

Fit for purpose solution for the right environment. Choose Orrcon Steel's ALLGAL® and ULTRA-SPEC GAL®

Australian Steel suitable for Australia's unique environment

The harsh Australian environment wreaks havoc on the construction industry with an estimated \$75 billion in damage each year due to corrosion*. A significant portion of this is preventable.

Corrosion is a natural process and understanding the factors that cause corrosion allows a fit for purpose approach to design and material selection.

Corrosion can compromise the aesthetics and integrity of a structure. If left unchecked corrosion may consume large areas resulting in pitting, scale and loss of wall thickness. Corrosion can be cost effectively addressed; in a similar way to issues that can occur in other materials such as timber or concrete. For example, durability can be enhanced by applying appropriate barrier protection coatings and/or using sacrificial coatings.

Metallic zinc coatings on steel has been used for over a century to provide long-term, durable and cost-effective protection of steel structures. Zinc provides that protection by sacrificing itself in corrosive environments instead of the steel, as it is the more 'active' metal.

The durability that can be achieved for a specific structure is an outcome of the coating system selected and the design process based on the consideration of:

- ▶ **The function and estimated life of the structure**
- ▶ **The environment, contaminants and microclimatic factors**

Other factors such as materials, aesthetics and owner's requirements for each part of the structure need to be taken into account.

The corrosion rate of steel and/or zinc coatings has been determined over many years by industry experts at multiple exposure sites in state and territories around the country. The exterior environment is monitored and described in terms of the geography and its proximity to airborne contaminants; such as chemical pollution or salt-spray from the bay, coast or ocean.

The corrosivity of Australian environments for steel exposed to the atmosphere has been categorised on a 6-level scale, subject to the rate of material loss in microns (µm). The table below is described in AS 4312 and can be used as a starting point to estimate the durability of exposed structures and the subsequent time to first maintenance.

Corrosivity in Australia described in AS 4312.

Corrosivity Category	Corrosion Rate Steel µm / year	Corrosion Rate Zinc µm / year	Typical Exterior Environment
C1: Very low	<1.3	<0.1	Few alpine areas
C2: Low	1.3 to 25	0.1 to 0.7	Arid / rural / urban
C3: Medium	25 to 50	0.7 to 2.1	Coastal
C4: High	50 to 80	2.1 to 4.2	Sea-shore (calm)
C5: Very high	80 to 200	4.2 to 8.4	Sea-shore (surf) /offshore within chemical plants
CX: Extreme	200 to 700	8.4 to 25	Shoreline (severe surf)



Zinc Coatings - Electrogalvanized ALLGAL®

The Orrcon Steel electrogalvanizing process applies a uniform zinc coating to steel coil in size range from 1.6mm up to 6mm. This technology is unique to Orrcon Steel and Orrcon is the only Australian pipe and tube manufacturer that has the capability to wholly manufacture galvanized pipe and tube products that are greater than 3mm.

Australian-made BlueScope steel coil is the raw material used for ALLGAL®, where the raw steel coils are acid-pickled to a white metal finish and then rinsed clean, before passing through the galvanizing line where a fine, smooth even layer of zinc is electrically applied to the surface.

Orrcon's ALLGAL® Z100 has a standard coating (AS 4750 ZE50/50) with a minimum 7 microns per side, which equates to 50 grams per square meter, per side. A clear coat paint is then applied to finished tube to provide short-term protection during storage and transit. ALLGAL® is best suited for use in low to mildly corrosive environments C1 to C2.

ALLGAL® is preferred by many fabricators who find it easy to weld, with minimal weld fume and a spangle-free appearance, whilst powder-coaters say they like the smooth finish. For a cost-effective and easy product to work with - ALLGAL® coated pipe and tube is your fit for purpose solution.



At Panelfab we use the ALLGAL® product on all of our buildings base frames because not only is it an Australian made product but it's coating produces less welding splatter which means less cleaning on the weld area as well and the welding gun, overall meaning faster production time.

We have used ALLGAL® for a long time and will continue to use it in the future ▶▶.

- Ashish Bhagat -
Production Manager,
Panelfab.

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Orrcon Steel ULTRA-SPEC GAL® ZB135/135 (Z275) Zinc Coating

ULTRA-SPEC GAL® is a coated structural tube compliant to AS/NZS 4792 ZB135/135 (Z275) that provides extra durability to meet the level of corrosion protection as specified in the Building Code of Australia and under the NASH standard for use in residential and low-rise steel framed construction.

Galvanised products are used in multiple applications across the housing construction sector so it is best to confirm where the source coil has come from and where the product is made.

Customers have indicated their preference for ULTRA-SPEC GAL® as they know it conforms to the requirements under the National Building Code and it is made from Australian sourced BlueScope coil and manufactured in Australia at the Orrcon Steel tube mill in Brisbane. ULTRA-SPEC GAL® provides customers with a surety of source and manufacture of product, traceability and local customer support.

For a product that you can be sure meets the standards of your build specifications, ULTRA-SPEC GAL® is a good choice.

Coating Durability Guide		ALLGAL® ZE50 / 50	Pregal Z275 MSGB ULTRA-SPEC GAL®
Description.		Electrogalvanised by Orrcon. Uniform colour.	Pregalvanised coil, hot dipped in zinc. 'Spangle' pattern.
Atmospheric Corrosion Category.	Per side	50g/m ²	137.5g/m ²
	Per side	7µm	19µm.
Low (C2) Dry, rural, remote from coast.		Medium (5 to 10 years).	Extra Long (> 25 years).
Med (C3) Coastal, low salinity. Most city areas.		Short (2 to 5 years).	Medium (5 to 10 years).
High (C4) Near surf, but not beachfront.		Very Short (< 2 years).	Medium (5 to 10 years).
Application Example.		General fabrications. Powder coated furniture. Non-spangle may be preferred. Very good to weld. Australian Steel. Up to 6mm	Thicker zinc layer when additional durability is required. Trailer Chassis Building and construction. Australian Steel. Up to 3.2mm.

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The table below is referenced from the NASH Standards Residential and Low-rise Steel Framing Part 2- Designs, with inclusion of ALLGAL® and ULTRA-SPEC GAL® to identify where these products reflect in that standard.

DESIGNATION	ATMOSPHERIC CORROSIVITY CATEGORY	
	C2	C3
Description (refer to AS4312 / ISO9223)	Arid / Urban inland	Coastal or industrial with low salinity
Corrosivity (AS4312 / ISO9223)	Low	Medium
APPLICATION		
Inaccessible for maintenance		
Roof framing system – unventilated	ALLGAL®	ULTRA-SPEC GAL®
Roof framing system – ventilated	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Wall framing system – unventilated	ALLGAL®	ULTRA-SPEC GAL®
Wall framing system – ventilated	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Floor bearers and joists – unventilated	ALLGAL®	ULTRA-SPEC GAL®
Floor bearers and joists – ventilated	ULTRA-SPEC GAL®	X
Decking / balcony – integral	ULTRA-SPEC GAL®	X
Ceiling battens	ALLGAL®	ULTRA-SPEC GAL®
ACCESSIBLE FOR MAINTENANCE		
Roof battens	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Stumps and Piers supporting main building	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Decking/balcony – independent of main structure	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Verandah beams and rafters	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Verandah posts and stumps	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Carport rafters and beams	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Carport posts	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Lower Storey unlined eaves and pergola rafters and beams	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®
Pergola Posts	ULTRA-SPEC GAL®	ULTRA-SPEC GAL®

C1: dry, indoors. Very low corrosivity. ALLGAL® is generally suitable in this environment.
C4: sea-shore (calm). High corrosivity. ULTRA-SPEC GAL® may have limited application in this environment. C5: sea-shore (surf). Very high corrosivity. Greater corrosion protection or systems required in these conditions.

By choosing Orrcon Steel's ALLGAL® or ULTRA-SPEC GAL® tubular range of products, you can be assured it is manufactured from Australian made BlueScope steel coil and offers a fit for purpose solution for the right environment.

Products manufactured that reference and comply with Australian Standards have been produced with Australian conditions in mind. You can trust Australian made steels will be the solution to go the distance.

Orrcon Steel is a leading Australian distributor and manufacturer of steel, tube and pipe. Our extensive product range covers RHS, SHS & CHS structural tubular steel.

Download a factsheet for further information, visit <https://www.orrconsteel.com.au/> or call 1300 677 266 to discuss how we can meet your steel needs.

*According to the Galvanizers Association of Australia the cost of corrosion is 3-5% of GDP, In Australia that equates to \$75 billion per year, where about 30% of this cost (\$25 billion) is preventable. Every 45 seconds, 1 tonne of steel corrodes globally.



“ At Oxworks we have been big fans of Orrcon Steel's Z275 products since switching to it 2 years ago for the manufacture of our steel fencing range.

We love the fact that it's Australian Made, durable, consistent, and it powder coats better than anything we have ever seen.”

- David Burke, Oxworks Supply Chain Manager.



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