Data Sheet – Orrcon Steel tube made with REDCOR®

JULY 2020 | REV 02 | This version supersedes all previous issues

General Description

This special purpose Orrcon Steel tube is a cold-formed structural hollow section made from BlueScope's REDCOR® weathering steel. It is manufactured using the ERW (Electric Resistance Welded) process, external weld upset is removed to give a smooth clean surface finish with equivalent metallurgical properties.

BlueScope REDCOR® weathering steel is a high strength steel that develops a stable oxide layer on the surface of the steel known as a 'patina'. When used is the appropriate environment, the patina enhances corrosion resistance of the steel compared to conventional structural steels effectively 'weathering' the steel in a natural way.

Once fully formed and weathered, the appearance of this film is uniform, usually of a dark brown or purple colour. The colour can blend nicely with the environment and improves with age.

Certification

Orrcon Steel tube made from REDCOR® is a product range is made by Orrcon Manufacturing, an ISO9001 accredited business. It is manufactured to meet the requirements of AS/NZS 1163 C350L0 – Cold formed structural steel hollow sections. REDCOR® weathering steel supplied by BlueScope Steel Australia complied to AS/NZS 1595, a high phosphorous structural weathering steel. A manufacturers test certificate can be provided on request.

Durability

Atmospheric corrosivity categories to AS 4312 and AS/NZS 2312.

Atmospheric Category (AS 2312)	Corrosion Rate for Steel (µm/year)
C1 Very Low	<1.3
C2 Low	1.3 to 25
C3 Medium	25 to 50
C4 High	50 to 80
C5 Very High	80 to 200

Durability is the estimated time to first major maintenance within the service life of the structure to restore the protection to the base material and is not subject to aesthetic considerations.

Other factors that influence durability, include: design, local variations in environmental conditions and non-atmospheric exposure conditions, such as chemicals, soil and concrete. Additional protective measures, such as organic coating and/or routine maintenance may be required, subject to: the specified design, aesthetics and service life requirements of the structure.

Limitations of BlueScope REDCOR® weathering steel

REDCOR® weathering steel is not suitable for all applications and in all environments. In particular weathering steels are not recommended in marine environments with high salt deposition rates. The proximity to the sea for which REDCOR® weathering steels can be used depends on a variety of factors – wind direction and strength, presence of breaking surf and topography. In general weathering steel should not be used within 2km of the coast, except where exposure testing confirms that the first year corrosion loss rate is less than 50 µm/year.

Guidance as to the suitability for the use of BlueScope REDCOR® weathering steels in marine environments is available in AS 2312 (Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings).

Refer to the BlueScope Technical Bulletin 26, June 2019, Revision 7 "REDCOR weathering steel" for a more comprehensive overview of how to use weathering steel.

Available Product Range

AUSTRALIAN MADE

BlueScope

Sizes available in SHS	
65 x 65 x 2.5	6,500mm
75 x 75 x 2.5	8,000mm
89 x 89 x 2.5	12,000mm
100 x 100 x 2.5	8,000mm

MOQ and extra apply for non-standard length.
Standard pack configuration only.
Other sizes may be available upon enquiry.

Typical Applications

Orrcon Steel tube made from REDCOR® weathering steel is suitable for structural and general purpose applications, including;

- Streetscapes
- Shopping precincts
- Public parks
- Constructed wetlands
- Play spaces
- Cycle pathways
- Sporting facilities
- Wayfinding and sign structures
- Gates and fencing
- Garden features
- Street furniture
- Letterbox supports
- Seating supports
- Urban Artwork

Detailing

Correct detailing is essential when using REDCOR® weathering steel in order to ensure

a. there are no corrosion issues with the structure being built from weathering steel and

b. that staining of the surrounding areas does not occur.

In all detailing work it is important that the structure has good ventilation to enable the proper development of the patina.

Handling and Preparation of REDCOR® weathering steel

Care should be exercised in the handling of REDCOR® weathering steel.

The steel must be kept free from oil, chalk marks, paint, gouges, concrete splatter and similar staining by other construction materials. Any foreign matter adhering to the steel needs to be removed as soon as practicable.

Care should also be exercised in design as run off staining may occur to the surrounding area depending on the nature of the surrounding surfaces, e.g. bare concrete.

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Mechanical Properties – Grade C350 L0

Mechanical Property	Specification, min
Yield Strength	350 MPa
Tensile Strength	450 MPa
Elongation	20%

Orrcon Steel tubular products made with REDCOR® weathering steel meet the Charpy V Notch impact requirements within AS/NZS 1163 for L0 specification.

Chemistry – Grade C350 L0

Element	C	Si	Mn	P	S	Cr	Ni	Cu
Specification (max %)	0.15	0.75	1.60	0.16	0.04	1.05	0.55	0.50

Other limits as per AS/NZS 1163 apply.

Dimensional Tolerances – Complies with AS/NZS 1163

Attribute	Specification
Length	-0, +15mm
Thickness	± 10%
Linear Mass	≥ 96% of nominal mass
Outer dimensions	± 1%, with a minimum of ± 0.5mm
Corner Radius	1.5t to 3.0t (t = nominal thickness)
Twist	2.0mm + 0.5mm/m length
Concavity / Convexity	Max 0.8% or 0.5mm, whichever is greater
Straightness	0.15% of total length
Squareness	90 ± 1°

Weldability

BlueScope REDCOR® weathering steel have similar welding characteristics to conventional hot rolled AS/NZS 3678 350. With relatively small single pass welds, dilution effects between the weld metal and parent material will ensure that sufficient alloying elements are present in the weld for adequate resistance to corrosion for high phosphorus weathering steels only. In all cases the use of hydrogen controlled welding consumables is preferred for the welding of high tensile steels. The suitability of alternative electrodes should be established via appropriate weld procedure qualification tests as specified in AS/NZS 1554.1.

Refer to the BlueScope Technical Note "Guidance on the welding of weathering steels" for general precautions and consumable requirements when welding Orrcon Steel tube made with REDCOR® weathering steel.

Contact us for more about this product

1300 677 266

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For availability of Orrcon Steel tube made with REDCOR® weathering steel please contact your Orrcon Steel representative.
Please note that not all products are available in all regions.

Please ensure you have the current data sheet for this product as displayed at orrconsteel.com.au/resources/technical-resources