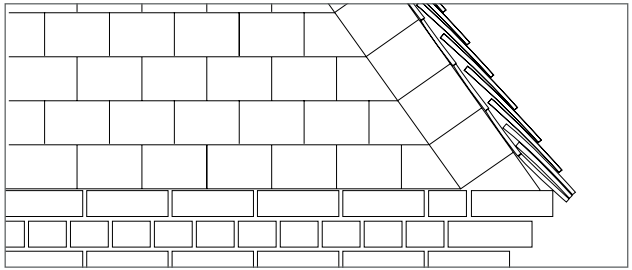


Fig. 34 – Fixing tiles to raked batten

Abutments

Where the tiling meets an abutment, use tile-and-a-half tiles in alternate courses to provide a broken bond.

1 When tiling meets a brickwork wall, fix tiles to within 50mm of return.

2 A Code 4 lead sheet can be taken a minimum of 75mm behind tiles and turned in a single welt on a vertical counterbatten.

3 Lead is taken around corner and top edge taken into brickwork mortar joints (Fig. 35).

4 If lead soakers are used, slot them between tiles and turn along abutment wall.

5 Turn and dress the stepped flashing over soakers.

6 When meeting timber cladding or a window jamb, turn flashing behind cladding or return into the jamb (Fig. 36).

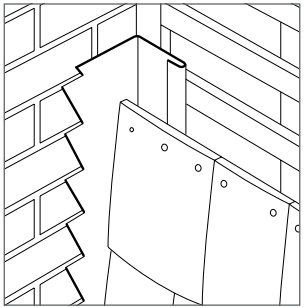


Fig. 35 – Abutment to wall, with flashing

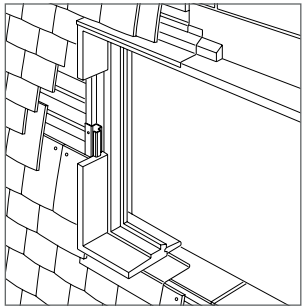


Fig. 36 – Abutment to window

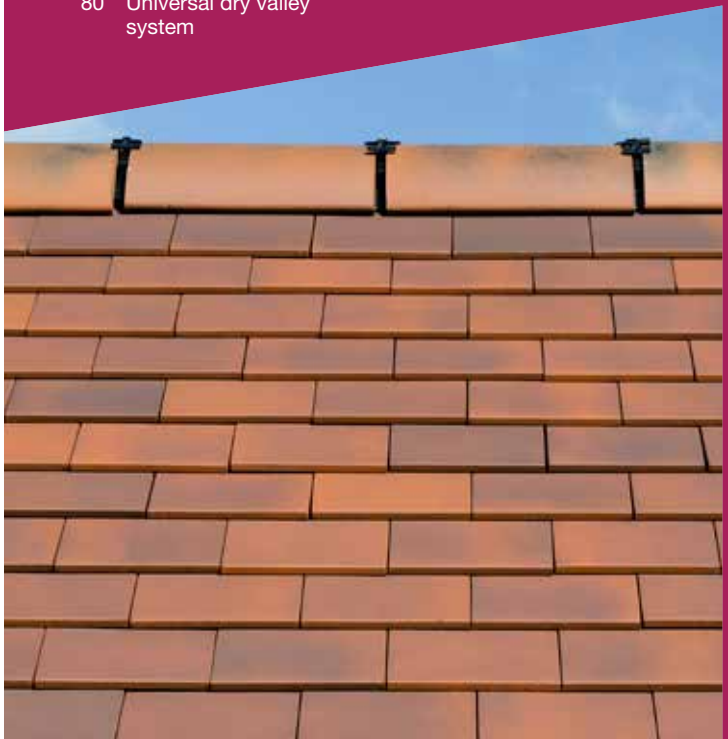
Vertical tiling

Vertical tiling check points

- Ensure each Plain and feature tile is twice nailed on vertical tiling.
- Use double course of tiles at eaves and top edges
- Always use tile-and-a-half tiles at raking cut abutments.
- Maintain broken bond in all cases.
- Avoid using feature tiles on pitches below 70° unless adequate weathering is provided by additional means.
- Ensure battens are securely fixed to substrate with suitable fixings.

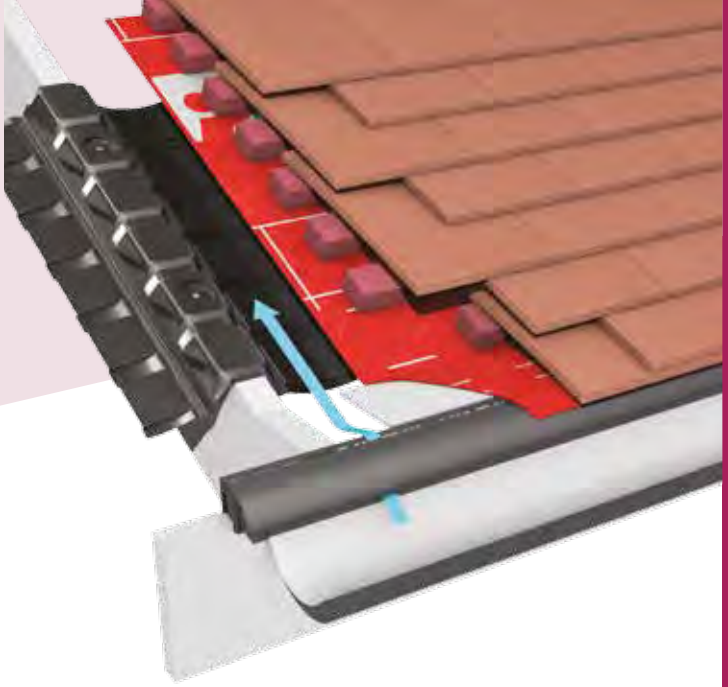
Dry fix & ventilation systems

52 Universal eaves vent systems
58 Plain tile dry verge
64 Plain tile cloak verge
70 Universal HipFast system
80 Universal dry valley system
86 Universal RidgeFast system
96 Individual dry soakers
100 Clay in-line vent terminal
104 Bonding gutters

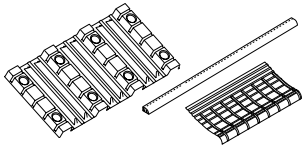


UNIVERSAL
eaves vent systems

Marley Eternit universal eaves ventilation systems are designed to provide continuous 10mm or 25mm free vent areas to roof voids in an efficient and unobtrusive manner for roof pitches from 12.5° to 55°. The 25mm system can also be used to ventilate the batten cavity where this is required.

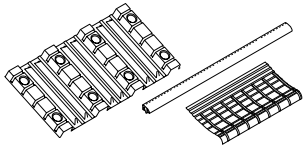


Components



10mm eaves vent pack
(6 metres)
(code 46350)

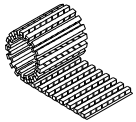
Packs contain: 6 No. over fascia ventilators (10mm), 1 No. continuous rafter roll, 10 No. felt support trays



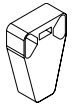
25mm eaves vent pack
(6 metres)
(code 46351)

Packs contain: 6 No. over fascia ventilators (25mm), 1 No. continuous rafter roll, 10 No. felt support trays

Individually available components



Continuous rafter roll pack (2 x 6m)
(code 46323)



Gutter spacers
(20 per pack)
(code 46353)

DRY FIX & VENTILATION SYSTEMS | EAVES VENT SYSTEMS

UNIVERSAL
eaves vent systems

Installation

Before commencing work, check that fascia or tilting fillet is fixed to correct height for type of tile and rafter pitch being used, taking into account height of over fascia ventilator and comb filler strip (if required). For fascia height details, see table on page 57. Ensure that eaves course tiles are laid in the same plane.

Note: 25mm warm roof constructions (when ventilating the roof space). Dependent on gutter type, consideration should be given to maintaining a sufficient airpath behind the gutter. This can be achieved using gutter spacers (available separately). Contact the Technical Advisory Service for further information.

1 Roll out continuous rafter roll over full length of eaves rafters so that wall plate is directly under centre of the roll.

2 Pull and adjust to correct rafter centres and twice nail to top of each rafter, using 25mm long aluminium nails (Fig 37).

Note: The continuous rafter roll fits rafters from 400-600mm centres. It is advisable to lay some insulation material at this stage to ensure that it extends over wall plate into eaves, to prevent cold bridging. Two rolls of rafter roll may be required to ensure depth of insulation does not block ventilation path.

3 Place over fascia ventilator (OFV) on top of fascia board or tilting fillet with location stop hard up against front of board.

4 Nail to top of fascia or tilting fillet using 45mm x 3.35mm (10mm OFV) or 60mm x 3.35mm (25mm OFV) aluminium nails at every nail hole position (Fig. 38).

Note: To assist with correct fascia height dimensions, allowance should be made for height of strip ventilator.

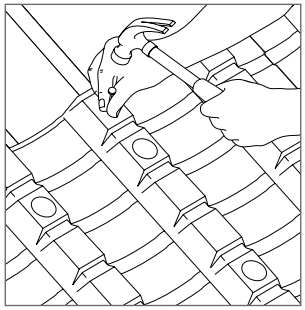


Fig. 37

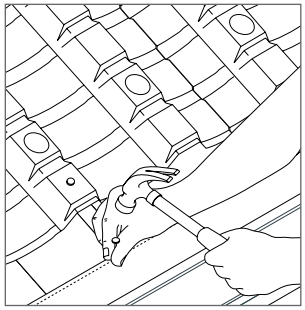


Fig. 38

5 Place felt support trays over the over fascia vent strips and nail to rafters with 25mm x 3.35mm aluminium nails (Fig. 39).

Note: When used with plain tiles, substitute felt support tray with 6mm thick plywood strips supported by timber fillets fitted at each rafter.

6 The support tray should be laid so that the curved front edge dresses down over the fascia vent unit towards the gutter (each tray provides 600mm effective cover) (Fig. 40).

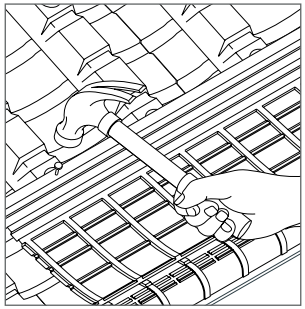


Fig. 39

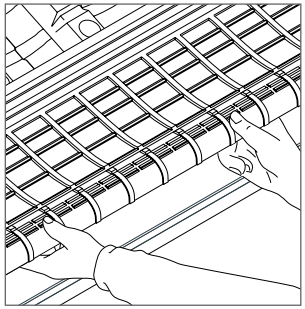


Fig. 40

UNIVERSAL eaves vent systems

7 Lay the underlay over the support tray stopped approx. 25mm from the top of the curved front edge of the felt support tray. (Fig 41). The underlay should not be left exposed to UV light.

Ventilating the batten cavity using 25mm eaves vent system

1 Install the roofing underlay over the rafters, ensuring sufficient drape into gutter (Figs. 41 and 42).

Notes: Timber fillets or plywood strip should be fitted at each rafter to provide support for the underlay into the gutter. Underlay support trays are not required for this type of construction. Use only suitable UV resistant membranes at the eaves.

2 Install counter battens on top of the underlay at each rafter. Roofing battens should then be installed as normal on top of the counter battens.

3 Install over fascia ventilator on top of fascia board, using 60mm x 3.35mm nails at every nail hole position.

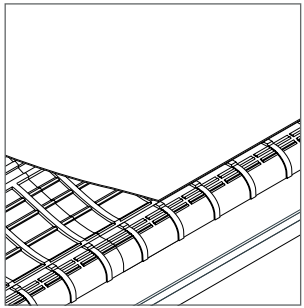


Fig. 41

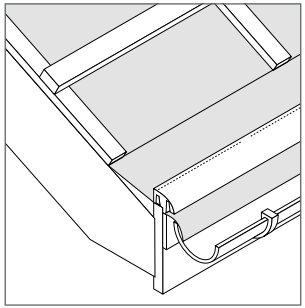


Fig. 42

Fascia height settings for 10mm Universal eaves vent system (without gutter spacer)

Pitch	**30°**	**32.5°**	**35°**	**37.5°**	**40°**	**42.5°**	**45°**
Fascia height	26mm	26mm	26mm	26mm	26mm	26mm	26mm
Pitch	**47.5°**	**50°**	**55°**				
Fascia height	26mm	26mm	26mm				

Fascia height settings for 25mm Universal eaves vent system (without gutter spacer)

Pitch	**30°**	**32.5°**	**35°**	**37.5°**	**40°**	**42.5°**	**45°**
Fascia height	8mm	8mm	8mm	8mm	8mm	8mm	8mm
Pitch	**47.5°**	**50°**	**55°**				
Fascia height	8mm	8mm	8mm				

Fascia height settings for 25mm Universal eaves vent system (with gutter spacer)

Pitch	**30°**	**32.5°**	**35°**	**37.5°**	**40°**	**42.5°**	**45°**
Fascia height	3mm	3mm	3mm	3mm	3mm	3mm	3mm
Pitch	**47.5°**	**50°**	**55°**				
Fascia height	3mm	3mm	3mm				

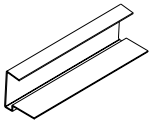
DRY FIX & VENTILATION SYSTEMS | EAVES VENT SYSTEMS

Plain tile dry verge

Marley Eternit plain tile continuous dry verge provides a strong, weathertight and maintenance-free verge that meets the requirements of BS 5534.

The system is fast and simple to install and offers sleek, uninterrupted verges without the need for mortar.

Components



Universal plain tile dry verge (3m)
(code 38501)



Plain tile dry verge fixing kit
(code 38510)

Kit contains: 1 No. Connector unit, 15 No. 35mm x 2.65mm ARS stainless steel nails, 2 No. 25mm x 10g stainless steel screws



Modern ridge end cap
(code 394)



DRY FIX & VENTILATION SYSTEMS | PLAIN TILE DRY VERGE

Plain tile dry verge

Installation

1 Ensure the gable end is reasonably level and free from projections. The roofing underlay and tiling battens should be laid across the cavity/gable ladder and the battens finished flush with the outer wall or outer edge of the bargeboard (Fig. 43). The verge extrusion is fitted prior to tiling.

2 Square cut the ends of the verge extrusion to the desired length. A connector unit is available to join lengths of extrusion. At the eaves, cut away a length of horizontal flange to accommodate the tilting fillet or support tray (Fig. 44).

3 At the ridge apex, allow a 10mm expansion gap at the mitred joint between the verge extrusions. Cut away the top flange and 20mm depth of the side wall (Fig. 45) to accommodate the ridge tile (and dry ridge batten section, if appropriate).

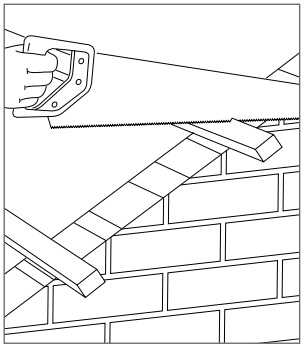


Fig. 43 – Preparing gable end

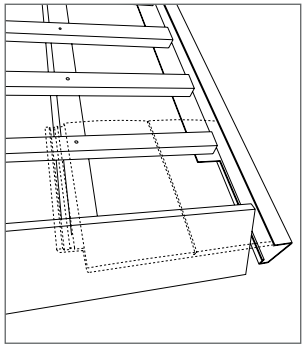


Fig. 44 – Lining up at eaves

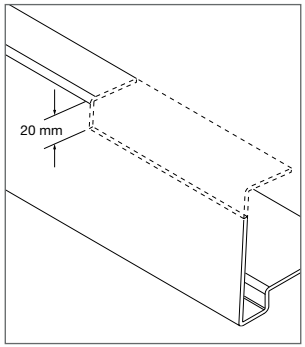


Fig. 45 – Cut away section at ridge

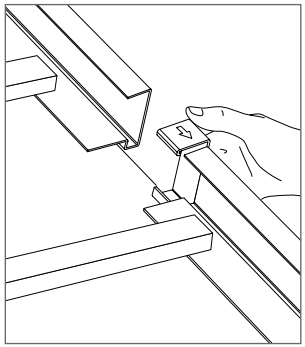


Fig. 46 – Connector units

4 The horizontal flange of the extrusion is pushed between the top of the wall (or gable ladder) and tiling battens along its whole length. Ensure the bottom end lines up with the leading edge of the eaves tiling course (Fig. 45).

5 Where necessary, a connector unit is fitted at joints between extrusions (Fig. 46).

DRY FIX & VENTILATION SYSTEMS | PLAIN TILE DRY VERGE

Plain tile dry verge

6 Secure the verge extrusion by driving the annular ring shank nails provided through each tiling batten (40mm from the end) into the extrusion (Fig. 47).

7 Lay tiles in the usual manner, ensuring the verge tiles are fully inserted into the verge extrusion and mechanically fixed (Fig. 48).

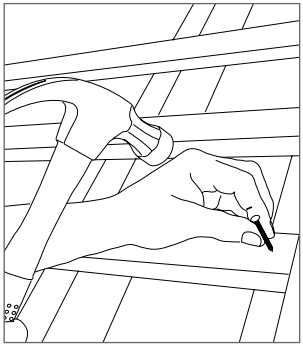


Fig. 47 – Nailing verge units

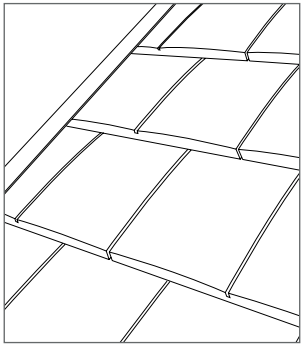


Fig. 48 – Inserting verge tiles

Fixing dry verge at ridge

For fixing at ridge using a dry fix system please refer to RidgeFast, page 86.

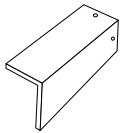
For fixing at ridge using mortar, please refer to pages 36-37. Please remember that ridge units of any type cannot be fixed using mortar alone and mortar bedded ridges must always be mechanically fixed in accordance with BS 5534.

DRY FIX & VENTILATION SYSTEMS | PLAIN TILE DRY VERGE

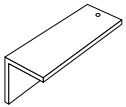
Clay plain tile cloak verge system

Plain tile cloak verges provide a weatherproof and mortar free finish to the roof verge. They are available in right and left hand units in colours to match the main roof tiles, twice nailed for maximum security. The apex of the roof is finished with matching stop-end ridge tiles.

Components



Clay plain tile right hand cloak verge



Clay plain tile left hand cloak verge



DRY FIX & VENTILATION SYSTEMS | PLAIN TILE CLOAK VERGE SYSTEM

Clay plain tile cloak verge system

Installation

1 Where possible, set out the tiling so that the leg of the cloak verge fits flush with the brickwork or bargeboard. If so, cut the ends of the battens flush with the outer edge of the gable wall or bargeboard (Fig. 49).

Where setting out dictates, the cloak verge tiles can be laid to a maximum 50mm overhang, a fibre cement strip should be inserted beneath the tiling battens and the top of the wall or bargeboard to prevent the ingress of birds or vermin (Fig. 50).

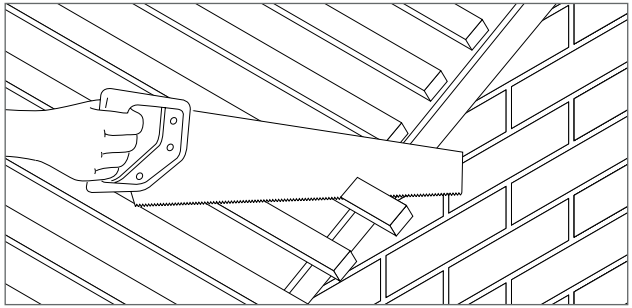


Fig. 49 – Saw battens flush

DRY FIX & VENTILATION SYSTEMS | PLAIN TILE CLOAK VERGE SYSTEM

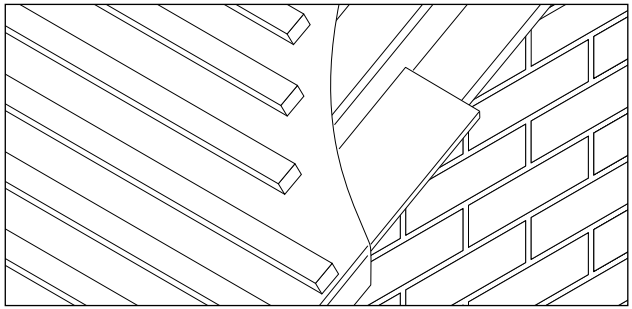


Fig. 50 – Fibre cement strip inserted under battens, 50mm overhang

2 Commence laying an under eaves course of tiles using a standard eaves tile or a cloak verge tile cut down to size (Fig. 51, page 68). Where possible use a standard eaves tile, but establish what will be required for the top course at the roof apex, to ensure that the same unit is provided on both sides of the apex. In this way, opposite gable ends can be constructed with cloak verge tiles in different courses, but will still maintain a balanced appearance when viewed from the ground.

Clay plain tile cloak verge system

4 Nail the eaves cloak verge tile with 2 No. 38mm x 3.35mm aluminium or stainless steel ring shank nails to both top and end of the tiling batten using the holes in the top and vertical leg (Fig. 51). Alternatively, if the verge construction allows, a timber batten can be secured to the outer edge of the bargeboard or gable wall to assist nailing the vertical leg of the cloak verge tile (not shown).

5 Each alternate course should contain a normal plain tile to break bond, which should be twice nailed using standard 38mm x 2.65mm aluminium or stainless steel nails (Fig. 52).

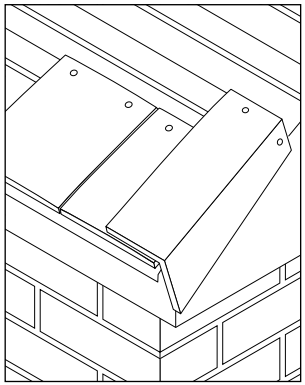


Fig. 51 – Eaves course

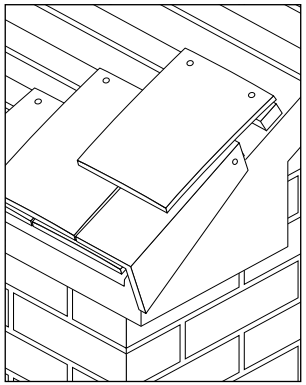


Fig. 52 – Standard tile used to break bond

DRY FIX & VENTILATION SYSTEMS | PLAIN TILE CLOAK VERGE SYSTEM

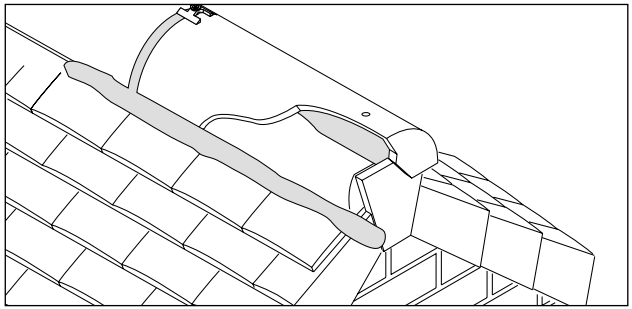


Fig. 53 – Mortar bedded stop end ridge tile used to finish cloak verge at ridge

6 The remainder of the verge is completed using successive cloak verge and plain tiles until the apex is reached. The top course may be either a tops/eaves tile or a cloak verge tile cut to size, with nail holes drilled to suit, and fixed as required. If necessary, trim the vertical legs of the cloak verge tiles where steep pitch roofs are encountered.

7 Complete the apex closure of the two top course cloak verge tiles by fitting a Stop End Ridge Tile and a tile-and-a-half/gable tile, cut to fit between the vertical legs of the top course cloak verge tiles. Drill and nail cut tile to timber groundwork (Fig. 53).

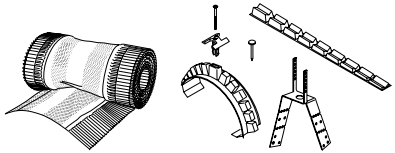
8 Either mortar bed end ridge tile with mechanical fixing, or use a dry fix system.

UNIVERSAL HipFast system

HipFast is a simple and rapidly installed, dry fixed hip system suited to all Marley Eternit plain tiles, tiles and slates, as well as those of other manufacturers.



Components

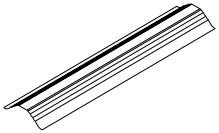


Universal 6m HipFast system

(code 53400)

Kit contains: No. 6m length hip roll, 11 No. batten brackets, 13 No. unions and clamps, 2 No. tapered filler units, 16 No. 75mm x 4.8mm s/s screws, 36 No. 25mm x 3.35mm s/s ARS nails, 3 No. washers, 24 No. tile head C clips, 36 No. tile tail clips

Also available



Universal HipFast support tray

(code 34002)

RidgeFast/HipFast union pack

(code 53303)

6 unions supplied in pack

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL HIPFAST SYSTEM

UNIVERSAL HipFast system

Installation

1 Lay roof underlay and battens in the normal manner, leaving a 5mm continuous gap in underlay either side of hip rafter if roof void is to be ventilated to recommendations of BS 5250. Mitre cut the ends of tiling battens and support on hip rafter (Fig. 54).

If rigid sarking is used, finish the board at side of hip rafter (allow a 5mm continuous gap either side of the hip rafter if the roof void is to be ventilated).

2 Fix Hip Batten Brackets to hip rafter using nails provided (4 No. per bracket).

Ensure first Bracket is fixed as close as possible to base of the hip rafter and topmost Bracket no more than 100mm from hip/ridge apex. When fixing with Plain tiles, tiling battens will require trimming back from hip rafter, locally, to provide space for fitting hip brackets (Fig. 55). Support any batten ends with noggins.

Fix remaining batten brackets equally over the length of the hip, at maximum 600mm centres.

Batten Brackets can be fitted at a choice of two heights achieved by bending bracket legs inwards along the appropriate diagonal line of holes, (see page 79).

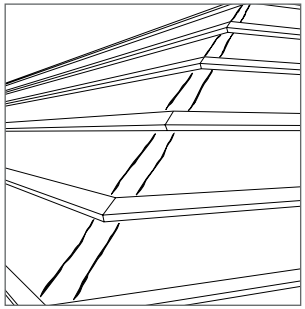


Fig. 54 – Neatly mitre battens

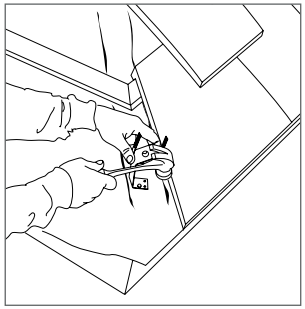


Fig. 55 – Fixing hip batten brackets

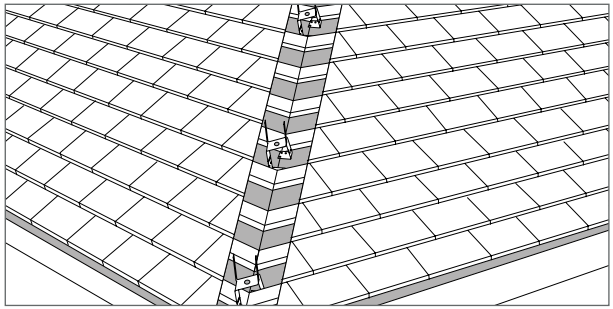


Fig. 56 – Lay tile to hip with raking cut

3 Tile roof leaving a gap of 80mm between raking cut tiles laid adjacent to hip rafter (Fig. 56). Ensure all raking cut tiles are fully supported on the battens and if not, provide suitable packers to prevent tiles from rocking.

4 Ensure that tile-and-a-halfs are used on all courses adjacent to the hip, in order to minimise small cut pieces

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL HIPFAST SYSTEM

UNIVERSAL HipFast system

Ensure that tile-and-a-halfs are used on all courses adjacent to the hip, in order to minimise small cut pieces.

5 Secure either one or two thicknesses of 50mm x 25mm tiling batten to the top of Batten Brackets, parallel to hip rafter, by folding over Batten Bracket arms and nailing through perforations into the battens using nails provided (Fig. 57).

Where two battens are needed, ensure lowest is screwed to upper batten before locating into Batten Brackets, with any joints in hip battens made over Batten Brackets to ensure both ends are fixed.

Note: To establish if one or two batten thicknesses are required, place a hip tile over the hip junction at the highest point of the tiling and assess the space remaining between the top of the batten bracket and the underside of the hip tile. Install two battens where two battens locate without fouling the hip tile.

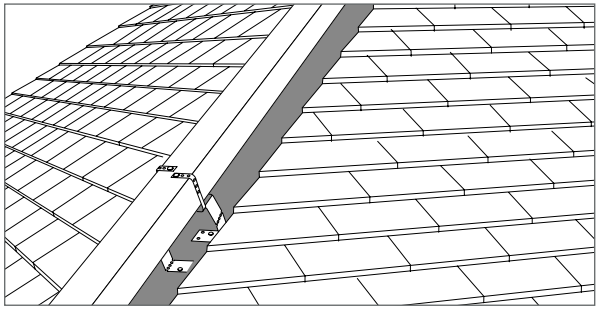


Fig. 57 – Fixing hip batten

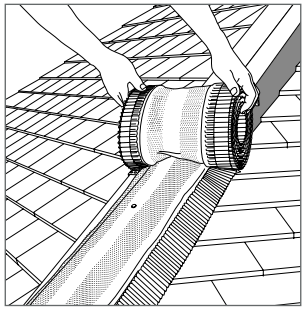


Fig. 58 – Roll out HipFast roll

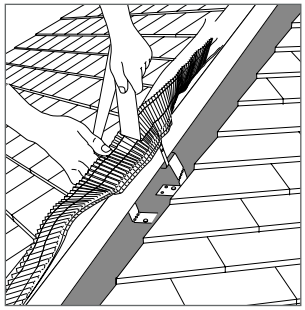


Fig. 59 – Remove backing tape

6 Starting from eaves, roll out HipFast roll centrally over hip rafter battens, and secure in position using well spaced felt nails, leaving a distance of 100mm to oversail the hip/ridge apex. Joints along hip should be lapped by 100mm to drain water down roof (Fig. 58).

7 Wash off any surface dust on raking cut tiles with brush and water and allow to dry thoroughly prior to sticking down the HipFast Roll.

Remove backing tape covering both mastic strips from underside of the roll (Fig. 59). Press adhesive strips on both sides of hip firmly onto tiles below to ensure a continuous seal along length of both sides of hip.

Both sides should be dressed down together to ensure edge of roll is kept aligned. Avoid stretching HipFast Roll during fitting.

UNIVERSAL HipFast system

8 In all applications it is recommended that Hipfast support trays (34002) be used. These are designed to ensure the correct support and alignment of hip tiles. Cut a HipFast Hip Support Tray to suit angle and overhang of tiles at eaves (Fig. 60).

9 Fit a clay third round hip end tight against eaves tiles and trim the Block End if required. Fix Block End Hip tile through HipFast Hip Support Tray to hip batten using 75mm x 4.8mm screw and sealing washer provided. Tighten securely to ensure a firm seal (Fig. 61).

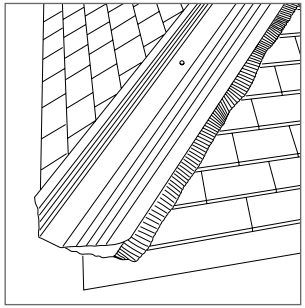


Fig. 60 – HipFast support tray cut at eaves

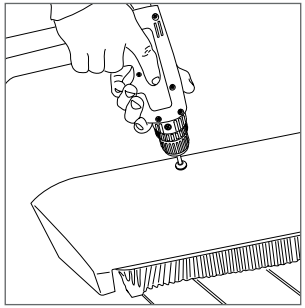


Fig. 61 – Fixing Third Round End Hip tile

10 Select a hip union, union clamp and 75 x 4.8mm screw. Fit a union clamp into the central slot in the hip union and offer up the assembly into the open end of the hip tile so that it is trapped between the clamp and the union flange. Where the ends on the union overlap the edges of the hip tile, cut off or fold inward the excess length along the crease lines at either end (Fig. 62).

When the union clamp is fully engaged in the hip union, it may create an interference fit with the sub-structure. In this case, the protruding length of the clamp can be snapped off below the hip union flange.

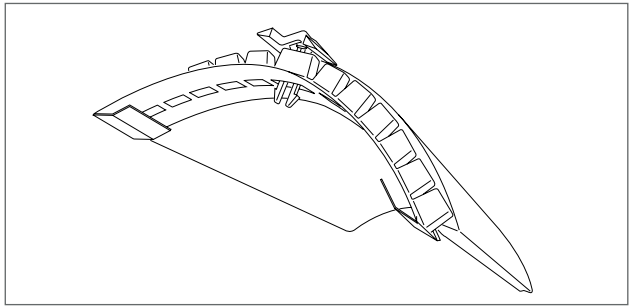


Fig. 62 – Fold in union tabs to suit capping

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL HIPFAST SYSTEM

UNIVERSAL HipFast system

11 Position next Hip tile into open side of Hip Union and Clamp assembly. Continue process of laying support trays (centrally along hip tree at 100mm overlap), hip tiles, unions and clamps ensuring that all tiles are aligned. Ensure screws are tightened well and the edges of the Hip tiles sit evenly on Hip Support Trays (Fig. 63).

12 At apex, ensure final Hip tile is a full length unit, with any adjustments to suit the length of hip taken up by cutting the adjacent one or two Hip tiles.

Top Hip tile should be mitred into other Hip and Ridge tiles. The hip support tray should also be mitred at internal angle.

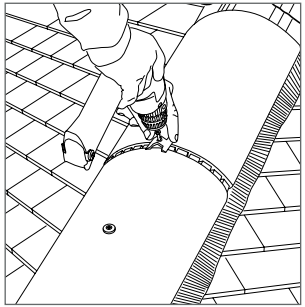


Fig. 63 – Fixing Hip Unions

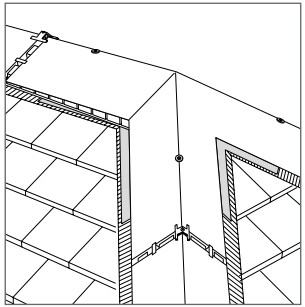


Fig. 64 – Weathering of hip/ridge junction with lead soaker

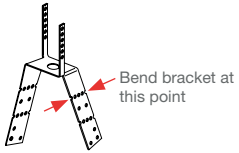
13 Secure the mitred end of the top Hip tile by drilling a 6mm dia. hole centrally through the tile, approx. 125mm down from the apex, using a specialist drill bit for clay plain tiles. Fix the Hip tile to the hip battens using a screw with washer provided and weather all mitre joints using a Code 4 lead saddle or soaker (Fig. 64).

14 Where Marley Eternit RidgeFast is also being used and the hip tiles are the same as the ridge tiles, a Tapered Filler unit must be fitted beneath both edges of the end ridge tile to ensure a close fitting mitre can be achieved at the apex (Fig. 65).

When using plain tiles, the Fillers are trapped between the Ridge Roll and the bottom edges of the ridge tile, with the deeper end toward the hip.

HipFast batten bracket setting for clay plain tiles

Low level bracket setting (bend along top row of diagonal holes).



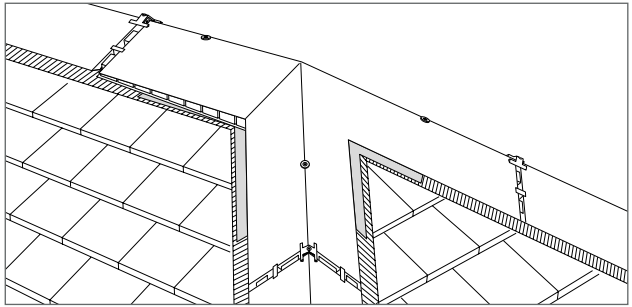
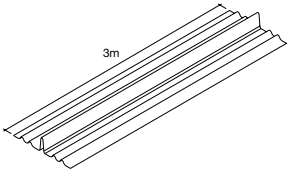


Fig. 65 – Weathering of hip/ridge junction with soaker

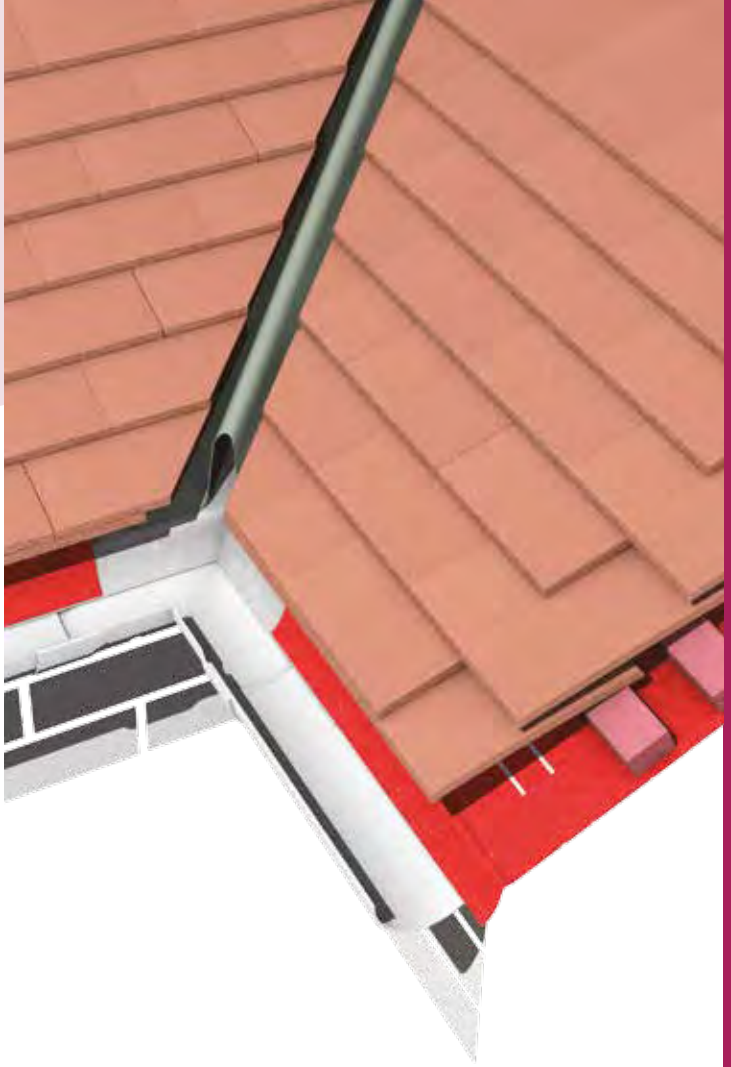
UNIVERSAL dry valley system

Developed to allow the designer freedom to specify a completely mortar-free roof, this system utilises the latest GRP technology. The advanced and unique gutter section improves discharge rates and gives the appearance of a close-cut finish.

Components



Low profile GRP valley
(30422)



DRY FIX & VENTILATION SYSTEMS | UNIVERSAL DRY VALLEY

UNIVERSAL dry valley system

1 In all cases, valley boards should be fitted. Valley boards may be inset or continuous over the rafters. Where they are inset, they should be a minimum of 12mm thick and supported on bearers or noggins of 50 x 25mm or similar and set at a depth to suit the thickness of the valley board (Fig. 66).

2 Continuous overlaid boards should be minimum of 6mm thick plywood and only butt jointed over a supporting rafter (Fig. 67).

3 The width of the valley boards should extend by a minimum of 50mm beyond the edge of the valley trough. For overlaid boards on rafter spacings above 450mm, it is recommended that support noggins of 75 x 50mm are fixed under the outer edge of the valley board between the rafters (Fig. 68).

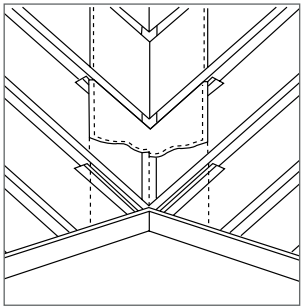


Fig .66 – Construction of valley boards

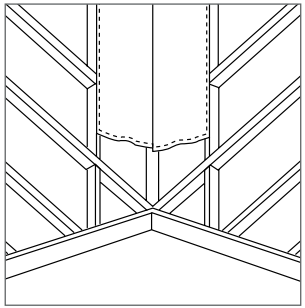


Fig. 67 – Butt joint valley boards over supporting rafters

The fascia or barge board may be trimmed to allow the valley trough to pass through without flattening the profile, or alternatively a lead soaker may be used if required.

Lining the valley

4 A single strip of roofing underlay, at least the full width (500mm) of the valley boards, should be laid up the centre and directly on top of the boards allowing for an overlap beyond the fascia line where appropriate and which may be trimmed later (Fig. 69).

Fixing the valley trough

5 Fix dry valley trough by nailing outer welts to supporting timbers at 500mm max, centres, and overlapping lead (Code 4) apron by a minimum of 150-200mm (Fig. 70, page 84).

Lay roof underlay to overlap valley trough and trim between outer and inner welts. Trim tiling. Battens to lap on to outer welt and nail to supporting timbers.

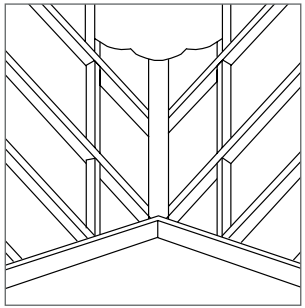


Fig. 68 – Use of support noggins

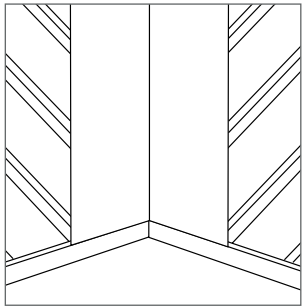


Fig. 69 – Lining the valley

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL DRY VALLEY

UNIVERSAL dry valley system

6 Where a lead soaker is to be used at the foot of the valley, i.e. where the dry valley terminates above eaves level or where an eaves intersects with a verge or it is not appropriate to notch the fascia boards, the soaker should be welted at the edge and supported with suitable timber work. The valley trough should be trimmed to suit before fixing if necessary.

Laying raking cut tiles to valley trough

7 Cut tile-and-a-half tiles neatly to butt closely to central upstand of valley trough, and to avoid small cut pieces.

8 Fill any small voids in the upstand of the valley trough with a suitable mastic.

Valley intersections

9 Where a section of dry valley intersects with another section of dry valley e.g. at the roof apex of a dormer roof or where one or more sections intersect with the ridge of a roof, it is necessary to mark the angle of intersection and cut the valley trough prior to fixing.

A minimum Code 4 lead saddle should then be dressed over the mitred sections of the dry valley(s) and ridge if necessary. The length of the overlap of the saddle onto the dry valley should be in accordance with LSA guidance. Alternatively, the lead saddle may be dressed over the slates or tiles.

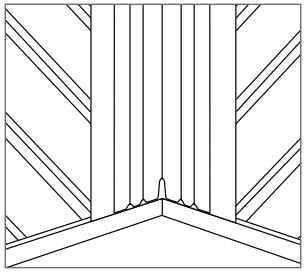


Fig. 70 – Fixing the valley trough

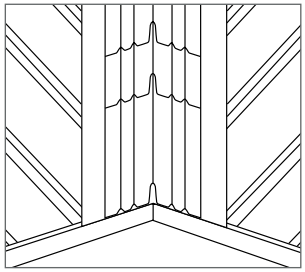


Fig 71 – Valleys terminating above eaves level

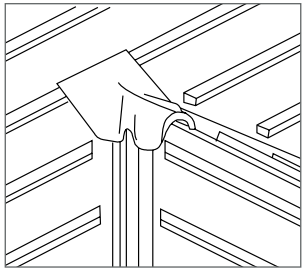


Fig 72 – Mid-slope valley intersection

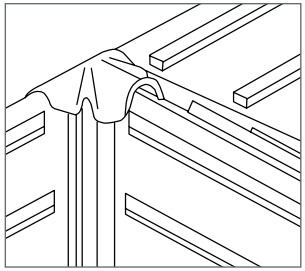


Fig 73 – Roof apex level valley intersection

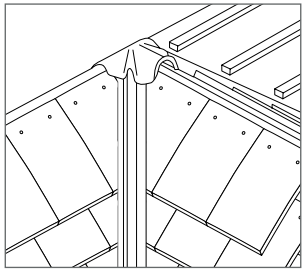
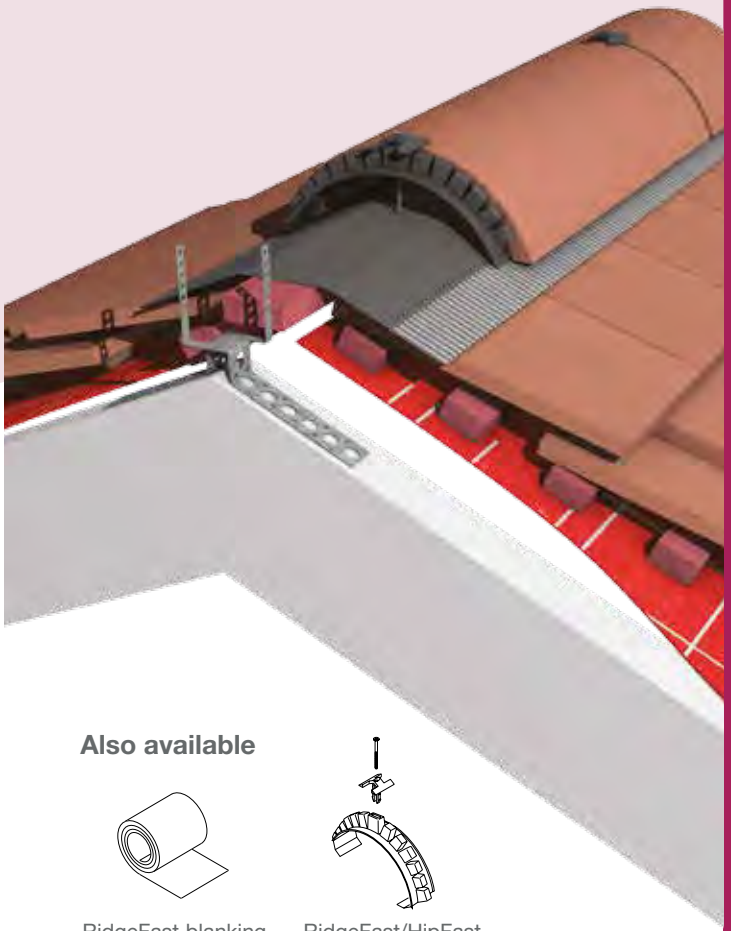


Fig 74 – Cut tiles to rake of valley

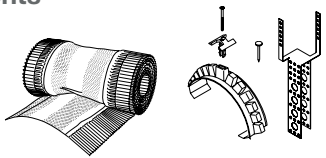
DRY FIX & VENTILATION SYSTEMS | UNIVERSAL DRY VALLEY

UNIVERSAL
RidgeFast system

RidgeFast is a simple and rapidly installed, dry fixed ridge ventilation system suitable for all duo- pitch roofs using all Marley Eternit tile and slate profiles, as well as those of other manufacturers.



Components



Universal 6m RidgeFast system
(code 33000)

Kit contains: No. 6m length hip roll, 10 No. batten brackets, 13 No. ridge unions, 13 No. ridge union clamps, 13 No. 75mm x 4.8mm s/s screws, 40 No. 25mm x 2.65mm s/s ARS nails

Also available

RidgeFast blanking tape (optional)
(code 33001)

RidgeFast/HipFast union pack
(code 53303)
6 unions supplied in pack

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL RIDGEFAST SYSTEM

UNIVERSAL RidgeFast system

Installation

1 Lay the roof underlay and battens in the normal manner leaving a minimum 5mm continuous gap in underlay at roof apex (refer to BS 5250 recommendations for specific advice) (Fig. 75).

Before fixing top course tiling batten, fix ridge batten brackets to each rafter, centrally about ridge apex, using the 25mm x 2.65mm dia./s ring shank nails supplied.

Note: Where a ridge tree is in place, a ridge batten bracket may not be required. In this case the ridge tree may be raised in height by fixing appropriately sized lengths of timber centrally to ridge tree.

To achieve required height of ridge batten bracket, legs of bracket need to lie parallel to rafters bent at a position where they will provide a minimum 20mm penetration of the ridge screw into a 25mm thick ridge batten.

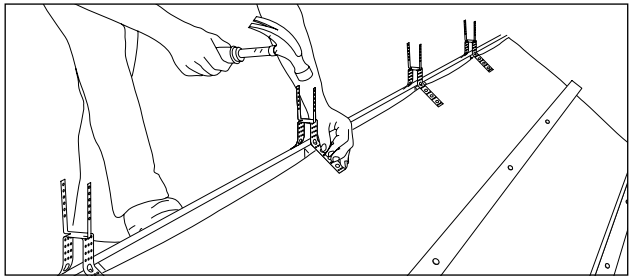


Fig. 75

To establish the appropriate point at which to bend legs of ridge batten bracket and depth of ridge batten (1 or 2 tiling battens), Temporarily secure a short length of top course tiling batten and loose lay top course tiles either side of ridge. Position a ridge tile centrally onto roof tiles. By offering up a ridge batten bracket to the side of ridge tile bend point and batten thickness can be assessed so that minimum 20mm screw penetration is achieved.

For further clarification please contact Marley Eternit Technical Advisory Service.

2 Fix the top course tiling battens into position, over the ridge batten brackets, leaving approximately 45mm between the rafter apex and the tiling batten to ensure 75mm of ridge tile overlap (Fig. 76).

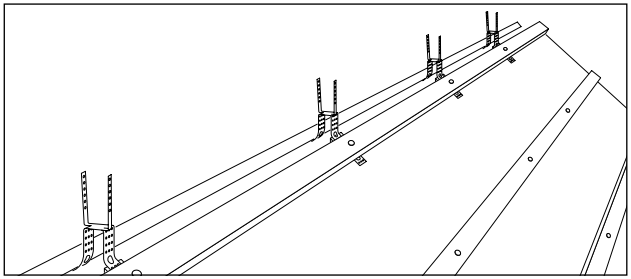


Fig. 76

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL RIDGEFAST SYSTEM

UNIVERSAL RidgeFast system

3 Place the ridge batten(s) along length of ridge between the perforated straps of ridge batten brackets. Bend over the straps and nail each securely to the ridge batten using the nails supplied. Joints in ridge batten should be made half way across a ridge batten bracket to ensure the ends are secured (Fig. 77).

It is recommended that ridge batten is finished at either end of ridge a little beyond the outer edge of gable end tiles. This will allow for trimming back in accordance with requirements of the chosen ridge end treatment. Where a bedded verge or ridge is used, the ridge batten should be cut back by 100mm from the face of mortar.

With the ridge batten(s) secured to the ridge batten brackets at each rafter, lay and fix the roof tiles in the normal manner.

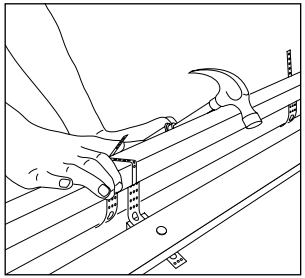


Fig. 77

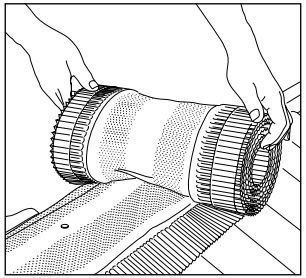


Fig. 78

4 Unroll RidgeFast roll centrally along entire length of ridge batten (Fig. 78) and fix at approximately 2 metre centres to ridge batten using felt nails. Overlap roll ends by 100mm at each joint. At gable ends, roll should be able to lap over the edge of gable tile/verge finish by approximately 50mm (where a bedded verge is used it should be cut back by 50mm).

5 Remove release paper covering mastic strip on underside of corrugations on both sides of roll.

Ensure area of top course tiles to which RidgeFast roll is to be adhered is dry and clean before proceeding (Fig. 79).

6 Firmly press corrugations onto tiles on both sides along length of the ridge (Fig. 80).

7 Lay first ridge tile/stop end ridge, in correct relative position to gable end and secure to ridge batten, either directly through ridge tile with appropriate fixing, or through ridge end cap.

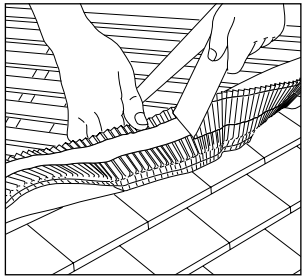


Fig. 79

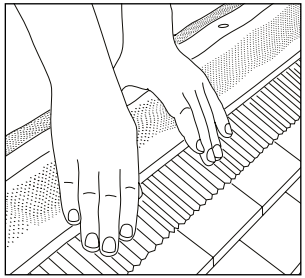


Fig. 80

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL RIDGEFAST SYSTEM

UNIVERSAL RidgeFast system

Select a ridge union, a union clamp and 75mm x 4.8mm s/s screw. Fit a union clamp into the central slot in the ridge union and offer up the assembly into the open end of the ridge tile so that it is trapped between the clamp and the union flange. Ensure it is centrally aligned with the ridge batten. Where the ends of the union overlap the edges of the ridge tile, cut off or fold inward, the excess length along the crease lines at either end (see Fig. 81). Engage the next ridge tile so that it is trapped between the union clamp and ridge union flange.

8 When the union clamp is fully engaged in the ridge union, it may create an interference fit with the sub-structure. In this case, the protruding length of the clamp can be snapped off or folded below the ridge union flange (Fig. 82).

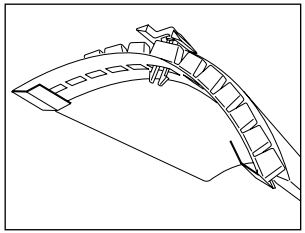


Fig. 81 – Union tabs folded

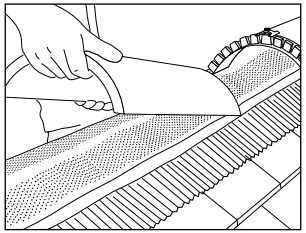


Fig. 82

9 Push ridge tile firmly into position and secure ridge union assembly to ridge batten by fixing screw through hole in union clamp using a pozidrive No.2 screw bit (Fig. 83).

10 Repeat this process along ridge line, ensuring screws are not over-tightened. The ridge line should be finished with a full-length ridge tile. The minimum length of any cut ridge tile should be no less than 250mm (Fig. 84).

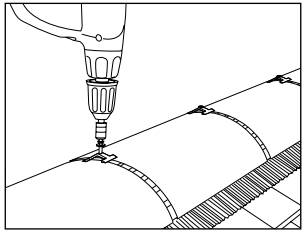


Fig. 83

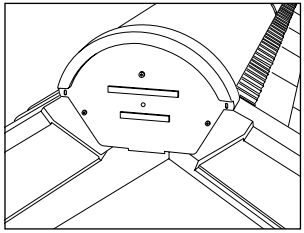


Fig. 84

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL RIDGEFAST SYSTEM

UNIVERSAL RidgeFast system

Ridge Abutments

At an abutment, ensure the RidgeFast roll is turned up the wall by 75mm, with the end ridge tile drilled and screw fixed. A Code 4/5 lead saddle should be fitted over the ridge tile in accordance with LSA recommendations.

Junctions

At ridge/hip junctions, the ridge batten should be cut 50mm beyond the apex of the hip rafters and the ridge. Turn down the RidgeFast roll over the top of the roof tiles on the hip end by 75mm. A code 4/5 lead saddle should be fitted between the RidgeFast roll and the ridge/hip tiles, with a welt formed along the edges under the ridge and hip tiles. The end ridge tile should be cut to a neat mitre with the hip tiles mechanically fixed (see gable end fixing).

Where an ‘L shaped’ junction occurs, ensure that the RidgeFast roll is lapped prior to the lead saddle being fitted. Form a welt along the edges of the lead saddle where it is fitted under the ridge and hip tiles. Mitre cut the end ridge tiles prior to fixing with screws and washers.

Where a ‘T shaped’ ridge junction occurs, or where a dormer ridge intersects the main roof, the Ridgefast construction should not cross the valley. A lead saddle (Code 4/5) should be fitted prior to the roof tiles being laid. The Ridgefast roll should be rolled out along the head of the T shape, with the corrugated edge stuck to the surface of the lead saddle (Code 4/5). The Ridgefast roll on the leg of the ‘T’ shaped junction or dormer intersection, should finish 50mm back from the face of any mortar bedding. The end ridge tile should be mechanically fixed.

DRY FIX & VENTILATION SYSTEMS | UNIVERSAL RIDGEFAST SYSTEM

Individual dry soakers

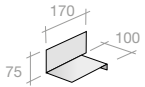
The Marley Eternit range of individual dry soakers are an easy to install, lightweight and highly affordable way to reduce both the material and labour costs associated with lead at side abutments.

Manufactured from a high density and high performance polypropylene, the dry soaker range offers excellent thermal stability, and resistance to UV light, acid rain and cracking under temperature change.

For full details on the use of lead soakers and weatherings, please see pages 18-19.



Components



Clay or concrete plain tiles dry soaker
(Left hand code MA30478)
(Right hand code MA30479)

DRY FIX & VENTILATION SYSTEMS | INDIVIDUAL DRY SOAKERS

Individual dry soakers

General installation

1 Lay the roofing underlay and turn up against the abutment by 100mm

2 Fit battens leaving a small gap to the abutment.

Clay or concrete plain tiles

1 Plain tile soakers are laid on top of each consecutive abutment tile with the 90° turndown locating over the head of the tile, the weight of the following courses of tiles keeping the soaker in position against the abutment.

2 The 75mm upstand can be covered using a traditional lead flashing.

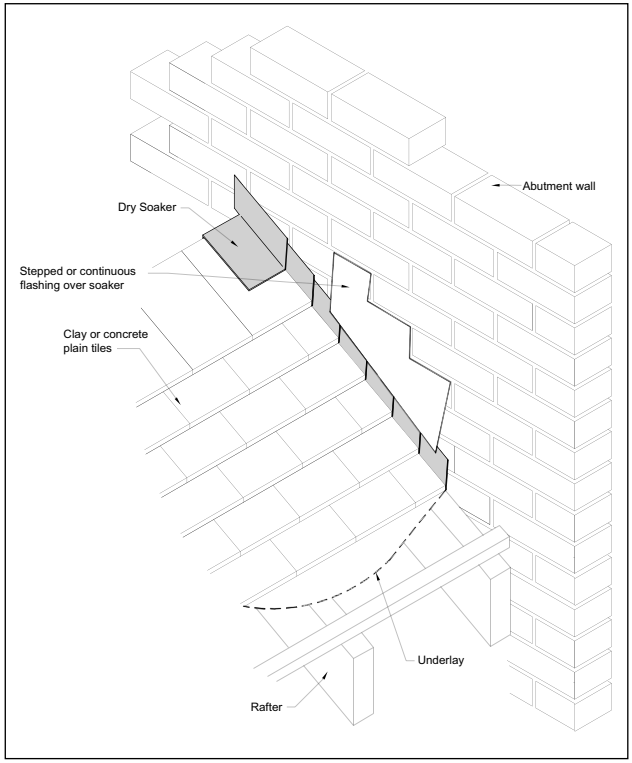


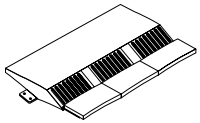
Fig 85– Clay or concrete plain tile abutment with dry fix soakers

DRY FIX & VENTILATION SYSTEMS | INDIVIDUAL DRY SOAKERS

Clay in-line vent terminal

Available in a range of bases with real clay tile slips on the visible edge (3 tiles wide). The clay tile vent provides a net ventilation area of 7,500mm^2 per vent. Suitable for natural, mechanical or soil pipe ventilation.

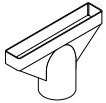
Components



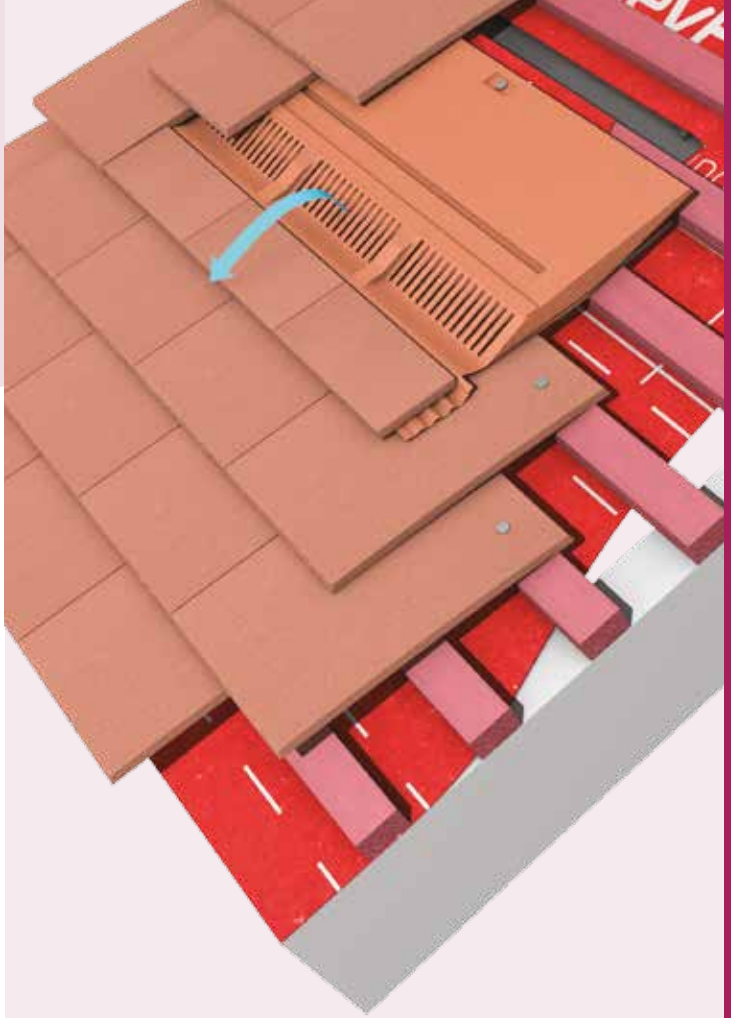
Clay in-line vent terminal



Flexible pipe
(sold separately)
(code 39091)



Clay in-line vent adaptor
(sold separately)



DRY FIX & VENTILATION SYSTEMS | CLAY IN-LINE VENT TERMINAL

Clay in-line vent terminal

Installation

1 Fix the roof underlay, batten and tile in the normal manner.

2 At the position the ventilator is required, align the throat between two tile battens, and mark the throat position before cutting through the underlay as shown (Fig. 86).

3 Fold the three flaps upwards and outwards to provide the hole for the ventilator throat (Fig. 86).

4 Make a second horizontal cut 340mm wide in the underlay between the next two battens directly above the opening already created. Slide the underlay protector unit through the horizontal cut as shown (Fig. 87).

5 Insert the ventilator throat though the hole in the underlay into the roof space and position ventilator onto surrounding tiles. Fix to tile batten by the two side flanges using two nails ensuring half bond is maintained. Positive fixing is required to prevent the ventilator lifting when fitting pipe adaptor.

6 Continue tiling in the normal manner (Fig. 88).

7 For soil venting or mechanical extraction, attach pipe adaptor and flexible pipe (supplied separately) after installation of the ventilator.

Note: The ventilator is not suitable for the extraction of hot combustion gases.

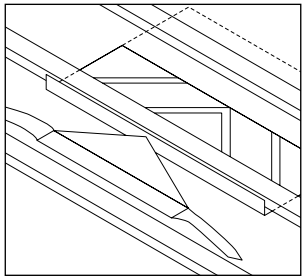


Fig. 86 – Mark throat position and cut underlay

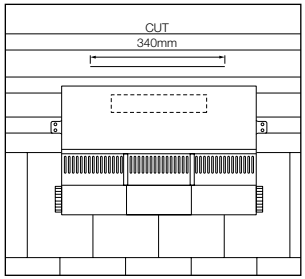


Fig. 87 – Position and fix in-line vent unit

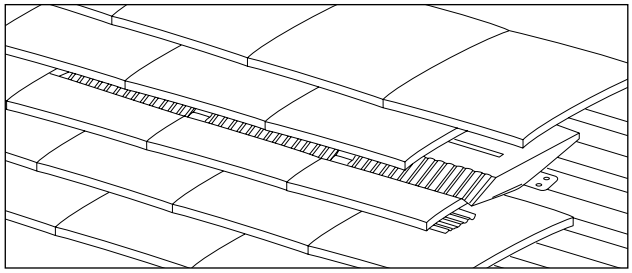


Fig. 88 – Continue tiling

DRY FIX & VENTILATION SYSTEMS | CLAY IN-LINE VENT TERMINAL

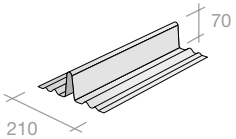
Bonding gutters

Mortar-free, BS 5534 compliant weather-tight joins between dissimilar roof coverings.

Dry Fix Bonding Gutters are manufactured from GRP (Glass Reinforced Polyester). The Dry Fix Bonding Gutter eliminates the requirement for mortar altogether.



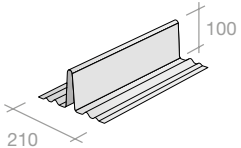
Components



Low profile bonding gutter

(code MA40470)

The MA40470 is 210mm wide and manufactured to a length of 3m with a central upstand height of 70mm to suit slates, flat interlocking tiles and plain tiles.



High profile bonding gutter

(code MA40471)

The MA40471 is also 210mm wide and manufactured to a length of 3m with a central upstand height of 100mm to suit profiled tiles on one or both sides and also typical Scottish practice where there may be tiling battens on one side only.

DRY FIX & VENTILATION SYSTEMS | BONDING GUTTERS

Bonding gutters

Preparation

The Dry Fix Bonding Gutter is designed to fix directly over the tiling or slating battens of both new and adjacent roof or over the underlay and directly into the sarking boards in a fully boarded roof, typical of Scottish practice.

Any battens and underlay on the adjacent roof should be checked for condition and if necessary renewed back to the nearest appropriate rafter, any defective nails should be replaced.

Positioning

The Dry Fix Bonding Gutter should be placed to allow the slate or tile bond to be maintained and using either a replacement tile and a half or wider slate, as required.

Where the tile nibs may interfere with the bonding gutter profile, they should be removed and each tile mechanically fixed. Where standard fixings cannot be used, use either 'C' clips or secret cut tile clips (available separately).

Installation (Figs. 89 and 90)

1 Before installing the Dry Fix Bonding Gutter, mark the centre line of its intended position onto the roof and then remove the slates or tiles for cutting.

2 With the slates or tiles removed, install the bonding gutter to the established centre line between the old and new roof, commencing at the eaves.

3 Allowing for a 50mm overhang of the Dry Fix Bonding Gutter into the rainwater gutter, the central upstand should be pinched together before fixing with nails of acceptable quality through the outer flanges and into the battens on both sides and at 500mm centres maximum.

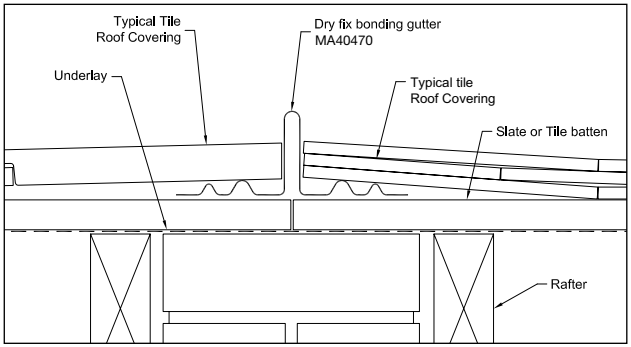


Fig. 89 – Typical standard installation showing low profiled interlocking tiles abutting slates, using MA40470

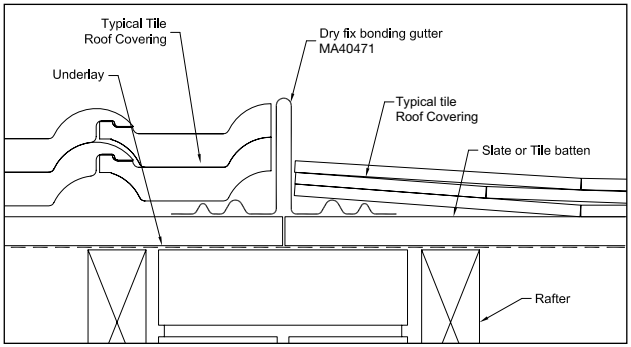


Fig. 90 – Typical standard installation showing high profiled interlocking tiles abutting slates, using MA40471

DRY FIX & VENTILATION SYSTEMS | BONDING GUTTERS

Bonding gutters

4 When joining lengths of Dry Fix Bonding Gutter use the minimum lengths of overlap as follows:

Roof pitch	> 39°	30-39°
Overlap	150mm	200mm

5 The slates or tiles, when fitted onto the Dry Fix Bonding Gutter, should be close or touching the central upstand on both sides but with care taken to avoid any pressure or distortion and maintain the straight line appearance of the profile.

6 When nailing the slates or tiles, care should be taken to avoid nailing into or between the water channels.

7 At the ridge, fit a minimum code 4 lead saddle over the apex of the roof and dressed over the Dry Fix Bonding Gutter. The length of overlap of the saddle onto the Dry Fix Bonding Gutter should be in accordance with the overlap lengths given previously.

Ridge tiles, whether dry fixed or mortar bedded, are fitted in the normal manner.

Fire break installations (Fig. 91)

1 When creating a fire break installation, e.g. at a party wall, the battens should be cut to allow a smooth trowelled mortar barrier to be built up off the wall and finished level with the top of the slating or tiling battens.

2 When dealing with an existing fire break detail, any loose mortar should be removed and the mortar barrier reinstated, ensuring it is brought up to the level of the battens.

3 The underlay on both sides of the mortar barrier should be folded back over the battens before nailing the Dry Fix Bonding Gutter into position and proceeding with the installation as previously described.

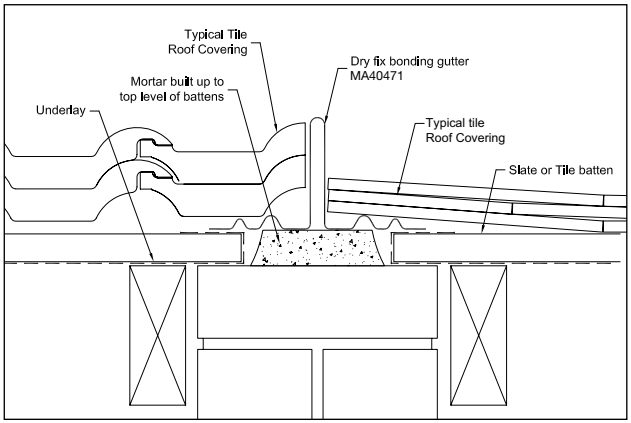


Fig. 91 – Typical firebreak installation showing high profiled interlocking tiles abutting slates, using MA40471

Resources



Technical advice

Our Technical Advisory Service is staffed by a qualified team with specialist knowledge.
Tel 01283 722588
E-mail info@marleyeternit.co.uk



Stockist information

To find details for stockists of Marley Eternit products, visit: **marleyeternit.co.uk/stockists**



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Samples

Samples of clay interlocking and plain tiles, fibre cement slates and concrete tiles are available on request.
Tel 01283 722588
marleyeternit.co.uk/samples



Sales support

Our Area Sales Managers have in-depth knowledge of your local area. They are available to visit your site to carry out a roof survey, and to offer specific solutions for both new build and refurbishment projects.
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Training centre

We have a purpose-built training centre where we are able to impart our expertise through a range of practical and classroom courses. To find out more about our courses, visit: **marleyeternit.co.uk/training**



Health and safety

In line with the requirements of the Health and Safety at Work Act, The Consumer Protection Act and The Chemicals (Hazard Information and Packaging for Supply) Regulations and the Control of Substances Hazardous to Health Regulations, **please view or download copies of our COSHH data sheets at marleyeternit.co.uk/coshh**



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