

VMZ Rainwater systems

Comprehensive gutter and downpipe systems in zinc

Guidelines for design and installation



Uniclass	L73141:P45
CI/SfB	(52.5) Hh7
January 2013	

Contents

3	Why use zinc rainwater systems?
4	Sustainable performance
5	The use of zinc in the construction industry
6 to 13	Half Round rainwater system A complete gutter and downpipe range Pipes and fittings Installation procedures Testimonials
14 to 16	Box rainwater system A complete gutter and downpipe range Pipes and fittings
17	Specification guidelines Half Round and Box rainwater systems
18 and 19	Building with VMZINC



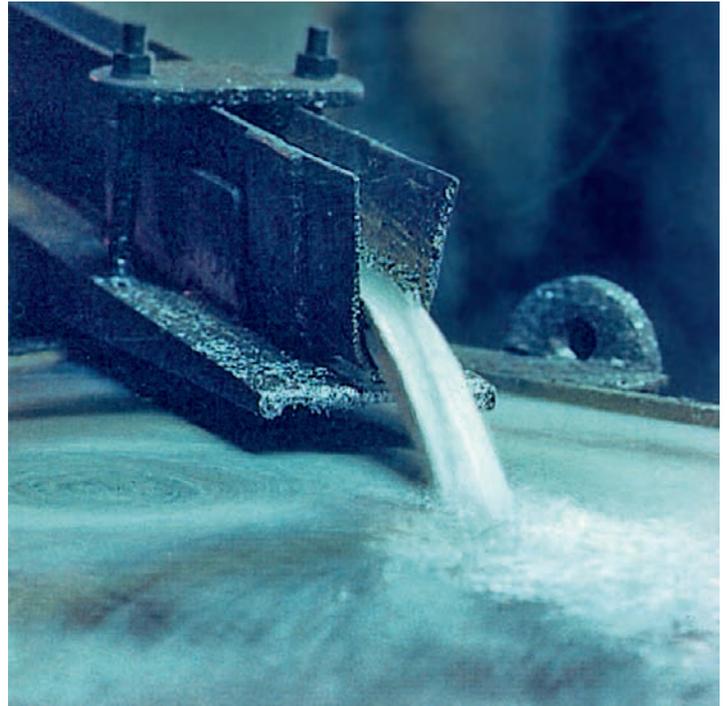
Company profile VMZINC® manufactures a wide range of rolled zinc products for use in construction and has over a century of experience. In addition to rainwater systems, products include roofing and cladding systems and decorative roofing products such as dormers, bull's eyes, weather vanes, finials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

Why use zinc rainwater systems?

Introduction Zinc is among the most sustainable metals used in construction today and presents no corrosion problems. VMZINC rainwater systems are also highly cost-effective, both from an initial procurement and design life perspective.

Whether for new build or refurbishment, VMZINC rainwater systems have been designed to complement a wide range of building materials and styles. Pre-weathered colours offer exceptional colour stability while developing the natural, self-protecting patina for which zinc is renowned. This ensures that maintenance requirements will be minimal throughout the systems' design life and that the material's installed appearance will be retained for many years.

Incorporating all of these qualities, VMZINC offers the **Half Round rainwater system** and the **Box rainwater system**. Both systems have a comprehensive range of components that are robust and easily assembled.



Features of VMZINC rainwater systems

- Lightweight and durable
- Minimal expansion and creak
- Low maintenance
- Choice of gutter profiles
- Self-protecting natural patina – will not corrode
- Fully recyclable
- The Half Round rainwater system uses glued joints
- The Box rainwater system uses soldered joints
- A design life that can exceed 50 years



Sustainable performance

A natural material

VMZINC undertakes Life Cycle Analysis (LCA) tests on its products and publishes Environmental Product Declarations (EPD). EPDs pertaining to VMZINC solutions, such as BRE Environmental Profiles are available from our website www.vmzinc.co.uk. 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.



OHSAS 18001

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



ISO 14001

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



ISO 9001

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



BRE

VMZINC received an environmental profile from the BRE in 2010, allowing the product to appear in the Green Guide with an A+ rating.



The use of zinc in the construction industry

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 façade and roofing systems, manufacturing processes for our 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

90% 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

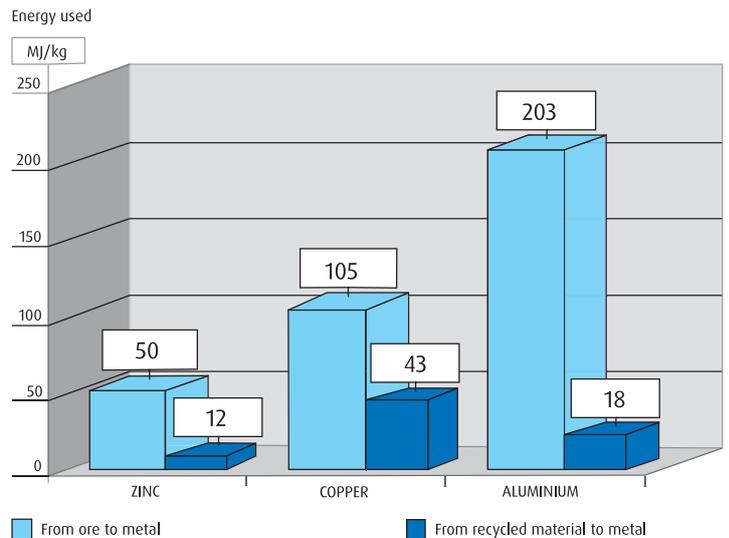
VMZINC rainwater systems benefit from zinc's self-protecting patina which develops as a result of exposure to oxygen, carbon dioxide and water. The average rate of corrosion of VMZINC rolled zinc is 1µm per year. With an initial thickness of 0.7mm, a simple calculation demonstrates that the estimated life span of rolled zinc is over a hundred years.

Timber species that may or may not be used with VMZINC

Compatible	Incompatible
Fir (red or white)	Larch
Spruce	Oak
Poplar	Chestnut
Pine	Cedar (red or white)
	Douglas Pine
	All wood with pH < 5

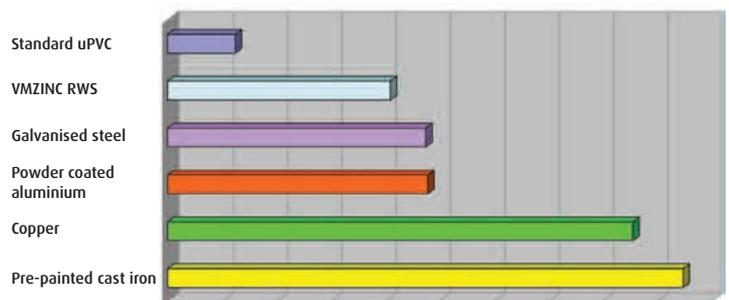
Note:
For confirmation of compatibility between VMZINC rainwater systems and other building materials please call us on 01992 82288.

Comparative energy expenditure in manufacture

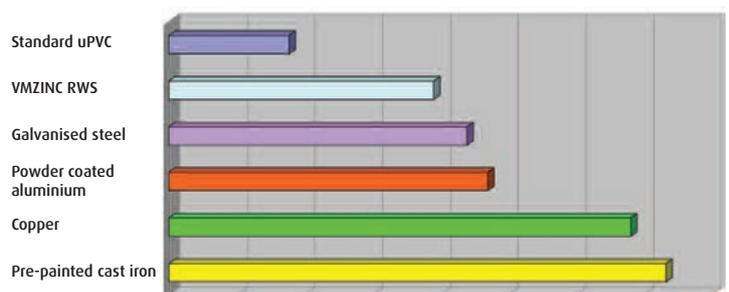


Compared with other metals, very little energy is needed to manufacture zinc metal from ore – less than half the consumption of copper and stainless steel and less than a quarter of that used for aluminium. CO₂ and other greenhouse gas emissions are also, therefore, proportionally less.

Gutter supply-only costs*



Gutter supply-and-fit costs*



* Information on relative costs of specific components is available on request. Based on a 4-bed house.

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 simply clip onto the gutter sections, which in turn slide and twist together. The gutter joints are then bonded and sealed using a specially formulated, high performance gun-applied joint 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 brackets
 - Self-locking downpipe brackets
 - Sleeve connection on pipes
 - Distinctive colours
 - Lightweight yet durable
 - Quick to install
 - Zero 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



VMZ Rainwater systems

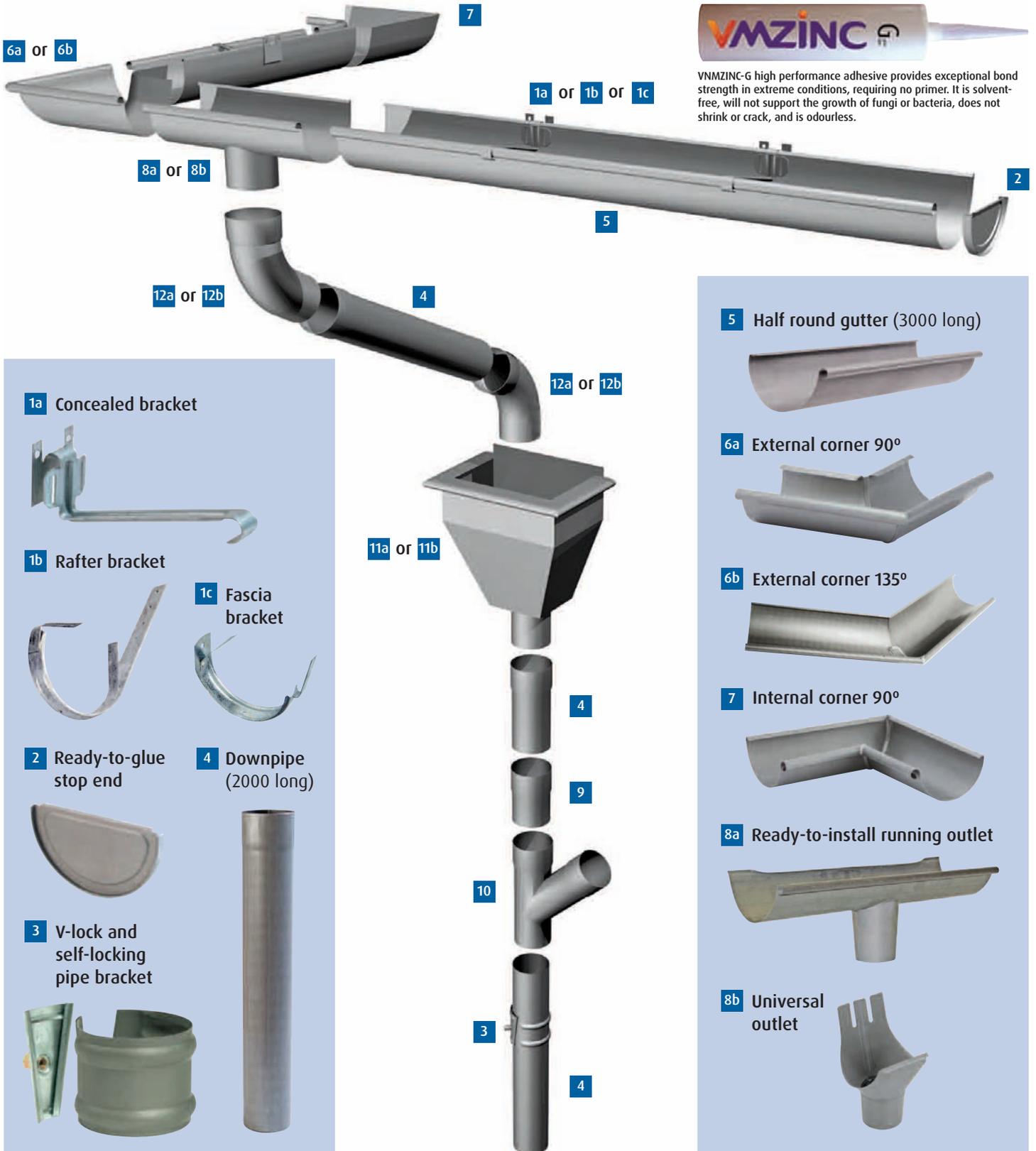
Half Round rainwater system

A complete gutter and downpipe range



Half Round rainwater system

Pipes and fittings



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



1b Rafter bracket



1c Fascia bracket



2 Ready-to-glue stop end



4 Downpipe stop (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

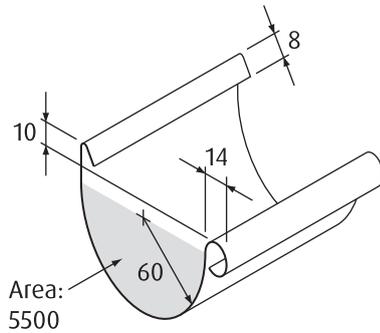
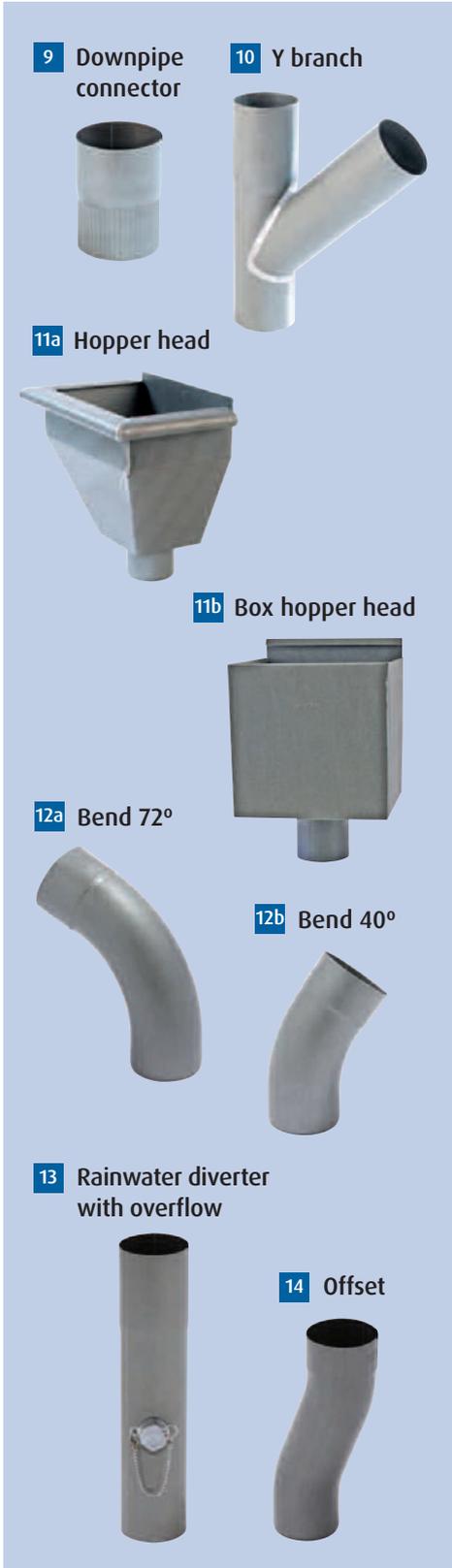


8b Universal outlet

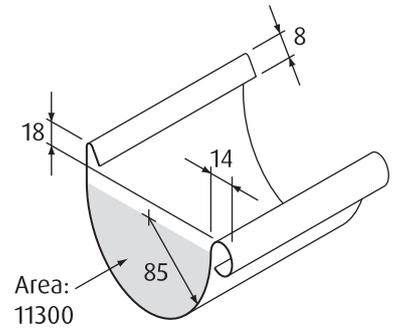


Half Round rainwater system

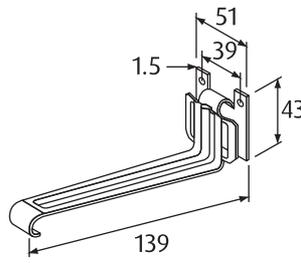
Pipes and fittings



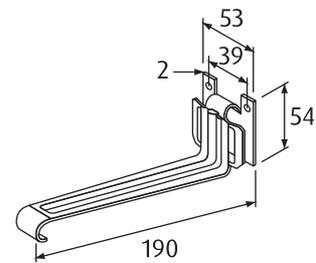
Half round gutter (3000 long):
Type 250



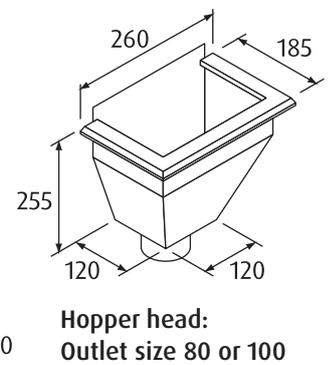
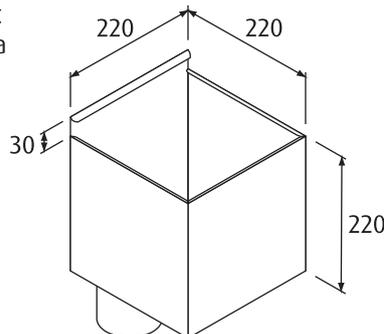
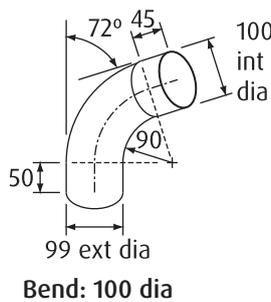
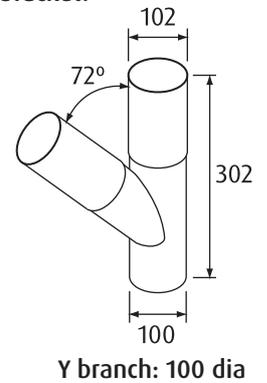
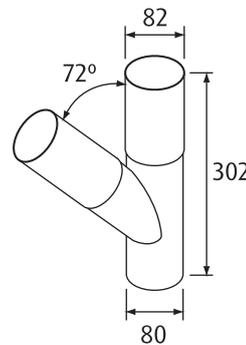
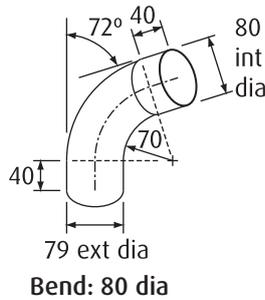
Half round gutter (3000 long):
Type 333



Concealed bracket:
Type 250



Concealed bracket:
Type 333



All dimensions in mm

Half Round rainwater system

Installation procedures

Installing the gutters



1 Using a rule, make a chalkline setting the fall 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.



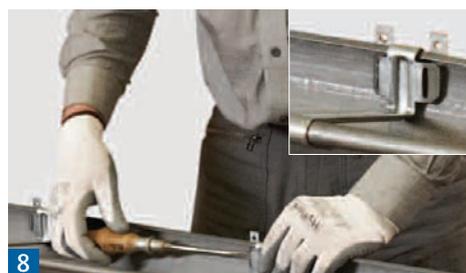
5 Firmly fix the prepared running outlet according to the chalkline.



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.



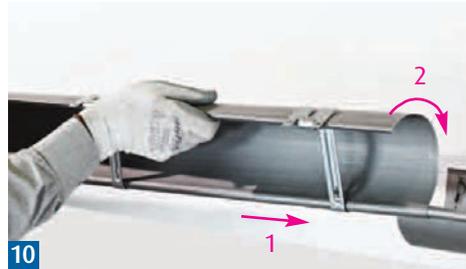
Half Round rainwater system

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.



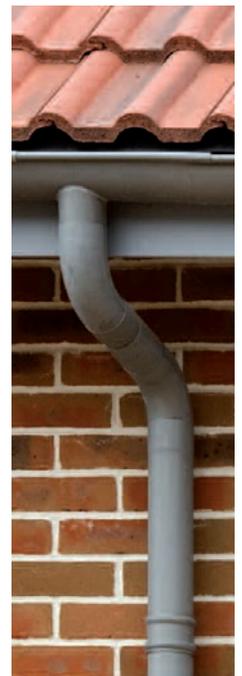
10 Insert the prepared gutter into the already installed running outlet via the rolled front edge first. Ensure a 50mm min overlap.



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. 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.

Half Round rainwater system

Testimonials

Testimonial 1 “Instructions on the website suggest that the rainwater system should be prefabricated on the scaffolding and fitted before the roof tiles. Fortunately, it is just as easy to fit after tiling and you can do so section by section from the high end towards the outlet simply by hanging each length on the front of the brackets and then rolling it up into position from underneath. Once the back edge engages in the bracket you hear a click which signifies that it is caught. This will hold it temporarily but you need the security of a closed clip. This is achieved by bending the ears back under the gutter lip with a flat bladed screwdriver. The gutter will now take a snow load!

The swan necks are made up of two bends and pipe (if needed) which are bonded using VMZINC’s adhesive. The down pipe brackets are a work of genius. You need one 10mm hole per bracket which is fixed behind each joint and joints in the pipe are hidden by the brackets. The screwed stud is adjustable so you can keep the downpipe parallel. The house I was working on had yet to be rendered but with this system it takes minutes to unclip the downpipes and remove the brackets. The plasterer can work around the metal studs and the downpipes are then refitted without any delay.”

Roger Bisby – Writing in Professional Builder
Product test on home in Reigate, Surrey



Testimonial 2 “Following major refurbishment and extension of our property, architect Jonathon Hartley suggested the use of VM QUARTZ-ZINC gutters to replace a combination of old cast iron and brittle PVC ones. We selected QUARTZ-ZINC for its aesthetic quality; it worked well with the combination of new fascias, rendering and brickwork on the kitchen extension.

The installation was quick and the larger size of the VMZINC gutters prevented the overflow that had sometimes occurred in heavy storm situations. We were pleased with the finished installation and found it to be most cost-effective. The longevity of the VMZINC product compared to our PVC gutter which had only been in place for 13 years or so and had already failed at the joints in several places. This means we can remain in the property knowing that only minimal maintenance will be needed in years to come.

We would strongly recommend this product compared to others we looked at. I know our architects have repeatedly specified VMZINC on many of their other projects.”

Mr Vincent Dean, Stamford, Lincolnshire



Half Round rainwater system

Testimonials

Testimonial 3 “Following a recent extension to our property, we found the need to replace the failing flat felt roofs and dated plastic gutters which had faded and started to leak at the joints.

We had recently added a garden room with a VMZINC roof. On speaking to the roofing contractor, C.E.L. from Peterborough, we took the decision to replace all our gutters with VMZINC. Its deep flow gutters prevent overflow, and the secret fix brackets give the impression of a seamless floating gutter.

The system has proven to be far superior to other systems we have used on previous properties and, aesthetically, it looks like the lead that was used on two of the flat roofs of the property.”

Mr D Carter, Rutland



Testimonial 4 “Fletchers Barn was a new construction of function rooms and offices on the grounds of the Council Office in Ware.

What is unusual about the building is that the roof slope eave is only 2.2m from the paved footpath. It was therefore important that this detail, including how the water is channelled away, became a feature of the building.

VMZINC Half-Round Gutter with a 400mm girth and incorporating rafter brackets was chosen. Ease of installation was high on our list of requirements, as well as being sufficiently durable to withstand knocks whilst the roof was being installed. In this respect it was highly successful; we also used VMZINC 100mm downpipes and hoppers to add the finishing touch to what has ended up a beautiful building.”

Mr Kean Power, Contracts Director, Albany Brent Ltd



Box rainwater system

A complete gutter and downpipe range

Introduction The Box rainwater system offers a range of rainwater components in two sizes that offers scope for use with buildings of varying style and function. It has been developed over many years and has been in widespread use in Europe for commercial and multiple storey buildings in both the new build and refurbishment sectors.

The profile means the system is equally suited to heritage as well as to contemporary new build projects with considerable roofline complexity. 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.

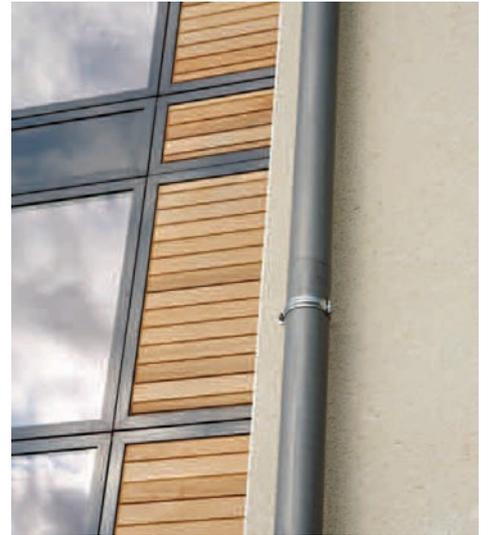
VMZINC solutions are BRE Green Guide rated and the pre-weathered zinc used to manufacture the Box rainwater system will not discolour, distort or become brittle over time. Due to the purity of rolled zinc used, cut edges will not corrode as the metal develops a natural self-protecting patina. By contrast, 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 and, with the Box rainwater system in particular, faceted details can be accommodated without the need for bespoke components.

The Box rainwater system is often used in conjunction with preformed details and features which are made to order and soldered by hand. Such decorative items are made and distributed under the brand name of "Ateliers d'Art Français".



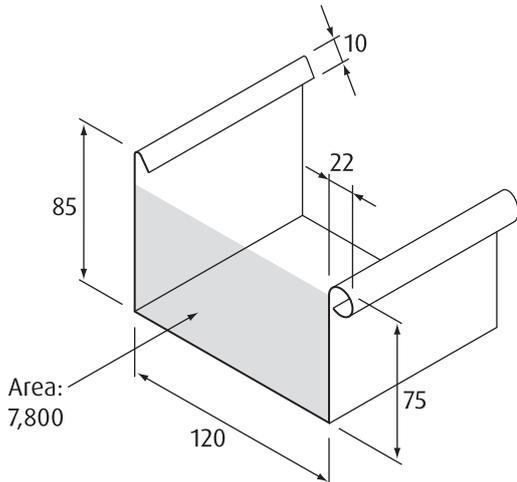
Box rainwater system

A complete gutter and downpipe range

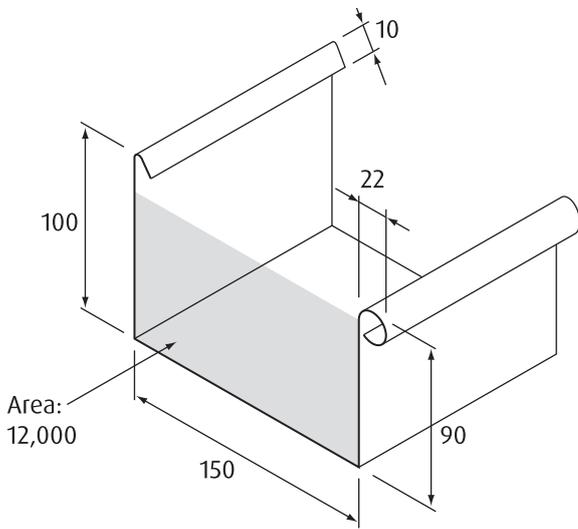


Box rainwater system

Pipes and fittings



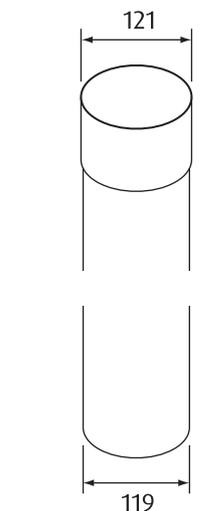
Box gutter (3000 long): Type 333



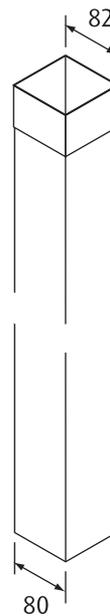
Box gutter (3000 long): Type 400



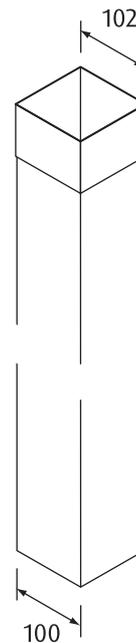
Round downpipes 80 and 100
(1000, 2000 or 3000 long)



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



Square downpipes 80 and 100
(1000, 2000 or 3000 long)



All dimensions in mm

Specification guidelines

Half Round and Box rainwater systems

Introduction Specification guidelines for VMZINC Half Round and Box rainwater systems 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 and Box rainwater systems

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

Manufacturer:
VMZINC (Umicore), Four Rivers House, Fentiman Walk, Hertford, Herts SG14 1DB.

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

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

Box rainwater system gutter profiles and sizes:
Half round - 155mm, 190mm
Box - 85 x 65mm, 120 x 85mm, 150 x 100mm
Ogee - 151 x 98mm

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

Material:
EN 988: Zinc, copper and titanium

Colours:
ANTHRA-ZINC, QUARTZ-ZINC, NATURAL ZINC

Accessories:
Concealed brackets for gutter fixing
V-lock/self-locking bracket assembly for downpipe fixing
Gutter stop ends
Internal, external gutters
Running outlets
Bends
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 rainwater system:
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 5.
- Box rainwater system 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 gutter joint.
- Slide and twist gutter sections together.
- Screw-fix bracket/gutter assemblies to supporting background.
- Ensure roofing underlay is dressed into gutter.

Box rainwater system

- Soldered in accordance with manufacturer's recommendations.

Fixing and jointing downpipes

Half Round rainwater system

- Using the v-locks and self-locking brackets, fix securely at 450mm centres, plumb and/or true to line.
- 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 rainwater system

- 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 and repair procedures.
- All VMZINC gutters and downpipes develop a self-protecting surface patina that does not require frequent maintenance.



Building with VMZINC

Diverse and complementary products

Though VMZINC rainwater systems complement a diverse range of building materials, they are being used increasingly in conjunction with the zinc roofing and façade systems. Zinc's malleability lends itself to complex detailing while the VMZINC PLUS compact, warm roof standing seam system is available using either cellular glass, mineral wool or PIR insulation without penetrating fastenings. In addition, VMZINC offers a choice of interlocking and overlapping panel systems, all of which are available in pre-weathered ANTHRA-ZINC® and QUARTZ-ZINC®. Most façade and roofing systems can also be supplied in the subtle PIGMENTO® shades of green, red, blue and brown.



Project list

- A** Paradise Apartments, Liverpool
VMZINC Interlocking façade system in ANTHRA-ZINC®
- B** Hanover House, Little Germany, Bradford
VMZINC PLUS standing seam roof system
- C** Brighton Station, Sussex
VMZINC roll cap system in QUARTZ-ZINC®
- D** The Rock Shopping Centre, Bury
VMZINC standing seam façade system in PIGMENTO® RED
- E** Leman Street, Aldgate, London
VMZINC interlocking panel façade system in mixed colours
- F** Prospect House, Bath
VMZINC standing seam roof and façade systems
- G** Abergwynfi School, Wales
VMZINC standing seam roof system
- H** Cloonty, Cliffony, Eire
VMZINC standing seam roof and façade systems
- I** Falmouth School
VMZINC PLUS standing seam roof and façade systems in ANTHRA-ZINC®
- J** Bersham Church, Wrexham
VMZINC roll cap system in QUARTZ-ZINC®



VMZ Rainwater systems

Building with VMZINC



E

VMZINC
RAINWATER SYSTEMS

VMZINC
ROOFING

VMZINC
FACADE



H



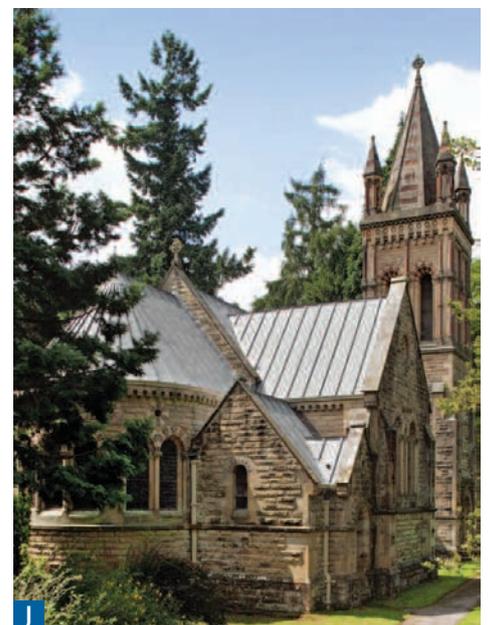
F



I



G



J



Subject

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

Countries of application

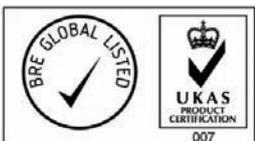
This document applies exclusively to the specification and installation of the designated products or systems on building sites in the United Kingdom and the Republic of Ireland.

Qualifications and reference documents

Please note that the specification of all construction systems for a given building remains the exclusive responsibility of its design team, who must, in particular, ensure that the specified products are suitable for the purpose of the building and compatible with the other products and techniques used. Please note that the correct use of this manual requires knowledge of VMZINC materials and of the zinc roofing profession. While construction is underway all standards in force must be respected. A video showing the installation process is available via download from www.vmzinc.co.uk or www.vmzinc.ie. Furthermore, Umicore offers training courses specifically for professionals.

Responsibility

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



Umicore Marketing Services UK
Four Rivers House,
Fentiman Walk,
Hertford, Herts, SG14 1DB

Tel 01992 822288
Fax 01992 584460
Web www.vmzinc.co.uk
Web www.vmzinc.ie

