TB - 40
Technical Bulletin

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Guide to good practice - BlueScope coated steel products in exterior walling applications

Introduction

The purpose of this Technical Bulletin is to highlight some key areas for consideration when designing, installing, or maintaining BlueScope coated steel products specifically in exterior walling applications.

Selection

The performance of prepainted steel walling can be influenced by several factors, including the environment, particularly its proximity to a salt marine influence. Typically, walling experiences less natural washing by rainfall when compared to roofing, which influences BlueScope product recommendations. Absolute performance is subject to local conditions including, but not limited to, prevailing winds, and presence of unwashed areas. The table below serves as a GUIDE ONLY for the selection of a walling product for your location and applies to salt marine influences only. For installations subject to severe or heavy industrial conditions/or internal humidity, it is essential to contact Steel Direct for advice on suitable products. In combination with a REGULAR 6 MONTHLY MAINTENANCE PROGRAM, this should provide optimum performance and longevity. For more information, please refer to:

Technical Bulletin TB-1B Steel walling products – selection guide

Table 1: Recommended BlueScope product guide for walling in marine environments

Recommended walling products	Distance from breaking surf or exposed marine	Distance from calm marine
COLORBOND® steel in a Metallic finish * **ZINCALUME® steel ***	> 1000m	> 1000m
COLORBOND® steel in a Classic finish **COLORBOND® steel in a Matt finish**	> 800m	> 200m
COLORBOND® Ultra steel	> 500m	> 100m
SUPERDURA® Stainless steel	> 0m	> 0m

NOTE:
i. Absolute performance is subject to local conditions including, but not limited to, prevailing winds, and presence of unwashed areas.
ii. Distance is as measured from the high water/tide mark.
iii. Table 1 applies to salt marine influences only. For installations subject to severe or heavy industrial conditions or internal humidity, it is essential to contact Steel Direct for advice on suitable products.
iv. Definitions and examples of surf, exposed and calm marine are outlined in Technical Bulletin TB-35 Australian Salt Marine Classifications.
* For commercial applications

Design and installation

There are several aspects to be considered that will influence the service life of the product. Important factors are listed below:

Coating type and thickness

Corrosion performance is afforded by metallic coating thickness and type. Performance can be further enhanced through a high-quality paint barrier to create a durable finish. For more information, please refer to:

Technical Bulletin TB-14 Professional's guide to Australian Standards for steel sheet and strip products

Site storage before building

Steel walling products must be kept dry during transit and storage. Failure to do so can result in moisture being drawn by capillary action into closely packed bundles that can cause irreparable damage and a significantly reduced service life. For more information, please refer to:

Technical Bulletin TB-7 Care of BlueScope coated steel products during transport and storage

Laying procedure

Follow manufacturer's recommended instructions. The proven practice of laying sheets with overlaps away from the prevailing weather is the most effective method and is described in Australian Standard AS 1562.1:2018 *Design and installation of sheet roof and wall cladding – Metal* (Section 4.3 Laying the Sheeting).

Edge detailing

It is critical that a free drip edge be maintained for all BlueScope steel products. This is to enable moisture to drain freely from the cut edge of the steel product. This is particularly important at the base of a wall. Minimum free drip edge: 5-10mm. The recommended clearance from the bottom of the metal wall cladding to the ground level is:

- Above unpaved, e.g. grass surface ≥ 75mm (Figure 1a)
- Above paved/concrete surface ≥ 50mm (Figure 1b)

Product performance recommendations for concrete slab detailing:

- Steel wall cladding minimum offset from slab or toe flashing: 3-5 mm
- Steel wall cladding minimum overhang on slab for maintaining weather proofing: 25mm (non-cyclonic regions), (50mm in cyclonic regions should be considered)

Figure 1: Recommended cladding detailing for concrete slab (not to scale)

Figure 1a: Cladding finishes above slab

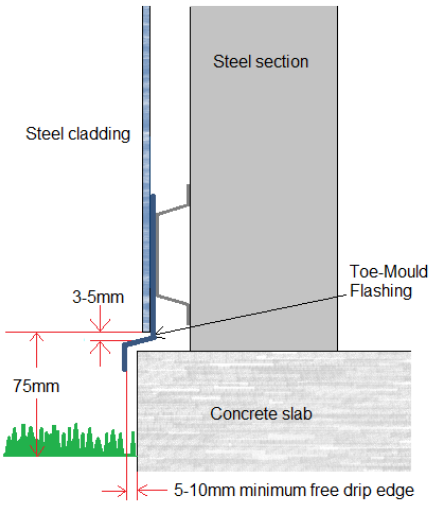
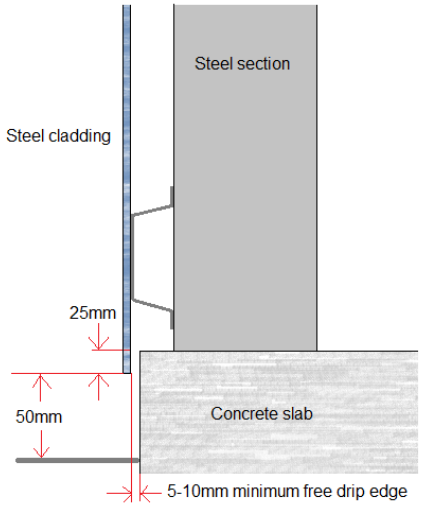


Figure 1b: Cladding overhangs slab



NOTE:

- Either cladding detail (Figure 1a: above slab, or Figure 1b: overhanging slab) is suitable for use with paved or unpaved surfaces.

- Simply ensure clearance values from the bottom of the cladding to the surface below are as required for that surface, i.e. cladding finishes ≥ 75mm above unpaved; cladding finishes ≥ 50mm above paved.
- For architectural cladding profile detailing please contact Steel Direct for more information.

The consequence of not maintaining a free drip edge may be premature corrosion. This is due to the retention of moisture at the cut edge of the steel when in contact with other materials. Bricks, pavers, timber, concrete slabs, and even other metallic products may contribute to this mechanism when installed incorrectly. For more information, please refer to:

Technical Bulletin TB-30 Sheds and garages

Cutting and avoidance of swarf damage

The process of cutting sheeting to size, or drilling to fix with fasteners, can create debris, or small metallic particles called “swarf”. If left on a sheet, swarf is not only unsightly but can create localised corrosion and shorten service life. Any debris, including swarf, should be carefully removed at the end of each working day. BlueScope do not recommend the use of abrasive discs when cutting steel walling products. Such cutting methods can damage the edges of the material and may result in premature corrosion of the edge. For more information, please refer to:

Technical Bulletin TB-5 Swarf staining of steel profiles

Fasteners

The correct selection of fasteners for fixing wall cladding and accessories is of paramount importance for long-term fastening integrity and aesthetics. When fasteners are selected to fix coated steel building products, it is vital that the fasteners have the same or superior service life as the material with which they are to be used. In areas of uncertainty, it is advisable to use fasteners with a higher corrosion resistance rating. BlueScope does not manufacture fasteners and does not control the quality of any given fastener type. Consumers should obtain written confirmation from suppliers that their fasteners are suitable for the relevant corrosivity category.

Washers used with fasteners

The washer component of self-drilling screws must be manufactured from materials compatible with the walling and accessory material. Washers containing significant levels of conductive carbon black fillers are NOT suitable for use with COLORBOND® steel, SUPERDURA® Stainless steel or ZINCALUME® steel products. Therefore, fasteners must be assembled with washers substantially free of carbon black fillers i.e. non-conductive. It is advisable to ask for a certificate of compliance from your fastener supplier, or similar statement, regarding washer conductivity.

Fastener shank corrosion

In certain environments the fastener may be exposed to a greater risk of corrosion as a result of location, building design or specific internal environments (e.g. high condensation, intensive animal farming etc.). In such cases, consideration must be given to corrosion protection of the fastener shanks.

Fastener types and compatibility

Materials that are incompatible and must not be used with COLORBOND® steel and ZINCALUME® steel, include stainless steel, copper and copper containing alloys. Similarly, lead, copper and copper containing alloys are incompatible with SUPERDURA® Stainless steel and are not to be used. Use only stainless-steel fasteners with SUPERDURA® Stainless steel. For more information, please refer to:

Technical Bulletin TB-16 Fasteners for roofing, walling and accessory product – selection guide

- BlueScope will not accept any liability for poor performance caused by installation using inappropriate and incompatible materials.
- BlueScope accepts no liability in relation to the performance of any fastener or fastener coating.

Maintenance

Washing should be done six-monthly as a minimum, or three-monthly in locations such as coastal areas where marine salt spray is prevalent, in areas where high levels of airborne dust/dirt or industrial fallout occur or areas considered “unwashed” e.g. top of wall under an eave/soffit.

It is good practice to establish a regular routine for washing exterior BlueScope coated steel products; water restrictions permitting (check with your local council). In cases where regular maintenance using fresh water does not remove all dirt from the surface of the product, or local water regulations prohibit the use of a mains water hose, the following procedure should be followed using water obtained from a locally approved source:

- Wash the surface with a mild solution of pure soap or non-abrasive dish washing kitchen detergent in warm water. Washing should be conducted with a sponge, soft cloth or soft bristle nylon brush (no abrasive scourers, steel wool etc.), and be performed gently to reduce the possibility of scuffing the product surface.
- Thoroughly rinse the surface with fresh water immediately after cleaning to remove traces of detergent.
- Dirt and marks may look different depending on the colour or finish of your BlueScope product. Repeat cleaning steps above if required.
- For advice on dirt or other material not removed by soap or detergent, contact BlueScope Steel Direct.

The long-term performance of exterior BlueScope coated steel products can at times be impacted by the durability of the accessories which are in contact with the product. For example, ensure fasteners meet the requirements as detailed earlier and inspect regularly as part of a maintenance routine with a view to replacing any with red rusting. For more information, please refer to:

Technical Bulletin TB-04 Maintenance of exterior BlueScope coated steel products

Other considerations

Formwork

Do not use steel walling as formwork when laying a concrete slab as this practice will cause premature corrosion due to:

- Contact with wet cement, which is strongly alkaline.
- Shrinkage of cured concrete enabling the build-up of dirt and debris in the resulting gap between the slab and the wall.
- Failure to maintain a free drip edge as outlined previously.

Gutter design

Gutter design should ensure that moisture can drain freely from the roof and not be allowed to enter the interior of the wall. Incorrect design can lead to the corrosion of interior steel components as well as damage to its contents.

Immersion

Moisture or moisture retaining materials such as leaves and soil should not be allowed to remain in intimate contact with BlueScope coated steel products. Such contact may ultimately result in accelerated corrosion of the material. The build-up of grass cuttings, leaves, soil from gardens, mulch, compost, sand, ashes or similar must be avoided. Failure to prevent this build-up may cause premature corrosion of BlueScope coated steel due to corrosion mechanisms associated with the wet poultice held against the coated steel surface. Similarly, storage of items alongside, and/or against the wall, that prevent washdown and/or drying cycles, should also be avoided. For more information, please refer to:

Corrosion Technical Bulletin CTB-16 Immersion

CORSTRIP® film

A clear laminate protective film called CORSTRIP® film is often applied to the decorative surface of COLORBOND® steel. This film protects the painted surface during forming, transport, handling, storage and erection. Ensure the CORSTRIP® film is removed as soon as practical after installation.

Leaving the CORSTRIP® film attached for an extended period can make it difficult to remove.

A knife should not be used to cut the CORSTRIP® film as this may scratch the painted surface. Where the product is seamed, and it is not possible to remove the CORSTRIP® film by hand, special care must be taken not to damage the painted surface.

The protective film is made from 100% low-density polyethylene (LDPE) and is suitable for recycling. Please contact your relevant waste management provider to discuss requirements for recycling this type of material.

Sunscreen damage

Given the outdoor nature of walling installations, it is recommended that suitable precautions be taken to prevent personal sun damage. It has been found that certain sunscreens containing semi-conducting metal oxides such as titanium dioxide (TiO_2) and zinc oxide (ZnO) can accelerate the degradation of organic paint systems.

Any corrosion or paint flaking, or peeling caused by sunscreen is not covered by BlueScope's warranties. Only organic sunscreens should be used, where there is a chance of contact with COLORBOND® prepainted steel, to minimise the risk of paint degradation.

For personal safety, and to protect the surface of COLORBOND® steel, it is recommended to:

- wear clean, dry, cut-resistant gloves that are suitable for the task;

- take suitable precautions against personal sun damage; and
- prevent contact of the painted surface with sunscreens that contain titanium dioxide (TiO_2) and zinc oxide (ZnO).

For more information, please refer to:

Technical Bulletin TB-37 Prevention of sunscreen damage

Touch-up paint

During manufacture, COLORBOND® prepainted steel undergoes a curing process in which the paint is baked onto the metallic coated steel substrate; while other paint systems, for example aerosol sprays, are air dried. Air-drying paints have different weathering characteristics to oven cured, prepainted products like COLORBOND® steel. Therefore, areas overpainted with airdrying paints to match adjacent COLORBOND® steel areas will weather at a different rate and vary in appearance over time

BlueScope does not recommend the use of touch-up paint to repair damage or scratches to the painted surface. BlueScope does not have a recommended method for the removal of touch-up paint.

Minor scratches (<2mm in width) should be left alone as the available metallic coating will continue to protect against corrosion providing the scratches are superficial and the metallic coating is not damaged. If scratches are more noticeable on new material, it is the recommendation of BlueScope to replace the affected product. For more information, please refer to:

Technical Bulletin TB-38 Effect of touch-up paint

Other sources of concern

Considerations should be given to other products that may reduce the performance of the walling or cause accelerated corrosion. These include, but are not limited to

- Using only neutral-cure silicone sealants
- Avoid the use of black carbon (“lead”) pencils for marking sheets
- Avoid use of acidic brick-cleaning or corrosive chemical products (fertilizers or pesticides) around steel
- Avoid contact with dissimilar metals or green timber which may accelerate corrosion

Summary

- Ensure that appropriate product is selected
- Store the material on site correctly and use it promptly
- Ensure a free-drip edge is present, particularly at the bottom of walls
- Only use compatible fasteners suitable for the environment
- Avoid build-up of swarf & do not use abrasive discs to cut material
- Maintain a 3-6 monthly washdown
- Do not use wall sheeting as formwork
- Keep wall sheets clear of soil, mulch & other moisture retaining materials
- Remove CORSTRIP® film as soon as possible after installation
- Prevent sunscreen coming into contact with the material
- Do not use touch-up paints to fix scratches
- Consider other materials or chemical that may cause problems such as silicone, acid brick-cleaning solutions, dissimilar metals.

For more information regarding specific profiles & installation practices, please refer to the profile manufacturer’s guidelines.

Related BlueScope Technical Bulletins

Technical Bulletin TB-1B Steel walling products – selection guide

Technical Bulletin TB-04 Maintenance of exterior BlueScope coated steel products

Technical Bulletin TB-13 General guide to good practice in the use of exterior BlueScope coated steel products

Technical Bulletin TB-14 Professional's guide to Australian Standards for steel sheet and strip products

Technical Bulletin TB-16 Fasteners for roofing, walling and accessory product – selection guide

Technical Bulletin TB-30 Sheds and garages

Technical Bulletin TB-37 Prevention of sunscreen damage

Technical Bulletin TB-38 Effect of touch-up paint

Corrosion Technical Bulletin CTB 09 Contact with unprotected steel supports

Corrosion Technical Bulletin CTB-12 Dissimilar metals

Corrosion Technical Bulletin CTB-13 Contact with timber

Corrosion Technical Bulletin CTB-15 Acid cleaning brickwork

Corrosion Technical Bulletin CTB-16 Immersion

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