ZAM®

Corrosion protection of the 21st century

ZAM® is a highly corrosion-resistant hot dip coated steel sheet that has a coating layer of zinc, 6% aluminum, and 3% magnesium.

WHEELING-NIPPON STEEL

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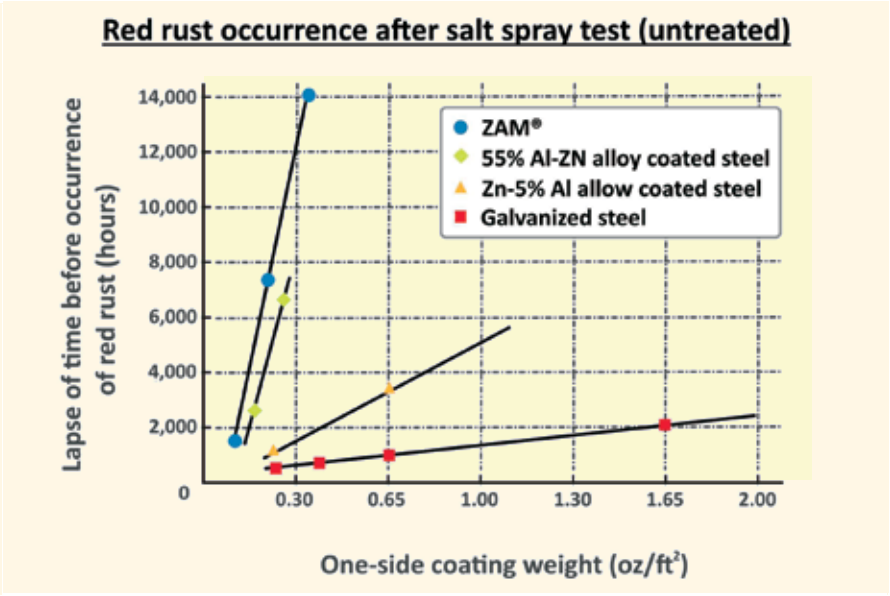
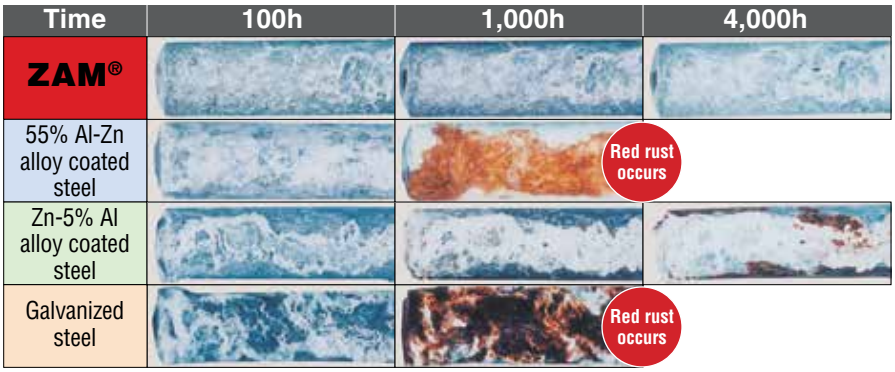
Superior corrosion resistance on surface

ZAM® has superior corrosion resistance as compared to galvanized steel, 55% Al-Zn alloy coated steel and Zn-5% Al alloy coated steel



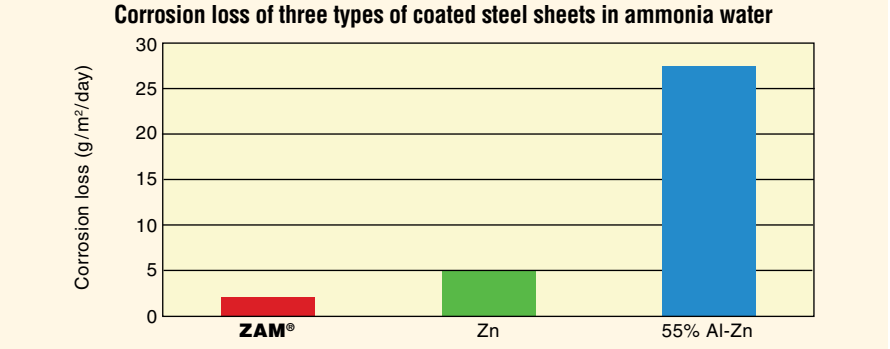
ZAM® has superior corrosion resistance on bend processed parts

Appearance of 1.0t bend processed parts on salt spray test (180° 1.0t bend, thickness 0.126", coating weight on one side 0.40 oz/ft², no chem treat)



ZAM® has superior corrosion resistance in ammonia environment

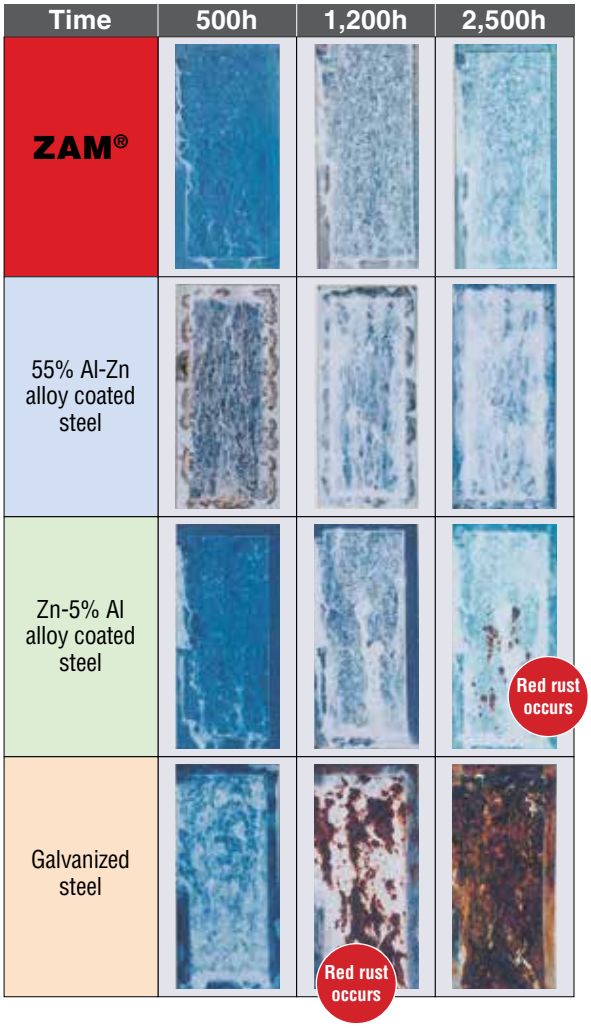
Ammonia solution concentrate at 5% (pH 12.5)



Appearance after salt spray test

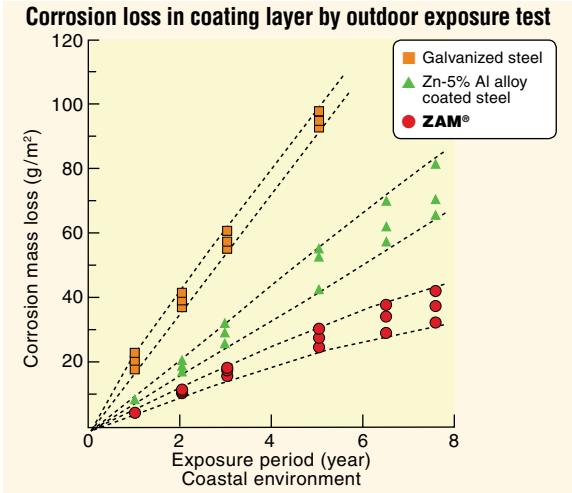
(SST: JIS Z2371)

(Coating weight on one side 0.30 oz/ft², no chem treat)



Outdoor exposure test

Coastal environment 100 ft from seashore (Okinawa Prefecture)



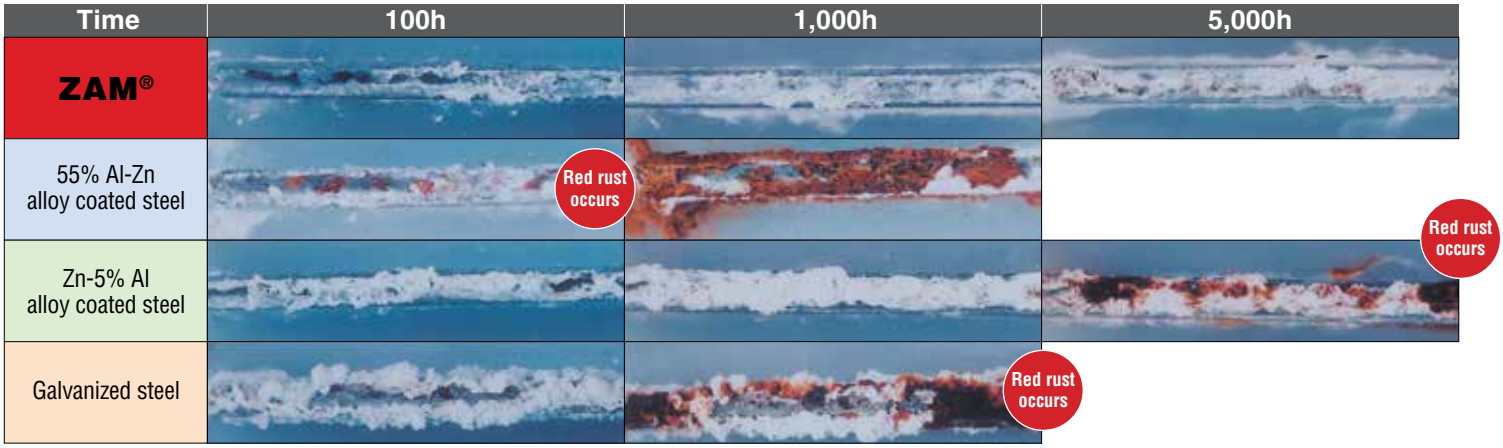
*Patents have been registered for the product and its manufacturer. **ZAM®** is a registered trademark of NIPPON STEEL CORPORATION

Superior corrosion resistance on cut edge

Appearances of cut edge sections after salt spray test

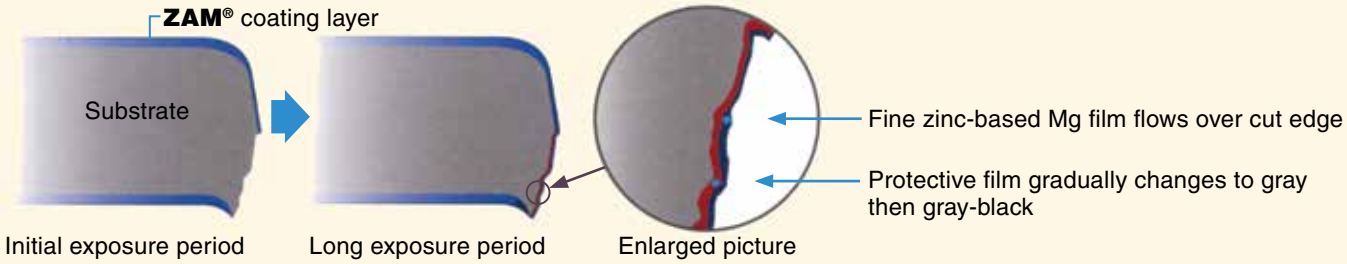
(Thickness 0.126", coating weight 0.40/0.40 oz/ft², no chem treat)

ZAM® Produced to ASTM A1046 Type 1 specifications



Mechanism of corrosion resistance on cut edge

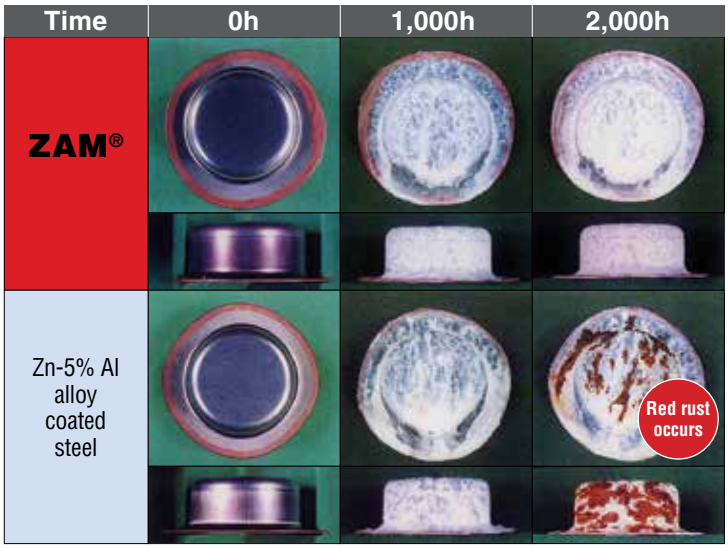
Excellent corrosion resistance is achieved on cut edge parts by covering the ends with a fine zinc-based protective film that contains Al and Mg leaching from the coating layer



ZAM® has superior corrosion resistance on drawing-processed parts

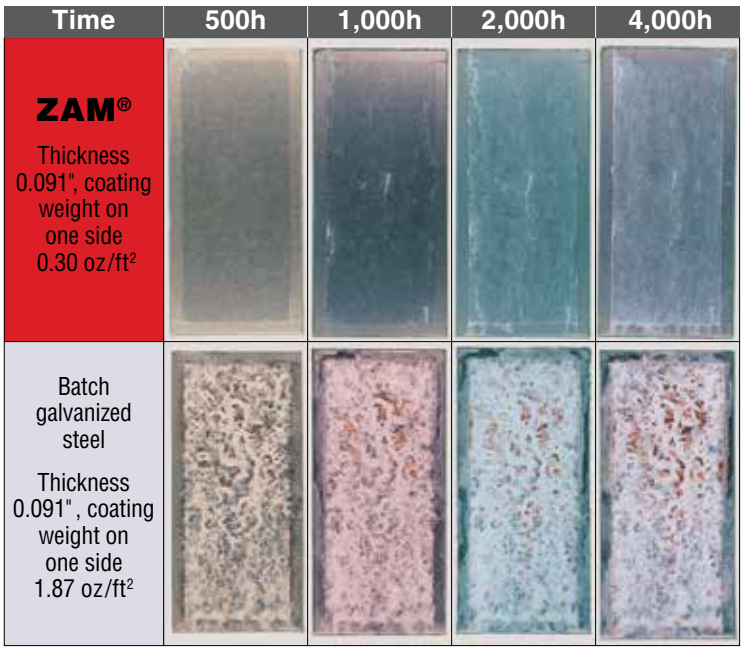
Appearance after salt spray test on drawing-processed parts

(Drawing height 0.98", thickness 0.031", coating weight on one side 0.23 oz/ft², no chem treat)



ZAM® has superior corrosion resistance to post (batch) hot-dip galvanized

Appearance after salt spray test of **ZAM®** vs batch galvanizing



Solar Power Rack System

Green House Structure

Outdoor Equipment

Complies to UL 2703 PV Racking

Animal Confinement Structure

Highway Safety Equipment

Architecutural Construction - Rain Screens

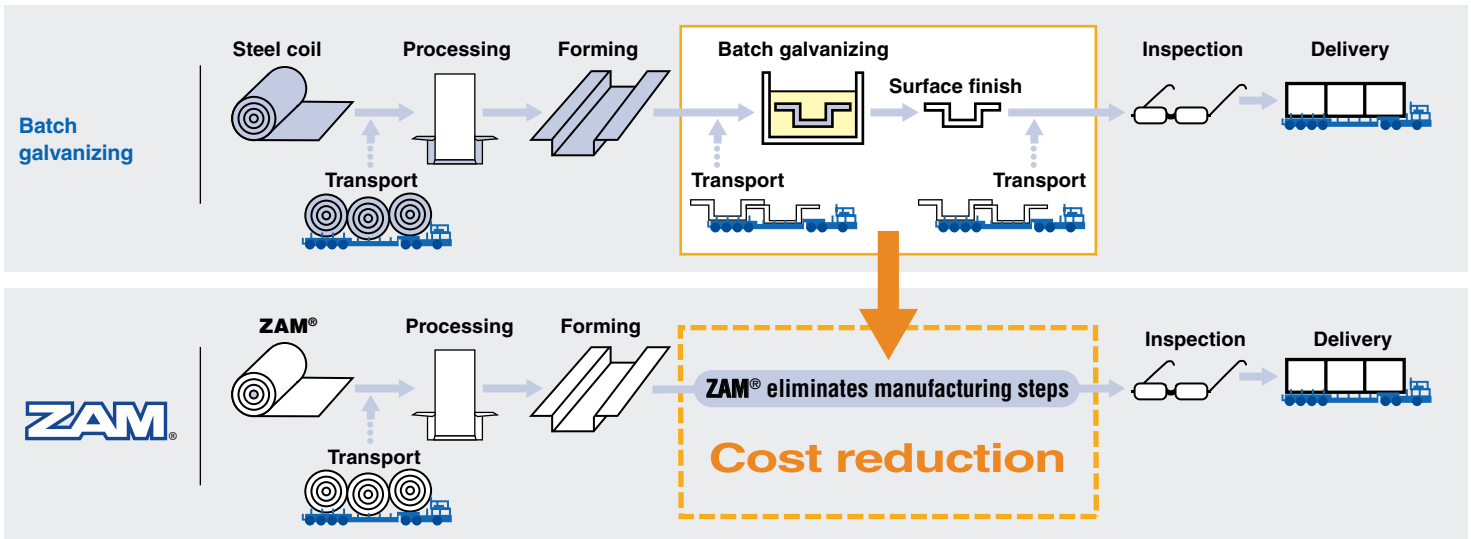
Key attributes of ZAM®

- Significant cost savings due to longer service life, lower maintenance and elimination of need for other coatings or treatments
- Thinner coating than other metallic coatings, thus reducing cost and benefiting the environment
- Superior cut edge rust protection over other coated products
- Performs exceptionally well in animal confinement environments (high chloride and ammonia) as compared to any other coated products

Construction

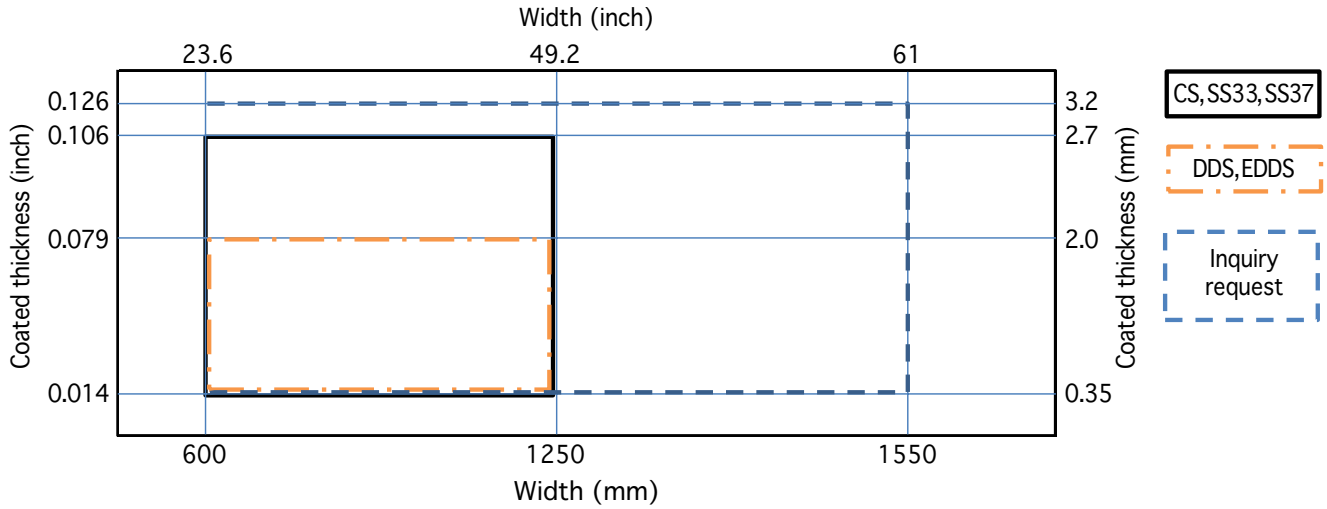
Cable Tray

Motor Case



Significantly lower total cost, higher corrosion resistance and shorter processing time than batch galvanizing

Available sizes



Available coating weights

Standard coating weight			
Inch-pound units coating designation	SI units coating designation	Minimum coating weight triple spot test both sides	
		Inch-pound units (ounces / square foot)	SI units (grams / square meter)
ZM 30	ZMM 90	0.30	90
ZM 40	ZMM 120	0.40	120
ZM 60	ZMM 180	0.60	180
ZM 75	ZMM 220	0.75	220
ZM 90	ZMM 275	0.90	275
ZM 115	ZMM 350	1.15	350

Available steel grades

ASTM specified properties

Designation	Grade	YS(min.)		TS(min)		El(min.)
		Ksi	Mpa	Ksi	Mpa	%
SS	33	33	230	45	310	20
	37	37	255	52	360	18
	40	40	275	55	380	16
	50 Class 1	50	340	65	450	12
	50 Class 2	50	340	---	---	12
	80	80	550	82	570	---
HSLAS	50	50	340	60	410	20
HSLAS-F	50	50	340	60	410	22

Typical mechanical properties for standard grades

Designation	YS		TS		El	n Value
	Ksi	Mpa	Ksi	Mpa	%	
CS typeB	30 - 55	205 - 380	50 - 60	345 - 415	25 - 30	---
FS	25 - 45	170 - 310	45 - 55	310 - 380	30 - 35	0.17 - 0.19
DDS	20 - 35	140 - 240	40 - 50	275 - 345	35 - 40	0.19 - 0.21
EDDS	15 - 25	105 - 170	35 - 45	240 - 310	40 - 45	0.22 - 0.27

Specifications

ZAM® (Zinc-Aluminum-Magnesium Alloy-Coated sheet) conforms to ASTM specification A1046 Type 1.
Please inquire other specifications to your WHEELING-NIPPON STEEL technical or sales representative.

FAQ

Q. What is the paintability of ZAM®?

A. ZAM® has the same paintability as galvanized steel. Pre-paint testing is recommended because paintability is subject to the painting materials.

Q. What is the weldability of ZAM®?

A. ZAM® is weldable. It is recommended that the welded portion be touched up with metallic paint. The potential for thinner coating layers give ZAM® an advantage over welding other coated products.*

Q. Why is ZAM® considered to be 'a bridge' between galvanized steel and stainless steel?

A. ZAM® offers superior corrosion resistance to galvanized steel but at a fraction of the cost of stainless steel. Applications which require high levels of corrosion resistance and low cost may prove perfect for ZAM®.

Q. Why is ZAM® environmentally friendly?

A. ZAM®'s superior corrosion resistance will allow customers to significantly reduce coating thickness which benefits the environment. Specifically, reducing coating thickness effectively decreases the amount of minerals mined from the earth, reduces harmful runoff dispersed into the soil and reduces coating residue at steel recycling plants.

Q. Why is ZAM®'s corrosion resistance superior to other coated products?

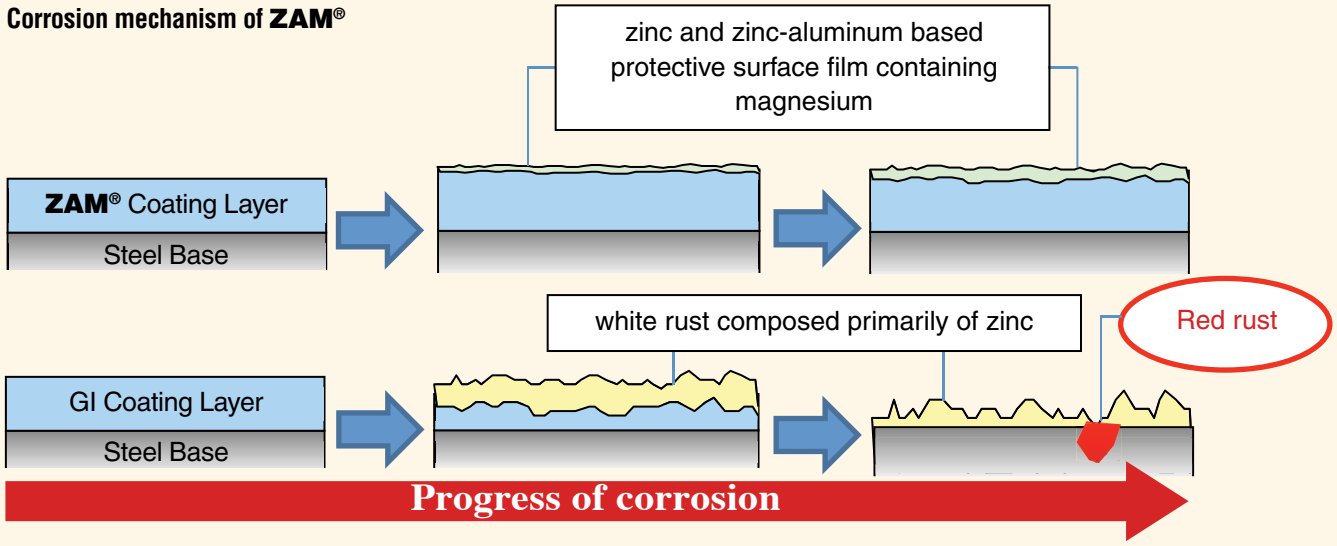
A. ZAM®'s unique chemical composition of Zn, Al and Mg combines to form a very tight and hard coating layer. This unique coating develops thin film byproducts that are remarkably corrosion resistant—even over cut edges.

Q. How does the ZAM® coating layer migrate over cut edges?

A. When the ZAM® coating layer corrodes in the rain, Zn and Mg flow over the cut edge. These elements form a fine zinc-based protective film.

Technical information on welding and touch-up painting is available upon request.

Corrosion mechanism of ZAM®



WHEELING-NIPPON STEEL is a certified ISO-9001:2015 company assuring continuous improvement, structured operating guidelines, superior quality control, and the highest possible level of customer service. WHEELING-NIPPON STEEL has also earned the "SHARP" certification from OSHA; this achievement recognizes WHEELING-NIPPON STEEL amongst business peers as a model and leader in workplace safety and health.WHEELING-NIPPON STEEL's goal has always been to produce the best possible quality product while protecting the safety, health, and environment of our employees and the surrounding communities.