

ROOFING  
+  
RAINWATER  
SYSTEMS

## STANDING SEAM + OTHER ROOF SYSTEMS GUTTER AND DOWNPIPE SYSTEMS

Design, specification and installation guidelines



# VMZINC Roofing and rainwater systems

## Contents



**Company profile** VMZINC® has been manufacturing a wide range of rolled zinc products used primarily for building envelopes since 1837. In addition to batten cap and standing seam roof systems, products include rainwater systems, a wide range of cladding systems, including a number of rainscreen facade products. Since its creation the company has also produced decorative roofing products such as dormers, bull's eyes, weather vanes and other ornaments.



3	.....	<b>Why use VMZINC roofing &amp; rainwater systems?</b>
4	.....	<b>Sustainable performance</b>
6	.....	<b>Surface finishes</b>
8	.....	<b>The roofing system</b> Underlying principles
12	.....	<b>Warm roofs (non-ventilated)</b>
	12.	Introduction
	14.	Standing seam on rigid insulation – Structural Roof
	16.	Standing seam on cellular glass insulation – Compact Roof (Only solution for high humidity buildings such as swimming pools)
	18.	Standing seam on insulated metal-faced panels
	20.	Standing seam on plywood bonded to phenolic foam
24	.....	<b>Cold roofs (ventilated)</b>
	24.	Introduction
	26.	Standing seam on vented plywood
	28.	Standing seam on open-gap timber boarding
30	.....	<b>Technical drawings</b>
34	.....	<b>Half Round rainwater system</b>
	34.	A complete gutter and downpipe range
	36.	Gutters, pipes and fittings available in QUARTZ-ZINC, ANTHRA-ZINC and PIGMENTO
	38.	Installation procedures
40	.....	<b>Box gutters and other profiles</b>
	40.	Complete gutter and downpipe ranges
	42.	Gutters and fittings available in QUARTZ-ZINC, ANTHRA-ZINC and Natural Zinc
	43.	Pipes and fittings available in QUARTZ-ZINC, ANTHRA-ZINC and Natural Zinc
44	.....	<b>General recommendations for gutters</b> Flow rates
45	.....	<b>Specification guidelines</b> Half Round rainwater system, Box gutters and other profiles
46	.....	<b>Further technical information</b> General for all zinc products
47	.....	<b>Other VMZINC roofing systems</b>
	47.	Batten cap roofs
	48.	Adeka tiles and roofing shingles
	49.	Rainscreen roofs
50	.....	<b>VMZINC facades</b>
	50.	Standing seam facades
	51.	Other VMZINC facade systems
51	.....	<b>VMZINC ornaments</b>

Front cover building credit: Peter Claiborne Architecture and Design

# VMZINC Roofing and rainwater systems

## Why use VMZINC roofing and rainwater systems?

**Introduction** Zinc is among the most sustainable metals used in construction today and has been used on the roofs of Paris for almost 200 years. The VMZINC standing seam system is also highly cost-effective, both from an initial procurement and design life perspective.

Whether for new build or refurbishment, the VMZINC standing seam system has 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's versatile standing seam system can be used for warm or cold roof constructions and all trim including both internal and hanging external gutters are available in VMZINC.

### Benefits of VMZINC standing seam and rainwater systems

- Lightweight and durable
- Minimal expansion and creak
- Fully recyclable
- A service life of 100 years for roofing panels and in excess of 50 years for gutters
- 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)
- EN 15804 Environment Product Declaration
- BBA certified systems
- Conforms to EN 988
- Can be laid in lengths up to 13 metres without the need for expansion steps
- Fire classification A1 (Natural Zinc, QUARTZ-ZINC, ANTHRA-ZINC and AZENGAR) and A2-s1,d0 (PIGMENTO and VMZINC PLUS) according to EN 13501-1:2002
- Available in a choice of either natural finish or 8 pre-weathered finishes as well as bespoke PIGMENTO colours



# VMZINC Roofing and rainwater systems

## 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. Manufacturing processes for our standing seam and rainwater systems present a low environmental impact, particularly with regard to energy expenditure.

As the comparative energy expenditure diagram opposite shows, 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.

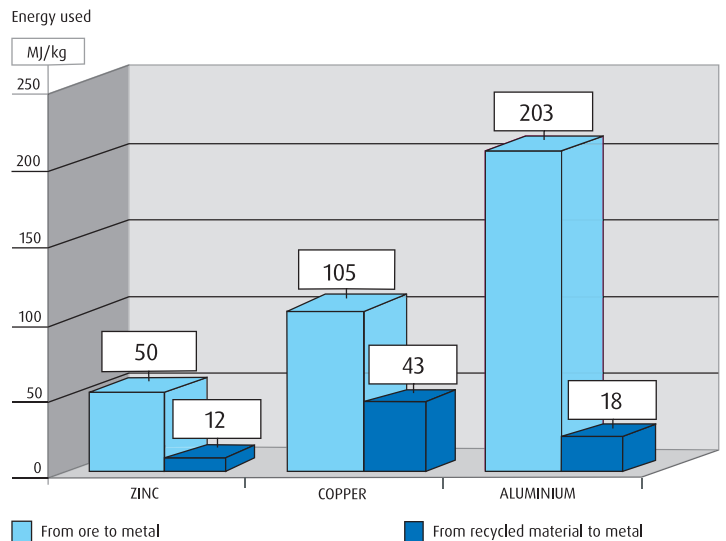
### Low corrosion, long life

The VMZINC 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. SO<sub>2</sub> 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](http://www.vmzinc.co.uk) and [www.greenbooklive.com](http://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.

### Comparative energy expenditure in manufacture



Compared with other metals, very little energy is needed to manufacture zinc metal from ore – less than half the consumption of copper and stainless steel and less than a quarter of that used for aluminium. CO<sub>2</sub> and other greenhouse gas emissions are also, therefore, proportionally less.



# VMZINC Roofing and rainwater systems

## Sustainable performance



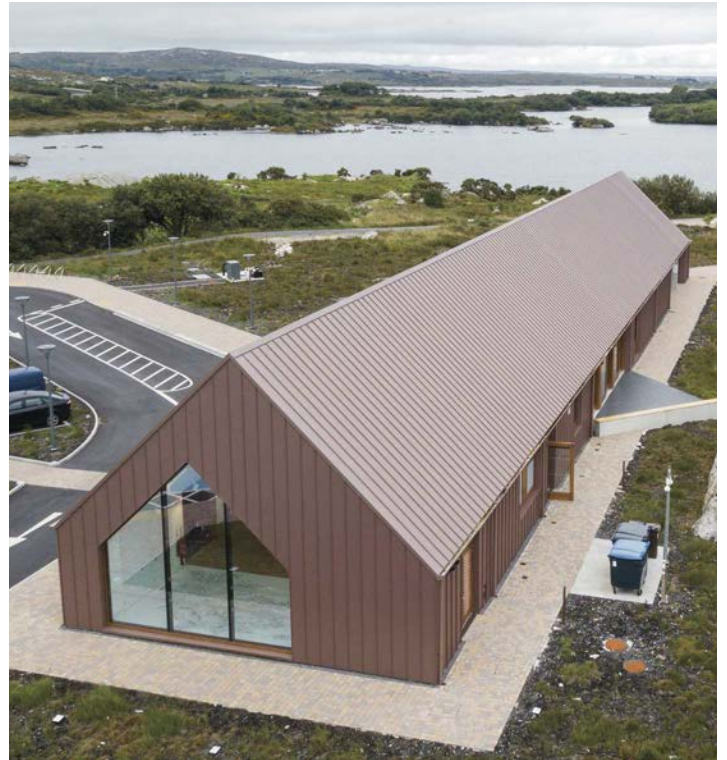
Environmental profiles measure the impacts of a construction material, product or building system throughout its life, not only during its manufacture, but also its use in a building over a 100 year period. This includes its extraction, processing, use and maintenance and its eventual disposal.

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 Roofing and rainwater systems

## Surface finishes

**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.



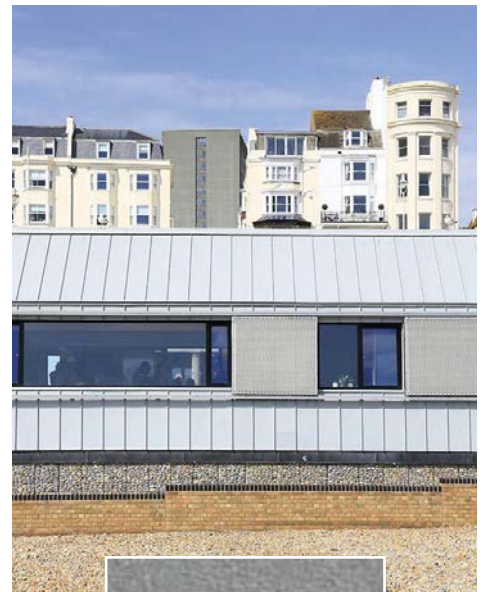
**QUARTZ-ZINC®** QUARTZ-ZINC offers an appearance and texture that does not change over time. When QUARTZ-ZINC is scratched, it will self heal. The grey tones of QUARTZ-ZINC blend well with existing construction materials - ideal for refurbishment.



**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 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.



# VMZINC Roofing and rainwater systems

## Surface finishes

Please contact us  
for  
samples

### Standard PIGMENTO®

PIGMENTO finishes offer a unique range of colours (Blue, Green, Brown, Red and Grey) 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 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.

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

### Bespoke PIGMENTO® New

The PIGMENTO range is now available in bespoke colours. Samples of the colours indicated here are available upon request. For other colours a sample and RAL colour should be submitted in order to assess feasibility.



Standard  
PIGMENTO® BLUE



Standard  
PIGMENTO® GREEN



Standard  
PIGMENTO® BROWN



Standard  
PIGMENTO® RED



Bespoke PIGMENTO®  
colours



Standard  
PIGMENTO® GREY

# VMZINC Standing seam roofing

## The roofing system

Underlying principles

**Introduction** The standing seam system consists of a comprehensive range of robust components that ensures appropriate and correct installation is achieved. It is also important that standing seam roofs are installed by properly trained and equipped professionals.

Individual panels are held in place at the top of the pitch by a minimum of 5 fixed clips and then towards the lower portion of the panel by sliding clips allowing thermal movement. These stainless steel clips, which are fixed to the structure, are crimped inside the joints. Thus the fixing clips for panels and flashings never penetrate the material and therefore do not affect the appearance or damage the waterproofing. The low height of the seams (25mm standard) and the 600mm maximum spacing between joints give the roof a light, harmonious appearance.

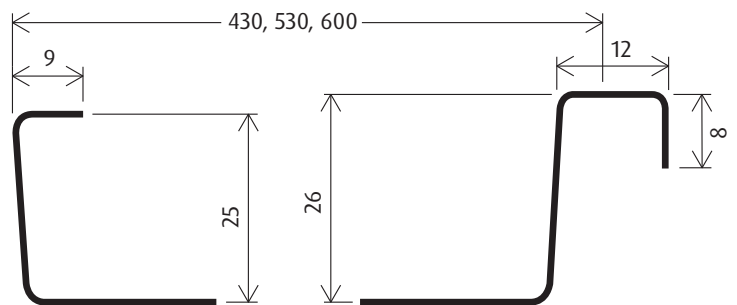
The standing seam system is available in various standard coil dimensions shown in the table on the opposite page. Non-standard widths between 60mm and 600mm can also be produced.

The standing seam panels weigh approx 6kg per m<sup>2</sup>.

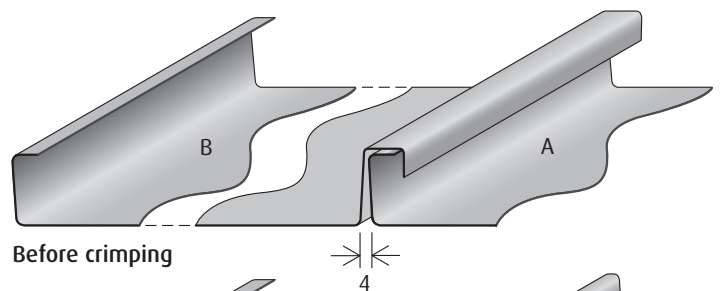
See pages 6 and 7 for samples of the 9 pre-weathered and engraved finishes.

The system is eminently suitable for warm roof constructions (pages 12-21) and for cold roof constructions (pages 24-29).

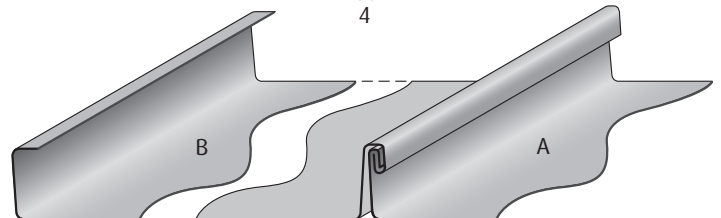
**VMZINC PLUS** VMZINC PLUS is a unique patented product that allows zinc to be installed on ventilated plywood (page 26) as well as specific warm (non-ventilated) substrates (pages 12-21). The product consists of VMZINC (in all finishes) having a 60µm coating applied to the underside thus allowing a 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 140 litres when tested in accordance with ASTM D 968.



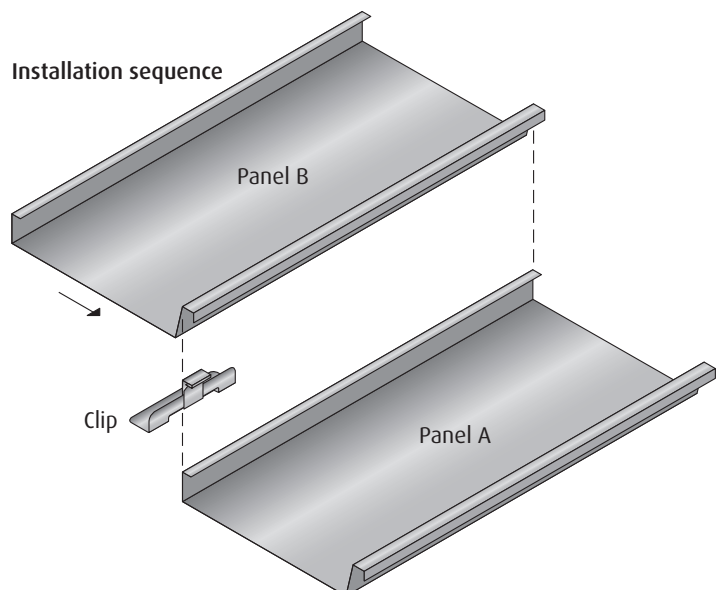
Panel dimensions (mm)



Before crimping



After crimping (double lock standing seam)



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



# VMZINC Standing seam roofing

## The roofing system

Underlying principles

Please contact us  
for further  
design assistance

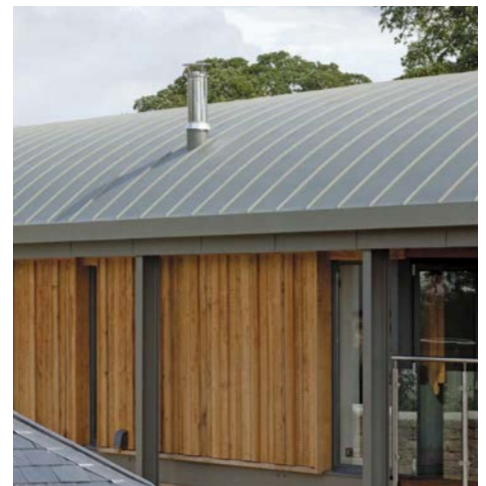


VMZINC has 2 BBA Certificates for non-ventilated warm roof systems – the Structural Roof and the Compact Roof. See pages 14 to 17.

BBA certified systems give a wide range of benefits. For over 40 years agrément certificates have been supplied by the BBA in order to give unbiased information on the performance of a system. By selecting a BBA system an architect is sure to avoid problems at a number of stages in the building process and queries about the performance of key products. By using BBA certified systems contractors also know that they will perform, if installed in accordance with the guidance in the Certificate.

### VMZINC accessories

VMZINC supply a number of accessories ranging from a breather membrane (page 46) to fixing clips (page 46) and flashings such as the G3 ridge, eave and verge.



### Standing seam coil dimensions

Surface finish	Coil thickness (mm)	Coil width (mm)	Standing seam centres (mm)
Natural zinc	0.70 or 0.80	500, 600 or 670	430, 530 or 600
QUARTZ-ZINC	0.70 or 0.80	500, 600 or 670	430, 530 or 600
ANTHRA-ZINC	0.70 or 0.80	500, 600 or 670	430, 530 or 600
PIGMENTO	0.70 or 0.80	500, 600 or 670	430, 530 or 600
AZENGAR	0.70 or 0.80	500 or 600	430 or 530

All the above surface finishes are available as Standard and PLUS products.

Standing seam zinc roofing will not give a perfectly flat finish. However, by reducing panel width and increasing zinc thickness, unevenness will be reduced. Narrower panels are also recommended in exposed areas with high wind loads.

# VMZINC Standing seam roofing

Kettle Collective



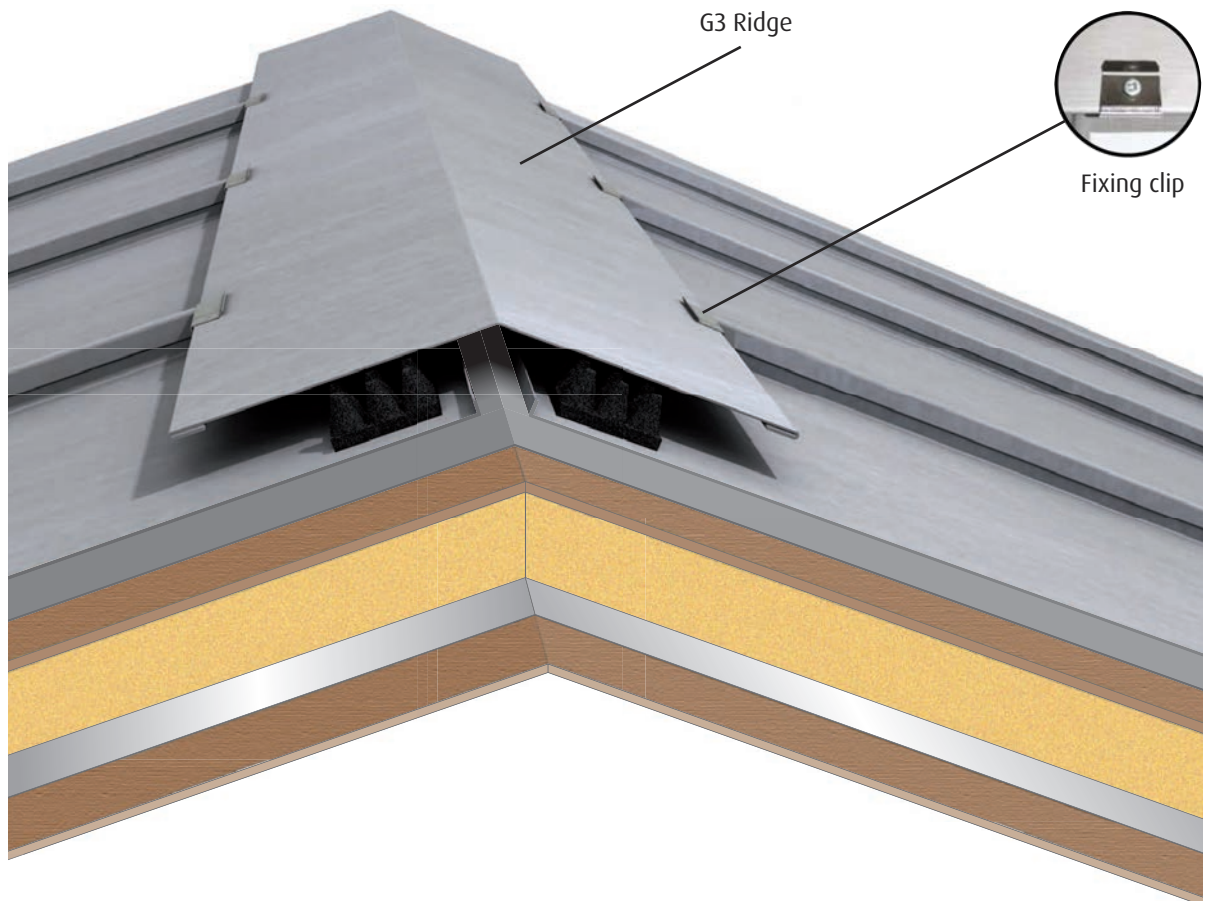
# VMZINC Standing seam roofing



## Warm roofs (non-ventilated)

Introduction

Typical detail using the VMZINC G3 Ridge on plywood bonded to phenolic foam



The VMZINC G3 Ridge:

- Gives a sleek, aesthetic value to the roof
- Is a standard VMZINC solution
- Is easy to install

**VMZINC PLUS** VMZINC PLUS must be used in all types of warm non-vented roof construction.

VMZINC PLUS is a unique solution that offers a protective coating 60 microns thick on its underside to protect the zinc from possible corrosion. VMZINC PLUS also allows all 9 available finishes to be installed.

**Advantages of a warm non-vented roof** This type of construction reduces thermal bridges and increases air tightness whilst still offering BBA certification and a BRE EN 15804 EPD.

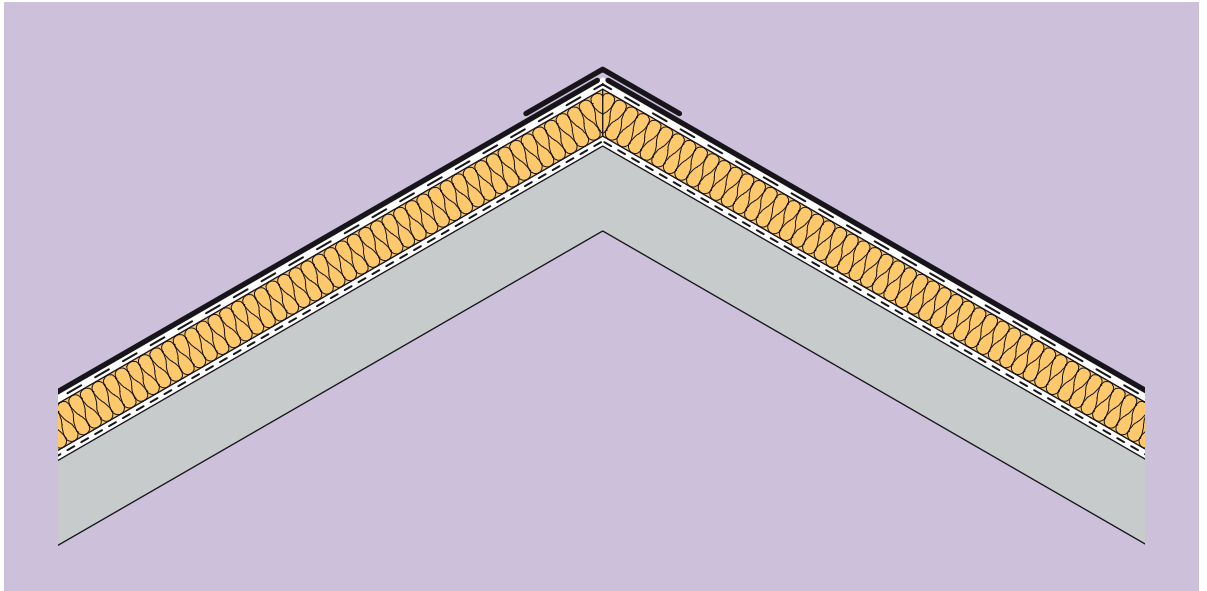


For more information contact us on  
**0203 445 5640**  
or send an e-mail to  
[vmzinc.uk@vmbuildingsolutions.com](mailto:vmzinc.uk@vmbuildingsolutions.com)

## Warm roofs (non-ventilated)

Introduction

Typical warm roof arrangement



Continuous layer of insulation covering a fully supported vapour barrier.

### 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.

### 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
- Aludex Max vapour barrier must be used and correctly installed. This is a bitumen-backed aluminium foil vapour barrier that must be fully supported and must cover the complete surface of the roof.

### Warm roof standing seam constructions

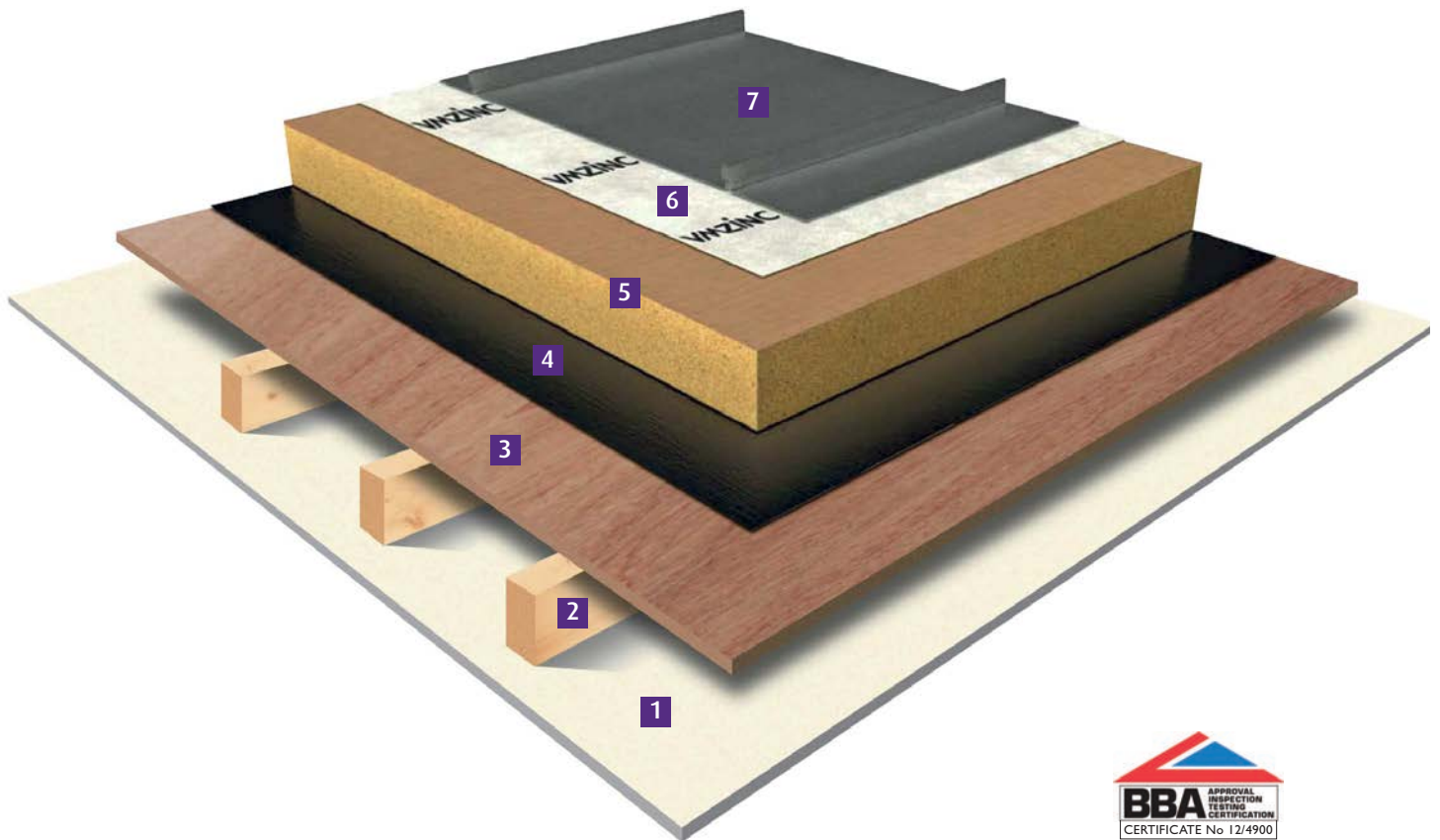
With rigid insulation – <b>Structural Roof</b> .....	<b>p14</b>
With cellular glass insulation – <b>Compact Roof</b> .....	<b>p16</b>
With insulated metal-faced panels .....	<b>p18</b>
With plywood bonded to phenolic foam .....	<b>p20</b>



# VMZINC Standing seam roofing

Warm non-vented roofs

## Standing seam on rigid insulation – Structural Roof



- Key to construction build-up**
- 1 Interior finish
  - 2 Rafters
  - 3 Continuous support (e.g. steel deck or plywood)
  - 4 Aludex Max (fully supported vapour barrier)
  - 5 Insulation (e.g. mineral board or PIR)
  - 6 VMZINC Membrane
  - 7 VMZINC PLUS Standing Seam

- Advantages of the Structural Roof**
- BBA certified – 12/4900 product sheet 1
  - BRE EN 15804 EPD
  - Reduced thermal bridges



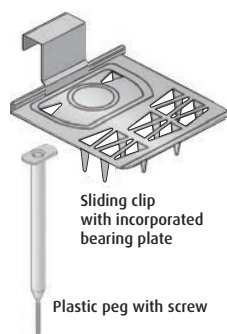
Aludex Max must be used and installed with a C350 primer when necessary

## Standing seam on rigid insulation – Structural Roof

**Area of application** With this warm roof system VMZINC PLUS Standing Seam can be installed on rigid insulation (mineral board or PIR) without ventilating the underside of the zinc. It is fixed through to the deck with special fixing screws and clips supplied by VMZINC. The system can be used for roofs with a pitch from 3° to 70° and for buildings with humidity classes of between 1 to 4 (dwellings with high occupancy, sport halls, etc).

**Structure** The supporting structure can be a steel or plywood deck. Either deck is covered by Aludex Max (an aluminium foil-reinforced bituminous vapour barrier with a high water vapour resistance of 7000MNsg) installed with cold or hot glued joints. All insulation materials must have a compression strength of minimum 50kPa (0.5kg/cm<sup>2</sup>), at a maximum 10% deformation and must be dimensionally stable at up to 100°C and comply with current Building Regulations. Between the VMZINC PLUS and the insulation, a VMZINC Membrane is fixed with an overlap that varies depending on the slope. The insulation material must also comply with the fire resistance requirements of the Building Regulations.

**Clip types and associated components** The Structural Roof includes fixing systems that allow both fixed and sliding clips to be installed without damaging the insulation but at the same time allowing the zinc panels to freely expand and contract.

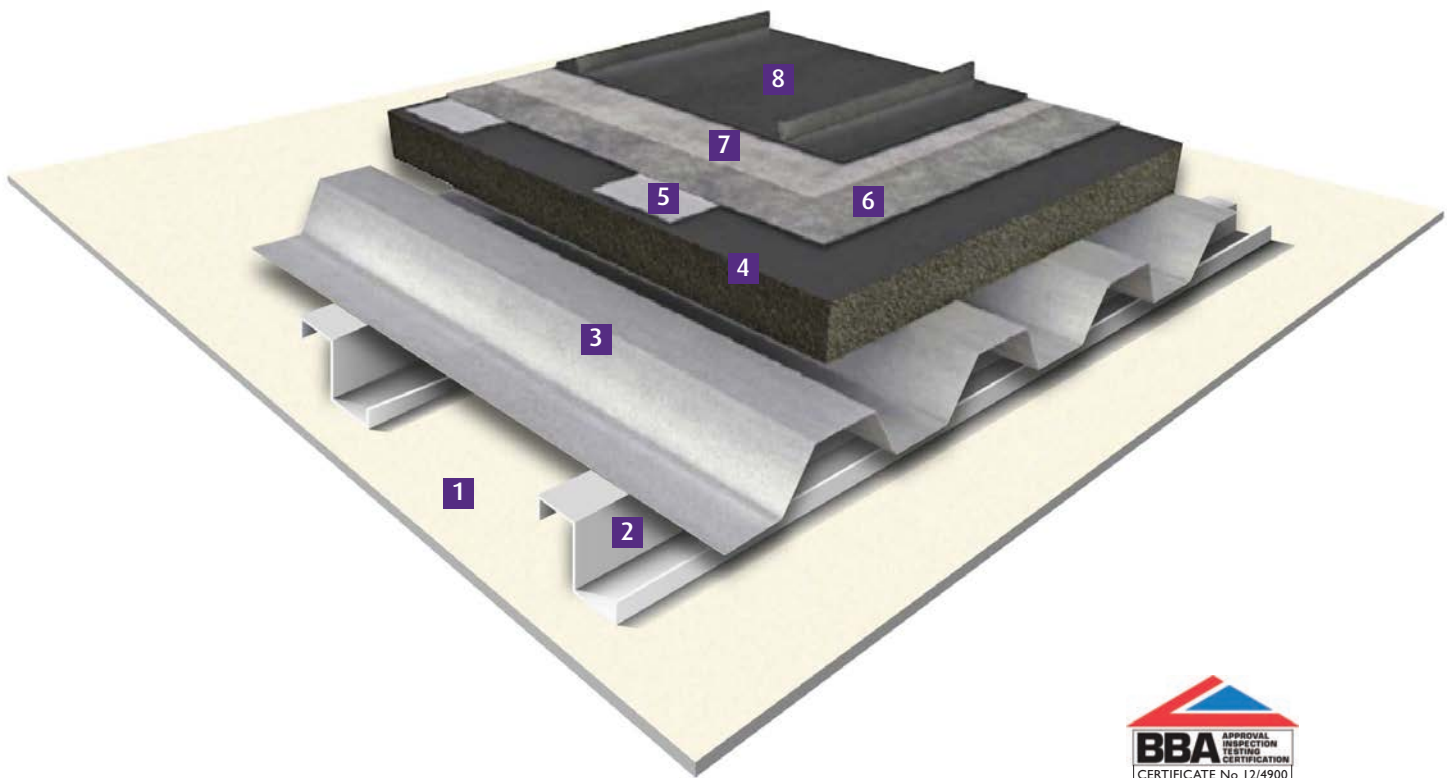


Note:  
The information relating to the installation of insulation is indicative only.

The choice and installation of these products will be according to the recommendations of the insulation manufacturers.

Download the technical drawings of this roof build-up from our website  
[www.vmzinc.co.uk](http://www.vmzinc.co.uk)

## Standing seam on cellular glass insulation – Compact Roof



### Key to construction build-up

- 1** Interior finish
- 2** Metal purlins
- 3** Continuous support (e.g. steel deck or plywood)
- 4** Cellular glass insulation (e.g. FOAMGLAS)
- 5** Galvanised steel plates
- 6** Bituminous membrane
- 7** Polyethylene separation layer
- 8** VMZINC PLUS Standing Seam

### Advantages of the Compact Roof

- Ideal for buildings with high humidity levels (including class 5, swimming pools)
- BBA certified – 12/4900 sheet 2
- Almost no thermal bridges
- Excellent pull-out resistance



Galvanised steel plates inserted into FOAMGLAS insulation



## Standing seam on cellular glass insulation – Compact Roof

**Area of application** Suitable for use on roofs with pitches from 3° to 60°. The only solution for high humidity buildings (eg swimming pools), this system can be installed on plywood and steel decks to the manufacturer's specifications.

FOAMGLAS cellular glass insulation offers resistance in any type of humid situations. Tapered or uniform thickness cellular glass insulation is available in board or slab format. Double layering is possible. For further information on cellular glass insulation, please contact FOAMGLAS.

**Structure** FOAMGLAS cellular glass insulation is adhered to the substrate using a cold adhesive; the staggered joints of the board are closely butted with the cold adhesive ensuring a vapour tight seal (no vapour barrier is required).

- The upper face of the cellular glass board has a bitumen and polyethylene protective layer.
- Galvanised steel plates are applied to the upper slab or board surface of the FOAMGLAS. Its bitumen upper surface is heated with a gas torch and the plates are inserted within the cellular glass insulation, forming a secure 'non thermal bridge' bond. The galvanised steel plates must be positioned in collaboration with the VMZINC installer.
- A high performance bituminous membrane +3mm thick with a sanded finish is torch applied to the upper surface of the insulation with lapped joints, the flow of bitumen ensures the butted joints are sealed. This membrane covers the entire roof surface including the plates.
- Polyethylene film is installed to avoid any contact between the VMZINC PLUS and the sanded torch-on bituminous membrane.
- The VMZINC PLUS panels are fixed to this structure with VMZINC clips screwed into the galvanised steel plates.

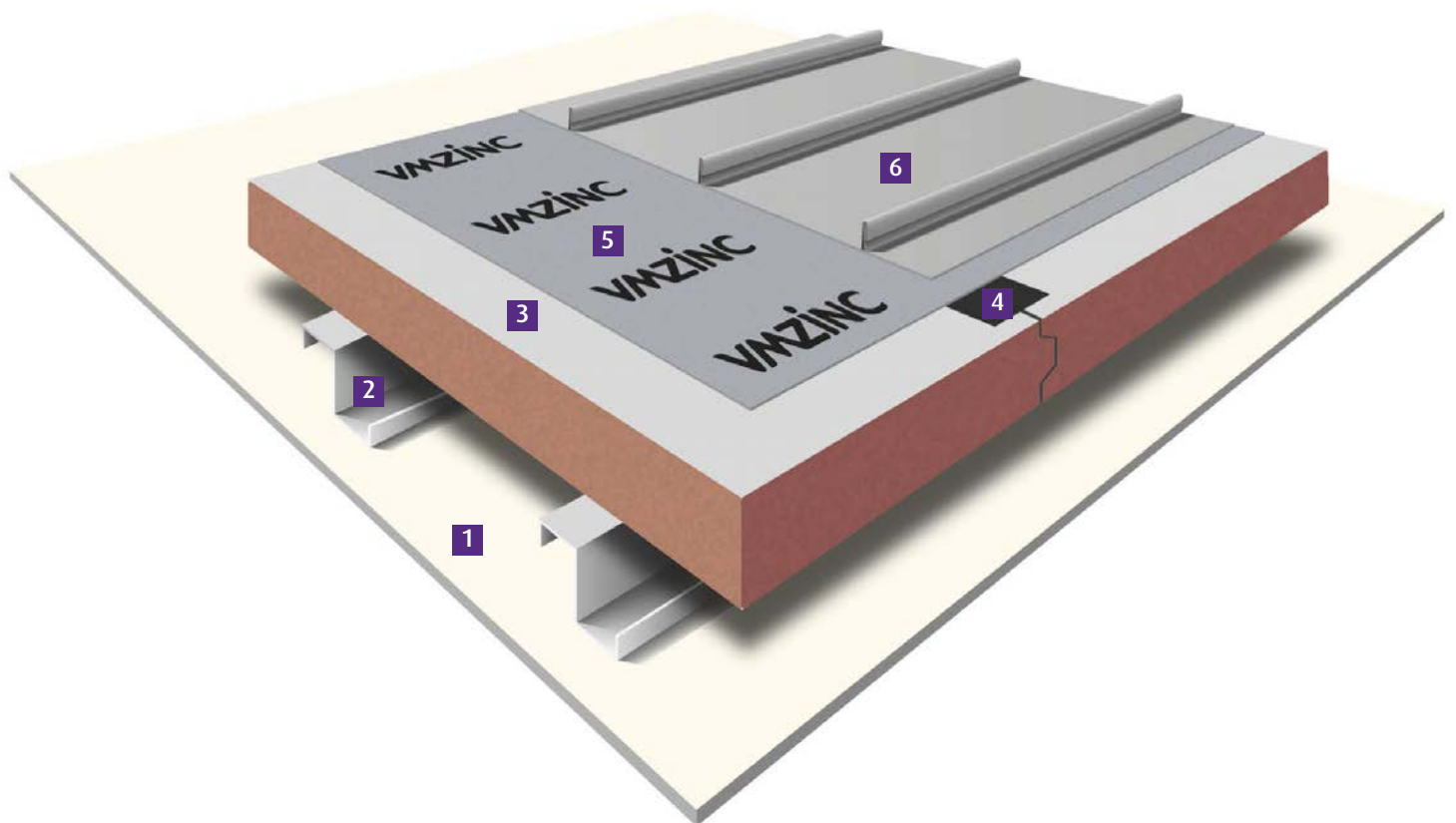


**Note:**  
The information relating to the installation of insulation and membranes is indicative only.

The choice and installation of these products will be according to the recommendations of the insulation and membrane manufacturers.

Download the technical drawings of this roof build-up from our website  
[www.vmzinc.co.uk](http://www.vmzinc.co.uk)

## Standing seam on insulated metal-faced panels



### Key to construction build-up

- 1 Interior finish
- 2 Steel purlins
- 3 Insulated metal-faced panel (0.7mm steel thickness)
- 4 Aluminium-faced tape
- 5 VMZINC Membrane
- 6 VMZINC PLUS Standing Seam

### Advantages of standing seam on insulated metal-faced panels

- BRE EN 15804 EPD.
- This solution provides good pull-out resistance
- Offers a fast track installation process over large areas
- Reduced thermal bridges
- Allows building to be temporarily weatherproofed rapidly



## Standing seam on insulated metal-faced panels

**Area of application** Suitable for buildings in 1 to 4 humidity classes (dwellings with high occupancy, sports halls, etc) and with pitches from 3° to 70°. The system can be used for wall cladding if a non-vented system is acceptable. For installation on metal-faced composite panels VMZINC PLUS, with its specially protected underside, must be used. The outer skin must provide a minimum pull-out value of 50daN for the standing seam fixing clip (dynamic testing method).

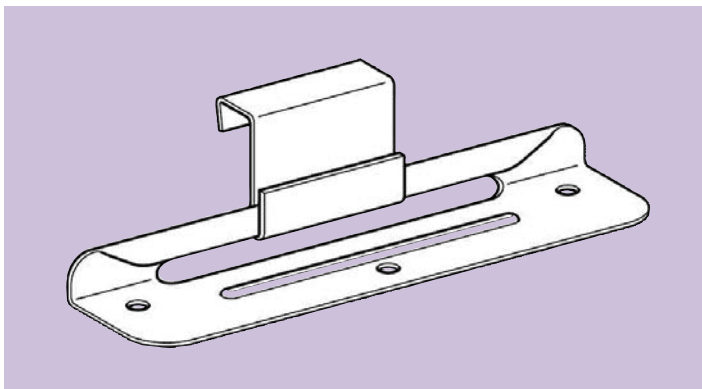
**Structure** The insulated metal-faced composite panel must be made from galvanised steel on both the internal and external facing (minimum thickness 0.7mm for external facing). Fixings and clips must not inhibit the required expansion and contraction of the VMZINC PLUS or cause any damage to the protective coating underneath.

The insulated metal-faced composite panel must provide a 100% vapour barrier. This is normally achieved using a panel with a vapour tight interlocking jointing system. It is the specifiers responsibility to ensure there is no risk of condensation in this type of roof construction and the use and humidity of the building should be considered before specifying this solution.

The warm side of the insulated panel joint must be sealed together with the top side. All joints and penetrations should be sealed appropriately.

The surface of the support that the zinc is to be laid on, must be even to within 2mm.

### Clips and screws



It is important that all screws and clips used on an insulated metal panel must be flush to the surface of the panel within 2mm. For instances where this is not the case it is possible to use clips with a raised section that allows free thermal expansion and contraction of the zinc panel without any risk to the underside of the zinc.

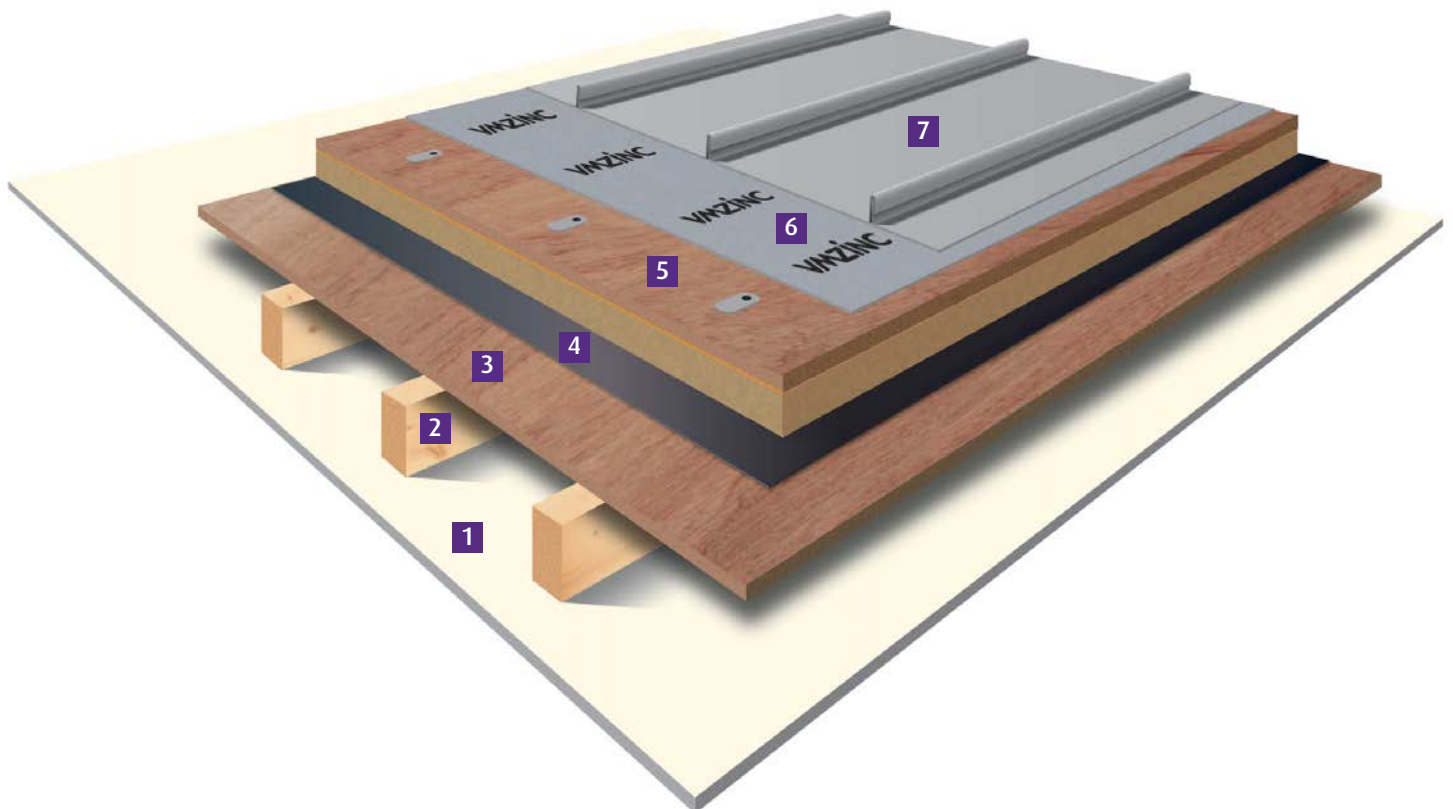


**Note:**  
The information relating to the installation of panel, clips and membranes is indicative only.

The choice and installation of these products will be according to the recommendations of the panel manufacturer.

Download the technical drawings of this roof build-up from our website  
[www.vmzinc.co.uk](http://www.vmzinc.co.uk)

## Standing seam on plywood bonded to phenolic foam



### Key to construction build-up

- 1** Interior finish
- 2** Rafters
- 3** Continuous support (e.g. steel deck or plywood)
- 4** Aludex Max (fully supported vapour barrier)
- 5** 18mm plywood factory bonded to phenolic insulation
- 6** VMZINC Membrane
- 7** VMZINC PLUS Standing Seam

### Advantages of standing seam on plywood bonded to phenolic foam

- Products such as Metdeck and Warmdex provide a continuous support to VMZINC PLUS
- Easy installation using traditional clips
- Reduces thermal bridging
- Timber substrate can resist limited foot traffic



## Standing seam on plywood bonded to phenolic foam

### Area of application

The system can be used for roofs with a pitch from 3° to 70° and for buildings with humidity classes of between 1 to 4 (dwellings with high occupancy, sport halls, etc). As with all warm (non-ventilated) roofs VMZINC PLUS must be used. This system provides a continuous 18mm WBP exterior grade plywood substrate allowing greater flexibility installing the VMZINC PLUS finish, thus eliminating the need to penetrate the insulation layer with additional fixings thereby minimising thermal bridging. With this warm roof system VMZINC PLUS Standing Seam can be installed on Metdeck/Warmdex composite panels without ventilating the underside of the VMZINC PLUS.

### Structure

The substrate of the Metdeck/Warmdex composite panels (on the warm side of the roof panel) must be covered with Aludex Max a continuous aluminium foil-backed bituminous self-sealing vapour barrier.

Condensation risk must be assessed for each individual project or individual project component in accordance with BS 5250: 2002. Specification may need to be adapted to the internal humidity load of the building. The VMZINC Membrane should be installed between the VMZINC PLUS and the Metdeck/Warmdex composite panels, then dressed into the gutter.

Metdeck/Warmdex composite panels, incorporating 18mm WBP plywood factory-bonded to a Resol insulation core, are mechanically fixed to the substrate (vapour barrier on concrete, metal or timber deck). The number of fixings required will vary with specific building details and geographical location, and must be assessed on an individual basis.

### Table of U-values

Product thickness* (mm)	U-value (W/m <sup>2</sup> K)
98	0.25
108	0.23
118	0.20
138	0.17
148	0.16
158	0.15
168	0.14

\*Product thickness = insulation + 18mm WBP ply.



Note:  
The information relating to the installation of insulation is indicative only.

The choice and installation of these products will be according to the recommendations of the insulation manufacturers.

Download the technical drawings of this roof build-up from our website  
[www.vmzinc.co.uk](http://www.vmzinc.co.uk)

# VMZINC Standing seam roofing



Studio Seilern

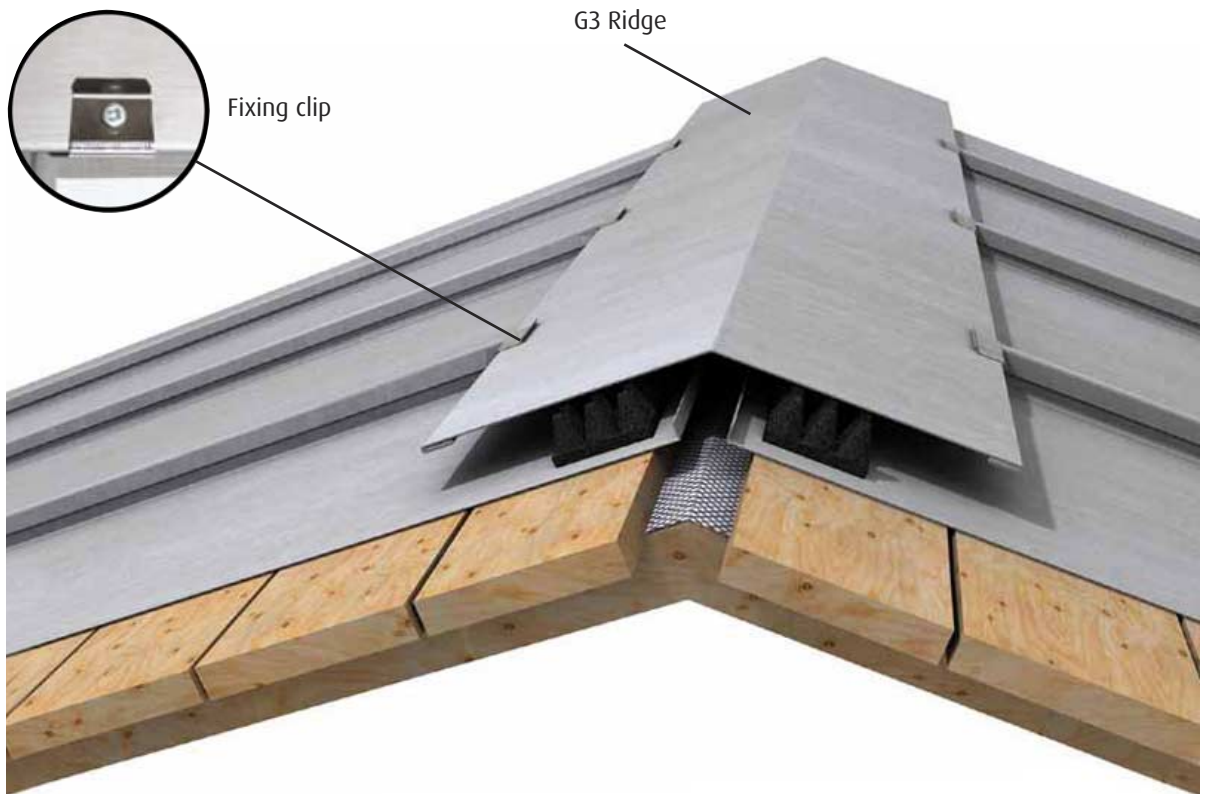
# VMZINC Standing seam roofing



## Cold roofs (ventilated)

Introduction

Typical ridge detail



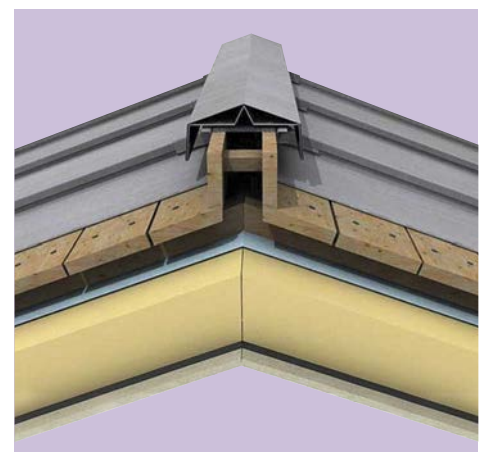
The VMZINC G3 Ridge, shown above:

- Gives a sleek, aesthetic value to the roof
- Is a standard VMZINC solution
- Is easy to install

**VMZINC PLUS** VMZINC PLUS is a unique solution that offers a protective coating 60 microns thick on its underside to protect the zinc from possible corrosion. VMZINC PLUS allows zinc in all 9 available finishes to be installed on a cold vented roof using a plywood deck (page 26).

**Advantages of a cold vented roof** Traditional construction which has a long history and is covered by a Code of Practice 143-5:1964 and BS EN 501:1994. This type of build up can be used on roofs ranging from 3° to vertical as well as soffits.

Alternative ridge detail



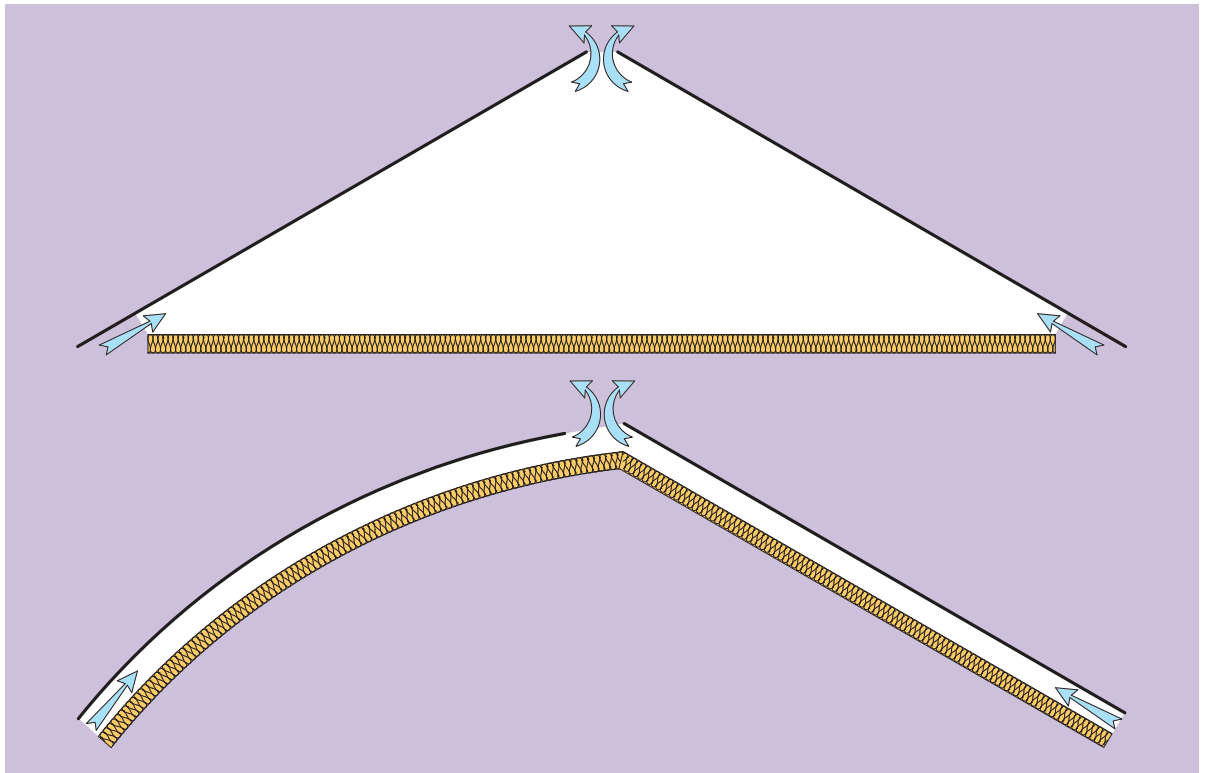
For more information contact us on  
**0203 445 5640**  
or send an e-mail to  
[vmzinc.uk@vmbuildingsolutions.com](mailto:vmzinc.uk@vmbuildingsolutions.com)



## Cold roofs (ventilated)

Introduction

Typical cold roof arrangements



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

### Definition of cold roof in the UK

Cold ventilated roofs and warm non-ventilated roofs are two terms which do not always denote the same ideas to all building professionals. 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. 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.

### Elements of the system

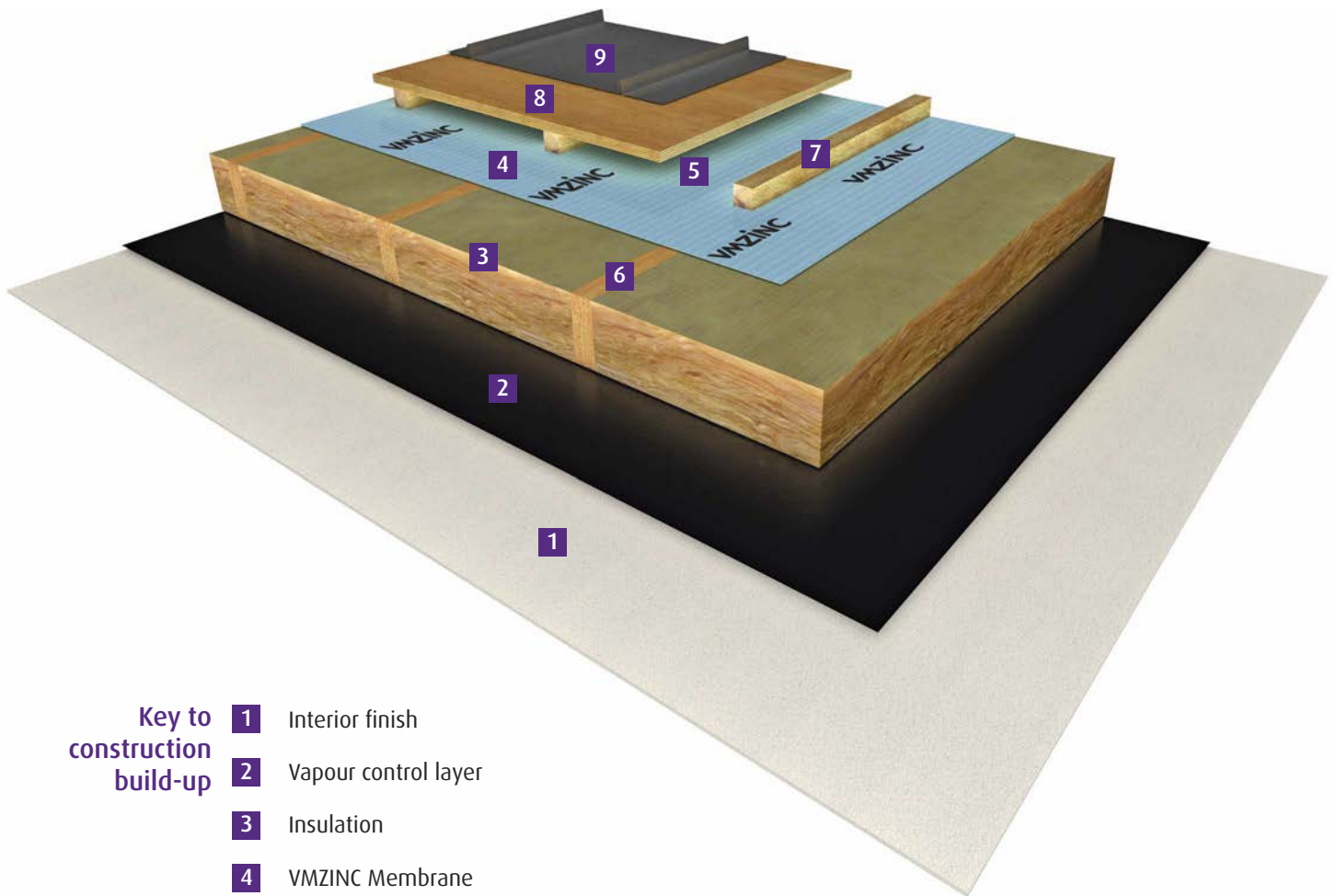
- VMZINC PLUS must be used on plywood whereas VMZINC is acceptable on open-gap softwood boards (see page 28)
- VMZINC Membrane can be used to protect the insulation
- The substrate must be continuous and even, and the correct fixing clips must be used



### Cold roof standing seam constructions

- With plywood ..... p26
- With open-gap timber boarding ..... p28

## Standing seam on vented plywood



### Key to construction build-up

- 1** Interior finish
- 2** Vapour control layer
- 3** Insulation
- 4** VMZINC Membrane
- 5** 50mm ventilated air space (minimum)
- 6** Rafter
- 7** Batten
- 8** Plywood
- 9** VMZINC PLUS Standing Seam

### Advantages of standing seam on vented plywood

- Provides a continuous rigid deck for the VMZINC PLUS
- Plywood decking is readily available and widely used
- Excellent pull-out resistance
- BRE EN 15804 EPD.



## Standing seam on vented plywood

**Area of application** Suitable for buildings in 1 to 4 humidity classes (dwellings with high occupancy, sport halls, etc) with pitches from 3° to the vertical. VMZINC PLUS is installed on the plywood. A minimum 50mm continuous air gap must be left clear beneath the plywood. Continuous ventilation openings are made at the ridge and eaves. In order to maintain the integrity of the roof, a breather membrane should be installed on the cold side of the insulation, and a vapour control layer appropriate to the building's humidity levels laid on the warm side of the insulation.

**Structure** VMZINC PLUS must be used. VMZINC Membrane can be used between the VMZINC PLUS and the plywood, although this is optional but may have the advantage of protecting the plywood prior to the installation of the zinc. The ideal thickness of the plywood is 18mm and it must be weather and boil proof. WBP plywood is more precisely described as EN 314-2 (bond class 2) and EN 636-2 (timber performance). The substrate must be flush to within 2mm and all screws and nails must be countersunk. The 50mm air space must be continuous and vented by openings at the base and top of the roof which are generally linear vents at least 10mm wide protected by insect mesh and correspond to BS 5250: 2002. The VMZINC membrane can be used to protect the insulation but the 50mm air space must not be compromised. It is also recommended to install a vapour control layer on the warm side of the insulation.

Prior to the installation of the VMZINC PLUS roofing panels the plywood substrate must be kept dry (moisture content of less than 22%). One method of protecting the plywood is to cover it with VMZINC Membrane. The VMZINC Membrane does not have to be removed when the VMZINC PLUS roof panels are installed.

**Temporary protection of the plywood** VMZINC PLUS can be installed directly over the plywood however it is important that this plywood is dry (moisture content below 22%). The plywood can be protected with a temporary roof, a tarpaulin or more commonly the VMZINC Membrane. When correctly installed with the appropriate overlaps the VMZINC membrane will temporarily 'dry in' the roof and has the added advantage of not having to be removed prior to installation of the VMZINC PLUS panels.

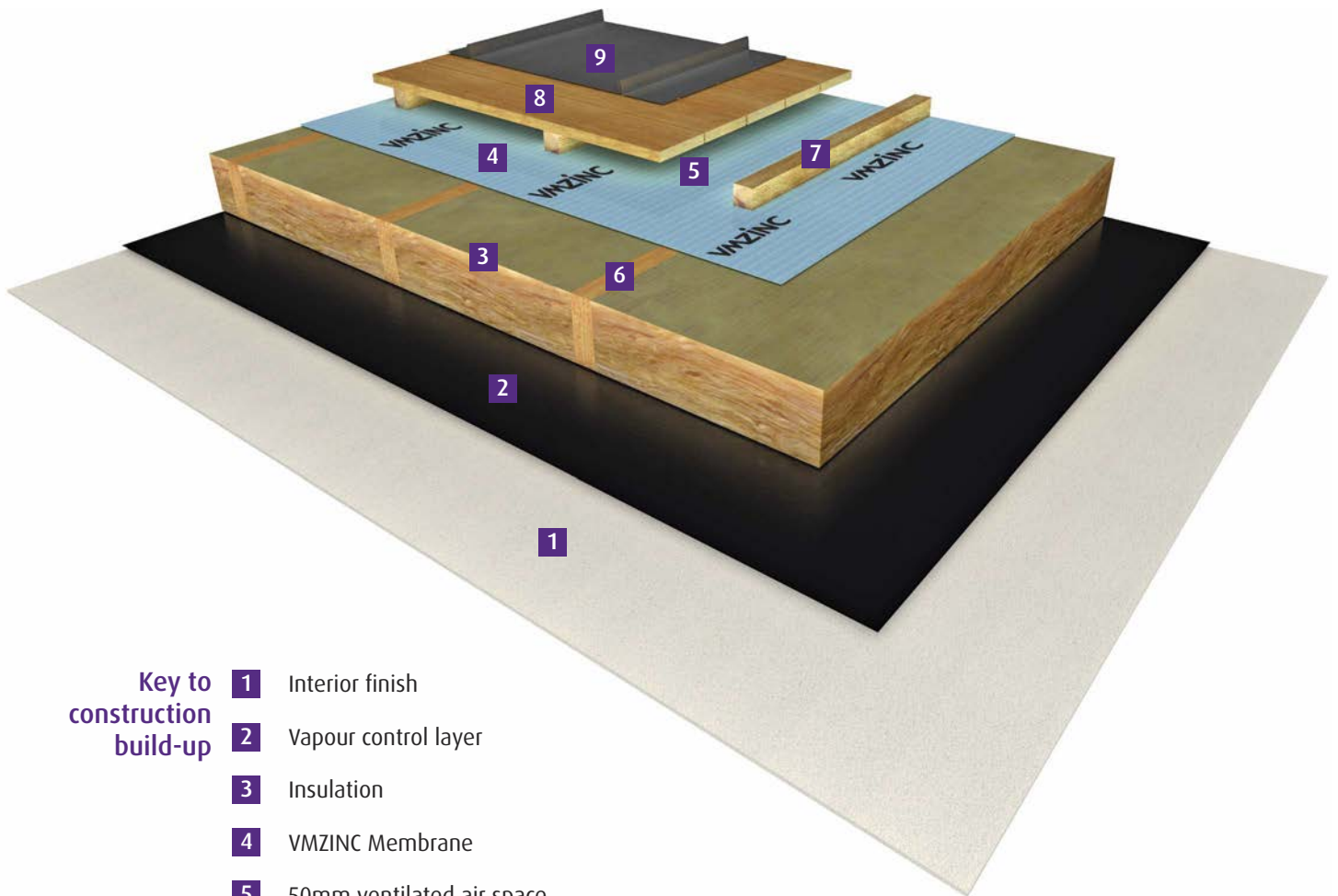


**Note:**  
The information relating to the installation of insulation and membranes is indicative only.

The choice and installation of these products will be according to the recommendations of the insulation and membrane manufacturers.

Download the technical drawings of this roof build-up from our website  
[www.vmzinc.co.uk](http://www.vmzinc.co.uk)

## Standing seam on open-gap timber boarding



### Key to construction build-up

- 1** Interior finish
- 2** Vapour control layer
- 3** Insulation
- 4** VMZINC Membrane
- 5** 50mm ventilated air space
- 6** Rafter
- 7** Batten
- 8** Open-gap timber boarding
- 9** VMZINC Standing Seam

### Advantages of standing seam on open-gap timber boarding

- A very versatile and easy to install substrate
- Flexible because it also permits complex shapes to be clad in zinc
- Excellent pull-out resistance
- Easy installation using traditional clips
- BRE EN 15804 EPD.



## Standing seam on open-gap timber boarding

**Area of application** Suitable for buildings in 1 to 4 humidity classes (dwellings with high occupancy, sport halls, etc) with pitches from 3° to the vertical (as well as soffits). VMZINC is installed on the roof boarding. A minimum 50mm continuous air gap must be left clear beneath the roof boarding. Continuous ventilation openings are made at the ridge and eaves. In order to maintain the integrity of the roof, a VMZINC breather membrane should be installed on the cold side of the insulation, and a vapour control layer appropriate to the building's humidity levels laid on the warm side of the insulation.

**Structure** VMZINC must be installed directly over the open-gap softwood boarding without the use of any membrane. The boarding should be clean and dry, 100mm to 150mm wide, 18mm or 24mm thick, according to the rafter centres. Any wood treatment products (fungicides, insecticides) must be dry and completely neutral in relation to VMZINC. See page 46.

The roof boards are fixed perpendicularly to the direction of the pitch leaving a 3mm to 5mm gap between them. They are securely fixed to the structure.

Maximum difference in height between roof boards should not be more than 1mm. The deflection measured under a rigid 600mm long straight edge cannot exceed 2mm in any direction. The roof board nails are countersunk in order to avoid any contact with the VMZINC.

Metal salt solutions must not be used on the timber boarding.



**Note:**  
The information relating to the installation of insulation and membranes is indicative only.

The choice and installation of these products will be according to the recommendations of the insulation and membrane manufacturers.

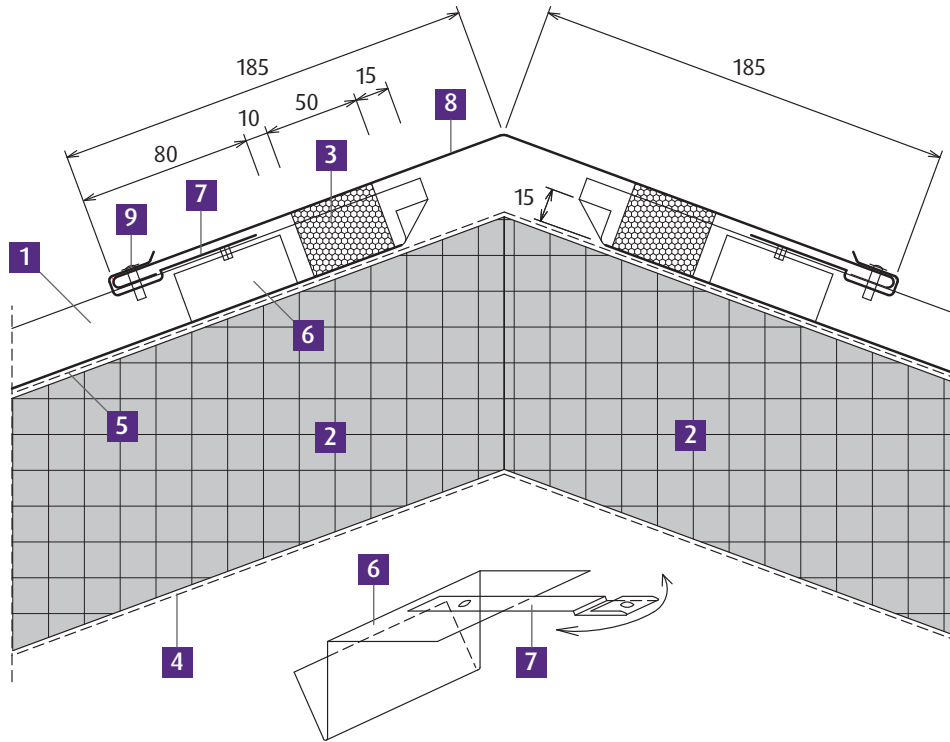
Download the technical drawings of  
this roof build-up from our website  
[www.vmzinc.co.uk](http://www.vmzinc.co.uk)

## Technical drawings

Download the complete set of technical drawings from our website [www.vorzinc.co.uk](http://www.vorzinc.co.uk)

### Ridge detail

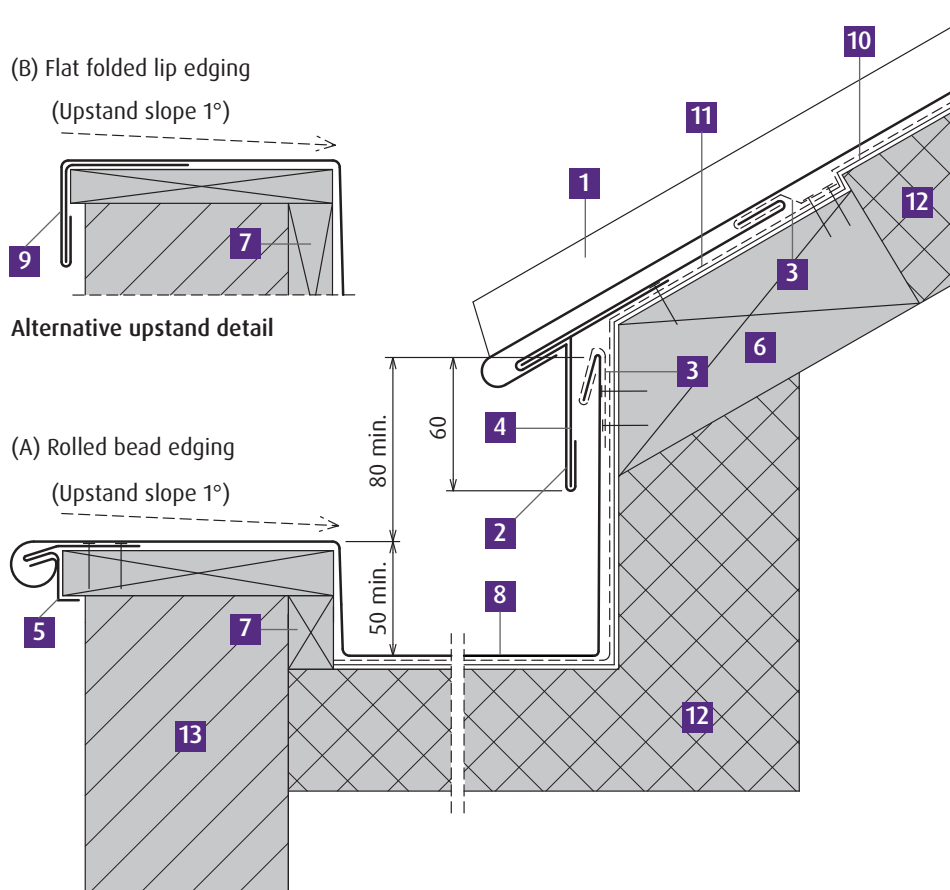
The ridge detail uses Standing Seam on rigid insulation - Structural Roof construction (p14)



- 1 VMZINC PLUS Standing Seam
- 2 Insulation: mineral wool or PIR
- 3 Decompression strip G3
- 4 Aludex Max vapour barrier supported by plywood or metal deck
- 5 VMZINC Membrane
- 6 VMZINC Ridge Clip G3 (fixed part)
- 7 VMZINC Ridge Clip G3 (moving part)
- 8 VMZINC Ridge G3
- 9 Clip fixing in accordance with the specification

### Box gutter (inside wall) detail

The box gutter detail uses Standing Seam on cellular glass insulation - Compact Roof construction (p16)



- 1 VMZINC PLUS Standing Seam
- 2 VMZINC PLUS continuous eaves apron strip
- 3 VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
- 4 VMZINC PLUS continuous folded strip, 0.7mm thick
- 5 VMZINC PLUS continuous apron strip, 0.7mm thick
- 6 Timber blocking, 5mm thinner than the insulation
- 7 Roof boarding
- 8 VMZINC PLUS boxed gutter
- 9 VMZINC PLUS continuous sheet strip, 0.7mm thick
- 10 Roofing membrane in accordance with the specification
- 11 PE film
- 12 Cellular glass insulation
- 13 Wall

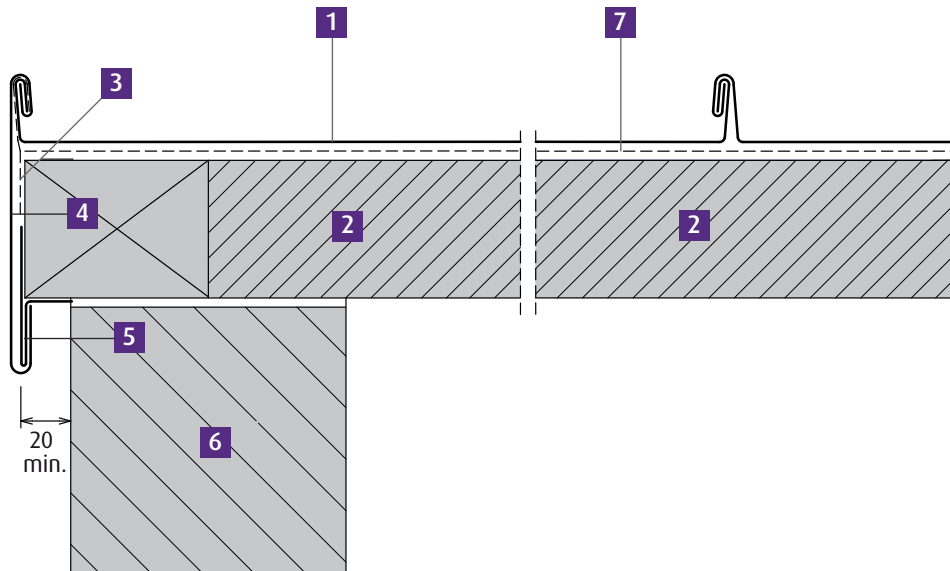
All dimensions in mm

## Technical drawings

Download the complete set of technical drawings from our website [www.vmzinc.co.uk](http://www.vmzinc.co.uk)

### Verge detail

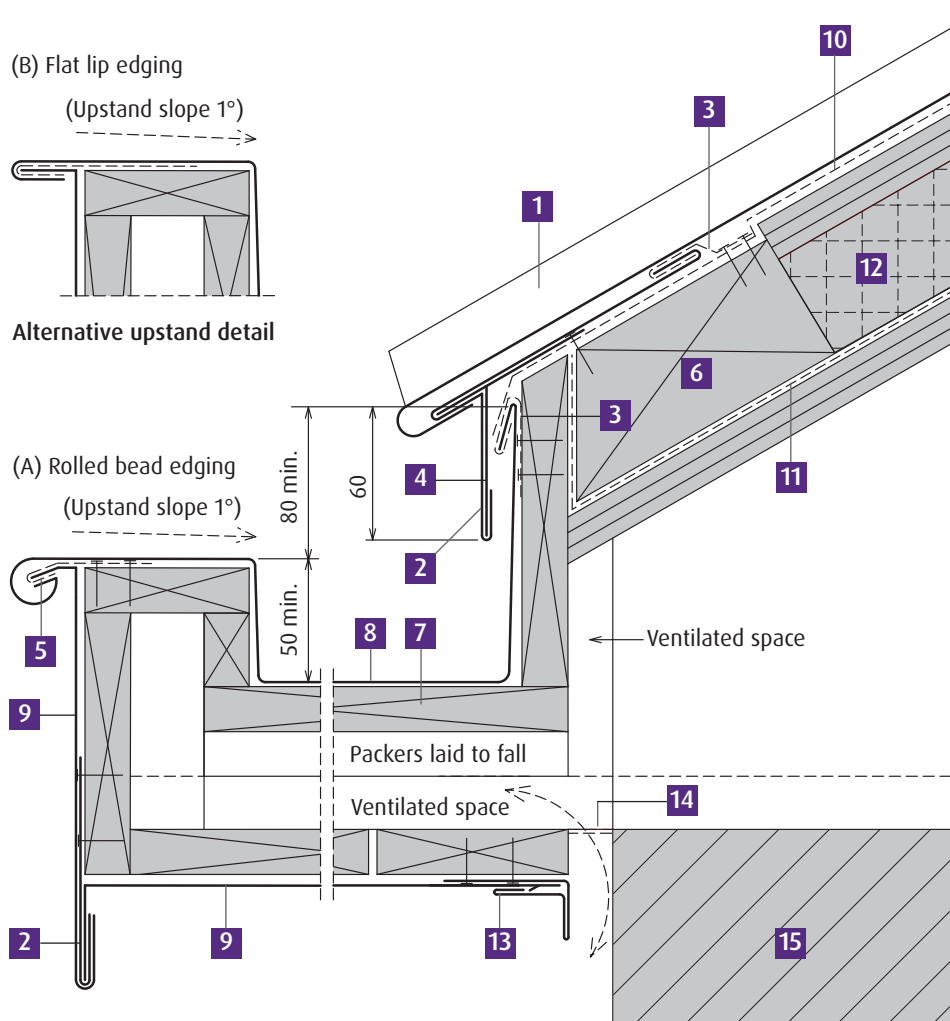
The verge detail uses Standing Seam on insulated metal-faced panels construction (p18)



- 1 VMZINC PLUS Standing Seam
- 2 Insulated metal-faced panel in accordance with the specification
- 3 VMZINC stainless steel sliding clip, bent to shape as required
- 4 VMZINC PLUS fascia
- 5 VMZINC PLUS continuous edge flashing
- 6 Wall
- 7 VMZINC Membrane

### Box gutter (outside wall) detail

The box gutter detail uses Standing Seam on plywood bonded to phenolic foam construction (p20)



- 1 VMZINC PLUS Standing Seam
- 2 VMZINC PLUS continuous eaves apron strip
- 3 VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
- 4 VMZINC PLUS continuous folded strip, 0.7mm thick
- 5 VMZINC bracket, 1mm thick, width 250mm, 2 per m
- 6 Timber blocking, 5mm thinner than Metdeck
- 7 Roof boarding (under box gutter on packers laid to fall)
- 8 VMZINC PLUS boxed gutter
- 9 VMZINC fascia with 400mm x 2000mm welted panels
- 10 VMZINC Membrane
- 11 Aludex Max vapour barrier supported by plywood or metal deck
- 12 Metdeck panel (plywood bonded to Resol phenolic foam)
- 13 VMZINC Uniprofil F4
- 14 Insect mesh
- 15 Wall

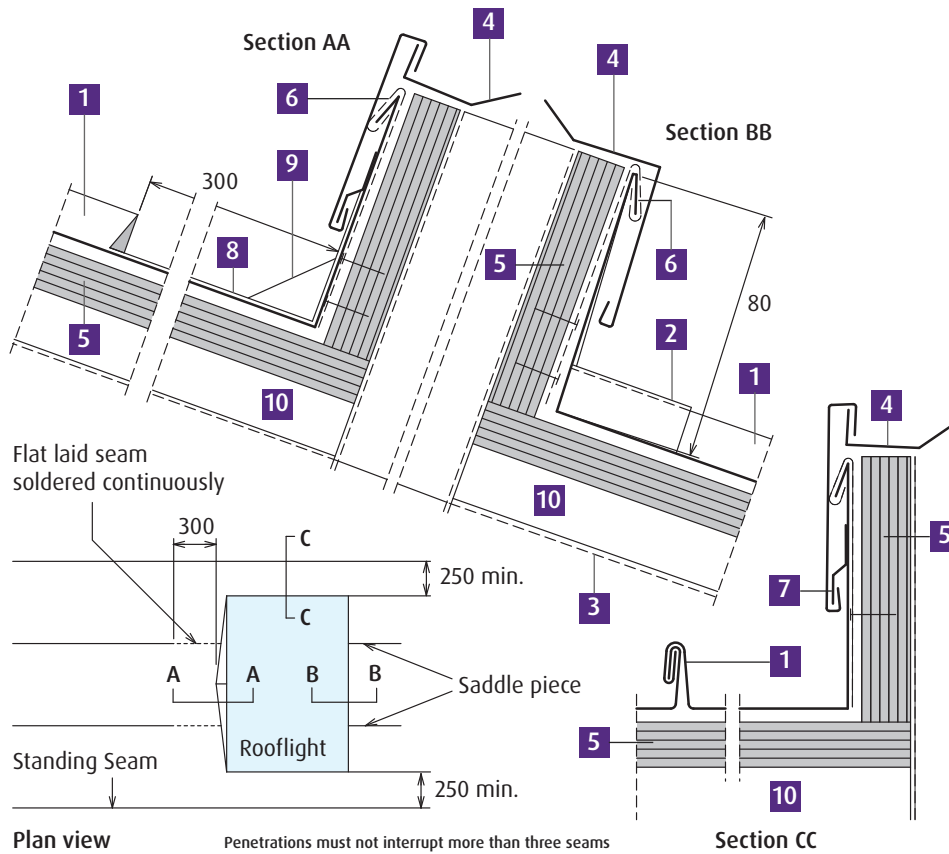
All dimensions in mm

## Technical drawings

Download the complete set of technical drawings from our website [www.vmzinc.co.uk](http://www.vmzinc.co.uk)

### Rooflight detail

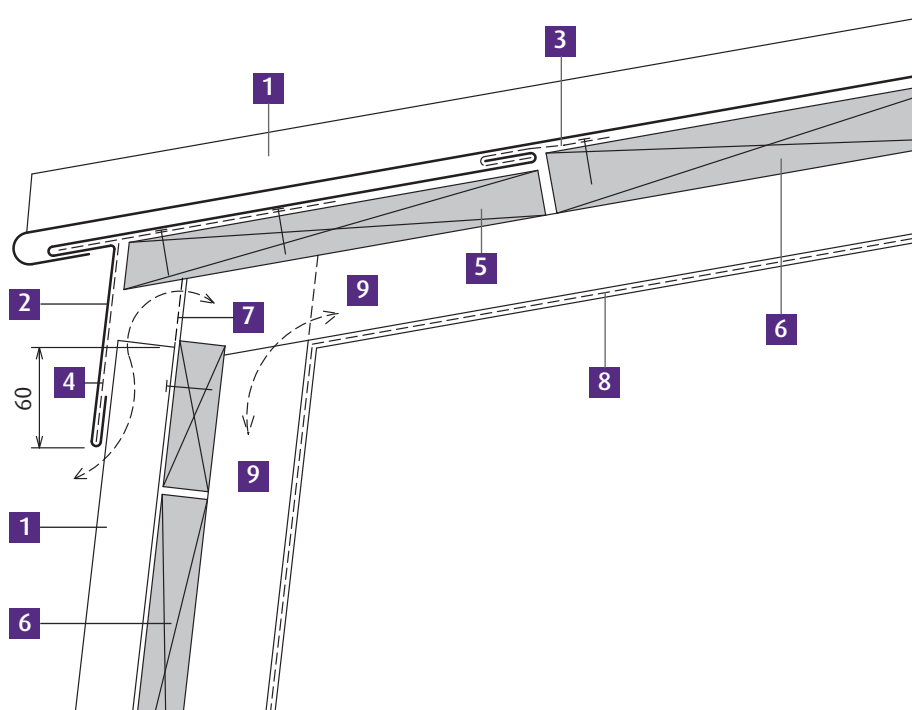
The rooflight detail uses Standing Seam on vented plywood construction (p26)



- 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 Fillet, 0.5° minimum slope
- 10 Ventilated space

### Mansard detail

The mansard detail uses Standing Seam on open-gap timber boarding construction (p28)



- 1 VMZINC Standing Seam
- 2 VMZINC continuous eaves apron strip
- 3 VMZINC sheet clip, 0.8mm thick, width 80mm, 2 per m
- 4 VMZINC folded clip, 1mm thick, width 250mm, 2 per m
- 5 Eaves board, 5mm thinner than adjacent boards
- 6 Roof boarding
- 7 Insect mesh
- 8 VMZINC Membrane
- 9 Ventilated space

All dimensions in mm

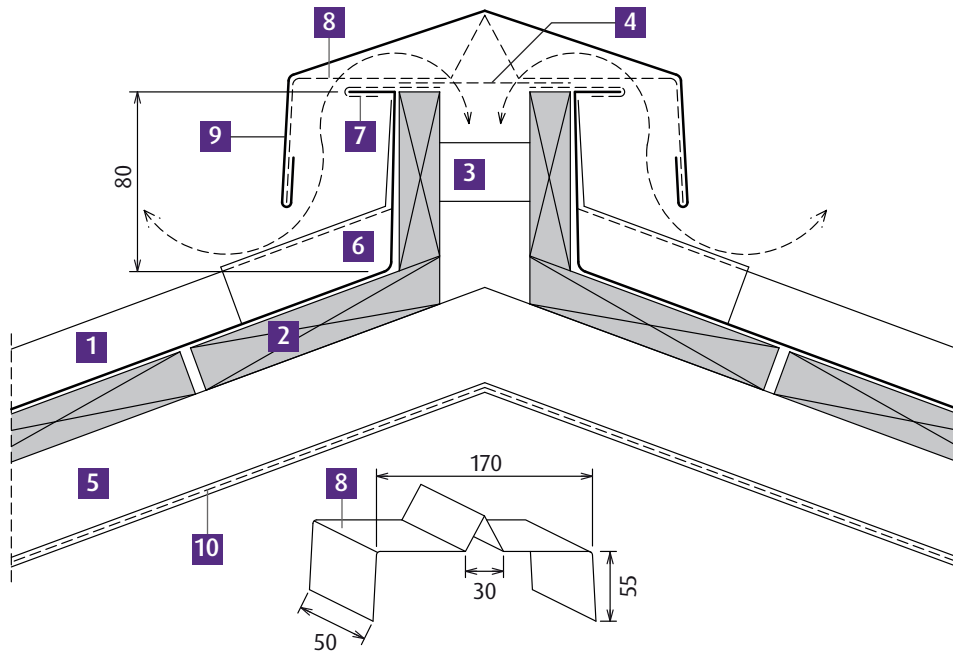


## Technical drawings

Download the complete set of technical drawings from our website [www.vMZinc.co.uk](http://www.vMZinc.co.uk)

### Ventilated ridge detail

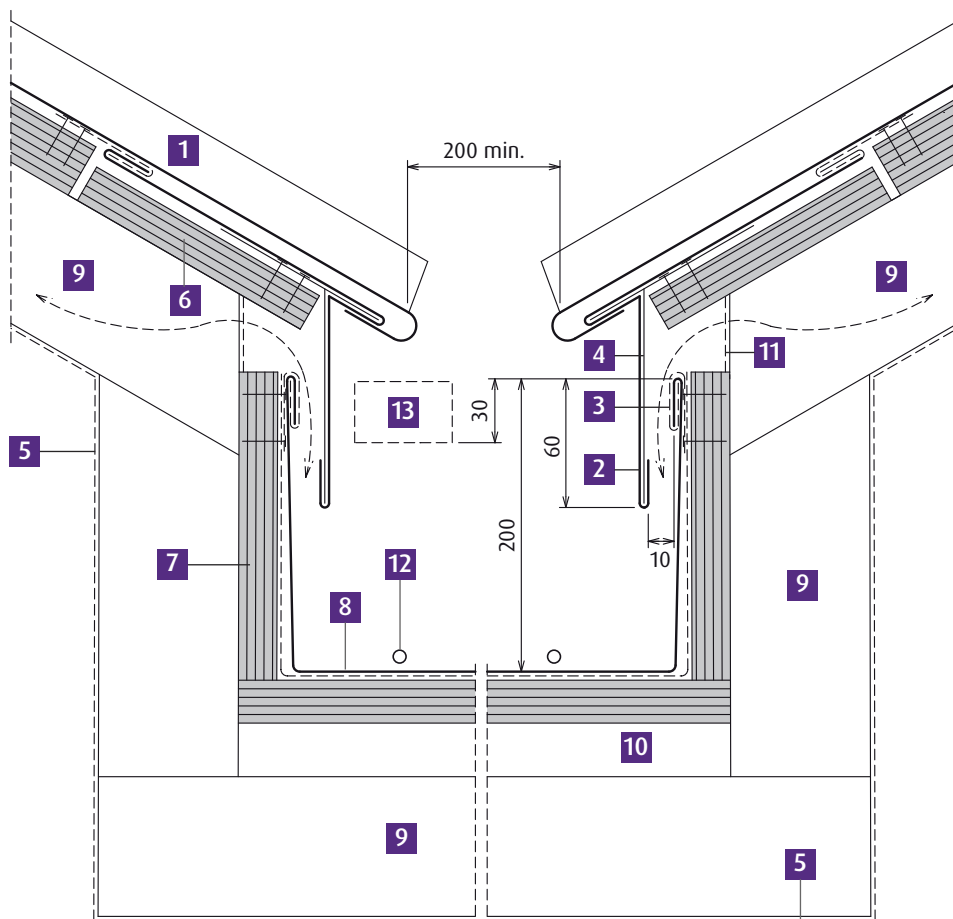
The ventilated ridge detail uses Standing Seam on open-gap timber boarding construction (p28)



- 1 VMZINC Standing Seam
- 2 Roof boarding
- 3 Sprocket piece
- 4 Insect mesh
- 5 Ventilated space
- 6 VMZINC saddle piece
- 7 VMZINC sheet clip, 0.8mm thick, width 80mm, 2 per m
- 8 VMZINC folded clip, 2 per m
- 9 VMZ ridge piece
- 10 VMZINC Membrane

### Box valley gutter detail

The box valley gutter detail uses Standing Seam on vented plywood construction (p26)



- 1 VMZINC PLUS Standing Seam
- 2 VMZINC PLUS continuous eaves apron strip
- 3 VMZINC PLUS sheet clip, 0.7mm thick, width 80mm, 2 per m
- 4 VMZINC PLUS continuous folded strip 0.7mm thick
- 5 Breather membrane in accordance with the specification
- 6 Plywood eaves strip, 5mm thinner than adjacent plywood
- 7 Plywood
- 8 VMZINC PLUS gutter lining
- 9 Ventilated space
- 10 Packers laid to gutter fall
- 11 Insect mesh
- 12 Heating cables (if required)
- 13 Overflow at stop end(s) of gutter

All dimensions in mm

# VMZINC Rainwater

## Half Round rainwater system

A complete gutter and downpipe range

**Introduction** Through the use of concealed brackets, the Half Round rainwater system provides a stylish, flowing gutter line. The surface is resistant to the accumulation of dirt and debris thereby ensuring that good water flow and discharge rates are maintained.

Designed to be easily and quickly installed, the Half Round rainwater system's concealed brackets (fixed at 400mm max centres) simply clip onto the gutter sections, which in turn slide and twist together. The gutter joints are then bonded and sealed using a high performance gun-applied one component MS polymer solvent-free adhesive, VMZINC-G.

Downpipes are secured to the wall using a simple but ingenious v-lock and self-locking bracket assembly. Downpipes are then push-fitted together but are not bonded, allowing the joints to expand and contract to accommodate varying thermal conditions.

- Benefits**
- Comes in ready-to-use kit form
  - Stylish flowing gutter line through use of concealed galvanised steel brackets
  - Self-locking downpipe brackets
  - Sleeve connection on pipes
  - QUARTZ-ZINC, ANTHRA-ZINC and PIGMENTO finishes
  - Lightweight yet durable
  - Quick to install
  - Low maintenance
  - Long life expectancy
  - Aesthetically distinctive
  - Strength not affected by ultraviolet light
  - Good flow rates and discharge of water
  - Colour does not deteriorate as a result of ultraviolet light



# VMZINC Rainwater

## Half Round rainwater system

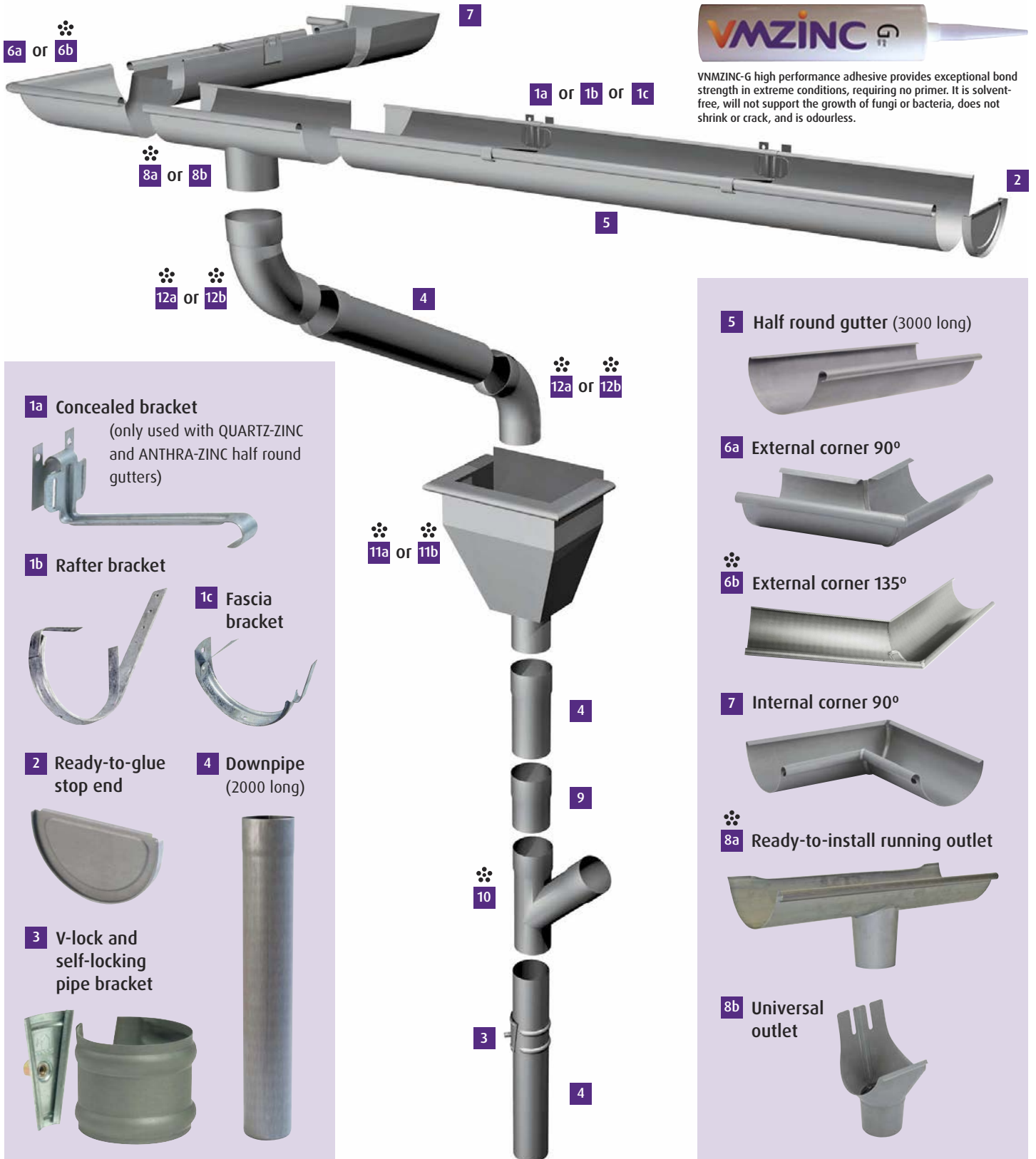
A complete gutter and downpipe range



# VMZINC Rainwater

## Half Round rainwater system

All gutters, pipes and fittings are available in QUARTZ-ZINC and ANTHRA-ZINC. They are also available in PIGMENTO except where indicated with an asterisk



VMZINC-G high performance adhesive provides exceptional bond strength in extreme conditions, requiring no primer. It is solvent-free, will not support the growth of fungi or bacteria, does not shrink or crack, and is odourless.

**1a** Concealed bracket  
(only used with QUARTZ-ZINC and ANTHRA-ZINC half round gutters)

**1b** Rafter bracket

**1c** Fascia bracket

**2** Ready-to-glue stop end

**4** Downpipe (2000 long)

**3** V-lock and self-locking pipe bracket

**5** Half round gutter (3000 long)

**6a** External corner 90°

**6b** External corner 135°

**7** Internal corner 90°

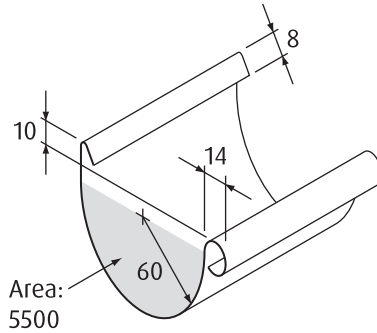
**8a** Ready-to-install running outlet

**8b** Universal outlet

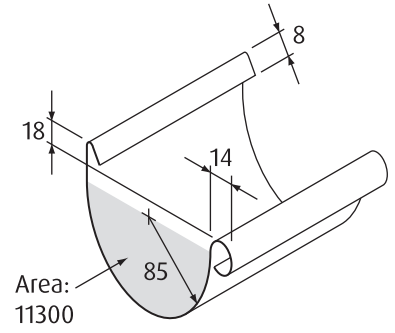
# VMZINC Rainwater

## Half Round rainwater system

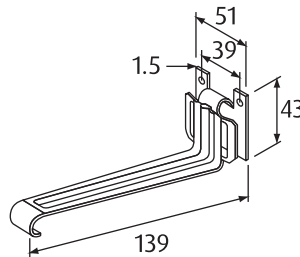
All gutters, pipes and fittings are available in QUARTZ-ZINC and ANTHRA-ZINC. They are also available in PIGMENTO except where indicated with an asterisk



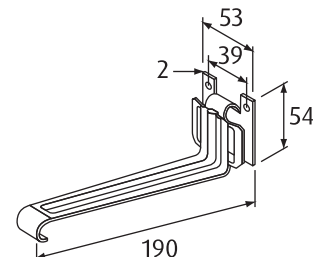
Half round gutter (3000 long):  
Type 250



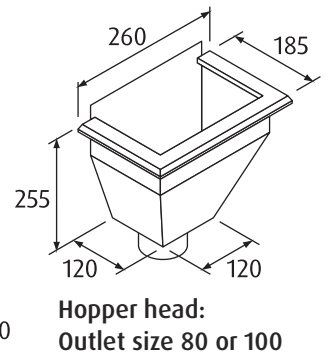
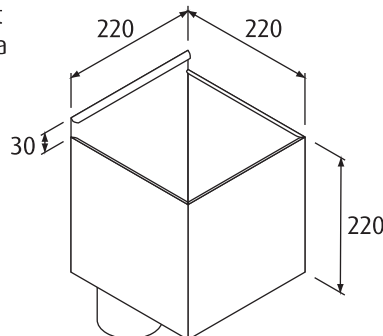
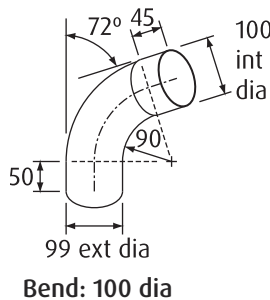
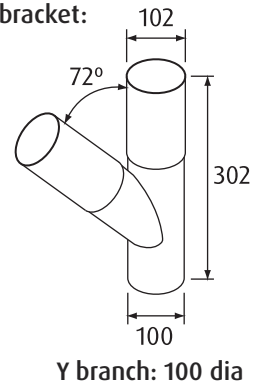
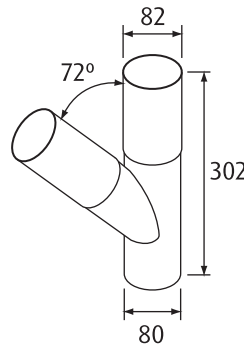
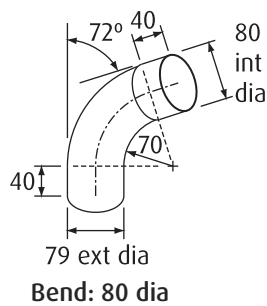
Half round gutter (3000 long):  
Type 333



Concealed bracket:  
Type 250



Concealed bracket:  
Type 333



All dimensions in mm

# VMZINC Rainwater

## Half Round rainwater system

Installation procedures

### Installing the gutters



**1** Using a rule, make a chalkline setting the fall (min 1:200) towards the running outlet and required position of the downpipe.



**2** Cut the running outlet to the required length, starting from the rolled front edge.



**3** Use the VMZINC adhesive to seal and fix the stop end. To avoid cuts from edges, always wear gloves when handling zinc components.



**4** Always use two concealed brackets to secure the running outlet.



**5** Firmly fix the prepared running outlet according to the chalkline.



**6** As for the running outlet, when cutting gutter to the required length, always saw from the rolled front edge first.



**7** Clip concealed brackets to the cut lengths of gutter at 400mm max centres.



**8** Secure each bracket to the gutter by folding in the two tabs. Then thoroughly clean the gutter joints before gluing.



# VMZINC Rainwater

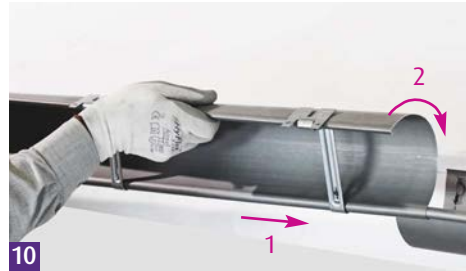
## Half Round rainwater system

Installation procedures

### Installing the gutters



**9** Apply two, thin, parallel beads of VMZINC-G adhesive to the inner surface of the running outlet at max 50mm from the edge.



**10** Insert the prepared gutter into the already installed running outlet via the rolled front edge first. Ensure a 50mm min overlap.



**11** Fix the gutter brackets according to the chalkline.



**12** Finally, fit the other stop end.



### Installing the downpipes



**1** Take two bends and measure the distance from the wall.



**2** Once measured, fit the two bends together. It may be necessary to extend the assembly using a piece of downpipe.



**3** At downpipe joints, mark positions for the v-locks at every 2 metres (maximum). Then firmly screw-fix the v-lock to the wall.



**4** Place the self-locking bracket on the end of each pipe, then slide the assembly neatly into the v-lock to complete the installation.

# VMZINC Rainwater

## Box gutters and other profiles

Complete gutter and downpipe ranges

**Introduction** As well as the half round rainwater system VMZINC offers a wide range of other gutter shapes and sizes that offers scope for use with buildings of varying style and function. These gutters have been developed over many years and have been in widespread use in Europe for all types of buildings in both the new build and refurbishment sectors.

The varying profiles allow the right gutter to be matched with the right architecture. The use of soldered joints for gutters provides a low maintenance jointing solution that has been used for over two hundred years and requires virtually no maintenance throughout the building's design life.

As with all VMZINC solutions the products are in accordance with the BRE Global certification scheme and carry an Environmental Product Declaration, EN 15804. The box gutters and other profiles are manufactured from solid pre-weathered zinc so will not discolour, distort or become brittle over time. Due to the purity of rolled zinc used, cut edges will not corrode as the metal develops a natural self-protecting patina. By contrast, systems which utilise powder coated and even zinc-coated finishes may be susceptible when gutter lengths are cut or to surface abrasion. VMZINC Rainwater systems suffer no adverse effects of surface deterioration (surface staining is possible on non-rinsed surfaces within 1km of the sea) and, with the Box rainwater system in particular, faceted details can be accommodated without the need for bespoke components.

VMZINC gutters are often used in conjunction with other zinc products including the ornaments range which produces dormer windows, finials as well as bespoke ornate roofing products. The gutters can also be used as an elegant addition with slate and tile roofs.

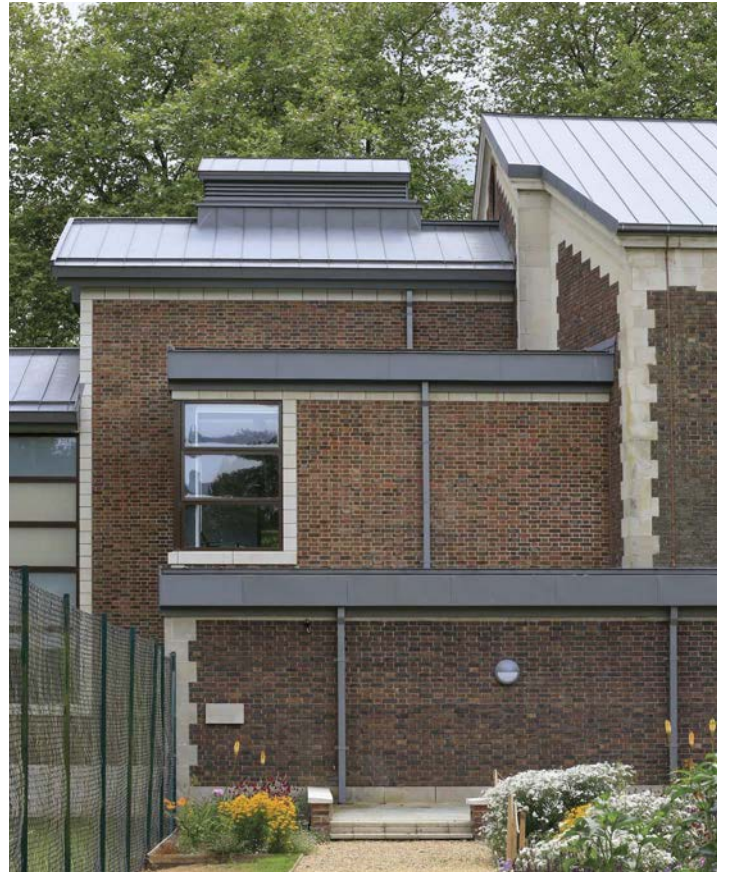
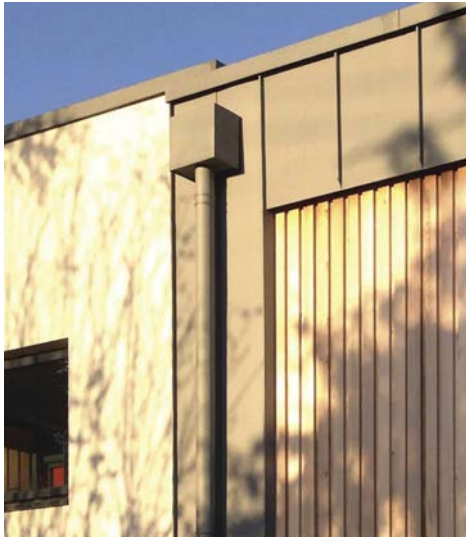




# VMZINC Rainwater

## Box gutters and other profiles

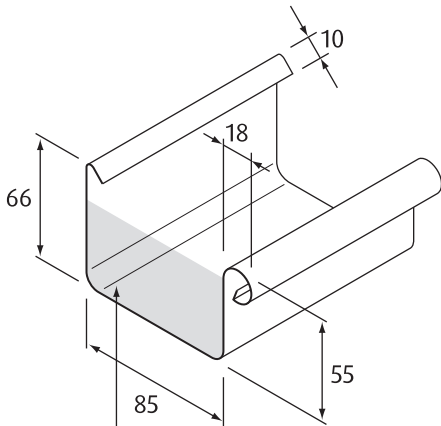
Complete gutter and downpipe ranges



# VMZINC Rainwater

## Box gutters and other profiles

Gutters and fittings available in QUARTZ-ZINC, ANTHRA-ZINC and Natural Zinc

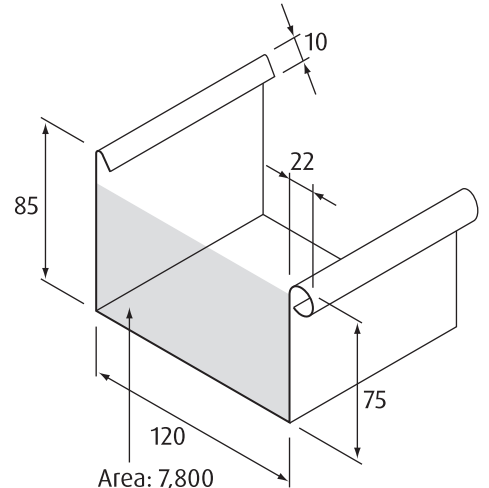


Area: 3,825

**Box gutter: Type 250**  
(3000, 4000, 5000 or 6000 long)



**Typical external corner 90°**  
(Internal 90° corners also available)

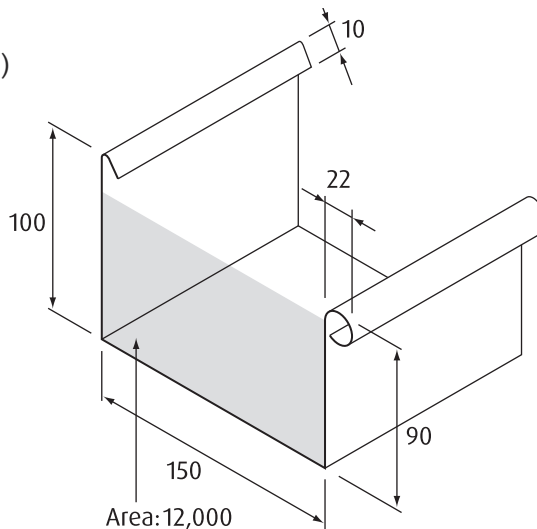


Area: 7,800

**Box gutter (3000 long): Type 333**



**Rafter bracket**

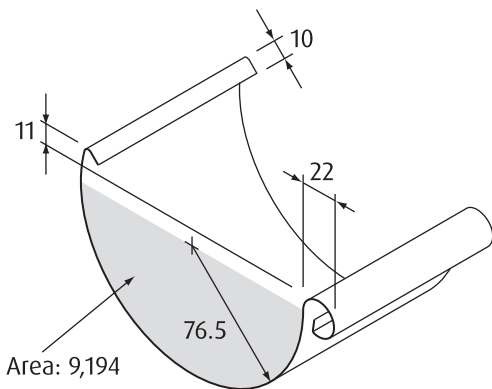


Area: 12,000

**Box gutter (3000 long): Type 400**

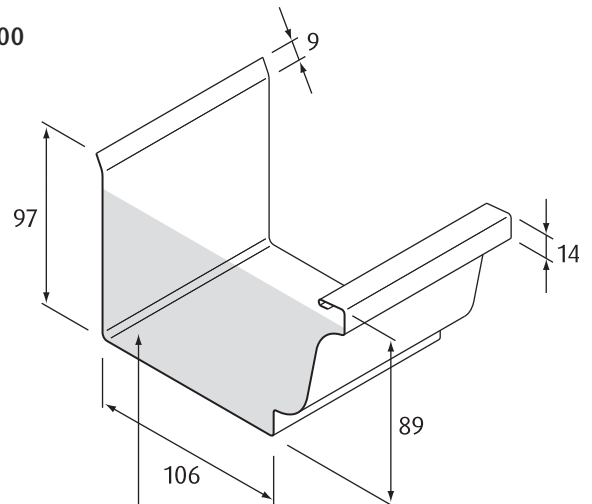


**Stop end**  
(not available in all finishes for all profiles)



Area: 9,194

**Half round gutter for underslung bracket**  
(3000, 4000 or 5000 long):  
**Type 333**



Area: 9,000

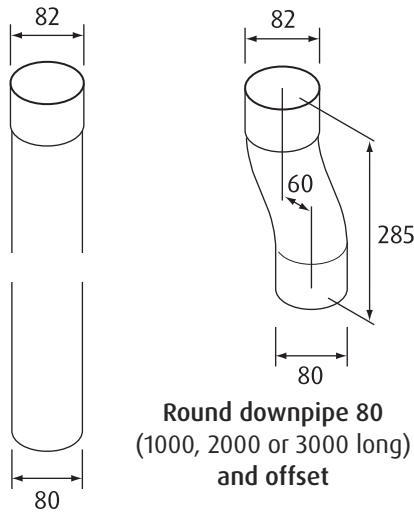
**Ogee gutter (4000 or 5000 long): Type 333**

All dimensions in mm

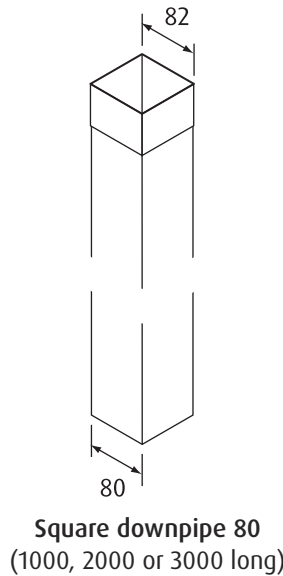
# VMZINC Rainwater

## Box gutters and other profiles

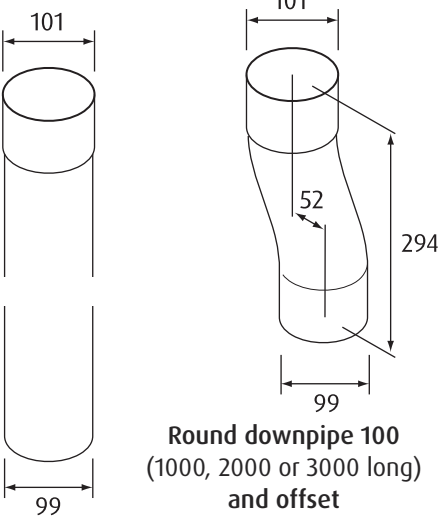
Pipes and fittings available in QUARTZ-ZINC, ANTHRA-ZINC and Natural Zinc



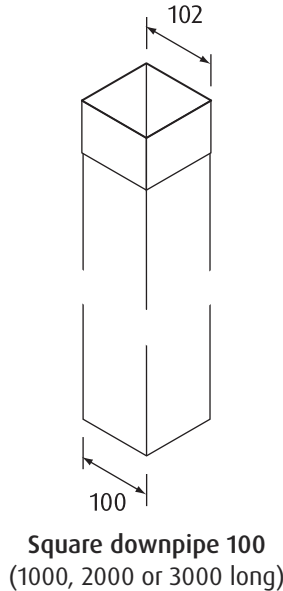
**Round downpipe 80**  
(1000, 2000 or 3000 long)  
and offset



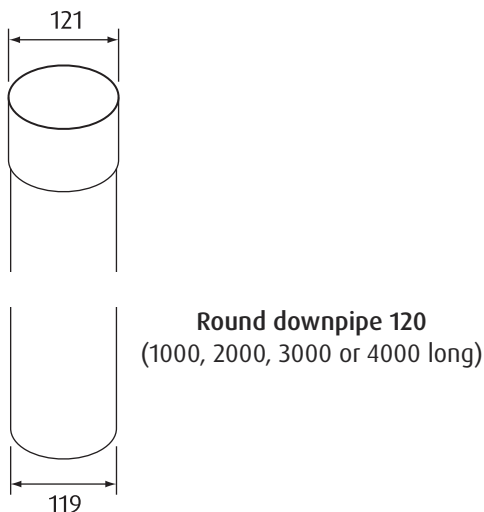
**Square downpipe 80**  
(1000, 2000 or 3000 long)



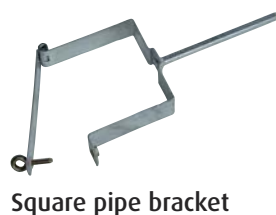
**Round downpipe 100**  
(1000, 2000 or 3000 long)  
and offset



**Square downpipe 100**  
(1000, 2000 or 3000 long)



**Round downpipe 120**  
(1000, 2000, 3000 or 4000 long)



**Square pipe bracket**

The majority of VMZINC gutter brackets whether they be hidden, underslung fascia fix or underslung rafter fix are manufactured from galvanised steel. However we also supply a number of underslung gutter brackets which are black powder coated. Please consult us for further information. For VMZINC round downpipes, the selflocking brackets are made from zinc but the V lock plate is manufactured from galvanised steel. As with the gutter brackets the traditional down pipe brackets are made from galvanised steel. However we also supply a number of brackets which are black powder coated for both round and square downpipes. Please consult us for further information.

Powder coated gutter brackets and downpipe brackets should be considered in locations within 5 km of the sea.

Non-standard 304 stainless steel brackets and 304 stainless steel black powder coated brackets are also available upon request.

**Box gutters are also available in the PIGMENTO and AZENGAR finishes, however these are non-standard products and therefore please consult us for further information. As the PIGMENTO finish is only applied to one side of the zinc the front bead on gutters will have a QUARTZ-ZINC aspect.**

As with all zinc products some marks are possible on non-rinsed surfaces, especially in coastal environments. Whilst these marks will not adversely affect the integrity of the zinc they may affect its aesthetics.

All dimensions in mm

# VMZINC Rainwater

## General recommendations for gutters

Flow rates using various gutter and downpipe combinations

Gutter profile	Gutter size (mm)	Downpipe size* (mm)	Flow rate (l/s)	Maximum roof area** (m <sup>2</sup> )
Half round 250	60 radius	80 dia or 80 x 80	1.89	37
Half round 333	85 radius	80 dia or 80 x 80	2.6	52
Half round 333	85 radius	100 dia or 100 x 100	4.6	92
Half round 333	76.5 radius	80 dia or 80 x 80	2.6	52
Half round 333	76.5 radius	100 dia or 100 x 100	3.5	75
Box 250	85 x 66	80 dia or 80 x 80	1.0	20
Box 333	120 x 85	80 dia or 80 x 80	2.6	52
Box 333	120 x 85	100 dia or 100 x 100	2.61	52
Box 400	150 x 100	80 dia or 80 x 80	2.6	52
Box 400	150 x 100	100 dia or 100 x 100	4.6	92
Ogee 333	106 x 97	80 dia or 80 x 80	2.6	52
Ogee 333	106 x 97	100 dia or 100 x 100	3.2	64

\* Note that the flow rates for round and square downpipes are the same:  
i.e. round 80 and square 80 are both 2.6 l/s  
i.e. round 100 and square 100 are both 4.6 l/s

\*\* Based on rainfall of 0.05 l/s/m<sup>2</sup>.

Correct design to BS EN 12056-3:2000, in conjunction with adequate maintenance, will ensure that the roof drainage system does not cause any problems during the life of the building.

Soldered gutters must allow for thermal movement. Traditional high point movement joints can be used as can soldered expansion joints. These must be installed between fixed points (eg outlets) with a maximum distance between expansion joints of 8m. Hanging gutters should include falls of at least 1:200. Internal box gutters must have minimum falls of 1:100 and include expansion joints and overflows. Other than internal gutters that combine a parapet in one piece, internal gutters should be 200mm deep.



Expansion joint soldered to gutter



Expansion joint



Downpipe outlet starter soldered to gutter

# VMZINC Rainwater

## Specification guidelines

Half Round rainwater system, Box gutters and other profiles

**Introduction** Specification guidelines for VMZINC Half Round, Box gutters and other profiles are given below.

For full specification advice, contact VMZINC. Bespoke specifications are also available.

### Specification guidelines

#### SYSTEM PERFORMANCE

##### General

Design Standard: To BS EN 12056-3, clauses 3-7.

Collection and Distribution of Rainwater: Fully complete, and without leakage or noise nuisance.

Design Parameters: Design rate of rainfall as per BS EN 12056-3: 2000, National Annex NB.2 - Category 1.

#### PRODUCT DESCRIPTION

##### Half Round rainwater system, Box gutters and other profile rainwater systems

Gutters, downpipes and fittings to:  
EN 988: Zinc, copper and titanium

Manufacturer:  
VMZINC, Collier House, Mead Lane, Hertford, Herts SG13 7AX.

Half Round rainwater system gutter profiles and sizes:  
Half round - 120mm, 170mm.

Half Round rainwater system downpipe profiles and sizes:  
Round - 80mm, 100mm

Box gutters and other profiles - gutters:  
Half round - 153mm  
Box - 85 x 66mm, 120 x 85mm, 150 x 100mm  
Ogee - 106 x 97mm

Box gutters and other profiles - downpipes:  
Round - 80mm, 100mm, 120mm  
Square - 80mm, 100mm

Material:  
EN 988: Zinc, copper and titanium

Finishes:  
ANTHRA-ZINC, QUARTZ-ZINC, PIGMENTO

Accessories:  
Concealed brackets for gutter fixing  
V-lock/self-locking bracket assembly for downpipe fixing  
Gutter stop ends  
Internal, external gutters  
Running outlets  
Bends, offsets  
Y branches  
Hopper heads  
Rainwater diverters

Joining methods for Half Round rainwater system:  
Gutters - glued with VMZINC-G adhesive  
Downpipes - loose-fitted, not glued

Joining methods for Box gutters and other profiles:  
Gutters soldered in accordance with manufacturer's recommendations.  
Downpipes loose-fitted.

#### EXECUTION PROCEDURES

##### Preparation

Before commencing work on the rainwater systems, ensure:

- Below ground drainage is ready to receive rainwater. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.
- Painting of surfaces which will be concealed or inaccessible, is completed.

##### Installation generally

- Avoid contact with copper or areas washed by copper to prevent possibility of electrolytic corrosion.
- Compatible and incompatible timber species are given on page 46.
- Other rainwater systems only - Allow for thermal and building movement.
- Adequately protect gutters/pipework from damage and distortion during construction.
- Fit purpose-made temporary caps to downpipes to prevent ingress of debris.

##### Setting out gutters

- Set out to a true line and even gradient of at least 1 in 200 to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points 50 mm (maximum) below the roof.
- Align outlet positions with connections to below ground drainage, unless shown otherwise on drawings.

##### Fixing and jointing gutters

Half Round rainwater system

- Clip concealed brackets to gutters at 400mm centres and fold in tabs to secure.
- Use two concealed brackets to secure running outlets.
- Apply VMZINC-G adhesive to each clean and dry gutter joint.
- Slide and twist gutter sections together.
- Screw-fix bracket/gutter assemblies to supporting background.
- Ensure roofing underlay is dressed into gutter.

Box gutter and other profile rainwater systems

- Underslung brackets should be at maximum 600mm centres.
- Soldered - see soldering recommendations.

##### Fixing and jointing downpipes

Half Round rainwater system

- Using the v-locks and self-locking brackets, fix securely with minimum of 3 brackets per pipe.
- Provide additional supports as necessary to support junctions and changes in direction.
- Tighten fixings as work proceeds so that every storey-length of pipework is self supporting.
- Push-fit downpipe sections together without adhesive to allow joints to accommodate thermal movement.

Box gutter and other profile rainwater systems

- Push-fit downpipe sections together, as Half Round rainwater system, to allow joints to accommodate thermal movement.
- For method of fixing to supporting structures, consult VMZINC for recommendations.

##### Jointing gutters and pipework generally

- Cut ends of pipes and gutters clean and square.
- Remove burrs and swarf.
- Clean gutter joints before gluing together.

##### Gutter test

- Temporarily block all outlets.
- Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

##### Care and maintenance

- Provide printed instructions of the recommended inspection, cleaning (generally once per year) and repair procedures.
- All VMZINC gutters and downpipes develop a self-protecting surface patina that does not require frequent maintenance.



# VMZINC Roofing and rainwater

## Further technical information

General for all zinc products

**Zinc aesthetics** Zinc is a material that requires almost no maintenance as the rinsing effect of rainwater performs this task naturally. However when zinc is used on a non rinsed surface such as a protected facade or soffit it is possible that the zinc may exhibit some superficial stains. These stains will not affect the integrity of the zinc itself. It is for this reason that the very dark grey ANTHRA-ZINC should be carefully considered before being designed on a non rinsed facade or soffit. In marine locations the risk of superficial staining in these areas increases. Whilst stains are possible on QUARTZ-ZINC and the PIGMENTO range the visual effect is greatly reduced and therefore these finishes may be more appropriate for some specific locations, however in a severe non-rinsed marine environment (1km from the sea), staining is still possible and therefore PIGMENTO should not be used in this application.

VMZINC manufacturing uses a colour management system based on the Y-Factor. The Y-factor ranges from 0 to 100: 0 is black and 100 is white. The range for ANTHRA-ZINC is 5 to 7 and the range for QUARTZ-ZINC is 22 to 25. We recommend that one project uses one production batch.

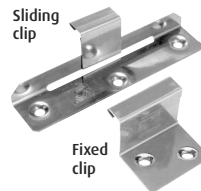
**Fixing system method** Clips have a dual function:

- Ensuring the mechanical resistance of the entire roof
- Allowing free expansion of the metal

VMZINC clips are made of 304 stainless steel. The thickness of the fixing clip is 0.5mm. The sliding clips have a moving component, which is 0.4mm thick, and a 70mm long slot to allow free movement of the panel when it is under expansion and contraction. Each clip must resist a pull-out force of 50daN. It is recommended that screws be used to secure the clips with three being used per sliding clip. The use of nails offers significantly less resistance, but in the event of using nails, contractors are advised to use ring shank nails.

Centre to centre distance between clips:

- 330mm on the main part of the roof
- 200mm on perimeter of the roof (at least 1100mm or 1/8 of the projected roof)
- 150mm in the corners



All standing seam panels require a minimum of 5 fixed clips. When attaching PV panels, snow guards, etc it may be necessary to further increase the number of these clips. Standard panel width is 600mm, however for aesthetic or wind up lift reasons 530mm or even 430mm wide panels can be used. Please consult us for further information.

### VMZINC Membrane

VMZINC Membrane is a breather layer that allows water vapour to pass through it but is water proof to liquid water (up to a column of 2m). For roof pitches above 22° (40%) the membrane should be overlapped by 150mm. Below this slope the overlap should be increased to 200mm. For pitches between 3° (5%) and 14° (25%) the overlap should be 200mm. VMZINC Membrane has an incorporated tape.

### VMZINC in relation to other materials

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

Note: Contact with limestone

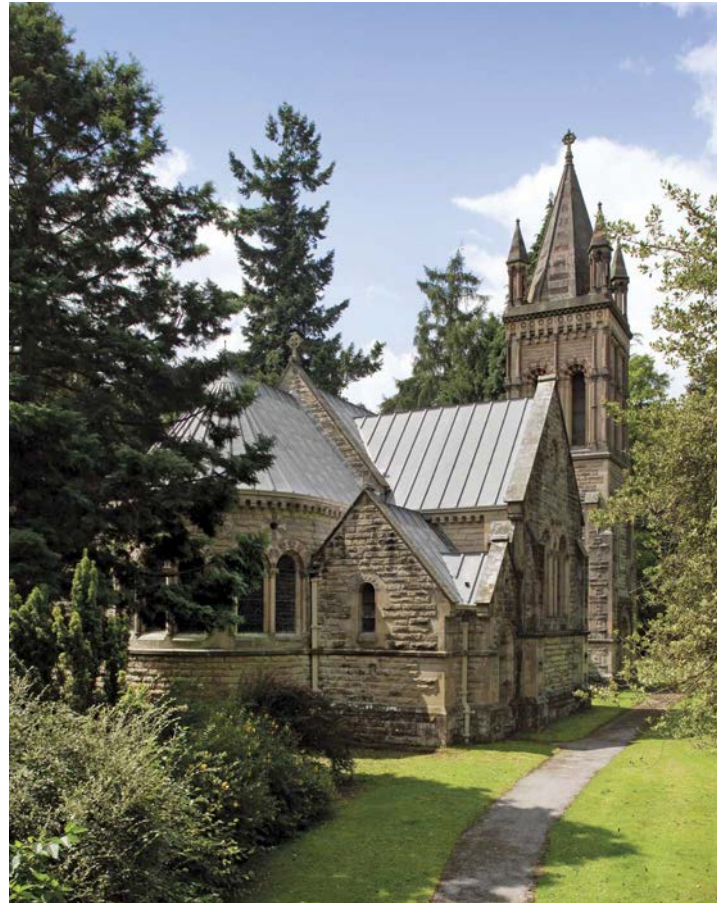
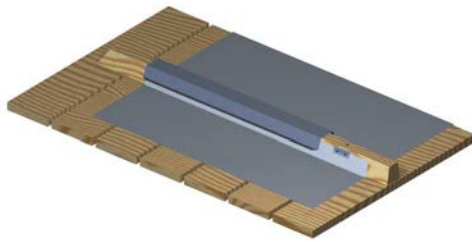
Zinc can be installed adjacent to limestone. The run off from limestone onto zinc material is acceptable. However, limestone dust and gypsum dust generated during cutting operations can react with zinc in the presence of water and form a superficial layer of white rust. No dust should be in contact with 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.

# Other VMZINC roofing systems

## Batten cap roofs

**Overview** Zinc has been used as a roofing material since the beginning of the 19th century and the first systems involved batten cap roofs which are still widely used across the whole of Europe and frequently now as a replacement for lead.

The batten cap roofing system is often a more appropriate choice for traditional buildings.



## Other VMZINC roofing systems

# Adeka tiles & roofing shingles

**Overview** Adeka is an innovative patented facade and roof system based on small pre-formed QUARTZ-ZINC elements featuring a unique locking key. For other finishes please contact us.

8.8 elements are required to cover 1m<sup>2</sup>. Due to the raised edges and 50mm overlaps Adeka can be used for roofing for slopes of 15 degrees and over.



### Installation and structure

Adeka can be fixed to both vented open gap softwood boards and vented 18mm plywood with VMZINC Membrane. The panels are installed from bottom up with the key fixing into the lower panel. Each Adeka tile is then secured with 3 screws. Adeka is not supplied with filmed VMZINC.

Roofing shingles (flat lock panels) can also be installed on a roof in a similar fashion to the Adeka tile however the minimum slope for the majority of projects using diamond shingles with non aligned joints is 45 degrees.





# Other VMZINC roofing systems

## Rainscreen roofs

**Overview** Zinc rainscreens can be considered for roofing, however, as these are not weather resistant when installed non vertically it is vital that a secondary water proofing layer be installed under the rails supporting the zinc panels. Alternatively a complex gutter system can be created in order to evacuate the rain water.



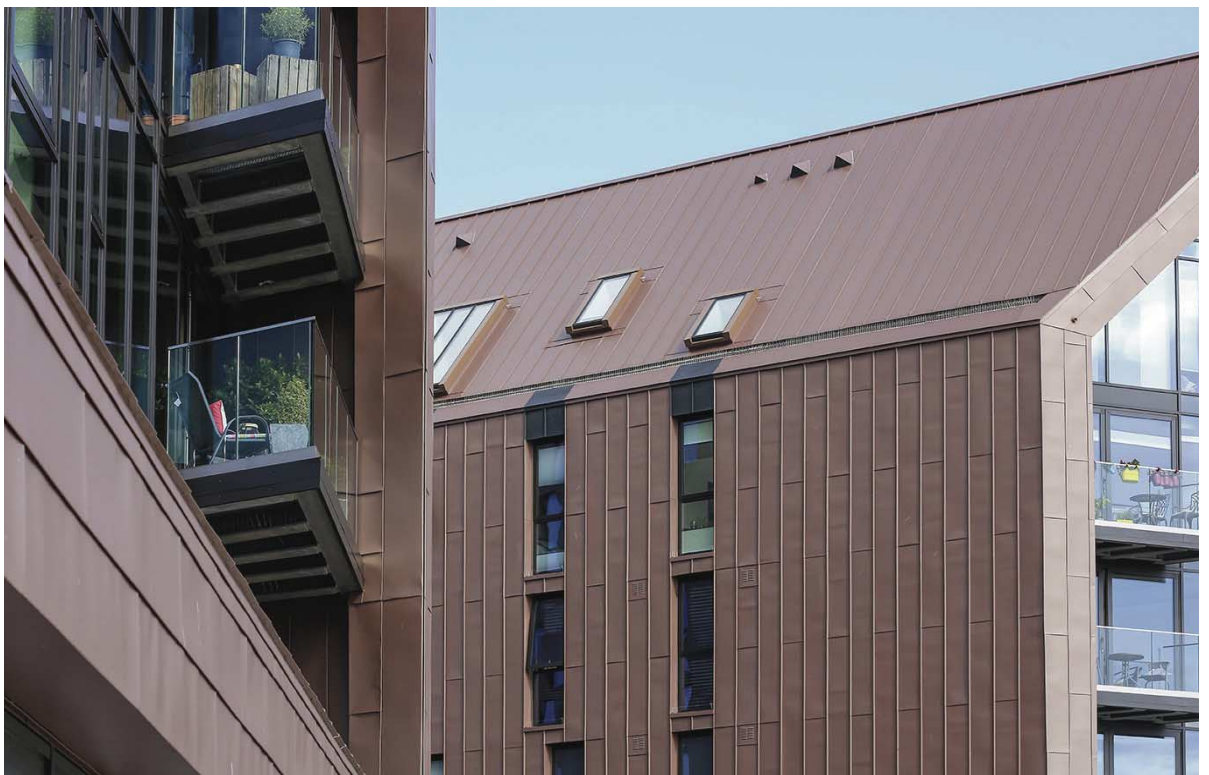
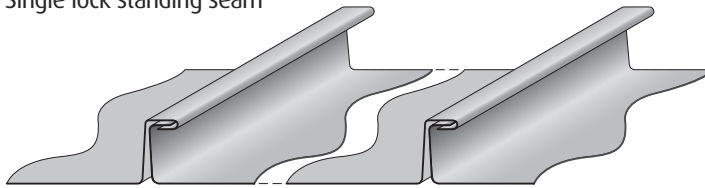
# VMZINC facades

## Standing seam facades

### Standing seam panels as walls and soffits

VMZINC can be used as a standing seam panel for all vertical walls as well as soffits. The structure must be a cold ventilated one using either VMZINC on vented open gap boarding, VMZINC PLUS on vented plywood (humidity classes 1 to 4) or VMZINC on VMZINC Membrane on vented plywood (this last build up is only acceptable on vertical surfaces). The vented air space must be at least 38mm wide. For buildings where the facade must be constructed of mostly EN13501 A1 or A2 materials, the plywood can be replaced with 0.7mm thick galvanised steel decking. The panels can be installed vertically, horizontally or even diagonally but panel length should not exceed 4m. Although zinc standing seam panels are not as flat as some other VMZINC facade systems it is possible to reduce unevenness by reducing panel width to 430mm and zinc thickness to 0.8mm. The use of a single lock also increases panel flatness but does reduce wind uplift resistance and should be avoided on wider panels.

Single lock standing seam

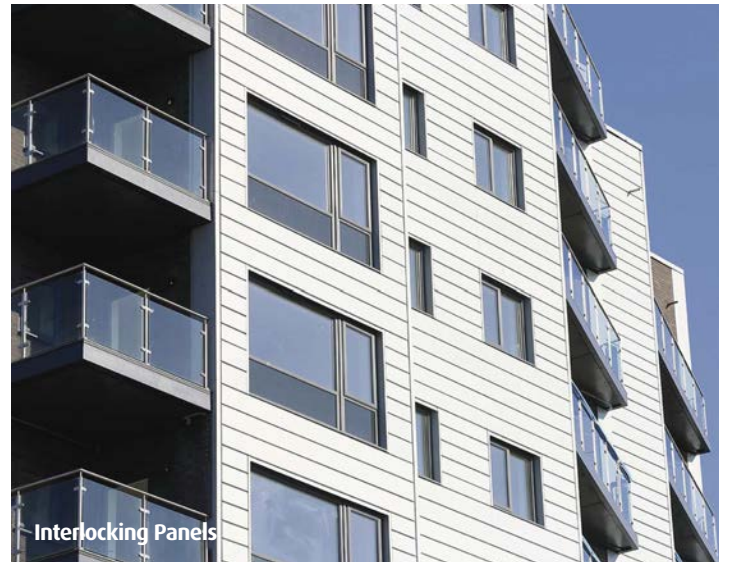


# VMZINC facades and ornaments

## Other VMZINC facade systems

VMZINC can be installed using the principle of a rainscreen facade. There are a number of panel types and sizes available. These include **Interlocking Panels** which can be installed horizontally or vertically in all finishes. For slightly wider panels the **Mozaik** cassettes offer an excellent solution.

**Sine Wave Panels** offer an alternative design in zinc as do **Overlapping Panels** whilst remaining cost effective solutions for rainscreen cladding. **Flat Lock Panels** can be used on a facade in many formats, sizes and in all finishes of VMZINC.



## VMZINC ornaments

VMZINC has been used as a material for heritage projects for almost two hundred years. VMZINC produces ornaments such as finials, weathervanes and bull's eye windows. These elements exist in both standard shapes and sizes as well as completely bespoke products.





### 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 profession. While construction is underway all standards in force must be respected. Further information showing the installation process is available via download from [www.vmzinc.co.uk](http://www.vmzinc.co.uk) or [www.vmzinc.ie](http://www.vmzinc.ie). Furthermore, VM Building Solutions 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. Further information concerning the design and installation of VMZINC is available at [www.vmzinc.co.uk](http://www.vmzinc.co.uk). 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.

