ZINC-AL-MAG

COATED SUB-FRAMING

vitrafix™

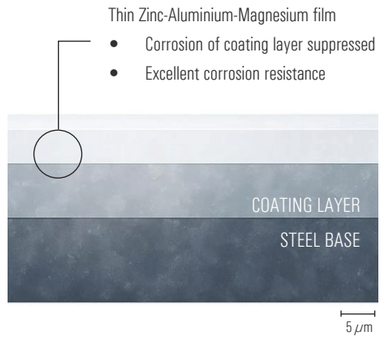
FAÇADE SYSTEM ACCESSORIES / BY FAIRVIEW

CONTENTS

ABOUT

In the early 2000s, Japan developed Zinc-Al-Mag type coatings as a next-generation alternative to galvanised steel, offering significantly improved durability and stability. Fairview's Vitrafix Zinc-Al-Mag Top Hats apply this advanced triple alloy technology to deliver superior structural reliability, long-term corrosion resistance and confidence that the façade will perform as designed throughout its service life. Its stable performance reduces the likelihood of premature deterioration, while the limited need for ongoing maintenance contributes to more cost-efficient project outcomes. The balance of durability and value makes Vitrafix Zinc-Al-Mag ideal for demanding environments, such as coastal and industrial locations.

As an integral part of Fairview's facade systems, Vitrafix Zinc-Al-Mag Top Hats work seamlessly with cladding panels, insulation, sarking, fixings, and accessories to form a complete assembly. Thorough testing guarantees consistent performance, compliance with Australian standards and reduced long-term maintenance. By combining technical performance with ease of integration, Fairview's Vitrafix Zinc-Al-Mag sub-framing provides designers, engineers and builders with confidence that their facade systems will deliver lasting performance and value.



KEY FEATURES

SUPERIOR CORROSION RESISTANCE

The Zinc-Al-Mag coating provides multi-layer protection. Zinc sacrifices itself to shield the steel, while aluminium and magnesium react with moisture and oxygen to form a dense, stable corrosion film. This film migrates over exposed areas, including cut edges, creating a barrier that prevents further corrosion, outperforming standard galvanised steel.

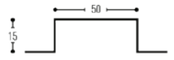
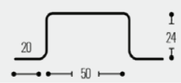
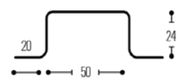
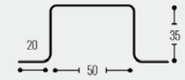
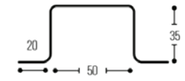
LONG SERVICE LIFE

By sealing vulnerable areas and slowing corrosion rates, the coating maintains structural integrity for extended periods. This self-healing process significantly reduces the risk of premature failure in harsh environments such as coastal, industrial and high-humidity zones.

COST EFFICIENT

The combination of sacrificial zinc protection and self-healing Al-Mg film minimises maintenance and repair needs. Longer durability lowers whole-of-life costs, making Vitrafix Zinc-Al-Mag Top Hats a practical and economical choice for compliant building systems.

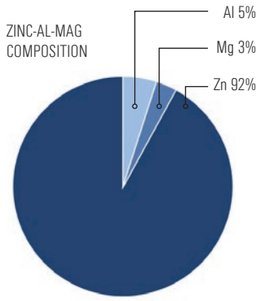
PRODUCT OFFERING

DIMENSIONS	NAME	DESCRIPTION	CODE	LENGTH (m)
	15mm Zinc-Al-Mag Top Hat	Zn-Al-Mg Top Hat used as cladding substrate. Grade: G2 Steel Coating: ZM 275 Thickness: 1.15BMT	ZT5015S ZT5015L	2.9 5.8
	24mm Zinc-Al-Mag Ventilated Top Hat	Zn-Al-Mg Ventilated Top Hat used as cladding substrate. Grade: G2 Steel Coating: ZM 275 Thickness: 1.15BMT	ZT5024PS ZT5024PL	2.9 5.8
	24mm Zinc-Al-Mag Top Hat	Zn-Al-Mg Top Hat used as cladding substrate. Grade: G2 Steel Coating: ZM 275 Thickness: 1.15BMT	ZT5024S ZT5024L	2.9 5.8
	35mm Zinc-Al-Mag Ventilated Top Hat	Zn-Al-Mg Ventilated Top Hat used as cladding substrate. Grade: G2 Steel Coating: ZM 275 Thickness: 1.15BMT	ZT5035PS ZT5035PL	2.9 5.8
	35mm Zinc-Al-Mag Top Hat	Zn-Al-Mg Ventilated Top Hat used as cladding substrate. support. Grade: G2 Steel Coating: ZM 275 Thickness: 1.15BMT	ZT5035S ZT5035L	2.9 5.8
	120mm Zinc-Al-Mag Top Hat	Designed to span vertically across the building structure to support the facade panels at vertical joints. Grade: G2 Steel Coating: ZM 275 Thickness: 1.15BMT	ZT12035S ZT12035L	2.9 5.8

COATING SPECIFICATIONS

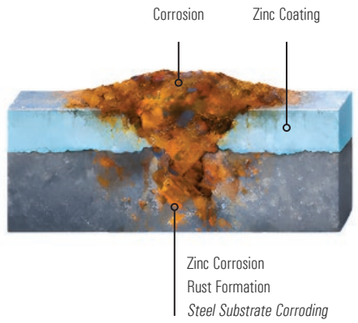
Zinc-Al-Mag is a metallic coating applied through continuous hot-dip processing. It forms a single, uniform alloy layer where Aluminium (Al) and Magnesium (Mg) are distributed within a Zinc (Zn) matrix. Zinc provides sacrificial protection to the steel, while aluminium and magnesium stabilise the corrosion process and reduce undercutting, significantly slowing the formation of red rust. Vitrafix Zinc-Al-Mag typically contains around 90–96% zinc, 2–6% aluminium and 2–3% magnesium. This combination delivers stronger barrier protection than traditional galvanised coatings, making it suitable for sub-framing in coastal, industrial and high-moisture environments.

In Australia, Zinc-Aluminium-Magnesium coated steels are covered under AS 1397 – Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated, where they are classified as ZM coatings (e.g. ZM120, ZM200). Products tested to AS 1397 meet Australian requirements for coating mass, durability and performance, ensuring suitability for local construction conditions.



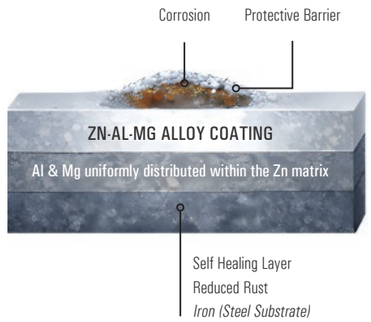
GALVANISED COATING

Zinc (Zn)



VITRAFIX ZINC-AL-MAG COATING

Zinc-Aluminium-Magnesium (Zn-Al-Mg)



CHEMICAL COMPOSITION ANALYSIS

The chemical composition data of the galvanised coatings are provided below in Table 1.

SAMPLE NO.	SAMPLE I.D.		Zn (%)	Al (%)	Mg (%)	Pb (%)	Ti (%)	Cd (%)	Sn (%)	Be (%)	In (%)
1	DX51D + ZAM275		92.2	5.7	2.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2	S350GD + ZAM		92.4	5.5	2.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
AS 1397 Type ZM		min.	82%	5%	2%	-					
Coating Requirements		max.	93%	13%	4%	1%					

Note: Requirements apply to a Type ZM coating as per AS 1397.

COATING MASS & BASE METAL THICKNESS TEST

The coating mass and base metal thickness results are provided below in Table 2.

SAMPLE NO.	SAMPLE I.D.	METALLIC COATING DESIGNATION	MEASURED SINGLE SPOT TOTAL COATING MASS BOTH SIDES (G/M^2)	AS 1397 TABLE 3.3 MIN. COATING MASS REQUIREMENT (G/M^2)	MEASURED BASE METAL THICKNESS (MM)
1	DX51D + ZAM275	ZM275	345	250	1.15
2	S350GD + ZAM	ZM275	340	250	1.15

Note: Coating mass rounded to 5g/m^2, as per AS 1397:2021

TESTING

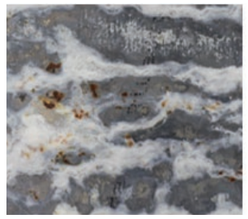
Testing demonstrates that Zn–Al–Mg coatings significantly outperform conventional galvanised coatings in chloride-rich and industrial atmospheres. Typical performance observations:

- 2–4× lower corrosion mass loss in coastal environments
- Significantly delayed time to first red rust
- Superior performance under cyclic wet–dry and salt-laden condition

Exposure of metal plate samples using a Salt Spray Testing apparatus was undertaken according to ASTM B117.

GALVANISED COATING

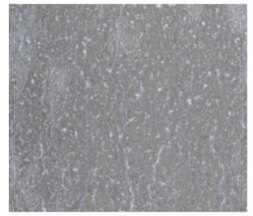
Z275 prior to salt spray.



Z275 after 1000hrs of salt spray exposure.

VITRAFIX ZINC-AL-MAG COATING

Zinc-Al-Mag prior to salt spray.



Zinc-Al-Mag after 1000hrs of salt spray exposure.

Note: Accelerated tests such as ASTM B117 are comparative indicators and should be interpreted alongside real-world exposure data.

TENSILE TEST REPORT

In confidence to the client:
FVA Group Pty Ltd
18 - 20 Donald Street
Lithgow NSW 2790
PO: P21618

Sample Delivery Date 11 August 2025
Date of Testing: 20 August 2025
Specimen Description Metallic Coated Steel Coil Samples
Testing Machine: TE 300 kN MT-3004 Grade A
Strain Device: Epsilon 50 mm Extensometer MT-1232 0.001 mm

SPECIMEN DETAILS:

			1	2
Batch I.D.:			HD25000 03602	HD25000 03602
Thickness:	a	(mm)	1.16	1.16
Width:	b	(mm)	10.82	11.67
Area:	S_o	(mm^2)	12.55	13.54
Gauge Length:	L_o	(mm)	50	50
Parallel Length:	L_c	(mm)	75	75

TENSILE PROPERTIES:

Tensile Strength:	R_m	(MPa)	480	480
Lower Yield Stress:	R_{eL}	(MPa)	370	370
Post Fracture Elongation:	$A_{50\,mm}$	(%)	27	26

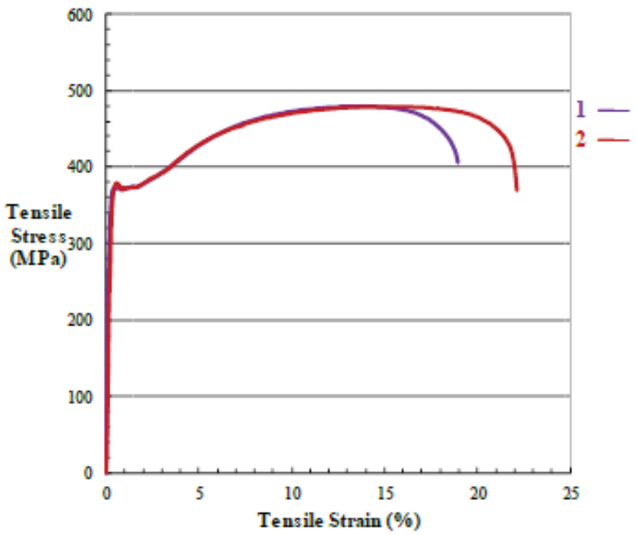
TEST COMMENTS:

Tested and reported as reduced-section samples in accordance with AS 1391:2020 & AS 1397:2021.

The reduced-section test piece was machined from the original coil parallel to the indicated direction of rolling.

Area (S_o) was computed on the base metal thickness after removal of the zinc coating.

Tensile Strength (R_m) and Yield Stress (R_{eL}) were rounded to the nearest 10 MPa & 5 MPa, respectively.



ENGINEERING ASSESSMENT

Through an independent assessment, Rickard Engineering has confirmed that they consider Vitrafix Zinc-Al-Mag (ZM275) coated top hats to have a corrosion performance of 27.8 years in the C4 corrosivity zone. Based on the above principle, the service life of the ZM275 coating can be estimated, as shown in Table 3. A similar assessment of the service life of ZM450, the maximum coating allowed under Australian Standard AS 1397, is also carried out and shown in Table 4.

Table 3: Fairview ZM275 service life to corrosivity categories

ATMOSPHERIC CORROSIVITY CATEGORY	ZINC-AL-MAG COATING ZM275	
	CORROSION RATE (μm/yr)	SERVICE LIFE (YEARS)
C1	< 0.02	> 50.0
C2	0.02 - 0.12	> 50.0
C3	0.12 - 0.35	> 50.0
C4	0.35 - 0.70	27.8*
C5M / C5I	0.70 - 1.40	13.9*

Table 4: Fairview ZM450 service life to corrosivity categories

ATMOSPHERIC CORROSIVITY CATEGORY	ZINC-AL-MAG COATING ZM450	
	CORROSION RATE (μm/yr)	SERVICE LIFE (YEARS)
C1	< 0.02	> 50.0
C2	0.02 - 0.12	> 50.0
C3	0.12 - 0.35	> 50.0
C4	0.35 - 0.70	> 50.0
C5M / C5I	0.70 - 1.40	22.7*

**It should be noted that if the required design life is over the life span, inspection at the end of the service life by a competent engineer to verify the remaining life span is required.*

For details on Vitrafix Zinc-Al-Mag and Fairview's full range of accessories, scan the QR code or visit https://fv.com.au/products/vitrafix.

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