

General guide to good practice in the use of steel roofing and walling products

INTRODUCTION

This Technical Bulletin sets out the general principles of good installation practice. More detailed information on most of these points can be obtained from other Technical Bulletins, which will be given as references in the text.

Attention to the following factors should ensure satisfactory performance and good service life. Manufacturers' specific recommendations about their particular products should be followed.

1. For correct material selection for the environment and any special corrosive influences, refer to:

Technical Bulletin TB-1A *Steel Roofing Products – Selection Guide.*

Technical Bulletin TB-1B *Steel Walling Products – Selection Guide.*

2. For design: Minimum roof pitch, support spacings, metal thickness, refer to:

Technical Bulletin TB-14 *Builders Guide to Australian Steel Sheet and Strip Standards.*

Corrosion Technical Bulletin CTB-8 *Building Applications.*

3. Site storage before erection, refer to **Technical Bulletin TB-7** *Care of BlueScope coated steel products during transport and storage.*

4. Handling steel sheet on site.

5. For laying procedure, refer to roofing manufacturer recommendations.

6. Type of fastener, including life expectancy and compatibility, refer to **Technical Bulletin TB-16** *Fasteners for Roofing and Walling Products – Selection Guide.*

7. Cutting and avoidance of swarf damage, refer to **Technical Bulletin TB-5** *Swarf Staining of Steel Profiles.*

8. Compatibility of accessories including flashings and sealants, refer to:
 - Technical Bulletin TB-8** *Flashing Materials for COLORBOND® steel and ZINCALUME® steel Sheet*
 - Technical Bulletin TB-9** *Sealants for Exterior Finishes.*

Corrosion Technical Bulletin

CTB-12 *Dissimilar Metals.*

9. Maintenance procedures to prolong service life, refer to **Technical Bulletin TB-4** *Maintenance of COLORBOND® steel and ZINCALUME® steel.*

CORRECT SELECTION OF MATERIAL

The correct selection of roofing and walling materials is the first step in achieving the maximum service life of a building. The range of products manufactured by BlueScope Steel is designed to give optimum performance in a range of environments, from benign rural areas to more corrosive industrial or salt-laden coastal atmospheres. It is a matter of choosing the right product for its intended location.

Selection of the appropriate steel roofing and walling products for a given environment is covered in **Technical Bulletin TB-1A** *Steel Roofing Products – Selection Guide* and **Technical Bulletin TB-1B** *Steel Walling Products – Selection Guide*. These Technical Bulletins not only cover atmospheric influences but also the special requirements for industrial activities and animal housing. If there is any doubt, it is essential to consult BlueScope Steel Direct for advice on the appropriate product for a given location and application.

DESIGN

There are a number of aspects to be considered with regard to design that will influence the service life of the product.

Three important factors are listed below.

1. MINIMUM PITCH

Minimum pitch has an important influence on the life expectancy of the product. Specified minimum pitch varies according to the depth of the roofing profile and the means of fixing, such as concealed-fixed or, pierced-fixed. Always follow manufacturers' recommendations.

Profiles designed for roofs with low pitches have deeper pans which allows the roof to effectively drain water without flooding the side laps. Concealed-fixed profiles further enhance the capability of the roof to effectively drain water by not breaching the roof sheet with fastener holes.

2. CORRECT SUPPORT SPACINGS

The correct spacing of supports is a critical component of the structural integrity of the building. Support spacing near the eaves and the ridge is usually less than the intermediate spacings to handle the increased lift and forces created by wind turbulence at these positions.

Information regarding the correct spacing for specific profiles can be obtained from the relevant supplier.

Supports must be carefully aligned to avoid creating low spots in the roof where ponding will occur, which ultimately leads to reduced service life.

3. STEEL THICKNESS – BASE METAL THICKNESS

The thickness of BlueScope Steel products is specified as base metal thickness (BMT) not total coated thickness (TCT). See *Figure 1* below.

Figure 1: Schematic of BMT vs TCT for COLORBOND® steel (not to scale).



It is important to note that structural capability is a function of BMT and steel grade whereas corrosion performance is afforded by metallic coating thickness and type. Always ensure that the BMT specified is as per recommendations.

For further guidance, refer to **Technical Bulletin TB-14** *Builders Guide to Australian Steel Sheet and Strip Standards*.

SITE STORAGE BEFORE BUILDING

Steel roofing and 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.

This of course is not just confined to steel sheet but applies to other premium building products. Dry site storage must always be a consideration with most building materials.

For more complete details, refer to **Technical Bulletin TB-7** *Care of BlueScope coated steel products during transport and storage*.

HANDLING STEEL ROOFING AND WALLING PRODUCTS ON SITE

Ensure appropriate safety precautions are taken when handling steel roofing and walling products on site.

Given the outdoor nature of roofing and walling erection it is recommended that suitable precautions be taken to prevent personal sun damage. It has been found that sunscreens containing semi-conducting metal oxides such as titanium dioxide (TiO₂) and zinc oxide (ZnO) can accelerate the degradation of organic materials, including paint systems.

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 (TiO₂) and zinc oxide (ZnO).

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 a requirement of Australian Standard AS 1562.1-1992 – *Design and installation of sheet roof and wall cladding – Metal*. This standard states “Consideration should be given to laying the initial sheet at the leeward end of the building, so the side laps are protected from the worst anticipated weather” (Section 4.4 Laying The Sheeting, Notes 2).

In some unlined COLORBOND® steel roofing applications, such as patios, it is often desired that the colour of the finish coat be visible on the underside. This results in the sheeting being installed so that the backing coat, ie. the branded surface, is exposed to direct sunlight on the top surface of the roof. This practice is not recommended as the backing coat does not have the same level of resistance to chalking and degradation from UV light as the non-branded coloured finish coat.

For applications where it is desired that the bottom surface has a colour other than the backing coat it is recommended that enquiries be made regarding availability of double sided products that have a finish coat on both surfaces. In cases where the desired colour combination is not available then it is recommended that COLORBOND® steel sheeting be installed with finish coat exposed to sunlight and backing coat (underside) be post-painted to the desired colour as per **Technical Bulletin TB-2** *Overpainting and Restoration of Exterior BlueScope Steel Products*.

FASTENERS – TYPE, LIFE EXPECTANCY AND COMPATIBILITY

The expected service life of the fasteners should be equivalent to that of the roofing and walling material. BlueScope Steel recommendations are contained in **Technical Bulletin TB-16** *Fasteners for Roofing, Walling and Accessory Products – Selection Guide*.

Special washers have been designed for fixing roofs in areas prone to cyclones and are readily available.

There are some commercially available fasteners with only minimal corrosion protection. These will quickly corrode and may affect the integrity of the roof sheeting.

Fasteners made of some alloy materials are highly corrosion resistant in their own right (e.g. stainless steel) but, when in contact with carbon steel, forms a galvanic couple, which results in the corrosion of the steel sheeting.

Fastener manufacturers/suppliers should be consulted to ensure correct usage in accordance with **Technical Bulletin TB-16** *Fasteners for Roofing and Walling Products – Selection Guide*.

CUTTING AND AVOIDANCE OF SWARF DAMAGE

The process of cutting roof sheeting to size, or drilling to fix with fasteners, can create debris, or small metallic particles called “swarf”. If left on the roof, 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 Steel do not recommend the use of abrasive discs when cutting steel roofing and walling products. Such cutting methods can damage the edges of the material and may result in premature corrosion of the edge.

For further details, refer to **Technical Bulletin TB-5** *Swarf Staining of Steel Profiles*.

COMPATIBILITY OF ACCESSORIES INCLUDING FLASHING AND SEALANTS

There are certain materials that are incompatible with BlueScope Steel's products. These materials can lead to premature failure of the steel product. For a comprehensive guide to compatible materials, refer to **Technical Bulletin TB-8** *Flashing materials for COLORBOND® steel and ZINCALUME® steel sheet* and **Corrosion Technical Bulletin CTB-12** *Dissimilar metals*.

BlueScope Steel recommends the use of neutral cure silicon sealants. Sealants with adverse reactions, such as acid release, should never be used. For recommendations on sealant usage, refer to **Technical Bulletin TB-9** *Sealants for exterior finishes*.

MAINTENANCE PROCEDURES TO CONTRIBUTE TO LONG LIFE

Areas not subject to the natural washing action of rainfall are known as “unwashed areas”. In these regions, dust, dirt and pollutants that would otherwise be removed by rain, tend to build up. Regular maintenance and removal of these contaminants by cleaning with fresh potable water (in accordance with local regulations), will help prevent the formation of localised areas where premature corrosion might occur. Accumulations of windborne salty deposits in seaside localities can have a particularly aggressive effect on steel products.

For further recommendations on maintenance procedures, refer to **Technical Bulletin TB-4** *Maintenance of COLORBOND® steel and ZINCALUME® steel.*

SUMMARY

This Technical Bulletin is not a complete or exhaustive guide to all techniques and trade practices, many of which are common practice. It is the responsibility of the relevant contractor to comply with good building practices. This Technical Bulletin is intended as a guide only.

RELATED BLUESCOPE STEEL TECHNICAL BULLETINS

Technical Bulletin TB-1A
Steel Roofing Products – Selection Guide

Technical Bulletin TB-1B
Steel Walling Products – Selection Guide

Technical Bulletin TB-2
Overpainting and Restoration of Exterior BlueScope Steel Products

Technical Bulletin TB-4
Maintenance of COLORBOND® steel and ZINCALUME® steel

Technical Bulletin TB-5
Swarf Staining of Steel Profiles

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

Technical Bulletin TB-8
Flashing material for ZINCALUME® steel and COLORBOND® steel Sheet

Technical Bulletin TB-9
Sealants For Exterior Finishes

Technical Bulletin TB-14
Builders Guide to Australian Steel Sheet and Strip Standards

Technical Bulletin TB-16
Fasteners for Roofing, Walling and Accessory Products – Selection Guide

Corrosion Technical Bulletin CTB-8
Building Applications

Corrosion Technical Bulletin CTB-12
Dissimilar Metals

REFERENCED AUSTRALIAN STANDARDS

- **AS 1562.1-1992** – *Design and installation of sheet roof and wall cladding – Metal.*

NOTE:

All Australian and Australian/New Zealand Standards should be read to incorporate any and all amendments to the most recently published version.

If you have any questions regarding this Bulletin, contact BlueScope Steel Direct on 1800 800 789.

To ensure you have the most current Technical Bulletin, please go to steel.com.au.



The information and advice contained in this Technical Bulletin ('Bulletin') 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 the materials, approach and techniques referred to in this Bulletin meet your specific requirements.

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