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:

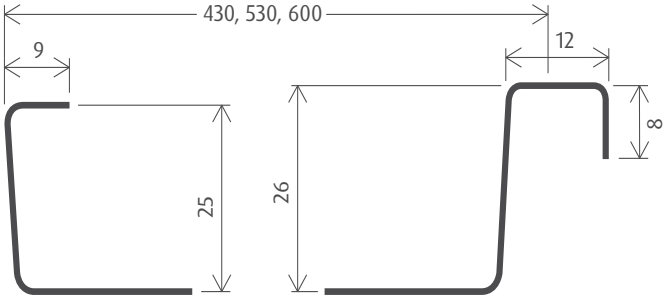
VMZINC General Technical Recommendations
VMZINC Roofing + Rainwater systems
VMZINC Facades

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

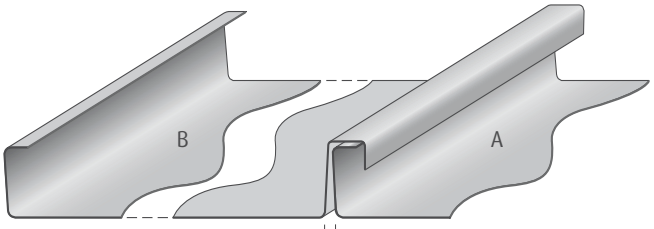
Benefits of the VMZINC systems

- 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/EPD EN 15804
- 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)
- Fire classification A1 and A2-s1, d0 according to EN 13501-1:2002
- Available in a choice of either Natural zinc, engraved Azengar or 9 pre-weathered finishes

Underlying principles of the standing seam system



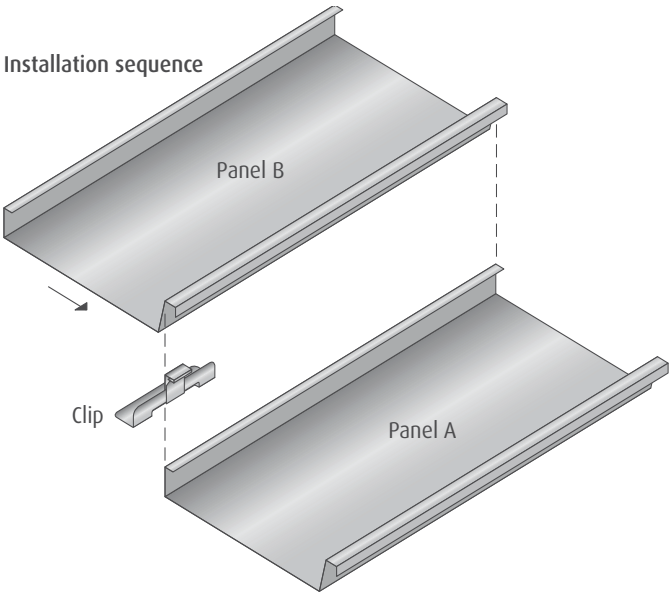
Panel dimensions (mm)



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®

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.

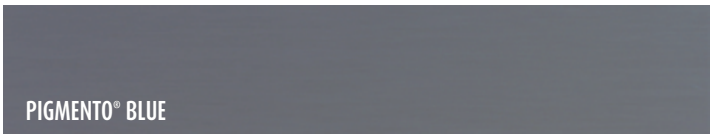
PIGMENTO, available in five standard colours, provides an increased resilience, however in a severe non-rinsed marine environment (1 km from the sea), staining is still possible and therefore the material should not be used in this application.























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 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 buildings over18m where non-combustible materials such as zinc must be used. The timber substrate can be substituted with 0.7mm thick galvanised steel deck, for further information on this and warm wall build ups please contact us.

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.

Typical standing seam panel system construction

1. VMZINC standing seam panels in VMZINC PLUS
2. Fixing clip
3. 18mm plywood
4. Battens creating a vented 38mm airspace
5. Insulation protected by VMZINC Membrane



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. For exposed sites with high wind loading 430mm wide panels are recommended.



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 awarm 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 sof-wood boarding	Vented rain-screen 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

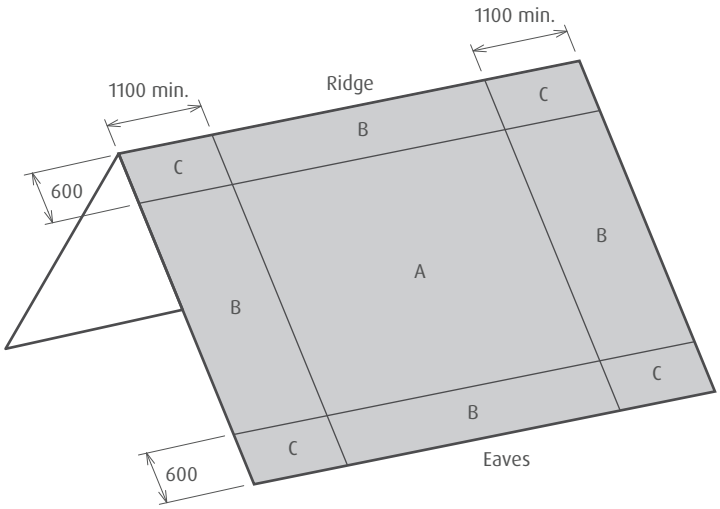
All standing seam panels must have a fixed area of at least 5 fixed clips which do not allow any thermal expansion or contraction. It should be noted that when items such as PV panels or snow retention systems are being fitted directly to the zinc roof a calculation of shear load must be carried out. 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.

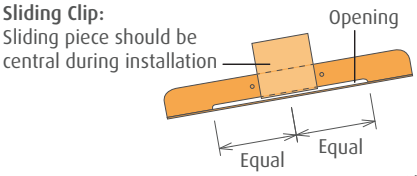


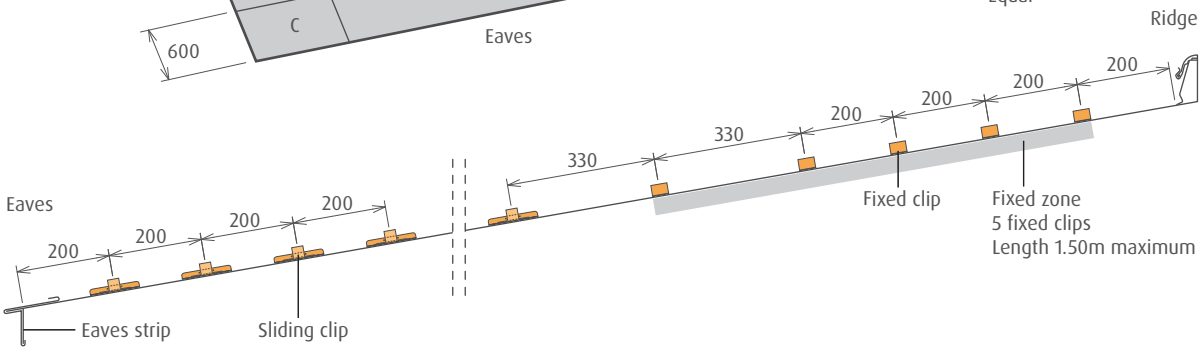
Sliding clip

Fixed clip

All dimensions in mm

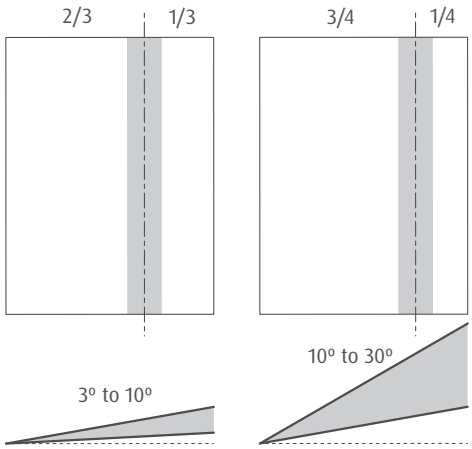






The normal zone for fixed clips is at the top of the roof panel (above). For panels of length between 10m and 13m it is advisable to move the fixed zone down the roof panel (as shown on the right).

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



Fascia installation

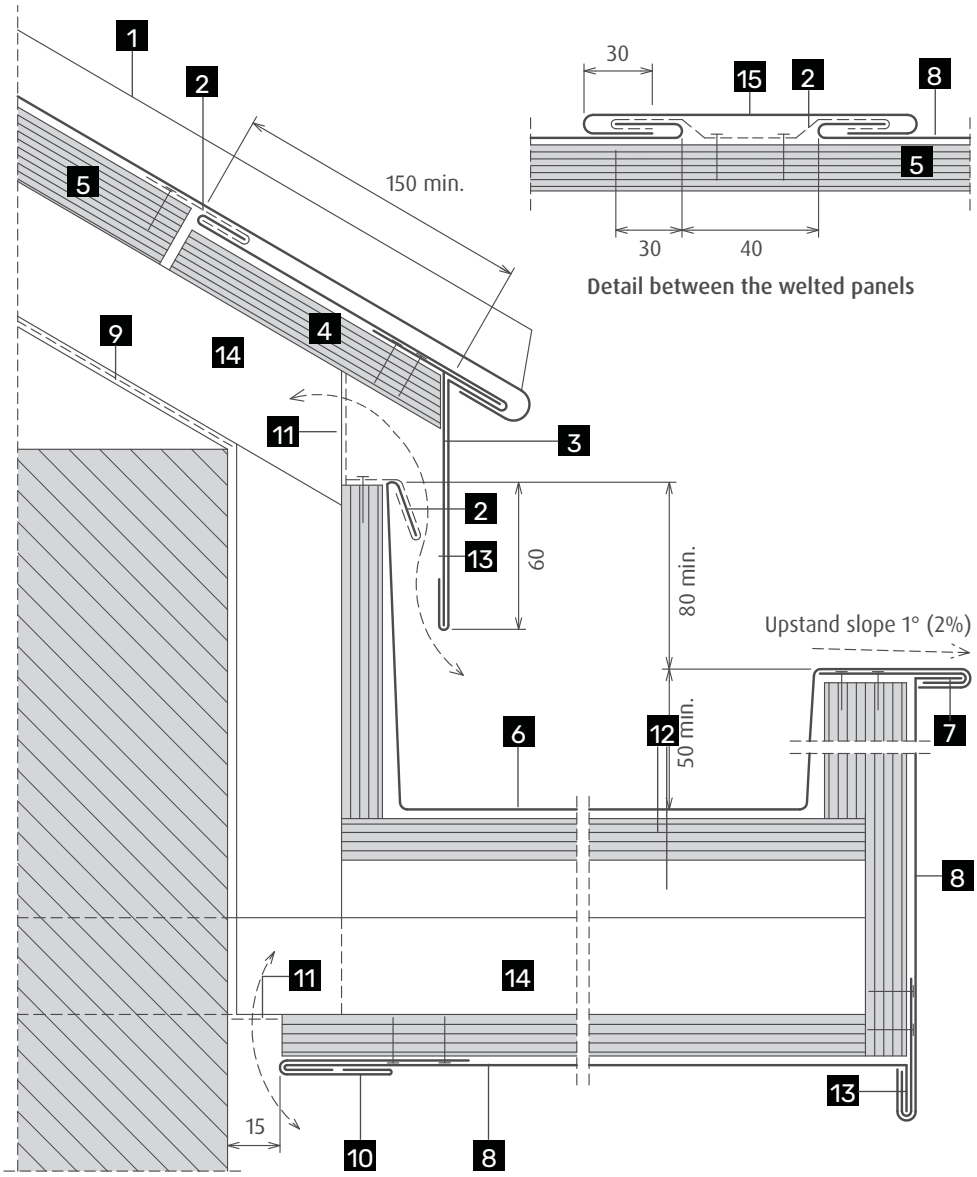
Overview

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.



Fascla detail

All dimensions in mm



Detail between the welted panels

1. VMZINC PLUS Standing Seam
2. VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
3. VMZINC PLUS continuous eaves apron strip, 0.7mm thick
4. Plywood, 5mm thinner than adjacent boards
5. Plywood
6. VMZINC PLUS boxed gutter
7. VMZINC PLUS continuous bracket, 0.7mm thick
8. VMZINC PLUS fascia and soffit welted panels, 400mm x 2000mm
9. Breather membrane in accordance with the specification
10. VMZINC PLUS continuous welt piece
11. Insect mesh
12. Plywood laid to fall on packers
13. VMZINC PLUS continuous sheet strip, 0.7mm thick
14. Ventilated space
15. VMZINC PLUS cover flashing at panel junctions of fascia and soffit

TIP

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

Fascia installation

Procedure



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



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



Install soffit.



Install adjoining soffit.



Open up top fold.



Insert coulisseau.



Fold down tabs.



Fit fascia with a cleat.



Fit adjoining flashing and turn up folds.



Fit 2nd coulisseau.

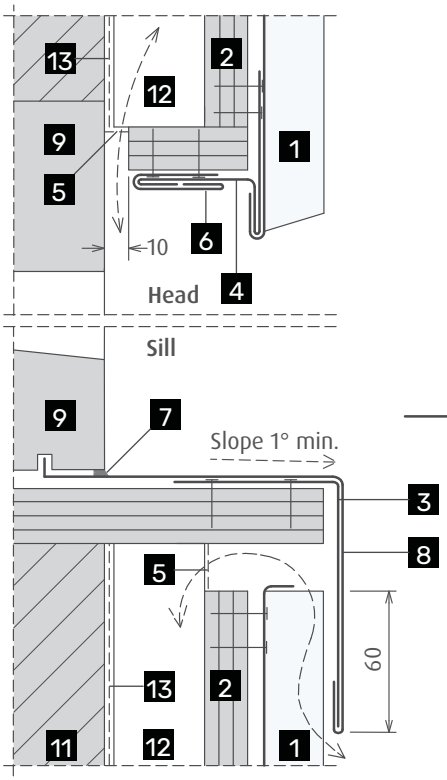
TIP

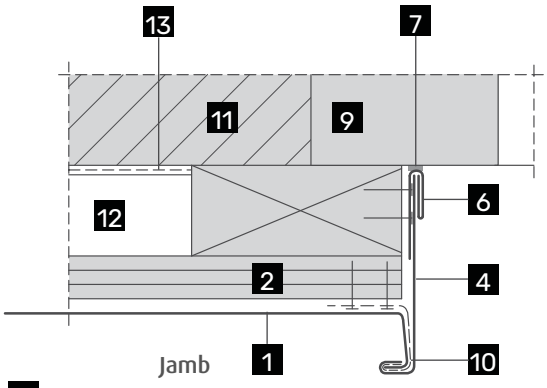
Individual pieces for fascias should never be more than 3m in length or 600mm deep. Parapets that are over 500mm in width should be considered as roofs and joined with standing seams and have slopes of at least 3°. Slopes of 1° are acceptable for parapets less than 500mm wide.

Window installation

Window head, sill and jamb details

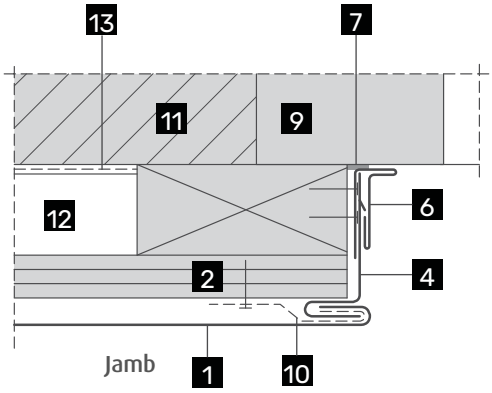
All dimensions in mm





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)

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



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

Window installation

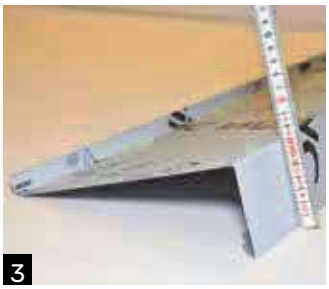
Procedure using the aligned seam method



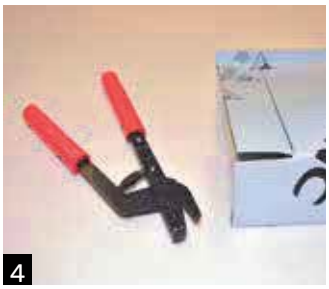
The 1st panel is installed aligned with the jamb.



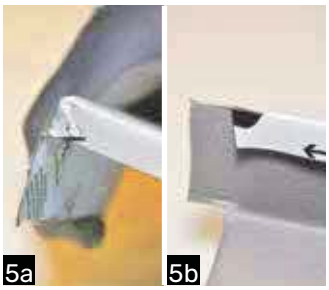
The panel below the window with a 15mm return is installed using a single lock.



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



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.



The sill is installed and the folded around the seam.



The jamb receiver strip is fabricated.



The strip is notched to create a friction grip.



The strip is installed.



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



The jamb with the friction grip is installed.



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



The head flashing is made.



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



The next standing seam panel is installed with sliding clips.



Remove plastic film at the end of the job.

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.

Window installation

Procedure using the offset seam method



The panel is offered up to the window.



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



The panel is fixed in place with a fixed clip.



The window sill is formed with a 50mm upstand.



Window sill prior to installation.



Sill in position.



Jamb receiver strip installed and jamb measured.



Jamb with reveal joint prior to installation.



Installed jamb.



Head strip fitted into receiver strip.



Following panel measured up.



Panel cut out.



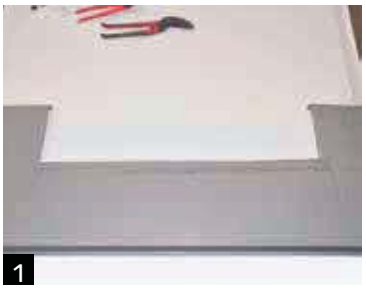
Panel installed and film stripped.

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

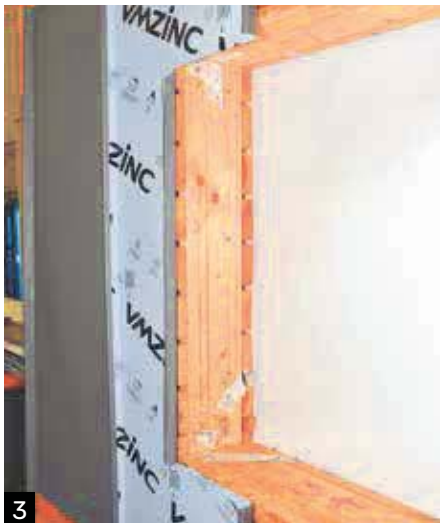
Procedure using the wrap around panel method



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



An upstand is formed on the panel.



The panel is installed around the window.



The sill (as before) is installed.



Jamb receiver strip is installed.



Standing seam jamb installed.



Jamb crimped to a single lock.



Head trim fitted ianto receiver strip.



Hem on panel folded back.

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.



Completed window.

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.

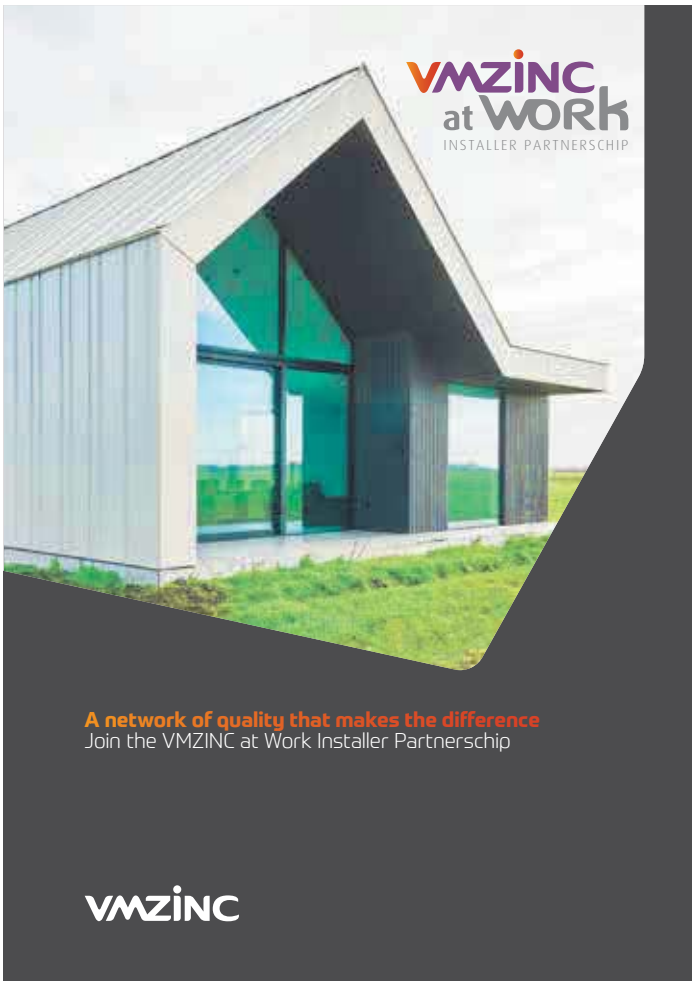
VMZINC also offers a Basic Competency Programme in hard metal in conjunction with the CITB and FTMRC.

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 roofingc 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 othervtrades 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 preweathering). 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 soas 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

Zinc is very resistant in marine locations however in coastal areassalty 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 will further reduce staining on rinsed surfaces and therefore can be considered for coastal environments but should not be used in these environments for non-rinsed areas.

For severe coastal environments if ANTHRA-ZINC is being considered ANTHRA-ZINC STRAT is likely to maintain its darker finish for longer on rinsed surfaces but again should not be used in these locations on non-rinsed surfaces.

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.considered as 'severe coastal' and within 20km as 'coastal'.

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 publishe 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 a 100 year period.
This includes its extraction, processing, use and maintenance and its eventual disposal.

VMZINC is a member of BRE Global`s certification scheme and carries Environmental Product Declarations in accordance with EN 15804 for Natural Zinc, QUARTZ-ZINC, ANTHRA-ZINC, the PIGMENTO range as well as VMZINC PLUS.

All of VMZINC production plants are conform to ISO 14001 creating a high level of quality control with regards to the environment.

Quality management certification ISO 9001 also applies to not only all production plants but also to all services and products.

VMZINC

Subject

The subject of this document is intended for specifiers (building project architects and design teams) and installers (specialist 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 VMZINC 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 and cladding profession. While construction is underway all standards in force must be respected. Further installation information is available from www.vmzinc.co.uk or www.vmzinc.ie. Furthermore, VMZINC offers training courses specifically for professionals.

Responsibility

The specification and installation of VMZINC products manufactured by VM Building Solutions 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, VM Building Solutions 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, VM Building Solutions cannot be held responsible for any damages resulting from a specification or installation that does not respect all of VM Building Solutions specifications and the above standards and practices.

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