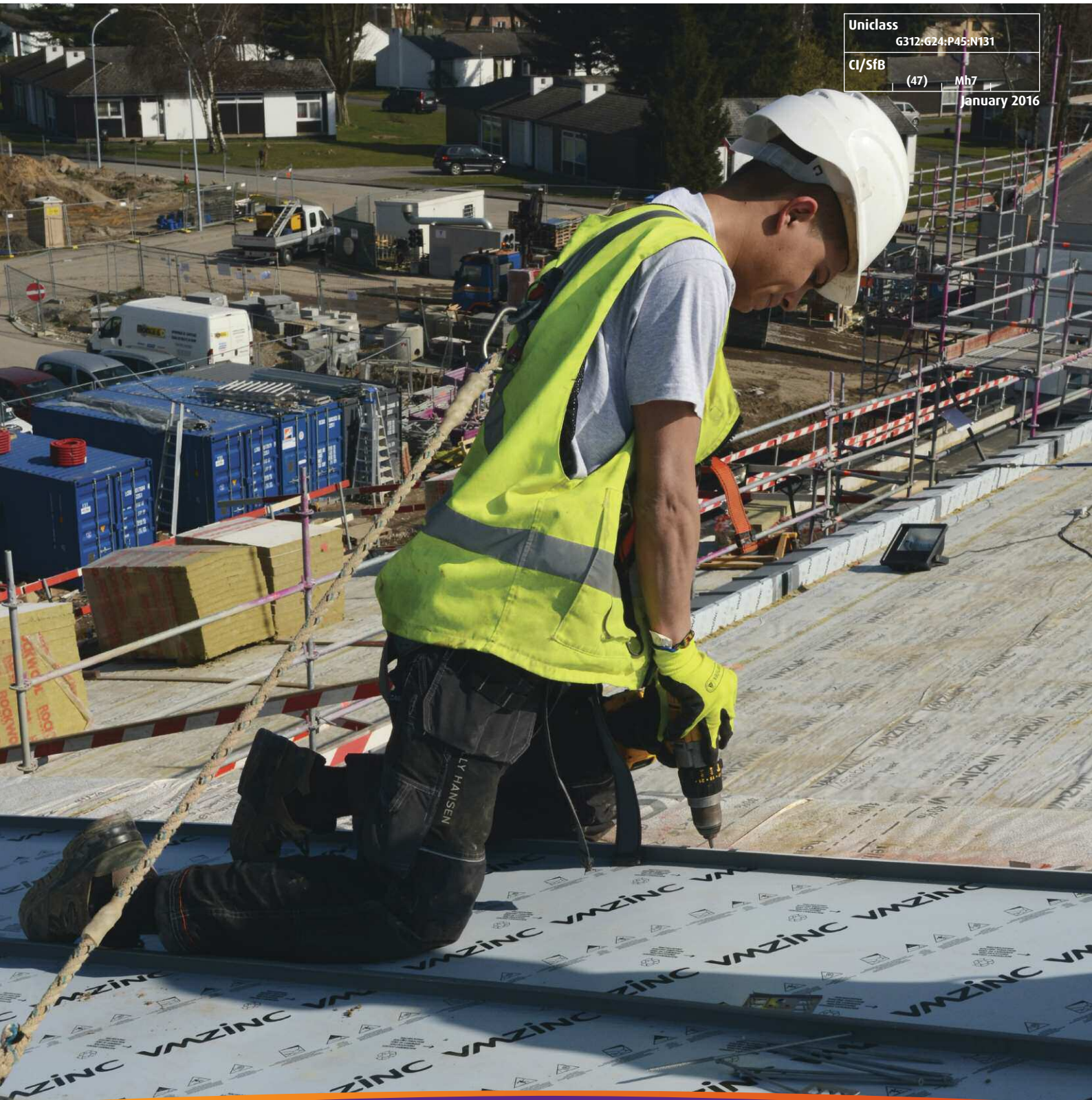


VMZ Standing seam installation guide

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Contents



Company profile and background to zinc

VMZINC® manufactures a wide range of rolled zinc products for use in construction and has almost two centuries of experience. In addition to the standing seam system, products include rainwater systems, cladding systems and decorative roofing products such as dormers, bull's eyes, weather vanes, finials and balustrades. VMZINC is part of the Umicore Group which has worldwide interests in precious metal services, recycling of non-ferrous metals, and catalyst technologies for the automotive industry. It also manufactures substrates for photovoltaics and LEDs, materials for photonics and lenses, and optical assemblies for night vision applications.

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Zinc is among the most sustainable metals used in construction today and has been used on the roofs of Paris for almost 200 years. VMZINC roof, wall and rainwater systems are also highly cost-effective, both from an initial procurement and design life perspective. Whether for new build or refurbishment, the VMZINC systems have been designed to complement a wide range of building materials and styles.

The finishes available offer exceptional colour stability. This ensures that maintenance requirements will be minimal throughout the system's design life and that the material's installed appearance will be retained for many years.

VMZINC can be used for warm or cold roof constructions as well as rainscreen facades. Some of its many benefits are listed opposite.



Introduction to VMZINC

This guide This installation guide is designed to give contractors information about the use and detailing of VMZINC, clarifying the limits of the material with specific regard to correct detailing. This guide should be read and used in conjunction with other VMZINC documents including:

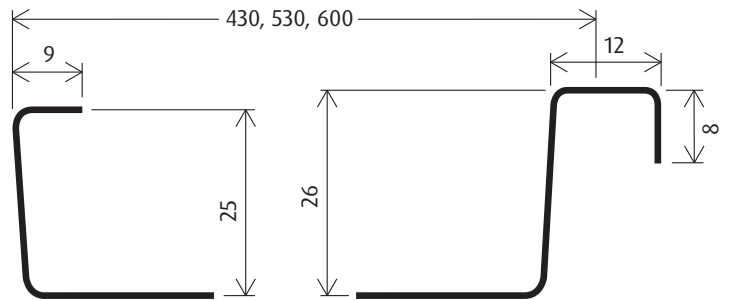
- VMZINC General Technical Recommendations
- VMZINC Standing Seam Guidelines for Design & Specification
- VMZINC Soldering
- VMZ Standing Seam G3 Installation Guide
- VMZINC Facades Guidelines for Design & Specification
- VMZ Rainwater Systems Guidelines for Design & Installation

These documents address substrate requirements, compatibility with other products and material aesthetics as well as many other subjects.

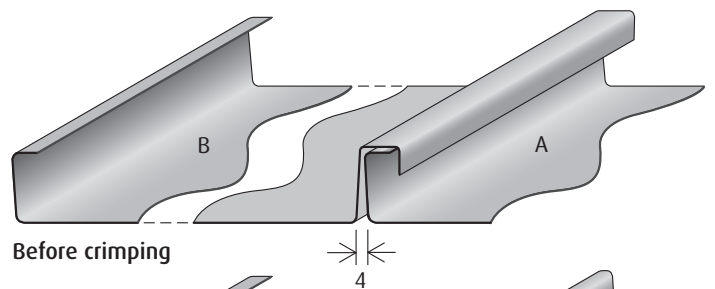
Benefits of the VMZINC systems

- Lightweight and durable
- Minimal expansion and creak
- Fully recyclable
- A design life of 80 years
- Virtually maintenance-free
- Can be installed on pitches from 3°-90°
- Complex shapes can be easily achieved. Zinc panels can be pre-curved to a radius as low as 600mm
- Can be used to cover soffits (box gutter overhangs, etc)
- BRE Green Guide certified
- BBA certified
- Conforms to EN 988
- Can be laid in lengths up to 13 metres without the need for expansion steps
- Fire performance rating 'AA' - BS 476: Part 3 ('low vulnerability' class in Scotland)
- VMZINC has a fire classification of A2-s1, d0 in accordance with EN 13501-1 2002
- Available in a choice of natural finish, 6 pre-weathered finishes, and an engraved finish

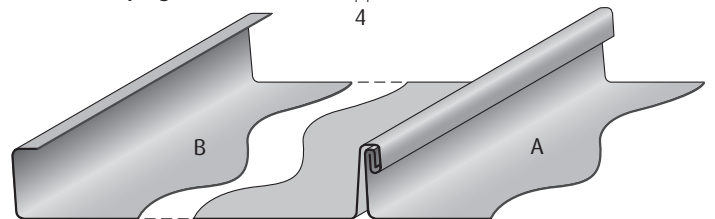
Underlying principles of the standing seam system



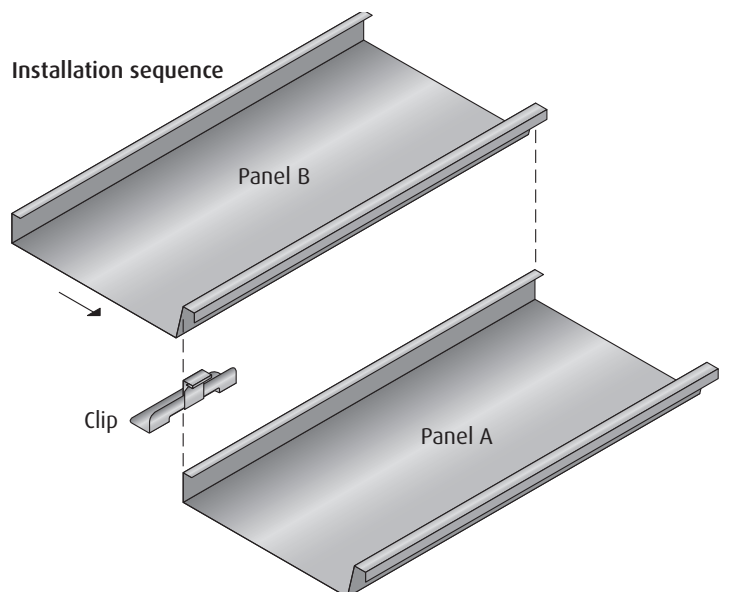
Panel dimensions (mm)



Before crimping



After crimping (double lock standing seam)



Installation sequence

1. Position panel A
2. Engage clips to upstand of panel A and screw fix to substrate
3. Engage edge of panel B over clip
4. Crimp all 3 components together to form double lock standing seam

Surface finishes

Please contact us
for
samples

Natural VMZINC® Natural VMZINC has a shiny metallic appearance when new and develops a patina over time. In facade applications, it may take 10 years for the matt grey patina to form. It can be quickly soldered without removing the patina.

QUARTZ-ZINC® QUARTZ-ZINC offers an appearance and texture that does not change over time. When QUARTZ-ZINC is scratched, it will self heal. The grey tones of QUARTZ-ZINC blend well with existing construction materials – ideal for refurbishment.

ANTHRA-ZINC® ANTHRA-ZINC with its visible grain matches the colour of slate and blends well in combination with photovoltaic panels.

AZENGAR®
New AZENGAR is the new surface finish from VMZINC which is the first engraved zinc giving a product with a matt, heterogeneous and light aspect. AZENGAR can be used in the same fashion as other VMZINC products for both roofs and facades.

PIGMENTO® PIGMENTO finishes offer a unique range of colours that enhances any building. This natural product enables the texture of the QUARTZ-ZINC to still be seen whilst offering the designer the choice of colour to complement other elements of a building's facade or roof.

The colouration of the zinc is achieved with a special pigment layer that enhances the qualities of the zinc without presenting a block colour. This product is tested to EN13523-10/2010 for UV-humidity and EN 15523-3/2001 for colour stability and requires minimum maintenance.

PIGMENTO, available in four standard colours, provides a special resilience in a marine environment and makes the removal of salt deposits easier than on the regular surfaces of other zinc finishes.



Warm and cold roof build-ups

Basic requirements

VMZINC must not only be installed according to our recommendations but also designed to them as well. VMZINC can be installed on non-vented warm roof build-ups as well as on vented cold roof build-ups. For standing seam build-ups a roof would have a slope of no more than 70° (Compact roof 60°); above this slope it should be considered wall cladding. All wall cladding should be ventilated. VMZINC will only give a warranty for recommended build-ups and details. The minimum slope for zinc roofs is 3° as built.

Definition of warm roof in the UK

Warm non-ventilated and cold ventilated roofs are two terms which do not always denote the same ideas to all building professionals. In order to put the warm non-ventilated roof system into context, we will refer to it as a roof where there is absolutely no vented space within the roof build-up and furthermore the entire roof structure is on the warm side of the insulation. In the UK this means that the roof structure is entirely below the insulation.

Fundamental elements of the system:

- VMZINC PLUS must be used on all warm roof build-ups
- VMZINC Membrane must be used (breather membrane)
- The substrate must be continuous and even and the correct fixing clips must be used
- A fully supported continuous vapour barrier must be installed (bitumen-backed aluminium foil). Polythene films are not acceptable
- For humidity class 5 (swimming pools) the Compact roof with Foamglas must be used. This build-up, as with the Structural roof, carries a BBA certificate



Definition of cold roof in the UK

In order to put the cold ventilated roof system into context, we will refer to it as a roof where there is a continuous air space of at least 50mm between the substrate supporting the zinc and the insulation. This air space must be a vented space with openings generally at the eaves and the ridge.

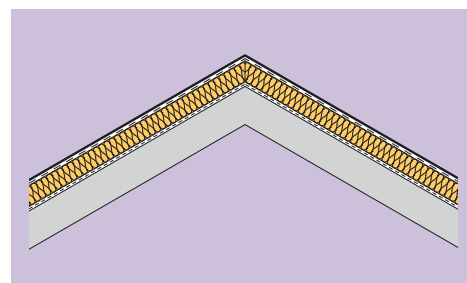
Hybrid roofs are not recommended by VMZINC and can result in the whole roof including the zinc failing.

Fundamental elements of the system:

- VMZINC PLUS must be used on plywood whereas VMZINC is acceptable on open-gap softwood boards
- VMZINC Membrane can be used to protect the insulation
- The substrate must be continuous and even, and the correct fixing clips must be used

Linear air vents must be at least 10mm wide and are commonly protected by insect mesh. It is always good practice to include a vapour control layer in the build-up and this should be installed on the warm side of the insulation. The system is covered by the Code of Practice 143-5: 1964.

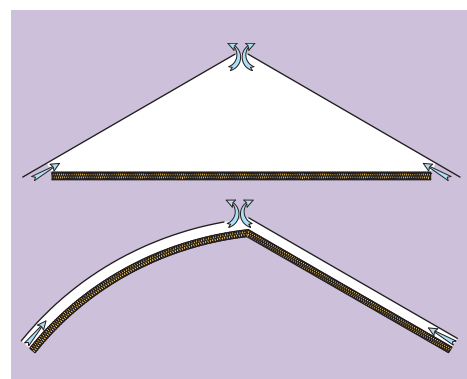
For further information please see our brochures on facades and the standing seam system



Warm Roof: Continuous layer of insulation covering a fully supported vapour barrier.



Result of using a hybrid roof.



Cold Roof: Air inlets and outlets are generally linear (at least 10mm wide) but can be individual. The ventilation must correspond to BS 5250: 2002.

Wall build-up

Basic requirements Fully supported traditional systems such as standing seam cladding are covered by Code of Practice 143-5:1964. Substrates should consist of 18mm plywood or soft wood open gap boarding and must be vented with a cavity at least 38mm deep. Air inlets and outlets with an open dimension of at least 10mm must be included at the base and head of the cladding. If the vents are covered with insect mesh the size of the opening must be increased accordingly. For warm wall build ups please consult us.

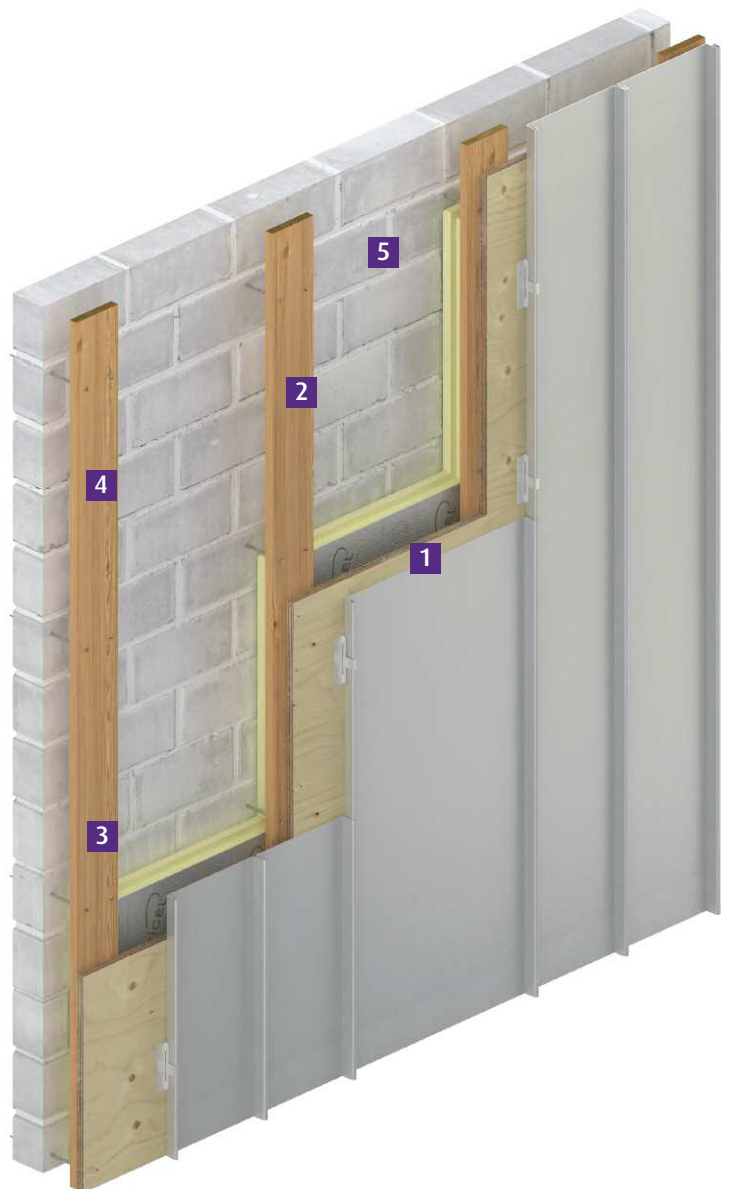
- Typical standing seam panel system construction**
- 1 VMZ standing seam panels in VMZINC PLUS
 - 2 Fixing clip
 - 3 18mm plywood
 - 4 Battens creating a vented 38mm airspace
 - 5 Insulation protected by VMZ Membrane

Fundamental elements of the system VMZINC PLUS must be used if fitted directly onto plywood. On vertical surfaces it is possible to use VMZINC and VMZ Membrane on plywood. VMZINC can be used on soft wood boarding.

In areas where impact risk is low the substrate does not have to be continuous but must allow for the clips to be securely fastened.

The use of a single lock seam is recommended for cladding as this allows the panels to sit flatter.

Panels should be fixed with 5 fixed clips placed at the top of vertical panels or the middle of horizontal panels, further clips should be sliding with all clips fixed as per the diagram on page 8.



Standing seam requirements

Panel size Standing seam roof panels can be up to 600mm wide, with 530mm and 430mm wide panels also being standard (non standard widths less than 600mm but greater than 150mm are also possible). Zinc, at 0.7mm thick, is the standard roofing thickness. However, for long panels or exposed sites 0.8mm thick zinc should be considered. Standing seam panels for wall cladding should be no wider than 430mm and should use 0.8mm thick zinc. Using wider, thinner panels will result in the cladding being less flat. We would also recommend that vertical panels be no more than 4m in length.

Minimum slope The minimum slope for standing seam roofing as built is 3° (5%). It is possible to cover barrel shaped roofs with a panel that runs continuously across the apex of the roof. Any zinc surface that is wider than 500mm should be considered as roofing and therefore the 3° minimum would be applicable. Below this width, for flashings such as parapets, the slope can be reduced to 1°. It is important to remember that the correct detail must be used at the correct roof slope.

Noise As zinc is a relatively soft metal, impact noise is rarely an issue. However, if the building owner does have concerns the use of a warm roof build-up would reduce not only impact noise but also possible noise created by pressure differences in a vented air space which is a prerequisite of a vented roof.

VMZINC and VMZINC PLUS Zinc is a metal that has been used to clad the exterior of buildings for many years and as such is resistant to water. However, this is only the case in the presence of carbon dioxide (which is present in air). If zinc is installed on a substrate that limits the amount of air that can be in contact with its back surface it is possible that this will induce the formation of white rust. It is for this reason that VMZINC (no backside coating) can only be used on roofing and cladding when vented open gap softwood boarding is used as a substrate. VMZINC is also acceptable on vented rainscreen facades. For all other roof build-ups VMZINC PLUS must be used.

VMZINC PLUS consists of VMZINC (in all finishes including AZENGAR) having a 60µm coating applied to the underside thus allowing a more varied amount of substrates to be used and eliminating the risk of the formation of white rust on the underside of the zinc standing seam panels. VMZINC PLUS resists to an abrasion of 40 litres when tested in accordance with ASTM D 968.



Material suitability

Product	Structural roof	Compact roof	Metdeck roof	Metal-faced panel	Vented plywood	Vented softwood boarding	Vented rainscreen facade
VMZINC	No	No	No	No	No	Yes	Yes
VMZINC PLUS	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standing seam requirements

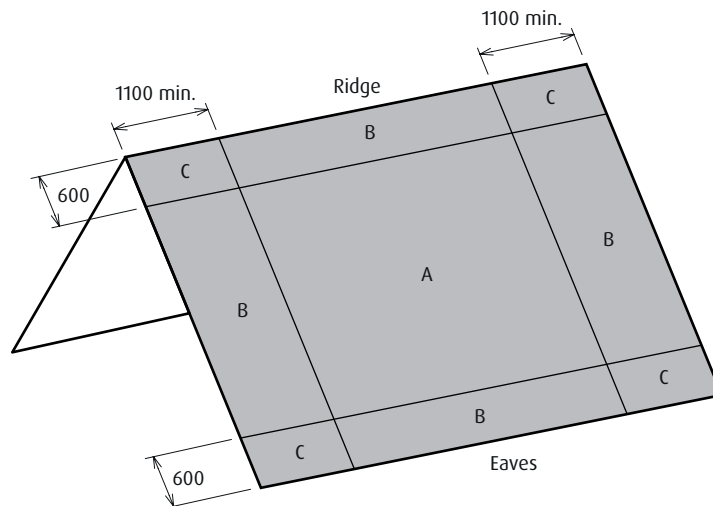
Fixing clip types, location and spacing

All standing seam panels must have a fixed area of at least 5 fixed clips which do not allow any thermal expansion or contraction. It should be noted that when items such as PV panels or snow retention systems are being fitted directly to the zinc roof a calculation of shear load must be carried out. This will determine whether by increasing the number of fixed clips will be sufficient or not to deal with the possible shear loads. Maximum clip spacing is 330mm (A) with this reducing to 200mm (B) along the edges of the roof (at least 1100mm or 1/8 of the projected roof) and 150mm (C) where two edges meet.



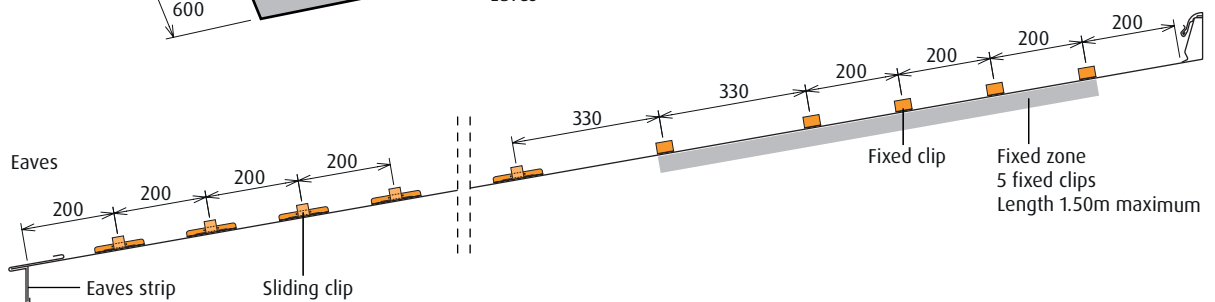
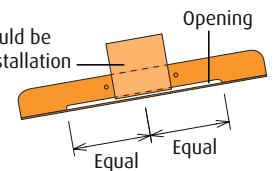
Sliding clip

Fixed clip



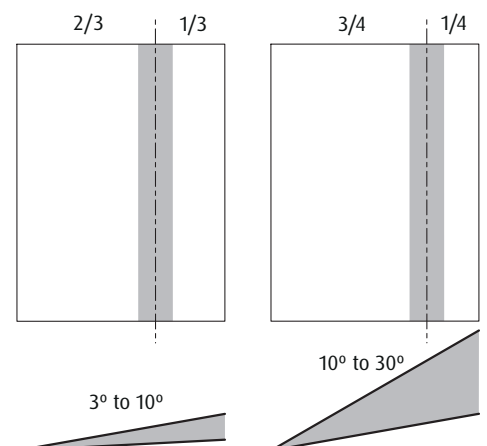
Sliding Clip:

Sliding piece should be central during installation



The normal zone for fixed clips is at the top of the roof panel (above). For panels of length between 10m and 13m it is advisable to move the fixed zone down the roof panel (as shown on the right).

For slopes exceeding 30°, maximum panel length should be 10m.



All dimensions in mm

Compatibility with other materials

Important considerations

When placed in contact with zinc, certain products can have detrimental effects on the appearance and/or structural integrity of the zinc. Acidic products and products that can generate a galvanic reaction must not be used with zinc. Run-off from non compatible products onto zinc also must be avoided. In general, products with a pH lower than 5 and higher than 7 are not compatible with zinc.

There are no issues with zinc in combination with metals other than copper and mild steel. When zinc is in contact with copper in the presence of an electrolyte (such as water) a galvanic reaction will lead to corrosion of the zinc and subsequent failure of the roof or wall cladding.

Run-off from a copper surface to a zinc surface must be avoided under all circumstances. Zinc in contact with mild (carbon) steel is not desirable either, due to similar electron transfers between the metal that will result in zinc corrosion and deterioration.

Zinc can be installed adjacent to limestone. The run-off from limestone onto zinc material is acceptable. However, limestone dust and gypsum dust generated during cutting operations can react with zinc in the presence of water and form a superficial layer of white rust. No dust should be in contact with unprotected zinc. To prevent white rust, good construction practices should be used to limit the amount of dust that comes in contact with the zinc.



Compatible contact products
Metals
Lead
Aluminium (painted, anodised or bare)
Galvanised steel
Stainless steel
Woods
Pine
Spruce
Scots pine
Poplar
Miscellaneous materials
Polyurethane
Non-acetic silicones
MS polymer mastics
Organic timber treatments

Incompatible contact products & run-off*
Metals
Copper
Steel (non-galvanised)
Gypsum dust/limestone dust
Woods
Larch
Oak
Chestnut
Red cedar
Douglas fir
White cedar
All woods with a pH < 5
Miscellaneous materials
Mortar
Building paper
Bituminous membranes
Fire retardant & preservative treatments
Acidic cleaners (brick cleaner etc)
Acetic silicones
Metal salt timber treatments

* This list is not exhaustive

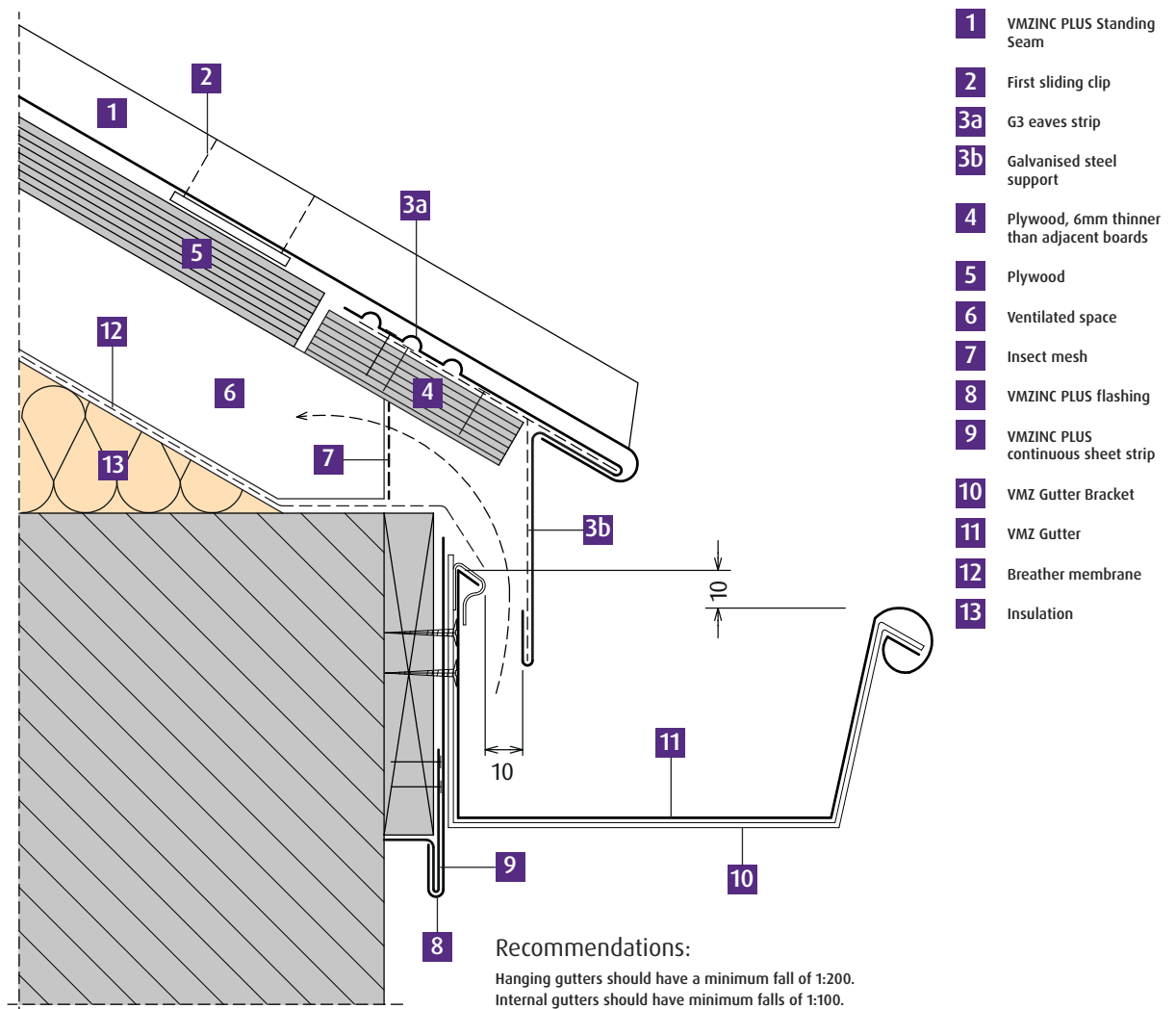
Eaves installation

Overview An eaves must secure the bottom of the roof panel and allow for thermal expansion whilst maintaining weather tightness. There are many ways of detailing the end of the panel at the eaves but here 2 options will be highlighted where both require an eaves strip of at least 150mm in width.

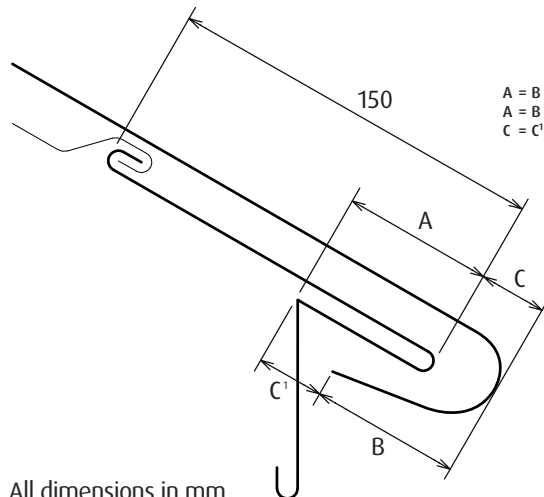


Eaves installation

Eaves detail



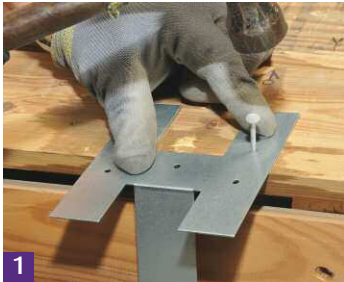
Managing thermal movement



A = B = 30mm for panels shorter than 7m in length
 A = B = 50mm for panels longer than 7m in length
 C = C' = Varies depending on the temperature during the installation. For most situations a 6mm gap is left, however this may be increased if the panels are long and/or installed in very hot weather - consult us for further information.

Eaves installation

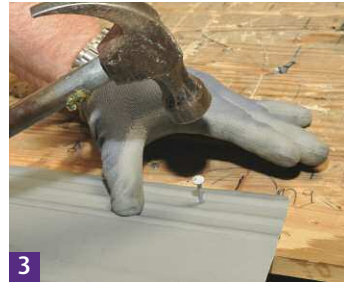
Procedure using the dog tooth method



1 Galvanised steel supports are installed at 300mm centres.



2 The G3 eaves strip located in position.



3 Fixed at 300mm centres above the water check rib.



4 The zinc should be marked 30mm for panels less than 7m in length and 50mm for longer panels.



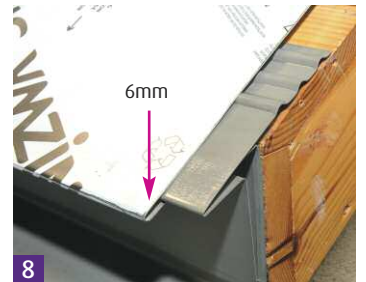
5 The zinc should be cut. Do not use snips that will result in the zinc 'tearing'.



6 The hem is folded back to 90°.



7 The hem is closed.



8 A gap of 6mm must be left to allow the panel to expand and contract (this can vary depending on installation temperature). The substrate must also have a 6mm rebate to allow the eaves strip to be flush.



9 An eaves strip with a water check can also be used but must not be installed with a through fixing.



10 The eaves strip must be installed with a zinc cleat.



11 The film must not be partially removed as this can cause staining.

Tip Solution ideally suited to low slope roofs as the water at the standing seam is taken beyond the line of the eaves strip.

Eaves installation

Procedure using the swept end method



1 Mark the zinc with a template (80mm in length).



2 Straighten the upstand.



3 Cut back the zinc.



4 Flatten the zinc.



5 Fold back the upstand.



6 Install 2nd panel.



7 Open up the upstand.



8 Mark the zinc at 15mm above the cut edge.



9 Cut the zinc back.



10 Pinch over the overlap.



11 Hammer over the overlap.



12 Hammer over swept end.



13 Completed eaves prior to film removal.

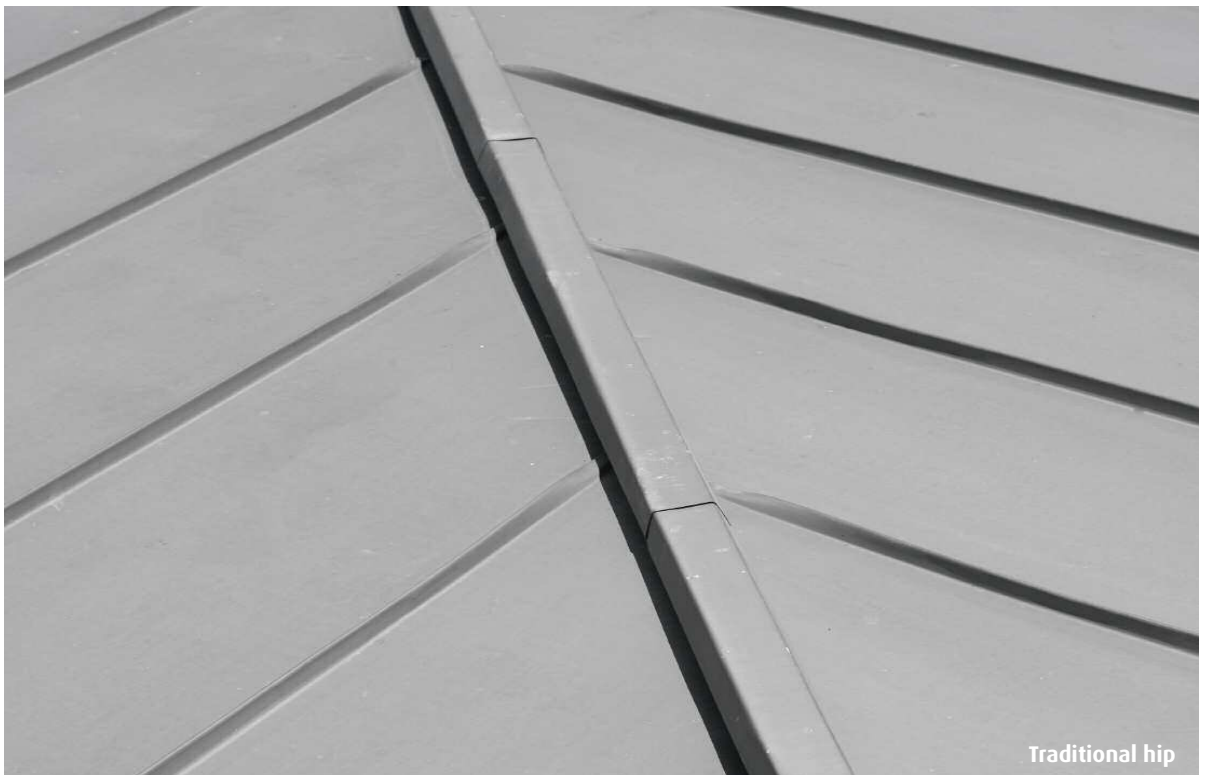
Tip This detail is elegant but does require more time and skill to be installed properly.

Hip installation

Overview The most efficient method of installing a hip is to use the G3 hip. However, a non-vented more traditional hip is also possible.

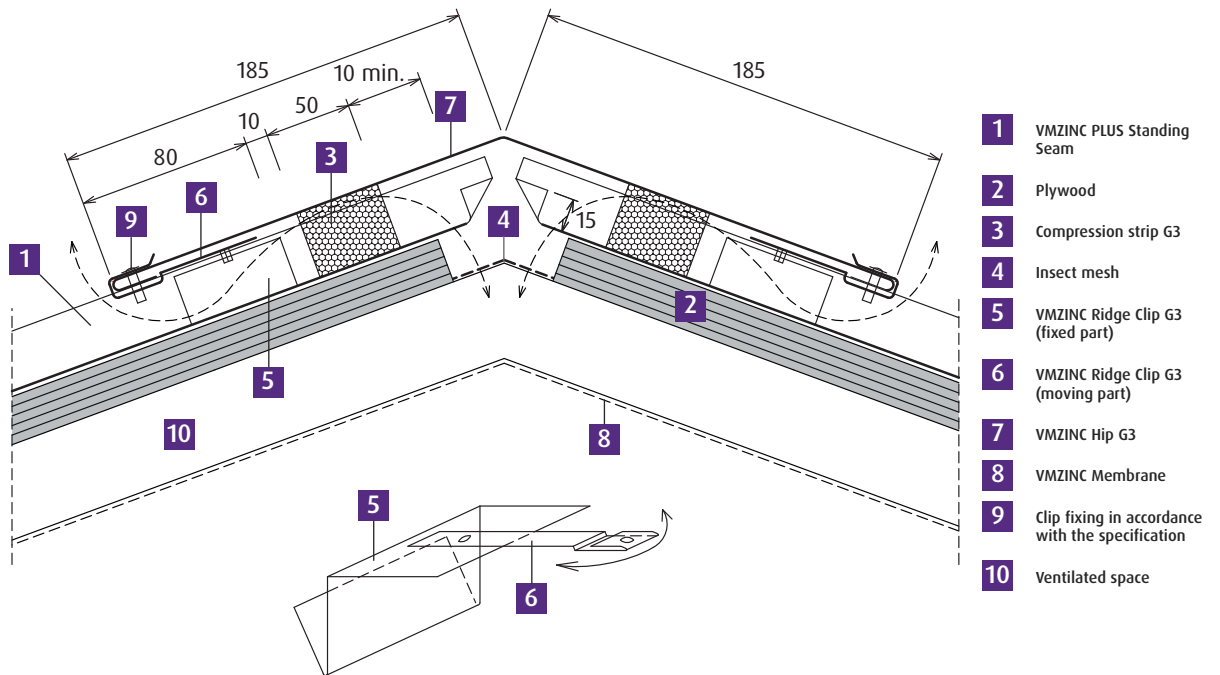
The traditional hip method requires more skill to install than the G3 hip method.

The G3 hip can only be used where the distance between clips is less than 940mm.

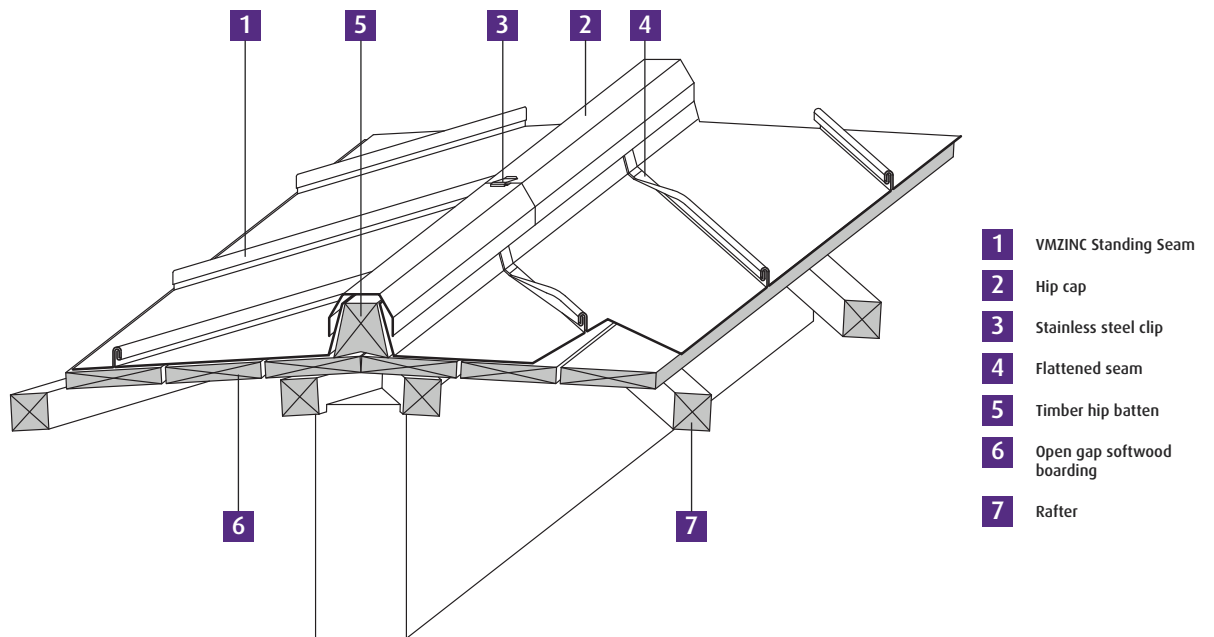


Hip installation

G3 hip detail



Traditional hip detail



All dimensions in mm

Hip installation

Procedure using the G3 hip method



1 The panel is folded up over 15mm.



2 A dog ear fold is created and the seam is crimped.



3 The G3 hip is used the mark the protective film that is then removed.



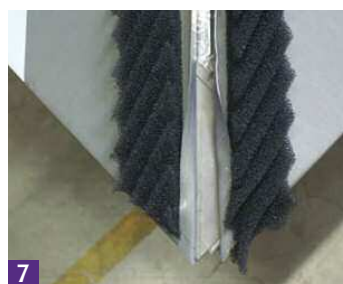
4 The clip is installed.



5 The tape is removed from the compression strip.



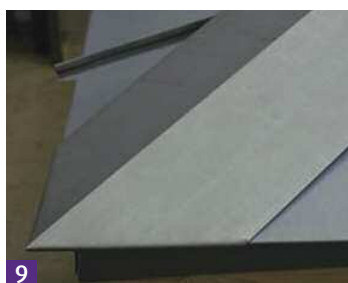
6 The strip is installed (no gaps must be left).



7 The distance between hip and 1st seam must be at least 370mm and the hip should be flattened over 150mm.



8 The end of the G3 hip is folded back over 30mm.



9 The G3 hip is hooked onto the eaves strip. G3 flashings require a 100mm overlap (with stiffening folds cut back). For slopes less than 25% the elements must be soldered together.



10 The G3 hip is installed into the clip and fixed with a stainless steel screw.

Tip The hip is installed from bottom to top and clips must be no more than 940mm apart. The G3 hip is a kit and individual parts must not be substituted and replaced.

Hip installation

Procedure using the traditional hip method



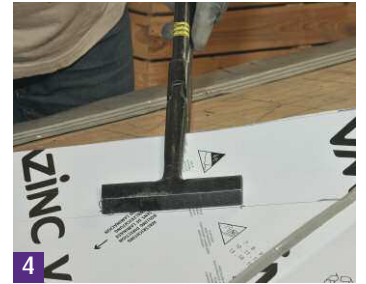
1 Panels are installed on the hip.



2 The seams are crimped beyond the hip.



3 The seams are carefully flattened over 150mm.



4 The panel is folded upwards.



5 Panels on the other side of the hip are seamed up.



6 The seams are again flattened.



7 The hip batten is installed.



8 A zinc clip is installed prior to the hip flashing being fitted.



9 The completed hip

Tip This hip cannot be vented. It is also the only detail where flattened seams are acceptable.

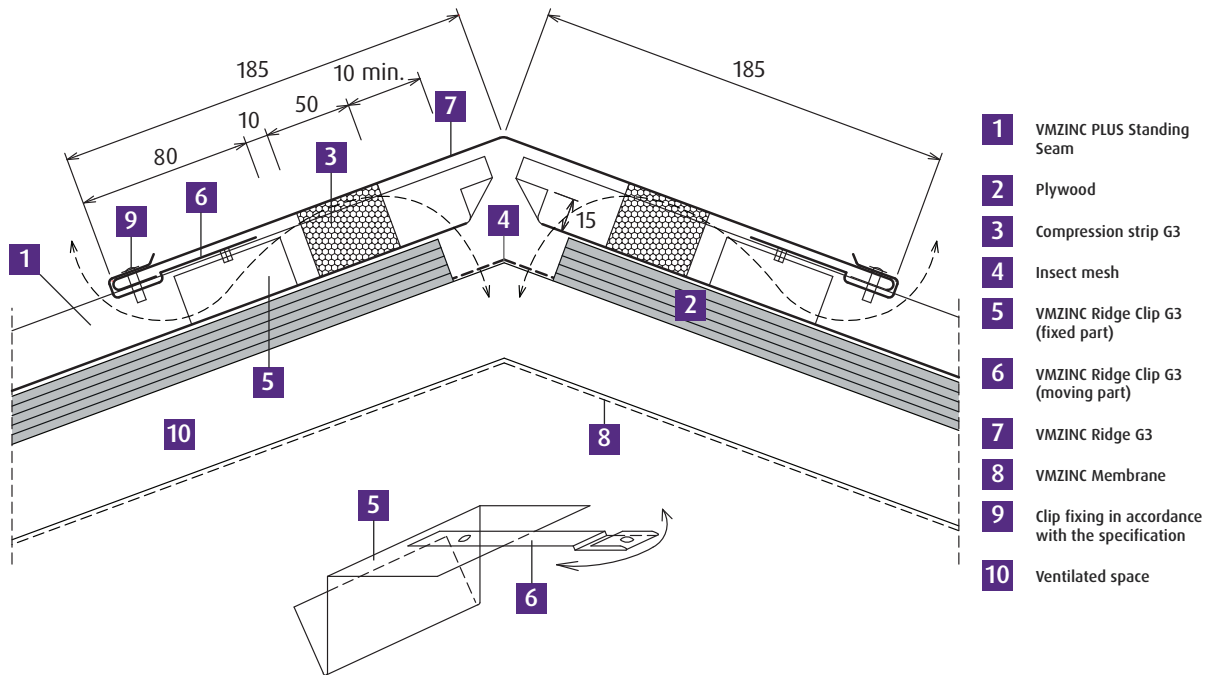
Ridge installation

Overview A larger traditional ridge or a low profile G3 ridge can be used. Both can be used on either warm (non-vented) or cold vented roofs.

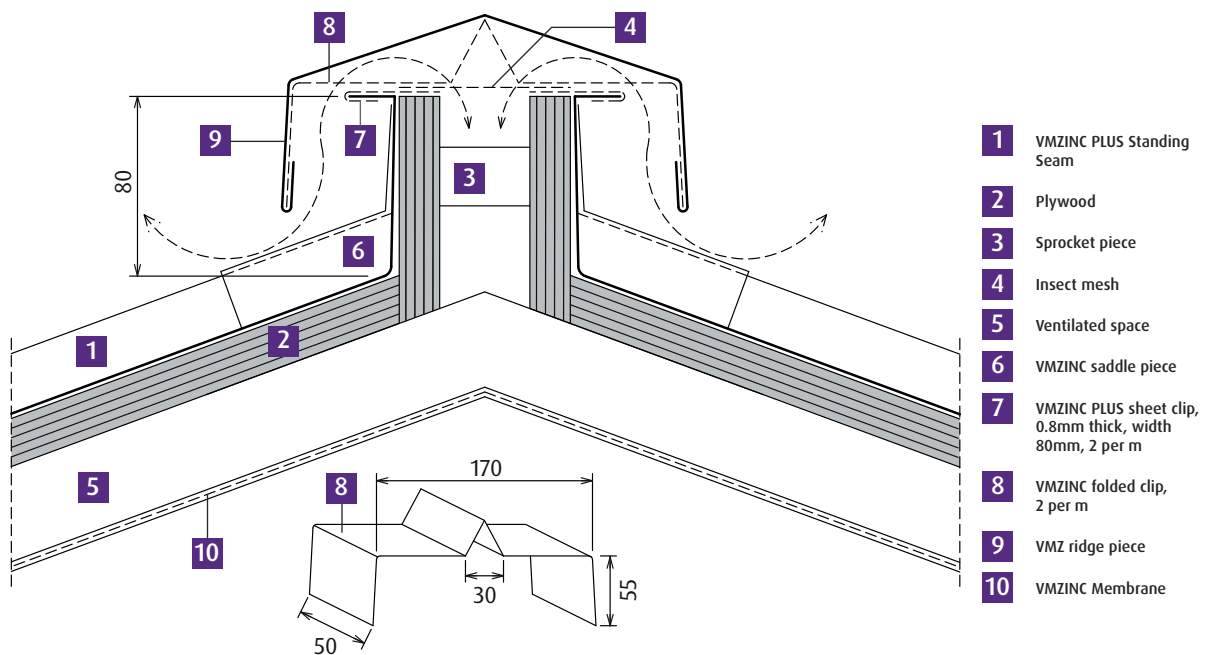


Ridge installation

G3 ridge detail



Traditional ridge detail



All dimensions in mm

Ridge installation

Procedure using the G3 ridge method



1 The panels are installed with a 15mm upstand (25mm should be used for a warm roof). An airspace should be left for vented roofs and should be protected with insect mesh.



2 Lay a G3 ridge cap on the axis of the ridge and cut the film back.



3 Install the G3 clips on each side with the bottom of the clip lined up with the cut film. Insert the clip into the seam.



4 Stick the compression strip between the seams. The strip should be 10mm below the upstand and the length of the strip should be 20mm wider than the c/c distance between the seams.



5 The angle of the G3 ridge can be altered. For low sloped roofs more open G3 ridges can be ordered. The ridge is inserted into the clips.



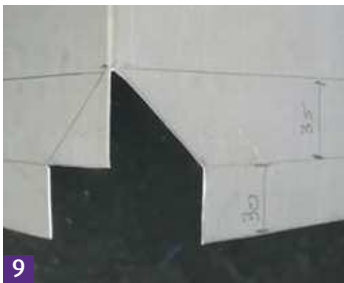
6 Connector pieces should be fitted before the ridge is installed.



7 Stainless steel screws must be used to attach the clip to the ridge piece.



8 For ridge end piece. Cut back hem on ridge cap by 65mm.



9 Notch ridge at 30mm and 35mm and at angle of the roof.



10 Fold end ridge into position.



11 Fix end cap with stainless steel screws into verge.

Tip The fixing clip can be moved up and down the seam using a mallet if necessary. As with the G3 hip the G3 ridge is a kit and individual parts should not be replaced and swapped.

Ridge installation

Procedure using the traditional ridge method



1 Mark the zinc at 100mm.



2 Cut away return fold on the profiles.



3 Create a dog ear fold.



4 Fold up the panel.



5 Create fold on panel upstand.



6 Finish fold on panel upstand.



7 Seam panels together.



8 Fit saddle piece and pinch at seam.



9 Fit clip for ridge flashing.



10 Insert ridge flashing.



11 Do not partially remove film.

Tip As with all details, the plastic film can be scored with a piece of zinc and removed leaving a clean sharp line. Under no circumstances must the film be allowed to 'flap' as this will result in staining.

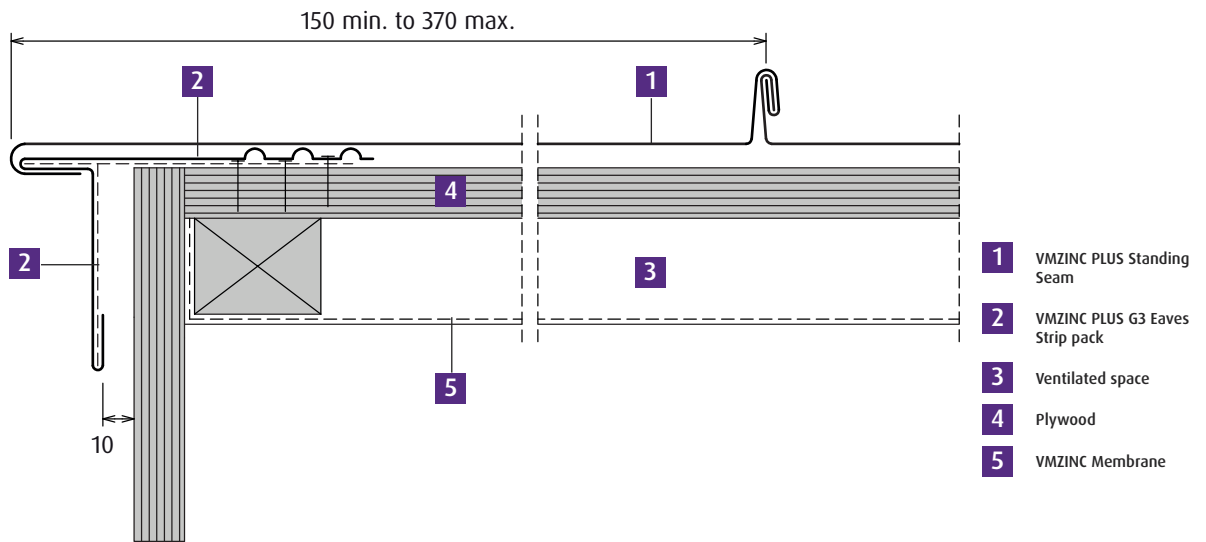
Verge installation

Overview A verge can be created either by using a G3 which moves the standing seam away from the ridge or a standing seam verge. In both cases the downstand should be at least 60mm.

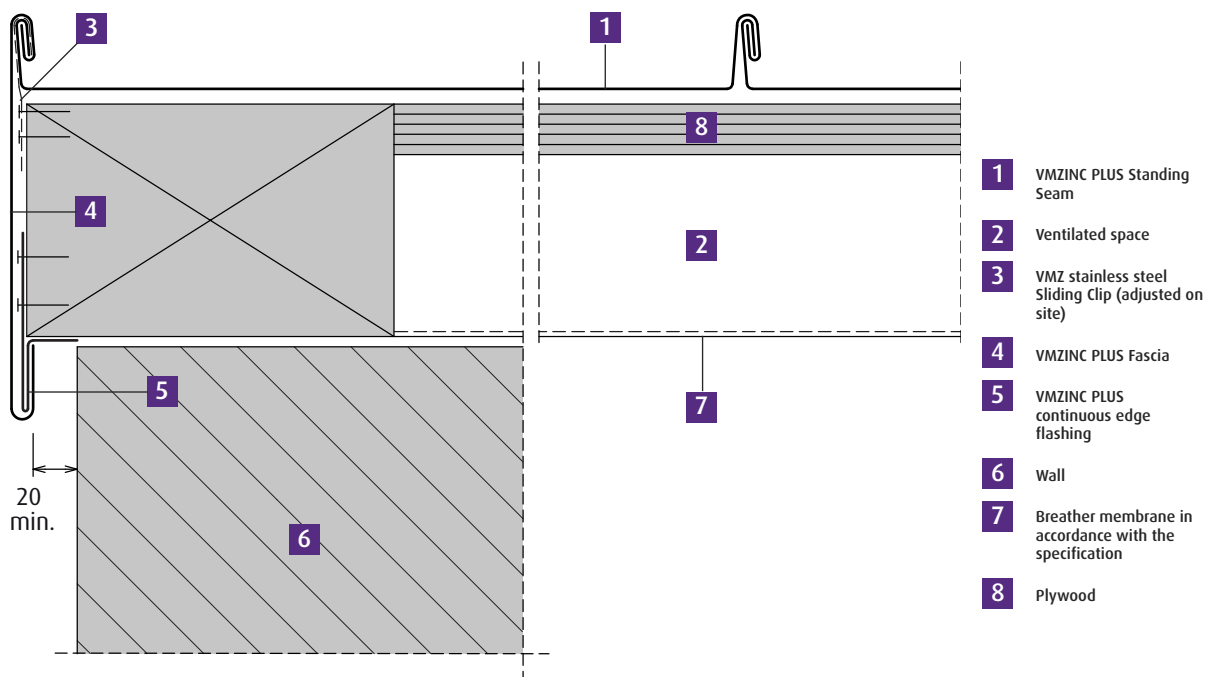


Verge installation

G3 verge detail



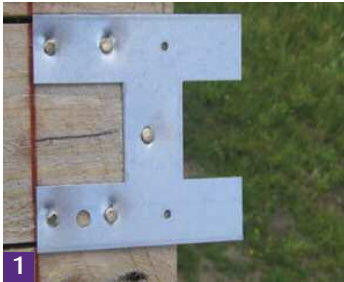
Standing seam verge detail



All dimensions in mm

Verge installation

Procedure using the G3 verge method



1 Fix the stiffeners at 300mm centres.



2 Fit the verge strip into the stiffener and fix with nails. The strips should overlap by 50mm.



3 The standing seam panels are fitted in the normal fashion and by being hooked into the verge strip with a 30mm hem. The distance between the verge and the first seam must be at least 150mm but no more than 370mm.

Tip The G3 verge can be used on curved roofs but the radius must be at least 3m. However the verge must be cut at interval of 1/10 of the radius. For example for a 5m radius roof the verge strip must be notched every 500mm.

Procedure using the standing seam verge method



1 Install a zinc clip with nails leaving a 20mm space with the verge.



2 Position the standing seam panel.



3 Fit the verge strip.



4 Crimp the standing seam at the verge.



5 Crimped seam.



6 Completed verge.

Tip The 20mm space between the verge and wall acts as a drip and must be respected.

Transverse junction installation

Overview Standing seam zinc roofing panels can be joined using either steps or weltd joints.

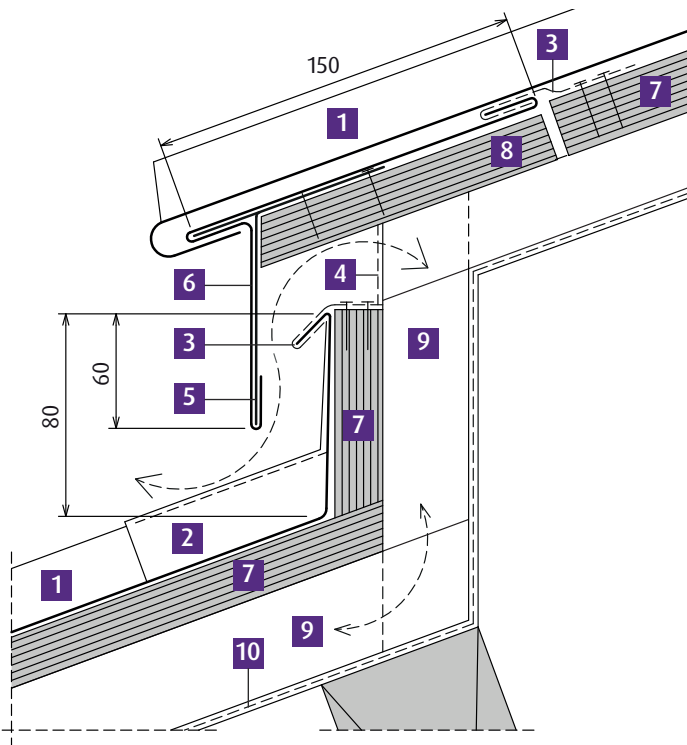
Step joints can be used with roof pitches down to 3°. They allow for expansion and contraction as well as ventilation.

Double welt joints (also known as a cross welt with continuously soldered undercloak) are not recommended below 14°. They also only allow very limited thermal expansion and contraction.



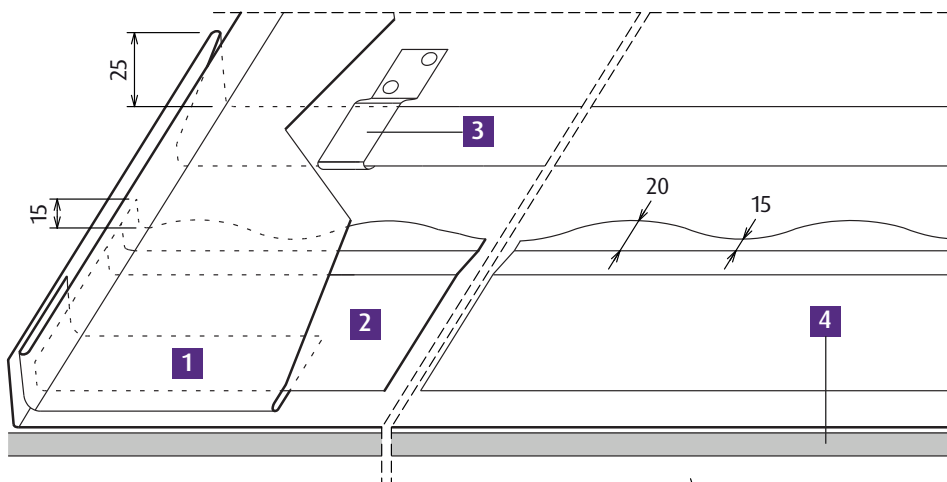
Transverse junction installation

Step joint detail

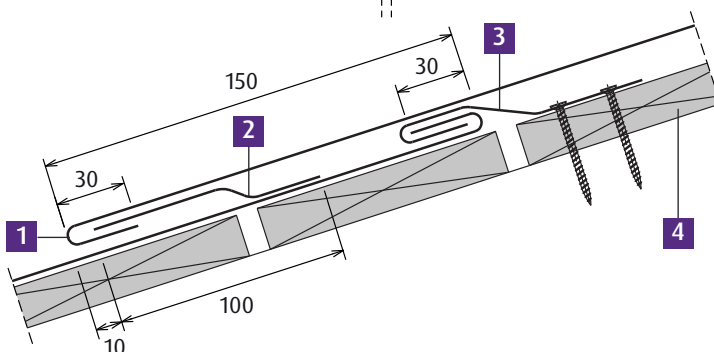


- 1** VMZINC PLUS Standing Seam
- 2** VMZINC saddle piece
- 3** VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
- 4** Insect mesh
- 5** VMZINC PLUS continuous folded strip
- 6** VMZINC PLUS eaves apron strip
- 7** Plywood, main sheeting
- 8** Plywood, 5mm thinner than adjacent main sheeting
- 9** Ventilated space
- 10** VMZINC Membrane

Double welt joint detail



- 1** VMZINC PLUS Standing Seam panel
- 2** Continuous, soldered cleat
- 3** Fixing clip
- 4** Open-gap boarding



All dimensions in mm

Transverse junction installation

Procedure using the step joint method



1 Create upstand as per ridge.
(See page 16)



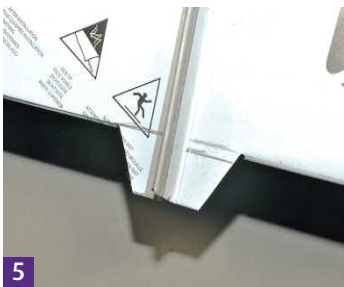
2 Pinch saddle piece into place.



3 Fit eaves strip as per the eaves.
(See page 8)



4 A G3 eaves strip can also be used.



5 Fit the upper panels as per the eaves.
(See page 8)

Tip A roof step joint can allow the roof to ventilate as well as permitting thermal expansion. This joint can also be used down to the minimum slope of 3°.

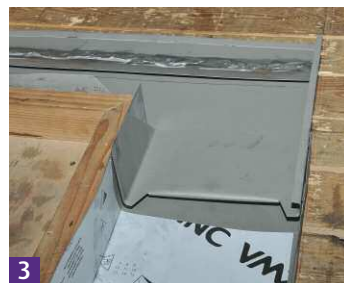
Procedure using the double welt joint method



1 Fold 25mm hem on panel and remove patina 150mm further down panel.



2 Solder welted strip onto panel 150mm below the water check.



3 Hook upper panel into place.



4 Complete double welt by gently hammering a wooden block onto the lower hem.

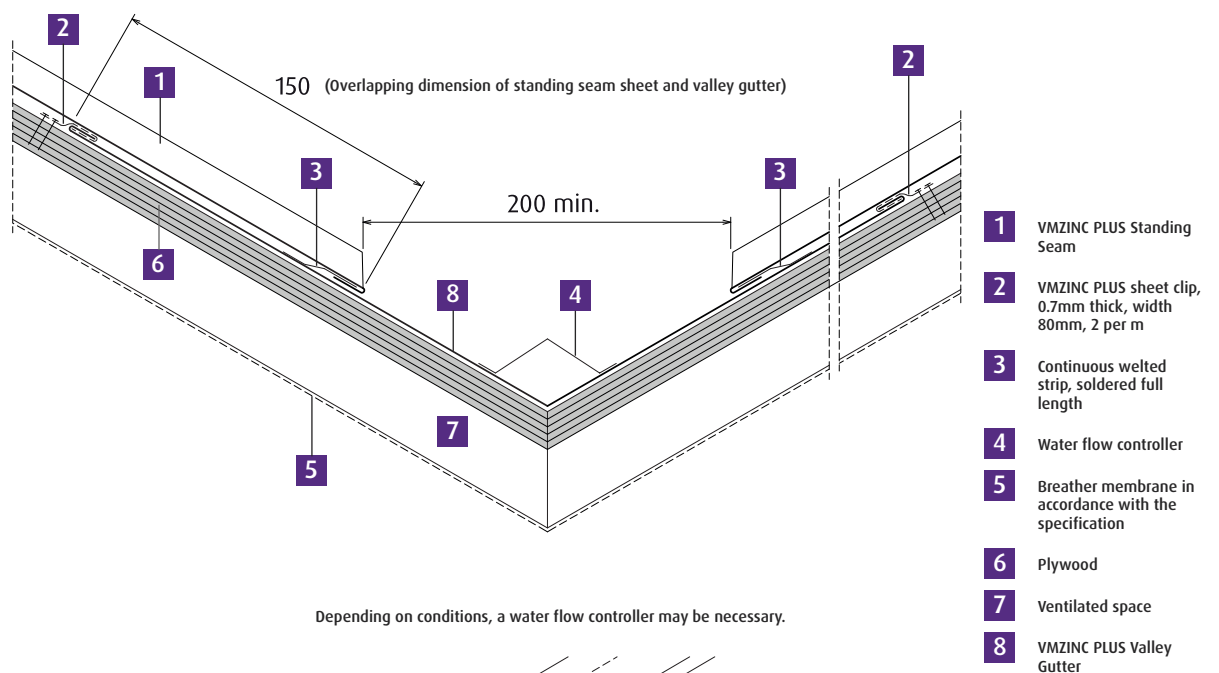
Tip A double welt junction requires some of the standing seam on the lower panel to be cut back. This does allow for a very limited amount of thermal movement but means that it cannot be used below 14°. The use of a step allows thermal movement, the detail to be used at 3°, and has the added benefit of allowing a ventilation entry and exit route.

Valley installation

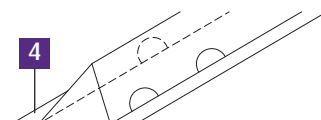
Overview An inline valley can only be used on roofs where the slope is at least 14°.



Valley detail



All dimensions in mm



Valley installation

Procedure



1 Place the valley (400mm wide with 25mm hems) on the substrate and mark out the junction with the eaves.



2 Cut the base of the valley back.



3 Cut strips of zinc at least 80mm wide.



4 Use grinder with bristle to expose natural zinc (chemical cleaning is also possible).



5 After applying flux, solder the cleat to the valley.



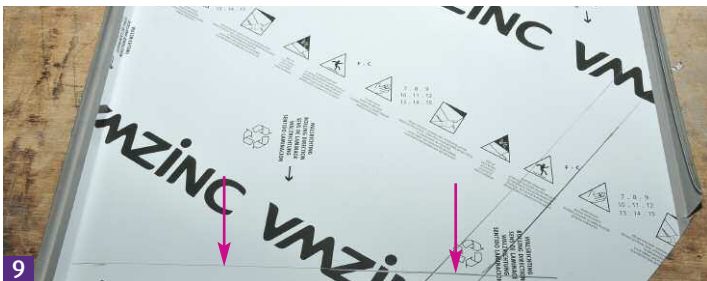
6 Fix valley with cleats.



7 Valley ready to receive roofing panels.



8 Roof panel measured for cutting.



9 25mm drawn on roof panel, then folded back to form hem.



10 Panel hooked onto continuous soldered clip and sliding clips installed.

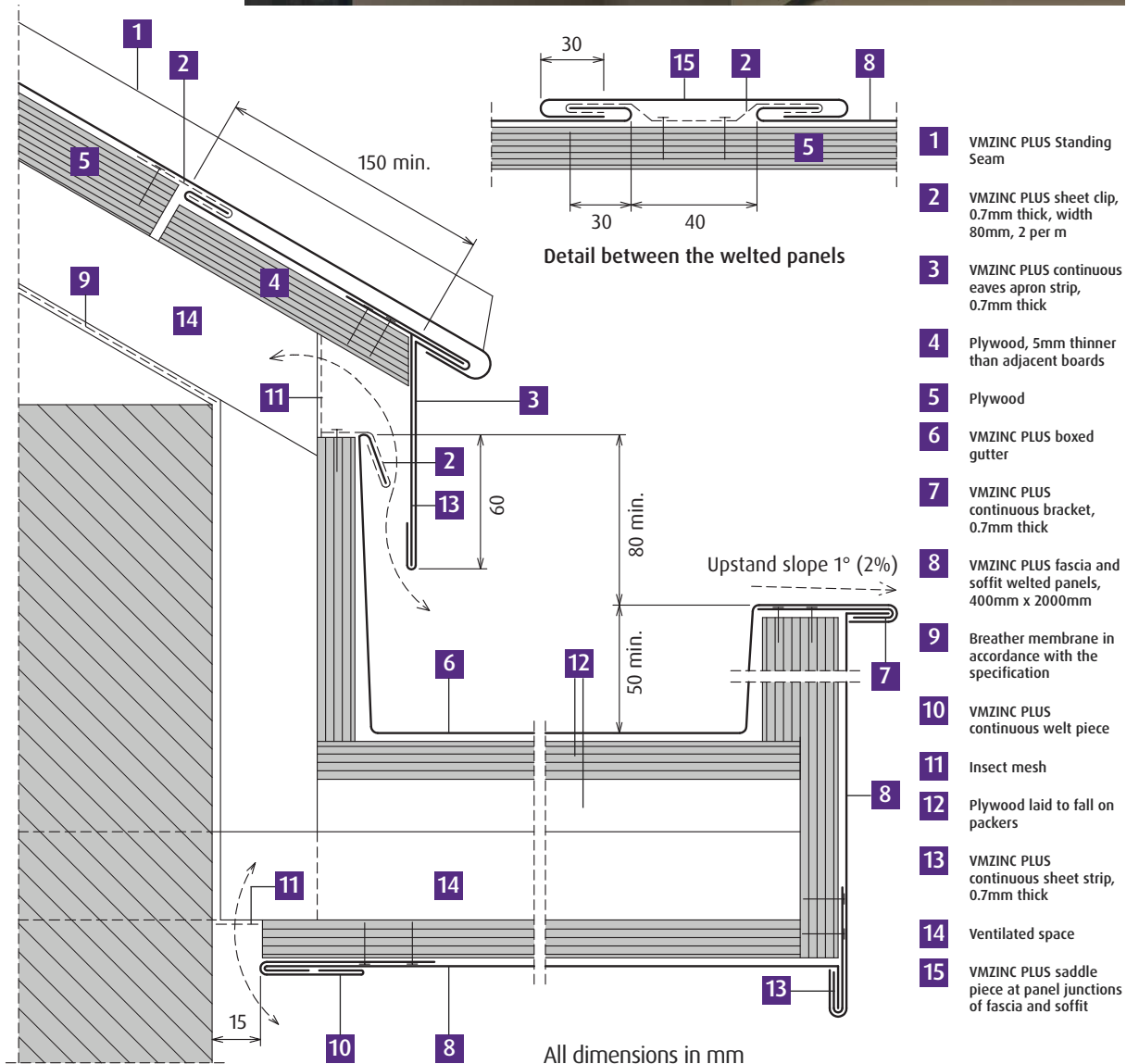
Tip As it is easier to solder a non linear surface, the cleat should be cut with curves thus allowing a better soldered joint.

Fascia installation

Overview There are many ways to clad parapets and fascias. The use of a coulisseau piece is often the most appropriate solution. The coulisseau can be omitted thus creating a flat lock joint but the fascia will not sit as flat.



Fascia detail



Tip Internal gutters require expansion joints every 6m and in some cases between fixed points which may be less than 6m.

Fascia installation

Procedure



1 Fix a base flashing to the bottom of the soffit using screws.



2 Fabricate the soffit panel with a 25mm hem and 2 x 25mm return folds.



3 Install soffit.



4 Install adjoining soffit.



5 Open up top fold.



6 Insert coulisseau.



7 Fold down tabs.



8 Fit fascia with a cleat.



9 Fit adjoining flashing and turn up folds.



10 Fit 2nd coulisseau.

Tip Individual pieces for fascias should never be more than 3m in length or 600mm deep. Parapets that are over 500mm in width should be considered as roofs and joined with standing seams and have slopes of at least 3°. Slopes of 1° are acceptable for parapets less than 500mm wide.

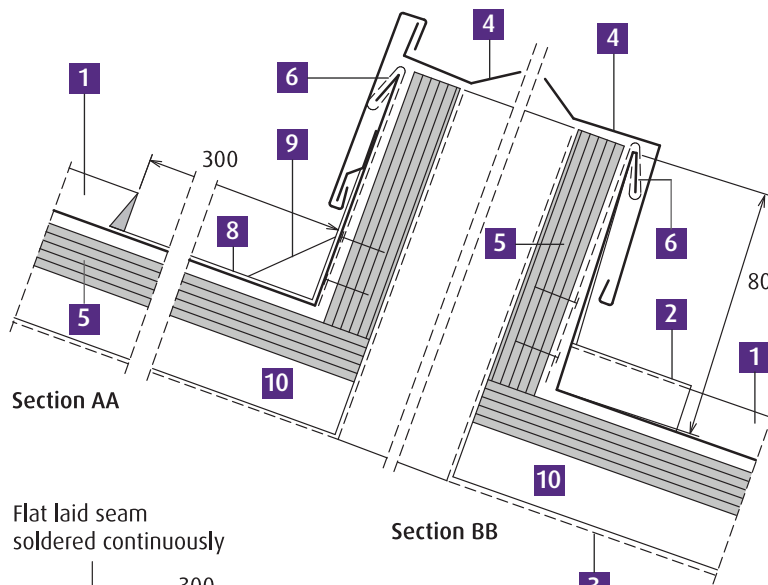
Rooflight installation

Overview The two most commonly used techniques are: the soldered solution for roofs with a slope between 3° and 14°, and the welted solution for roofs with a slope greater than 14°.



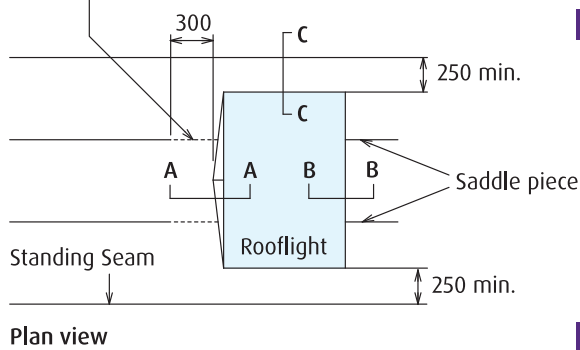
Rooflight installation

Soldered detail

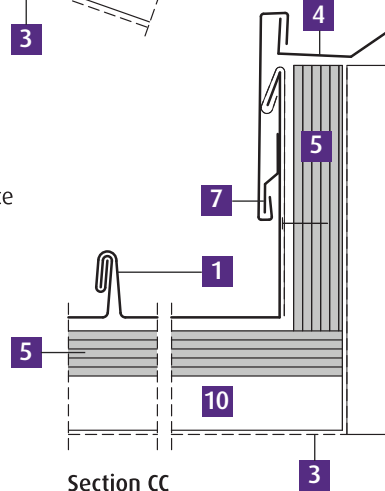


- 1** VMZINC PLUS Standing Seam
- 2** VMZINC head saddle piece
- 3** Breather membrane
- 4** Rooflight flashing
- 5** Plywood
- 6** VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
- 7** VMZINC double welt, continuously soldered
- 8** VMZINC Standing Seam, folded, laid flat and soldered with space at fillet allowing expansion
- 9** Water deflector fillet, 0.5° minimum slope
- 10** Ventilated space

Flat laid seam soldered continuously



Plan view



Section CC

Penetrations must not interrupt more than three seams.

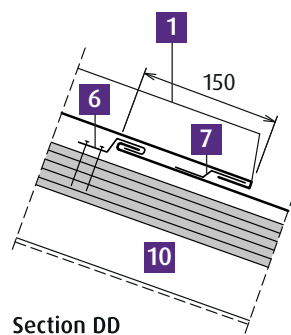
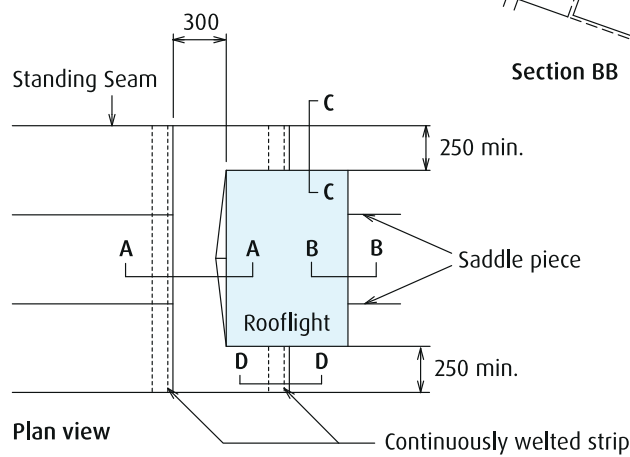
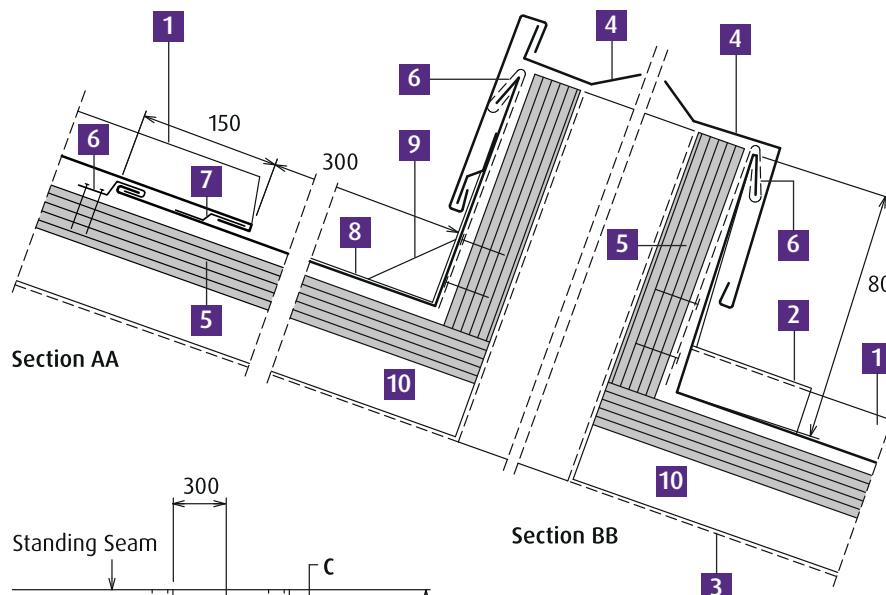
Above the upper level of the rooflight, expansion of the zinc sheeting must be towards the ridge not the eaves.

This detail is used for roof slopes between 3° and 14°.

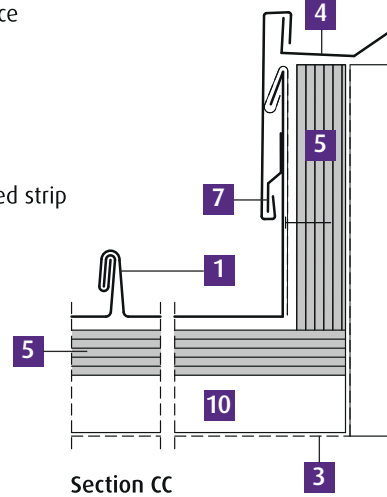
All dimensions in mm

Rooflight installation

Welted detail



- 1** VMZINC PLUS Standing Seam
- 2** VMZINC head saddle piece
- 3** Breather membrane
- 4** Rooflight flashing
- 5** Plywood
- 6** VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
- 7** VMZINC double welt, continuously soldered
- 8** Flashing to which VMZINC Standing Seam, is fixed
- 9** Water deflector fillet, 0.5° minimum slope
- 10** Ventilated space



This detail is used for roof slopes greater than 14°.

All dimensions in mm

Rooflight installation

Procedure using the soldered method



1 Mark out rooflight with 100mm upstands.



2 Cut back seam at 300mm from top of rooflight.



3 Fold back standing seam.



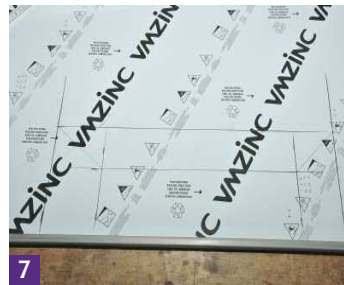
4 Create dog ear fold at bottom of rooflight.



5 Panel ready for installation.



6 Position and then solder corner gussets.



7 Repeat process for 2nd panel.



8 Cut back standing seam by 25mm. This enables a tab to be folded back prior to soldering above the rooflight.



9 Install panel with sliding clips below the rooflight.



10 Peel back film on area to be soldered.



11 Remove patina on all areas to be soldered. This can sometimes be done prior to panels being installed.



12 Solder panels together.



13 Solder upstand.



14 Crimp seam.

Tip A gap of 10mm should be left between the zinc upstands and the rooflight. This solution can only be used where no more than 3 seams are interrupted. The distance between the edge of the rooflight and the next standing seam should be at least 250mm.

Rooflight installation

Procedure using the welted method



1 Mark out rooflight and include 100mm upstands.



2 Cut zinc out.



3 Create dog ear fold at bottom of rooflight.



4 Create safety check at top of panel.



5 Fabricate 2nd panel.



6 Remove patina from all areas to be soldered.



7 2 panels installed.



8 Solder back plate into position.



9 Alternative positioning of welted joint.



10 Back plate with soldered strip.

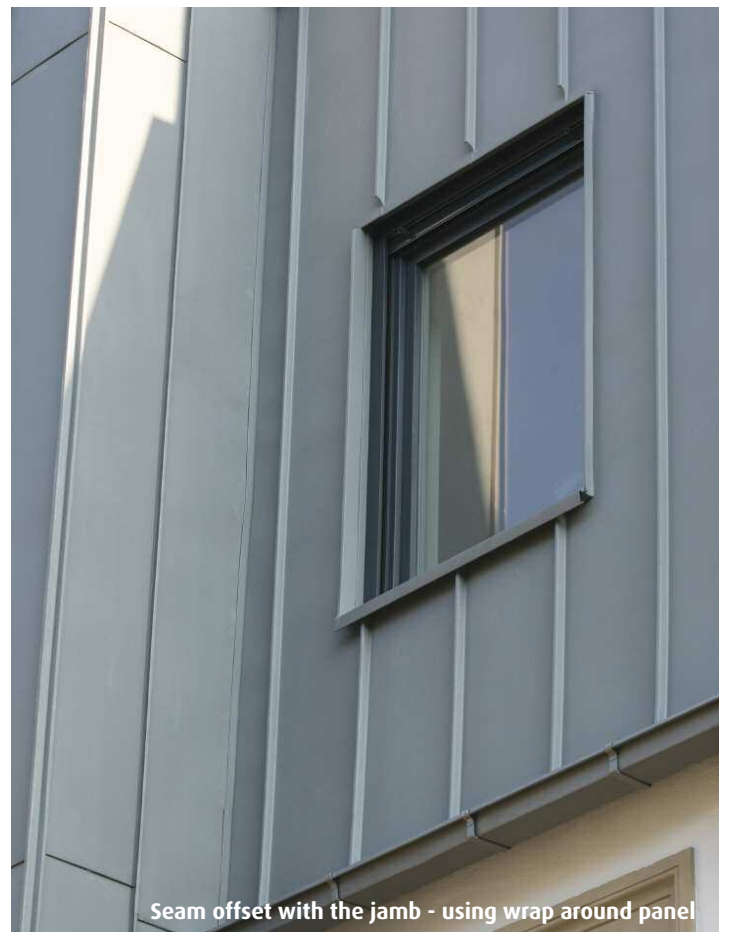


11 Back plate installed as a double welt.

Tip If the rooflight is over 1m wide a water deflector (gusset) should be moulded in to the rear upstand in order to guide the water left and right of the obstacle.

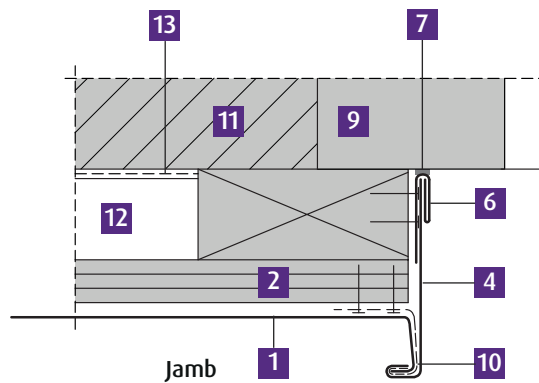
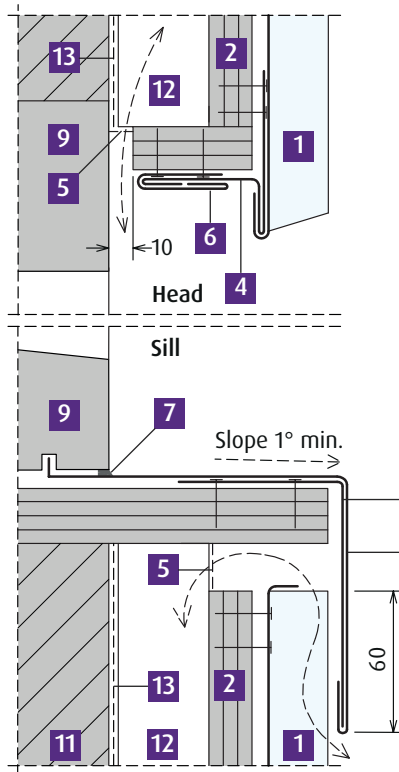
Window installation

Overview The type of detail used often depends on the positioning of the window with respect to the layout of the zinc panels. It is therefore important to plan the detailing before starting the installation of the zinc panels on the facade in question.

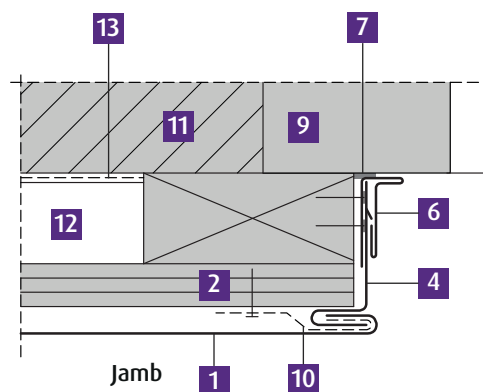


Window installation

Window head, sill and jamb details



This jamb detail can be used for both the aligned seam method (procedure on page 39) and the wrap around panel method (procedure on page 41)



This jamb detail is used for the offset seam method (procedure on page 40)

- 1 VMZINC PLUS Standing Seam
- 2 Plywood
- 3 VMZINC PLUS continuous folded strip
- 4 VMZINC continuous folded strip, 0.7mm thick
- 5 Insect mesh
- 6 VMZINC continuous folded strip
- 7 Compatible mastic sealant
- 8 VMZINC PLUS flashing
- 9 Window frame
- 10 VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
- 11 Loadbearing structure
- 12 Ventilated space
- 13 VMZINC Membrane

All dimensions in mm

Window installation

Procedure using the aligned seam method



1 The 1st panel is installed aligned with the jamb.



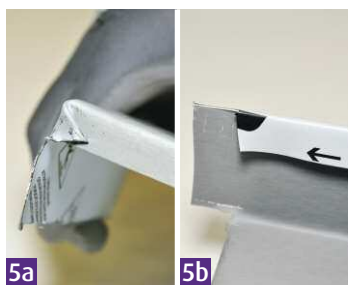
2 The panel below the window with a 15mm return is installed using a single lock.



3 The sill is made with a downstand of at least 60mm.



4 The sill is notched back by 50mm. Care must be taken to use a tool that will not leave a tear in the zinc.



5a The back of the sill must be folded into a dog ear.



5b The sill downstand is then notched.



6 The sill is installed and the folded around the seam.



7 The jamb receiver strip is fabricated.



8 The strip is notched to create a friction grip.



9 The strip is installed.



10 A standing seam jamb is made with a 50mm return for the top.



11 The jamb with the friction grip is installed.



12 The head receiver strip is fitted and a measurement for the head flashing taken.



13 The head flashing is made.



14 The head flashing is fitted using the friction grip and slotted holes for screws.



15 The next standing seam panel is installed with sliding clips.



16 Remove plastic film at the end of the job.

Tip Always remove the protective film that will get stuck in the joints. The film must be removed by being scored with a piece of zinc as this leaves a clean line.

Window installation

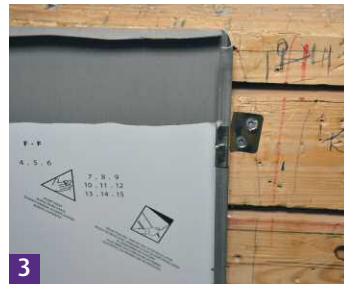
Procedure using the offset seam method



1 The panel is offered up to the window.



2 A hem for a single welt is formed along with a 90° return for the sill.



3 The panel is fixed in place with a fixed clip.



4 The window sill is formed with a 50mm upstand.



5 Window sill prior to installation.



6 Sill in position.



7 Jamb receiver strip installed and jamb measured.



8 Jamb with reveal joint prior to installation.



9 Installed jamb.



10 Head strip fitted into receiver strip.



11 Following panel measured up.



12 Panel cut out.



13 Panel installed and film stripped.

Tip The horizontal joint can be aligned with the sill or further up the jamb. This flashing is excellent in very exposed areas.

Window installation

Procedure using the wrap around panel method



1 The window is traced onto back of the standing seam panel. A line 30mm back is drawn and then the zinc is cut out.



2 An upstand is formed on the panel.



3 The panel is installed around the window.



4 The sill (as before) is installed.



5 Jamb receiver strip is installed.



6 Standing seam jamb installed.



7 Jamb crimped to a single lock.



8 Head trim fitted into receiver strip.



9 Hem on panel folded back.



10 Completed window.

Tip A wuko tool can be used to form the standing seams on the wrap around panel and the jamb. This detail is not suited to very exposed facades.

Installing zinc

General comment The details in this guide are not exhaustive and other options do exist. However, we recommend that VMZINC are contacted prior to other details being used.

Use a professional As well as following design recommendations it is critical that VMZINC is installed in the correct manner and by trained professionals.

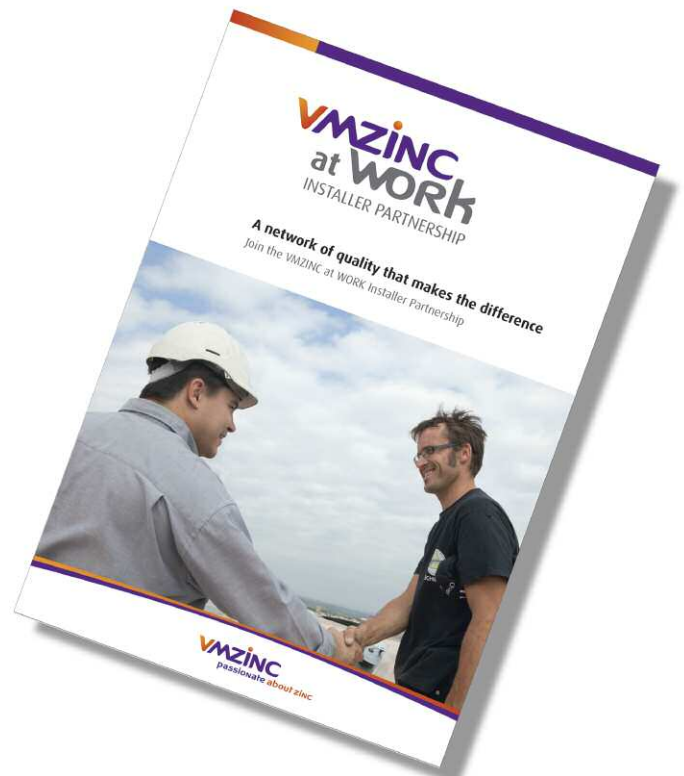
VMZINC provides training for installers with experience in metal roofing and cladding in partnership with the Lead Sheet Association. This training is designed to supplement trained professionals with specific information concerning VMZINC.

Please contact us for further information.



VMZINC at WORK We would also recommend that contractors be members of associations such as the Federation of Traditional Metal roofing Contractors.

Furthermore, VMZINC offers a network of partnering contractors who adhere to specific details and conditions whilst also offering benchmark experience and commitment to training. This network is known as 'VMZINC at Work'.



Installing zinc

Profiling and folding zinc

As zinc is a rolled metal it has a rolling direction, which is also indicated on the protective film. It should be noted that light may reflect slightly differently on panels laid in opposite directions on a roof or wall. The zinc must also be folded in a way that creates a gentle radius rather than a sharp fold.

This is the case for all equipment whether it be hand tools, CNC equipment or profilers. Natural zinc, QUARTZ-ZINC, ANTHRA-ZINC and AZENGAR should always have an internal folding radius of at least 2 x the thickness of the zinc sheet, and the metal should never be folded if the temperature of the metal is less than +7°C.

When using PIGMENTO, this radius should be increased to 3 x the thickness of the zinc sheet, and the folding should only be carried out when the temperature of the metal is at least +10°C. All folding of the zinc should be carried out with the protective film in place.



Protecting zinc

Protective gloves should not only be used as a safety measure when working with zinc but also to avoid staining the metal. The protective film should be left on the zinc during panel manufacture and installation – see page 44. Zinc roofs and walls must not be covered with tarpaulins during the installation as it will cause condensation build-up resulting in possible white rust staining.



Soldering zinc

Soldering is an excellent way of joining two pieces of zinc to another in a weather-tight fashion. It should be noted that a soldered joint will not allow for any thermal expansion and contraction, therefore soldering should only be used to join small pieces of zinc to one another.

Before soldering, all surface treatment of oxidation on the metal must be either chemically or physically (gentle abrasion) removed.

For more information please consult our guide to soldering.



Installing zinc

Protective film The protective film should be removed from the zinc panels upon completion of the facade or roof all at the same time.

The protective film should remain on the zinc no longer than 60 days after the installation of the panels. Make sure that other trades do not contaminate zinc panels after the film is removed.

The film must not be partially removed during installation for the remaining film to be removed at a later date, as this is likely to allow water to become trapped between the zinc and the partially removed film resulting in staining. It should be noted that most stains are very difficult to remove.

If fully filmed sheets are being used to form panels, which may make it difficult to remove the film after installation, the film can be scored by using a piece of zinc (greatly reduces scratching of the pre-weathering). This must be done on an area of the panel where water cannot build up, i.e. in the reveal of a cassette panel and not on the face of a panel. The scoring must also be done so as to leave a clean well-adhered edge to the film.

Once the film has been removed it must not be covered with timber, tarpaulins, etc as these will trap water and induce staining.



Partial removal of protective film.



Staining resulting from partial removal of protective film.



Maintenance and storage

Minimum requirements and normal maintenance

Although zinc is a metal that requires very little maintenance and the rinsing effect of rain water is often sufficient to keep the zinc in ideal condition the following precautions should be followed. The roof should be regularly inspected and any foreign matter such as leaves, grass and other deposits should be removed. Special attention should be given to gutters, ensuring that they are clean and not blocked thus allowing the free flow of water (flat gutters which result in standing water are not recommended). This maintenance shall be at the owner's expense after the installation work has been completed.

Foot traffic

Normal foot traffic use implies traffic reduced to a strict minimum for normal maintenance defined above and for other work, such as installation and servicing of aerials, etc.

It is advisable to take all the precautions and useful provisions necessary so as not to cause any puncturing of the flat parts or deformation of the joints, roll capping, roof vents, etc. Care must also be taken to clean footwear prior to walking on the roof.

In the case where technical equipment requiring frequent inspections (air conditioning, for example) is installed on the roof, certain adaptive arrangements such as walkways should be considered.

Cleaning

As indicated above, the rinsing effect of the rain will often mean that no other cleaning is necessary. However, it is possible to wash the zinc with warm water and a mild detergent.

The zinc must always be cleaned in the direction of the grain of the metal. Pressure washers are not recommended. Cleaning with detergent can be supplemented with application of a very small amount of mineral oil. The zinc must be completely dry prior to any application of mineral oil. It is always advisable that a small test area is cleaned and left for 24 hours prior to proceeding to a larger area.

Scratches

Due to the self healing nature of zinc we would recommend that small scratches be left to heal on their own. We do not recommend the use of touch-up paint.



Gutters must be regularly cleaned.



Boots should be cleaned prior to working on a zinc roof.

Maintenance and storage

Salt In coastal areas salty water can stagnate on all surfaces including zinc. When the water evaporates it is possible that this can leave a white stain.

On surfaces that are rinsed by rainwater the majority of the staining will be removed. However, on non-rinsed facades and soffits it is possible that these stains will build up and be more prominent.

The use of the Pigmento and Strat range reduces staining on un-rinsed surfaces and therefore should be considered for coastal environments.

It should be noted that this staining is purely aesthetic. All projects within 1km of salt water should be considered as 'severe coastal' and within 20km as 'coastal'.

Storage The zinc sheets, coils, and formed pieces must be stored in a well-ventilated, sheltered and dry area where temperature variation is kept to a minimum.

- Temperature variations can cause condensation build-up, that in turn will cause zinc hydroxide (white rust) to form. Ensure that the zinc is stored in an area without great temperature variations. Zinc hydroxide forms when the surface of zinc comes into contact with humidity without carbon dioxide. Zinc hydroxide provides no protection and leaves unattractive, indelible marks on the zinc. Consequently, we do not recommend installing any panel that has been affected by zinc hydroxide
- The sheets, coils and formed pieces should be separated from the ground by pallet or similar storage device to allow sufficient ventilation of the zinc
- Pallets or similar storage device should allow the zinc sheet to be stored flat to reduce risk of deformation
- It is recommended that the coils be stored in their original packaging

If the coils are to be stacked due to lack of storage space the following recommendations must be followed:

- If coils are delivered on their horizontal axis, the pallets must be stored in their original packaging and individually on separating racks
- If coils are delivered on their vertical axis the pallets must be stored on top of one another with a maximum of 4 pallets for stability reasons
- Zinc must never be stored outside



Sustainable performance

Low energy used in the manufacturing process

VMZINC rolled zinc products are used in construction industries throughout the world for their sustainability, distinctive appearance, and low maintenance requirements. As with VMZINC facade and rainwater systems, manufacturing processes for our standing seam system presents a low environmental impact, particularly with regard to energy expenditure.

Less energy is required to extract zinc from the ground than the other principal metals, and is even more favourable for recycled zinc. Such minimal use of energy in the production of zinc clearly indicates its contribution to sustainable development.

Recycled material

95% of old rolled zinc recovered every year in Western Europe, currently estimated at 100,000 tonnes, is reused. This represents savings in mining resources of between 1 and 2 million tonnes.

Low corrosion, long life

The VMZ standing seam system benefits from zinc's self-protecting patina which develops as a result of exposure to water and carbon dioxide. Over the last 50 years the quantity of sulphur dioxide in the atmosphere has been greatly reduced. SO₂ being the key agent of corrosion means that corrosion rates are now 1µm per year. With an initial thickness of 0.7mm, the estimated life span of rolled zinc is over a hundred years.

A natural material

VMZINC undertakes Life Cycle Analysis (LCA) tests on its products and publishes Environmental Product Declarations (EPDs), such as BRE Environmental Profiles, available from our website www.vmzinc.co.uk and www.greenbooklive.com. These provide users with comprehensive, reliable and transparent information on relevant environmental characteristics. The information is also used by VMZINC as the basis for its eco-design approach.

Standards

Environmental profiles measure the impacts of a construction material, product or building system throughout its life, not only during its manufacture, but also its use in a building over an 80 year period. This includes its extraction, processing, use and maintenance and its eventual disposal.

VMZINC has been audited and reviewed by BRE Global. The Life Cycle Assessment (LCA) modelling derives a Certified Environmental Profile and a Green Guide rating has been produced.

A wide range of zinc roofing and cladding systems has been audited with the systems receiving a Green Guide rating of up to **A+**. These profiles can then be applied to the **BREEAM** (BRE Environmental Assessment Method) allowing VMZINC to contribute to schemes such as the Code for Sustainable Homes.

Since 2009, VMZINC has been **OHSAS 18001** certified, thus conforming to occupational health and safety management systems.

VMZINC manufacturing plants have conformed to **ISO 14001** since 2004/5 so processes are strictly controlled to ensure that emissions are significantly below the national regulation threshold.

ISO 9001 is the internationally recognised standard for the quality management of businesses and applies to all Umicore/VMZINC products and services. Certification was originally obtained in 1997 and updated in November 2003 to conform to ISO 9001:2000.





Subject

The subject of this document is intended for specifiers (building project architects and design teams) and users (companies responsible for installation on the building site) of the designated product or system. Its purpose is to provide the main information, text and diagrams, relating to specification and installation. Any use or specification outside the area of use and/or specifications contained in this brochure requires specific consultation with the Umicore technical departments. This does not commit the latter to any responsibility with regard to the feasibility of the design or implementation of these projects.

Countries of application

This document applies exclusively to the specification and installation of the designated products or systems on building sites in the United Kingdom and the Republic of Ireland.

Qualifications and reference documents

Please note that the specification of all construction systems for a given building remains the exclusive responsibility of its design team, who must, in particular, ensure that the specified products are suitable for the purpose of the building and compatible with the other products and techniques used. Please note that the correct use of this manual requires knowledge of VMZINC materials and of the zinc roofing profession. While construction is underway all standards in force must be respected.

Responsibility

The specification and installation of VMZINC products manufactured by Umicore are the sole responsibility of the architects and building professionals who must ensure these products are used in a way suited to the end purpose of the construction and that they are compatible with other products and techniques used. The specification and installation of the products implies respecting the standards in force and the manufacturer's recommendations. In this regard, Umicore publishes and regularly updates specification and installation manuals for specific geographic areas and provides training courses. All the information on the latter can be obtained from the VMZINC team. Unless otherwise agreed in writing, Umicore cannot be held responsible for any damages resulting from a specification or installation that does not respect all of Umicore's specifications and the above standards and practices.



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