

ZENITH™ ARCHITECTURAL CLADDING WITH BLUESCOPE REDCOR® WEATHERING STEEL

INTRODUCTION

Lysaght now offers REDCOR® weathering steel across the ZENITH™ range of architectural roofing and walling products.

Whilst providing a unique architectural appearance in keeping with Australia's "sunburnt landscape" REDCOR® steel does require special considerations particularly in façade applications. This PAB should be read in conjunction with the ZENITH™ Design and Installation manual for Non-Cyclonic and Cyclonic applications, as applicable.

WHAT IS REDCOR® WEATHERING STEEL?

REDCOR® weathering steel by BlueScope is a high strength, low alloy structural steel with enhanced atmospheric corrosion resistance compared to conventional structural steels in certain environments. REDCOR® steel forms a tightly adherent oxide layer, known as the "patina", that confers the enhanced corrosion resistance.

REDCOR® weathering steel grade used for the LYSAGHT ZENITH™ range is a high phosphorus steel complying with AS/NZS 1595 and is consistent with grade CW300-G with a thickness of 0.7mm.

Published ZENITH™ cladding range capacities and span data for 0.75mm BMT may be applied to 0.7mm BMT ZENITH™ cladding products manufactured using REDCOR® weathering steel.

Detailed information regarding BlueScope REDCOR® weathering steel is available in BlueScope Technical Bulletin 26. This Product Advisory Bulletin provides a summary of this in relation to its use with the ZENITH™ cladding range.

FORMATION OF THE "PATINA"

REDCOR® weathering steel develops a stable oxide layer, known as the "patina", that is tightly adherent to the base steel and consequently helps to resist continued corrosion over extended timeframes. The stable oxide layer of weathering steels is a result of three factors:

- The alloy composition of these types of steels
- Exposure to wet and dry cycles
- A suitable atmospheric environment.

REDCOR® weathering steel develops the protective patina layer when exposed to alternating periods of wet and dry and hence requires bold exposure for the patina to develop. The colour of the patina changes over time. When first formed the patina will be bright

orange, but over time it will change to a dark brown, almost purple colour. The rate of development of the patina depends on the degree of exposure to the weather and the presence of contaminants such as chlorides and sulphides in the atmosphere.

In situations where one surface of a structure incorporating REDCOR® weathering steel receives more exposure than another there is likely to be a difference in appearance between the two surfaces. The more boldly exposed surface will form the patina more rapidly, whereas the protected surface will form the patina more slowly and have a rougher surface texture than the exposed side.

LIMITATIONS OF REDCOR® WEATHERING STEEL

It is important to note that REDCOR® weathering steel is not suitable for all applications and in all environments.

In particular, REDCOR® is **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 2 km of the coast
 - Similarly, micro climates should be considered. Eg splash zones around swimming pools, proximity to irrigated landscape areas etc
- BlueScope REDCOR® weathering steel is not recommended for heavy industrial locations where high concentrations of sulphides likely to be present in the atmosphere, for example adjacent to smelters in locations such as Port Pirie or Mt Isa.
- REDCOR® weathering steel is not suitable for applications where the structure is constantly wet, such as submerged in water, being buried in soil or in areas of very high rainfall and humidity.
- REDCOR® weathering steel should not be used where the relative humidity exceeds 80% for more than 60% of the time.
- Where REDCOR® weathering steel is used to span water a minimum distance of 2.5m is required above the water surface.

DESIGN CONSIDERATIONS

Correct detailing is essential when using REDCOR® weathering steel in order to ensure there are no inter-material issues with the structure and 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, additionally some important principles that need to be considered are:

- Eliminate entrapment points where moisture or debris accumulates. For the ZENITH™ cladding range, a vertical orientation is recommended for all wall cladding applications using REDCOR® weathering steel.
- Avoid expansion joints wherever possible. Where joints are unavoidable seal the joint using an appropriate material such as EPDM or silicone.
- Water running over the surface of REDCOR® weathering steel during development of the patina has the potential to stain downstream surfaces. Run-off should be considered at design stage and controlled to prevent run-off to surrounding structures. The following methods should be considered:
 - Diversion of run off by drip plates, sloping surfaces, downpipes and drains to carry the run off away from the structure.
 - Use of coverings or coatings on sub-structure.
 - Correct use of landscaping to collect the run off.
- Careful consideration should be given to the location where REDCOR® weathering steel is to be used:
 - Pedestrian traffic proximity should be considered as;
 - Contact with clothing may result in staining to clothing.
 - Oils from hand marks etc will affect the uniformity of the patina
 - Microclimatic considerations should be assessed
 - Splash zones around swimming pools
 - Irrigated landscape areas
 - Outdoor cooking areas etc

HANDLING AND PREPARATION OF LYSAGHT ZENITH™ USING REDCOR® WEATHERING STEEL

LYSAGHT ZENITH™ cladding made using REDCOR® weathering steel is supplied with stripable film to protect the surface during installation. However, care should be exercised in the handling of REDCOR® weathering steel. The surface 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 surface needs to be removed as soon as practicable.

Hand-marking of REDCOR® steel

REDCOR® steel can be particularly susceptible to hand-marking both during and after installation.

During installation the supplied stripable film coating will provide adequate protection from hand marking. Where this coating needs to be removed during installation gloves should be worn when handling the product.

Where the product is installed in locations susceptible to handling or touching after installation it should be understood that hand marking will occur and be visible for an extended period of time.

FIXING - FAÇADES

The fastening of weathering steel façades should follow the general principles outlined above. Weathering steel panel must be fastened in such a manner as to allow for adequate wet and dry cycles. Crevices must be avoided to ensure that the structure does not corrode and the run off must be controlled to prevent staining of the façade and surrounding structure.

COMPATIBILITY WITH OTHER MATERIALS

As with all metals, care must be exercised in terms of connecting dissimilar metals to REDCOR® weathering steel. When joining stainless steel to weathering steel a spacer or gasket should be used.

REDCOR® weathering steel should be isolated from ZINCALUME® steel or zinc-coated steel support sub-structures by use of a heavy-duty (min 250 micron thickness) self-adhesive tape such as TREMCO ALTA 300-40 Isolation tape or equivalent. Tape should fully cover and extend 50mm beyond support members.

FIXINGS

Fixing is achieved using 304/316 grade stainless steel screws, provided an isolating gasket is used to keep the two different steel types isolated. Eg EPDM washers.

Product	Fixing to Steel Battens	Fixing to Ply support
LYSAGHT DOMINION®	10g-16 x 28mm 304ss Wafer head with Neo ^{1,2}	14g -10 x 25 Hex head 304 SS Type 17 with Neo ^{1,2}
LYSAGHT IMPERIAL™	8g-10 x 25mm 304ss undercut self tapping screw. Pre-drilling maybe required to batten ³	8g-10 x 25mm 304ss undercut self tapping screw ³
LYSAGHT ENSEAM®	10g-16 x 28mm 304ss Wafer head with Neo ^{2,3}	14g -10 x 25 Hex head 304 SS Type 17 with Neo ^{2,3}
LYSAGHT BAROQUE®	14g -10 x 50mm 316ss Zip with 16mm bonded washer ¹	14g -10 x 50mm 304ss type 17 with 16mm bonded washer ¹
LYSAGHT LONGLINE® 305	10g-16 x 28mm 304ss Wafer head with Neo ^{1,2,4}	N/A
LYSAGHT SNAPSEAM®	10g-16x16 Tri-Fixx Flat head metal screw with minimum class 3 coating	10g-12x25 Flat head type 17 screw with minimum class 3 coating

¹ As screws are exposed consideration should be given to a paint finish to the screws to allow them to blend in to the patina finish.

² EPDM washers may need to be purchased separately and hand assembled.

³ Tops of screws / clips should be isolated from the underside of the ZENITH™ sheeting using isolation tape as noted above.

⁴ LONGLINE® clips should be isolated from REDCOR® using a heavy-duty (min 250 micron thickness) self-adhesive tape or equivalent. Alternatively pan fixing may be utilised for walling applications.

PRODUCT DESCRIPTIONS

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⁽¹⁾ Warranty terms and conditions apply. Visit www.lysaght.com for details.

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