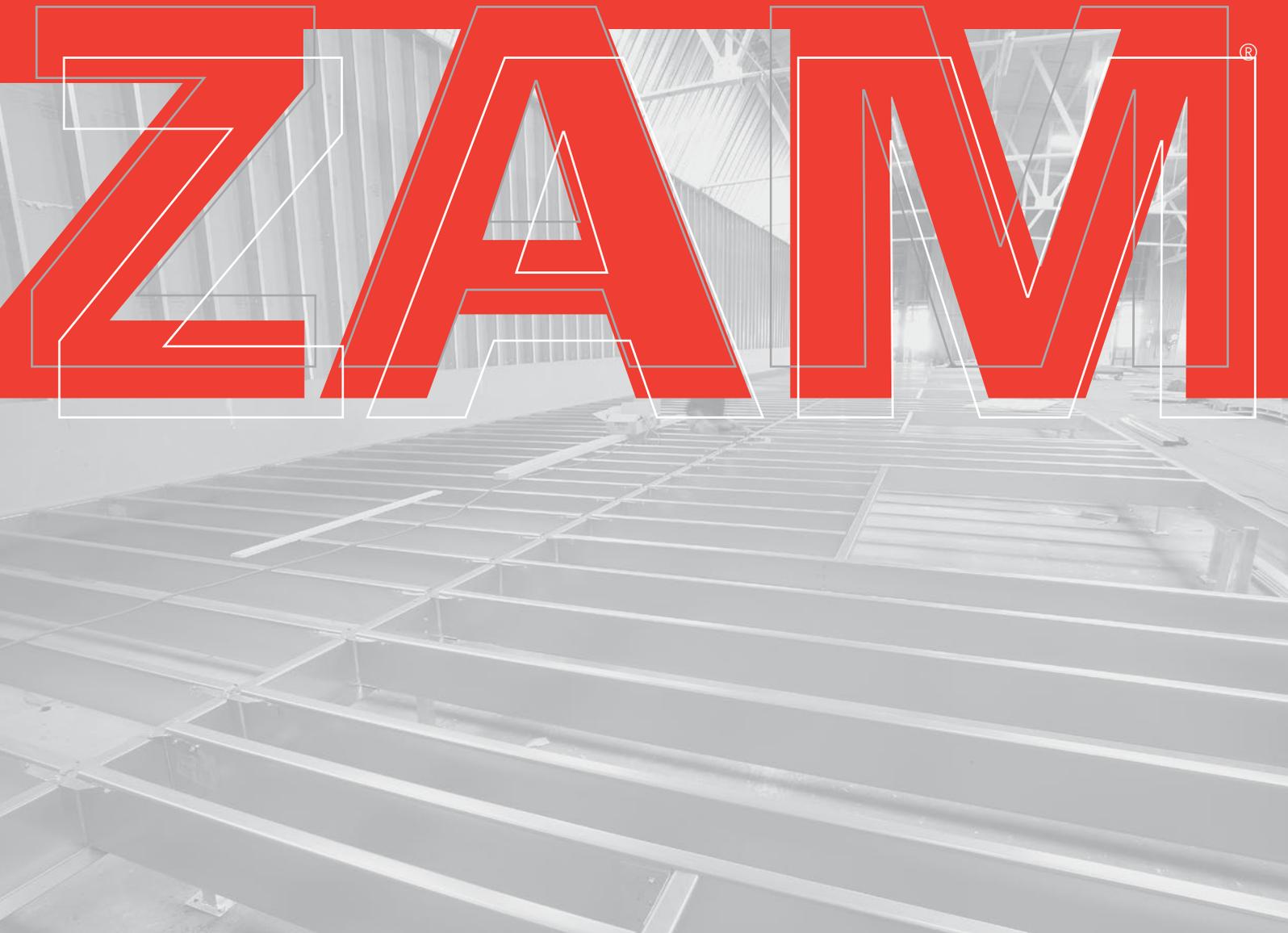


ZAM[®]

zinc + aluminium + magnesium

Coated steel products for
corrosive environments.



High corrosion resistance | High scratch resistance | Concrete compatible | Attractive finish

Better protection and lower cost
than post hot-dip galvanising.

Stramit[®]
Building Products



ZAM® coating is a blend of zinc, aluminium (6%) and magnesium (3%) that provides far greater corrosion resistance than hot-dip galvanised coatings.

New coated steel standard

In 2011, Australian Standards conducted a review of AS1397 to take into account the new generation of metallic coatings for steel building products. The revised document AS1397:2011 has been retitled “Continuous hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium”.

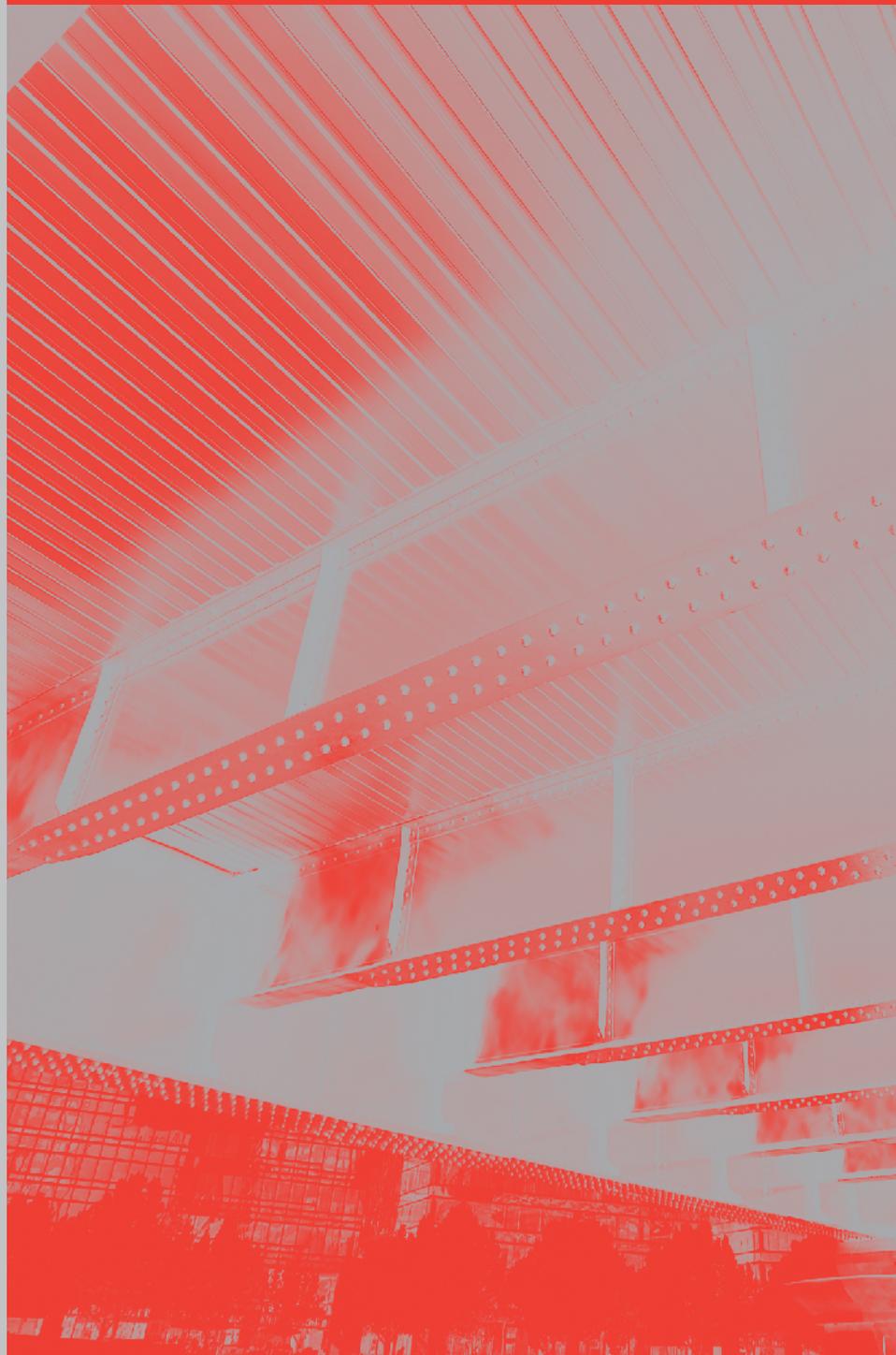
Included in AS1397:2011 are Type ZM coatings, which are hot-dip zinc coatings containing 5% to 13% aluminium and 2% to 4% magnesium, with \leq 1% minor additions of control elements. Type ZM coatings have superior to high corrosion resistance, with good galvanic protection and scratch resistance.

ZAM® coated steel complies with the Type ZM coatings requirements of AS1397:2011. The Stramit® range of structural steel purlin sections and Condeck HP® composite decking are available in ZAM® coated steel. Load tables in the respective Stramit Technical Bulletins are appropriate for use with the ZAM® coated steel products.

ZAM® coated steel advantages

- + New generation coating technology
- + Vastly improved corrosion resistance
- + Suitable for severe environments
- + Faster delivery than post-galvanised steel
- + Replaces need for higher coating weights
- + Raw edge protection
- + Concrete compatible
- + Scratch resistant
- + More economical than post-galvanised steel
- + No reduction in product performance
- + Attractive, satin matt finish

ZAM® coated steel is a technologically advanced hot-dip coated steel, complying with the requirements of Type ZM Coating Class in AS1397:2011. ZAM® coated steel allows new installation possibilities in corrosive environments, with potentially lower material costs and shorter project lead times.



ZAM® coated steel is a 21st century material developed by Nisshin Steel of Japan, a world leader in steel making technology and a major manufacturer of coated and stainless steel in the Asia-Pacific region.

The combination of Nisshin technology and Stramit Building Products expertise makes this partnership a leader in the field of corrosion-resistant steel products.



ZAM® purlins used for roofing of water reservoir

Salt spray test – 2500 hours

ZAM®



Galvanised



Longer design life

The ZAM® coating provides a longer useful lifetime, offering higher corrosion resistance with a smaller coating weight compared with traditional corrosion resistant steel products.

ZAM® coated products can replace stainless steel and aluminium in some applications.

New installation possibilities

The superior corrosion resistance of ZAM® coated steel makes it ideal for applications where structural sections are likely to be subjected to severe or corrosive conditions. Typical applications include:

- + Marinas and boat sheds
- + Farming and horticultural sheds
- + Refineries and industrial environments
- + Pool and spa areas
- + Exposed composite slabs

Wide range of structural products

Stramit® products that can be roll-formed from ZAM® coated steel include:

- + Z and C section purlins
- + Downturn lip purlins
- + Lapped downturn lip purlins
- + Top hats and battens
- + Floor framing
- + Formwork decking

The ZAM® coating enhances the corrosion resistance of Stramit® products without affecting their strength, durability and reliability.

Quality finish

ZAM® coated steel has a bright, uniform appearance that ages to a satin-like metallic finish. The metallic lustre provides a more aesthetically pleasing finish than other galvanic coatings.

ZAM® coated steel can be treated like galvanised steel. It can be welded, touched up using zinc-rich paint and, if required, post-painted or decorated in the same way as galvanised steel.

Compatibility

ZAM® coated steel is not resistant to bimetallic corrosion. It should not be installed in contact with copper or be subject to run-off from copper products.

Durability statement

A Nisshin Steel Statement of Durability is available from Stramit Building Products giving coating and steel specifications. A Performance Statement is also available confirming that ZAM® coated steel has at least three times the life of galvanised steel for similar coating thicknesses.

Specification

To ensure appropriate quality products are used in construction, comprehensive specifications from relevant Stramit® Product Technical Manuals should be included in the design documentation, including reference to ZAM® material.

Corrosion protection



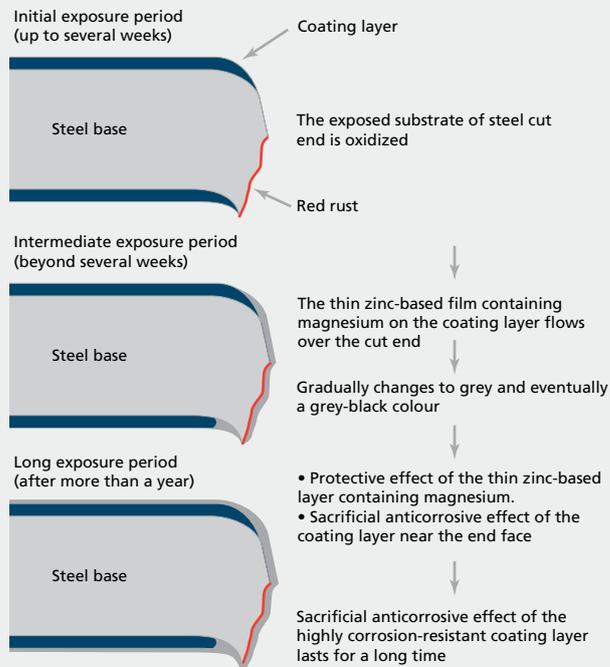
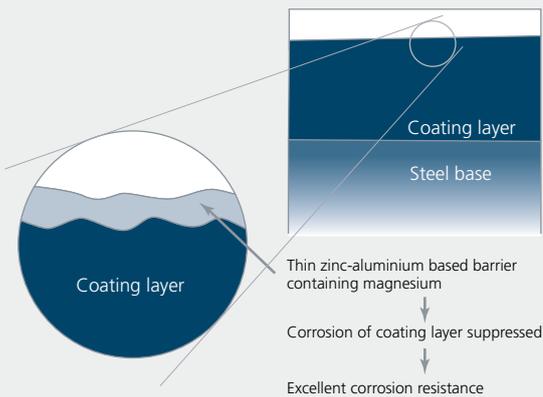
The ultimate in corrosion resistance

The ZAM® coating is a blend of zinc, aluminium and magnesium. The small quantities of magnesium (3%) and aluminium (6%) combine to form a protective barrier on the surface of the coating over time.

The fine, strongly attached barrier creates a two-layer structure on the surface of the steel, suppressing corrosion of the coating layer and enhancing the corrosion resistance of the product.

With a corrosion resistance at least 3 times that of zinc galvanised slit steel sheet for the same coating mass, ZAM® products can be used in environments subject to extremely corrosive conditions.

Dual layer surface structure



Mechanism of corrosion resistance on cut end-face

Excellent corrosion resistance is achieved on cut end parts by the sacrificial anti-corrosive effect of the coating.

Initially, cut edges may display signs of red rust, but this will change colour over time as the protective mechanism converts the red rust to a grey-black, highly corrosion resistant coating.

Example of change of colour tone of cut end-face after outdoor exposure test. [Thickness: 3.2mm; coating weight: 150/150 g/m²; post-treatment: chromate 50 mg/m².]

The colour tone and the speed at which the tone changes vary depending on the exposure environment (region, installation location, orientation, etc.).

Change of colour tone of cut end-face

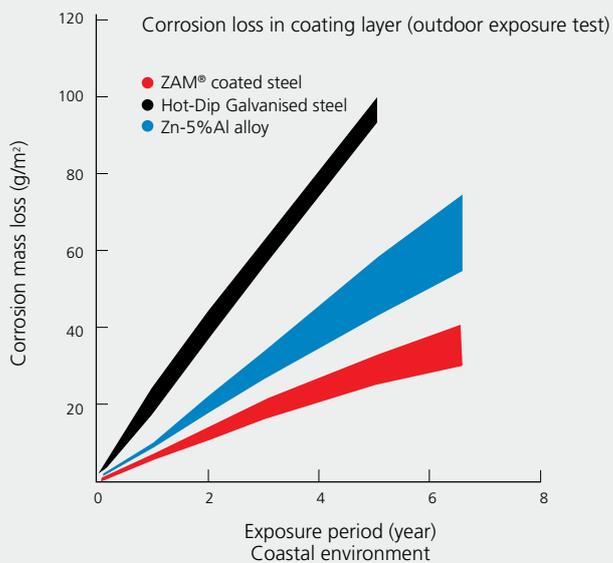
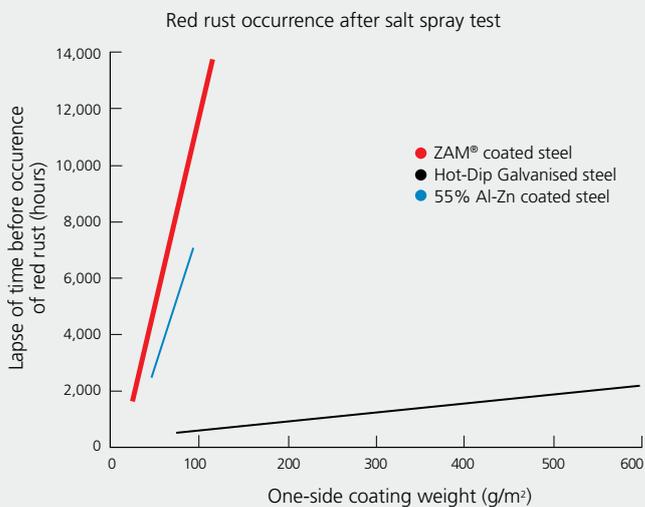


Salt environments

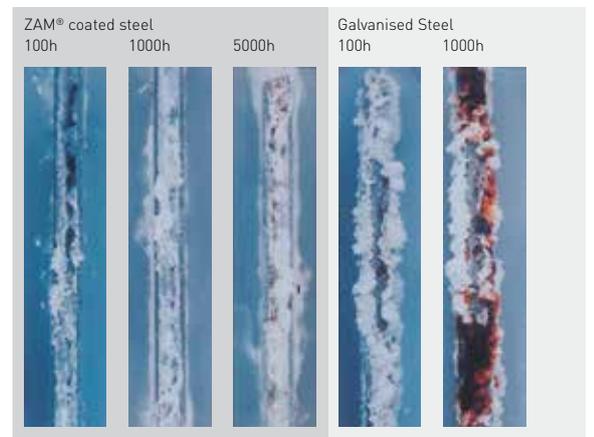
ZAM[®] coated steel has better resistance to red rust in salt spray conditions than hot-dip galvanised steel.

The graph shows the estimated lifespan of ZAM[®] products in salt-prone outdoor installations, compared with hot-dip post-galvanised zinc coating.

Durability of flat parts – salt spray test



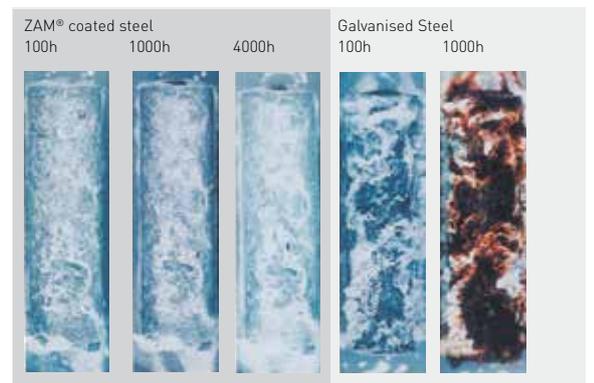
An investigation of long-term corrosion resistance using salt spray tests showed that ZAM[®] material has better durability (red rust resistance) than conventional galvanised steel and rivals that of 55% aluminium-zinc alloy coated steel.



Thickness 3.2mm, coating weight 120/120 g/m²

Durability of cut parts (end face)

Above are the results of a salt spray test on cut end faces of ZAM[®] material and conventional galvanised steel sheeting.



Thickness 1mm, coating weight 120/120 g/m²

Durability of processed parts (bent edge)

This salt spray test above shows the excellent corrosion resistance of the ZAM[®] coating on processed parts.



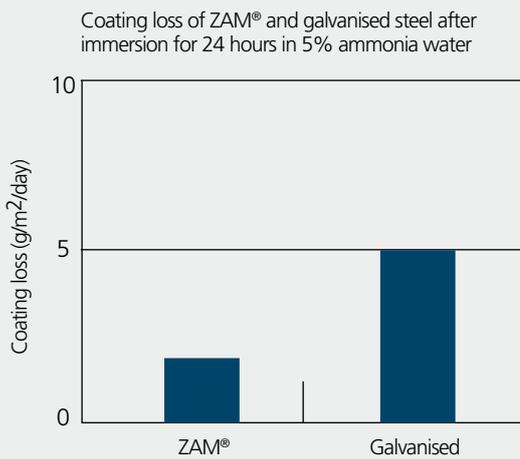
Animal and farm environments

Excellent resistance to ammonia and humidity make ZAM[®] coated steel products suitable for animal barns, composting sheds and other farm buildings with harsh, damp environments and corrosive conditions caused by animal excreta.

Industrial pollution

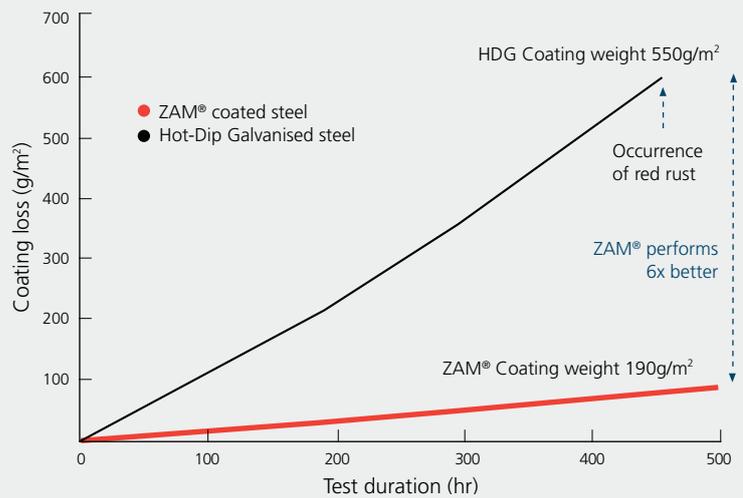
The ZAM[®] coating has higher corrosion resistance than zinc hot-dip galvanised steel in a sulphur dioxide (sulphurous acid gas) atmosphere, such as humid chemical environments.

Lower coating loss in ammonia environment



Lower coating loss in sulphur dioxide environment

Corrosion loss of ZAM[®] and post hot-dip galvanised products in sulphur dioxide tests



Test conditions: Sulphur dioxide concentration 100 ppm; testing temperature 40°C; relative humidity 98% or more.



ZAM[®] framing on greenhouse



ZAM[®] roofing purlins at waste recycling centre



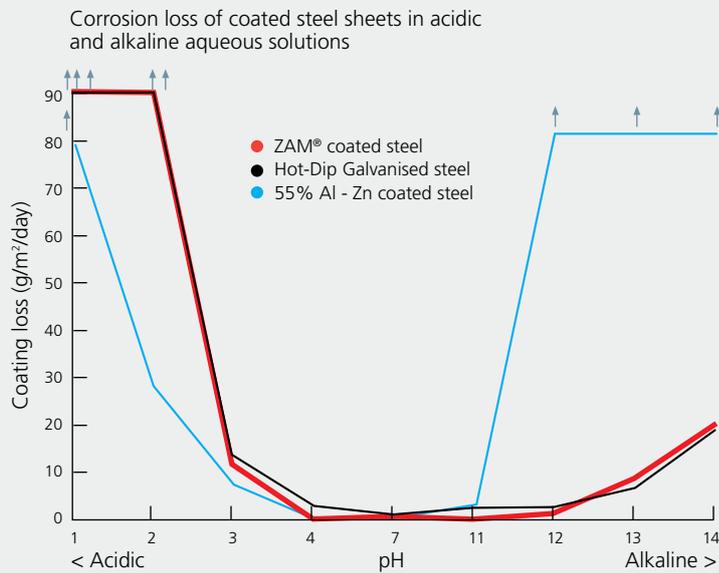
Concrete compatibility

ZAM® coated steel is compatible with concrete, making it the ideal material for steel formwork decking.

Scratch resistance

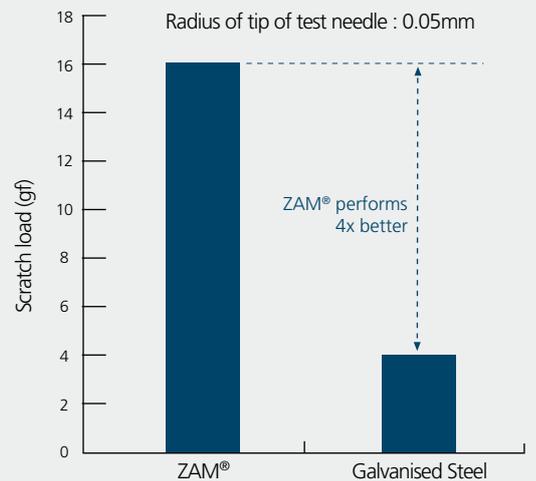
ZAM® material has a harder coating layer than both hot-dip galvanised steel and hot-dip zinc/aluminium alloy coated steel.

Coating loss in acid-alkaline environments



Test conditions: Corrosion loss measured after immersion for 24 hours in 5% ammonia water.

High scratch resistance



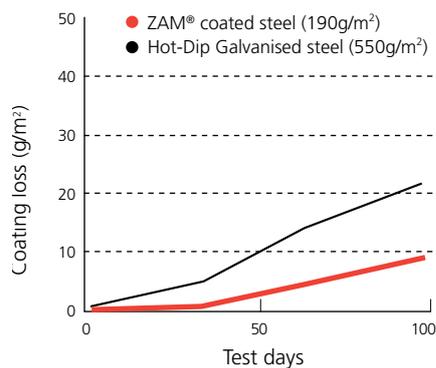
Minimum load required to produce visible scratching from sapphire test needle

In acidic and alkaline aqueous solutions, ZAM® material exhibits similar corrosion behaviour to zinc-based coated steel sheet.

This harder coating gives ZAM® material better scratch resistance and allows it to be used in applications subject to repeated wear.

Coating loss from concrete contact

Mortar extraction liquid (pH11.5)



Less handling damage

The ZAM® coating also provides greater resistance to damage during transport and erection.





zinc + aluminium + magnesium

The information in this brochure is, as far as possible, accurate at the time of publication. However, before application in a particular situation, Stramit Building Products recommends that suitably qualified expert advice is obtained confirming the suitability of the products and information in question for the application proposed. Stramit Building Products disclaims all liability (including liability for negligence) for any loss or damage resulting from the use of the information provided in this brochure.

© Trademarks of Stramit Corporation Pty Limited ABN 57 005 010 195 Trading as Stramit Building Products. A member of the Fletcher Building Group. ZAM® is a registered trademark of Nisshin Steel Co., Ltd. Technical data supplied by Nisshin Steel. © Stramit Corporation Pty Limited, March 2015

