ZINCALUME® STEEL
TECHNICAL GUIDE

BLUESCOPE

Zincalume®

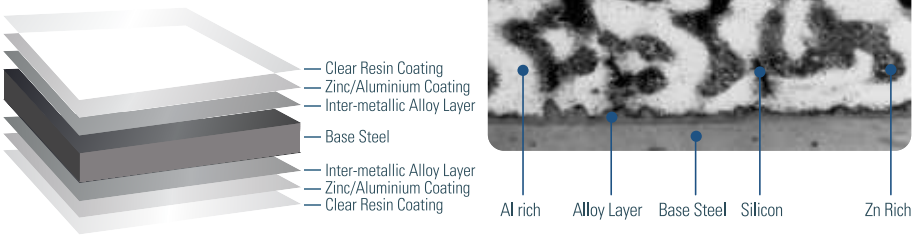
WHAT IS **CORROSION?**

Corrosion is caused by the deterioration of metal due to chemical reaction as a result of exposure to the environment (water and oxygen). It is also known as oxidation. Corrosion of metal results in the formation of rust or oxides in the corroded area.

ZN/AL COATING TECHNOLOGY (AZ150)

ZINCALUME® steel comprises coating composition of 55.0% aluminium, 43.5% zinc, and 1.5% silicon. The minimum coating mass of 150 g/m2 (AZ150) offers superior corrosion performance under varied conditions, when compared with other metallic coated steel. With additional proprietary surface treatment, ZINCALUME® steel also provides a combination of benefits just not available with generic Aluminum/Zinc (Al/Zn) coated steel alternatives.

CROSS SECTION OF ZINCALUME® STEEL



HOW DOES IT WORK?

Sacrificial protection is provided by an active metal (e.g. zinc), protecting a less active metal (e.g. steel). The more active metal corrodes in preference to the less active metal (figure A). ZINCALUME® steel exhibits a more complex coating structure consisting of both zinc-rich and aluminium-rich areas (figure B). The zinc-rich area provides excellent sacrificial protection, while the aluminium-rich area provides durable barrier protection. It is the combination of these two characteristics that make ZINCALUME® steel durable and effective against corrosion.

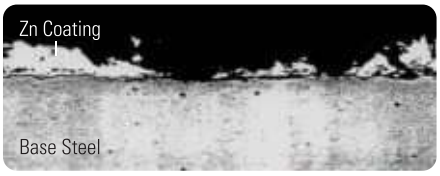


Figure A - Microscopic view of galvanized steel

Figure B - Microscopic view of ZINCALUME® steel

HOW DOES IT PERFORM?

The pictured samples were exposed for the same period of time under a similar severe environment. The galvanised steel shows severe loss of coating and consequent red rusting of the steel substrate but the ZINCALUME® steel is still in good condition.

Galvanized steel (G.I.)

ZINCALUME® steel

Bellambi Point site, Australia

Corrosion rates of galvanized steel and 55% Al-Zn alloy coated steel at Australian Atmosphere Exposure Test Sites.

Site	Galvanized Steel		55%Al-Zn Alloy Coated Steel	
	g/m²/y	µm/y	g/m²/y	µm/y
Severe Marine	140	9.8	16	2.2
Marine	18	1.3	4.0	0.54
Industrial/Marine	20	1.4	4.2	0.57
Rural	4	0.28	1.3	0.17

g/m² - two sided µm - one side

Green accreditation for the environment

Environmental sustainability is a continuous effort and commitment from all of us. We ensure our customers receive the highest standard in both quality and efficiency with the environment's best interest at heart. There is no better way to demonstrate our commitment than receiving green accreditation from renowned independent bodies.

Our coated steel products are accredited with Eco-Label by SIRIM QAS International, a member of the Global Ecolabelling Network (GEN).

The SIRIM Eco-Label certification identifies a product's overall environmental impact and the communication of its environmental information to consumers and businesses. Through this scheme, the product has undergone independent evaluation; and certified by SIRIM on its environment performance against criteria which include the composition of raw materials used, hazardous substances management and waste and energy management in the entire manufacturing operation cycle.

Key notes:

- Corrosion is dissolution of metal due to the surrounding environment.
- ZINCALUME® steel comprises a coating composition of 55.0% aluminium, 43.5% zinc and 1.5% silicon with a minimum coating mass of 150 g/m².
- For ZINCALUME® steel, the zinc rich area provides excellent sacrificial protection, while the aluminium rich area provides durable barrier protection.

Ten Facts of ZINCALUME® steel

1. ZINCALUME® is the brand name of BlueScope's premium metallic coated steel product.
2. BlueScope is the pioneer in introducing aluminium/zinc alloy-coated technology. ZINCALUME® steel now has more than 40 years of proven field performance around the world.
3. ZINCALUME® steel has provided more than 10 million tonnes of roofing and wall cladding since 1976.
4. In Malaysia, ZINCALUME® steel is only manufactured by NS BlueScope Malaysia, an ISO 9001 and ISO 140001 certified company.
5. ZINCALUME® steel is guaranteed to achieve a material strength of 300MPa (G300) or 550MPa (G550) as specified.
6. With a minimum coating mass of 150g/m2 (AZ150) – proven by triple spot test, ZINCALUME® steel provides corrosion resistance up to 4 times the life of galvanized steel with a similar coating thickness.
7. BlueScope's extensive research and development program brings continuous improvement to the performance of ZINCALUME® steel. With proprietary surface treatment, ZINCALUME® steel has greater resistance to weathering and surface marking.
8. As assurance of highest product quality and performance, ZINCALUME® steel is SIRIM certified according to Australian Standard AS1397 and Malaysian Standard MS1196.
9. ZINCALUME® steel is SIRIM Eco-Label (Coated Steel) certified to meet the requirements of green rated buildings.
10. ZINCALUME® steel is backed by a BlueScope warranty* against perforation by corrosion.

**Terms and conditions apply*

How does ZINCALUME® steel compare to other 55% Al/Zn steel?

Feature	ZINCALUME® steel	Other 55% Al/Zn steel
Certification SIRIM certified **What it means** 3rd party endorsed	✓	?
Mechanical Properties Yield Strength (G300/G550) **What it means** G550 = yield strength of minimum 550 N/mm^2 G300 = yield strength of minimum 300 N/mm^2	✓	?
Corrosion Performance Minimum AZ150 coating class **What it means** Optimum 55% Al, 43.5% Zn, 1.5% Si composition AZ150 = minimum 150 g/m2 of Aluminium/Zinc coating	✓	?
Warranty Backed by a BlueScope warranty **What it means** Product quality, service and support you can rely on	✓	?
Branding Each sheet is branded on the reverse side to confirm its quality **What it means** It is easy to distinguish genuine ZINCALUME® steel from generic substitutes	✓	?
Product Appearance Spangle size is small, fine and consistent Indicate optimised Aluminium and Zinc coating combination **What it means** Distinctive appearance that is lustrous and shiny	✓	?
Darkening Passivated by BlueScope technology designed to maintain the material's lustre **What it means** ZINCALUME® steel will continue to look new for longer duration	✓	?

**Depends on the environment and the location of the building.*

Disclaimer : Spangle variance from coil to coil is an inherent characteristic of metallic alloy coating process and will not affect the performance of the product. It is therefore not a cause for rejection

For product identification and originality, please check the reverse side of the coil for the following branding text.

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The information contained in this brochure is of a general nature only, and has not been prepared with your specific needs in mind. You should always obtain specialist advice to ensure that any materials, approaches and techniques referred to in this brochure meet your specific requirements.

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This brochure supersedes all previous version.

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