

# STEEL ROOFING PRODUCTS – SELECTION GUIDE

## TECHNICAL BULLETIN TB-1a

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This issue supersedes all previous issues

The materials manufactured by BlueScope Steel Limited for roofing applications are:

COLORBOND® steel – prepainted steel sheet

ZINCALUME® steel – zinc/aluminium alloy-coated steel sheet.

COLORBOND® steel sheet has either a ZINCALUME® steel or stainless steel substrate combined with a range of prepainted coatings applied by BlueScope Steel to cope with exposure to various environments.

Amongst the range of COLORBOND® steel products designed for external applications are:

- COLORBOND® Stainless steel – for very severe exterior environments
- COLORBOND® Ultra steel – for severe exterior environments
- COLORBOND® Metallic steel – for superior aesthetic qualities
- COLORBOND® steel – for exterior roofing and walling
- COLORBOND® COOLMAX® steel - for exterior roofing only.

*These COLORBOND® steel products are available in a variety of colours selected to match the needs of the building industry.*

*NOTE - COLORBOND® COOLMAX® steel is only available in the colour Whitehaven™.*

### PERFORMANCE OF STEEL ROOFING

#### General Applications

The performance of steel roofing is affected by many factors, some are controllable and some are not. The main factor that is not controllable is the environment. The effect of this however, can be minimised by choosing a material appropriate to the conditions under which the steel sheet must perform.

#### Environmental factors

1. Atmospheric exposure conditions
2. Unusually harsh service conditions due to the nature of the activity within a building eg. intensive animal farming, indoor swimming pools.

#### Atmospheric Exposure Conditions

In a country the size of Australia, with its wide variety of climatic conditions ranging from the tropical north to the alpine regions in the south-east, and from the heavy surf characteristics of much of the coastline to the desert regions of the interior, it is clearly not possible to provide a brief general description to cover all possibilities.

In addition, the concentration and nature of industrial activity and the effects of the combustion of fossil fuels must also be taken into account in some localities, whilst the direction, intensity and nature of prevailing winds can also exert an influence. Therefore, any distances quoted can be indicative only.

The following environmental descriptions and table are therefore intended to serve as a GUIDE ONLY. Prevailing winds, rainfall, time of wetness, temperature, shelter and areas not naturally washed by rainfall are just a few factors that may impact on the corrosive nature of a particular site. It is essential to consult with your roofing supplier or local BlueScope Steel Sales Office for the best advice on the most suitable choice of COLORBOND® steel and ZINCALUME® steel product.

#### Marine Influence

In general, marine exposure conditions can be categorised under five main groups: very severe, severe, marine, moderate and benign, as shown in Table 1. This table provides an indication of product performance where the corrosive factor is a marine influence eg. breaking surf, exposed marine or calm marine.

**Table 1: Recommended BlueScope Steel Product Guide for Roofing in Marine Environments**

MARINE ENVIRONMENT SEVERITY	DISTANCE FROM BREAKING SURF OR EXPOSED MARINE*	DISTANCE FROM CALM MARINE*	RECOMMENDED PRODUCT
Very Severe Marine	0m - 100m	N/A	COLORBOND® Stainless steel
Severe Marine	101m - 200m	0m - 100m	COLORBOND® Ultra steel
Marine	201m - 400m	101m - 200m	COLORBOND® steel COLORBOND® COOLMAX® steel
Moderate	401m - 1000m	201m - 1000m	COLORBOND® steel COLORBOND® COOLMAX® steel COLORBOND® Metallic steel ZINCALUME® AZ150 steel
Benign	1001m +	1001m +	COLORBOND® steel COLORBOND® COOLMAX® steel COLORBOND® Metallic steel ZINCALUME® AZ150 steel

**NOTE:**

- Absolute performance is subject to local conditions (eg prevailing winds) and presence of unwashed areas
- Distance is as measured to the high water/tide mark
- The above table applies to salt marine influences only. For installations subject to severe or heavy industrial conditions, it is essential to consult your local BlueScope Steel Sales Office for advice on the appropriate product
- \* Definitions and examples of surf, exposed and calm marine are outlined in Technical Bulletin TB-35 “Australian Marine Classifications”.

**Industrial Influence**

COLORBOND® steel, COLORBOND® COOLMAX® steel, COLORBOND® Metallic steel and ZINCALUME® steel are all suitable for light industrial applications.

However, for industrial buildings the internal and/or external environment of the building must be considered. Where the roof cladding, either internally and/or externally, is subject to heavy dust, emissions, contaminant fallout or contact with corrosive chemicals, it is essential to consult a BlueScope Steel Sales Office for advice on the correct product to use.

**Unusually Harsh Internal Service Conditions**

There are many activities carried out in sheds and industrial buildings that are quite severe in their effects on steel cladding products.

The micro environment inside sheds for intensive animal farming provides an example of this. Under these conditions, BlueScope Steel recommends ZINCFORM® G300 or G550 steel (depending on profile), with a heavy zinc-coated base (either in a Z450 or Z600 coating class). Refer CTB-22 “Special Service Environments: Intensive Animal Farming”

Other examples of applications where ZINCALUME® steel based products are not suitable for use include, but are not limited to, enclosed swimming pool buildings - refer to Corrosion Technical Bulletins CTB-21 “Special

Service Environments: Enclosed Swimming Pool Buildings”, and fertiliser manufacturing & storage buildings - refer to CTB-24 “Fertiliser Manufacturing and Storage Buildings”.

Any proposed structure for industrial activity involving acids, chemicals, heat and moisture, fossil fuel combustion etc, or any site immediately adjacent to such activity, should be referred to a BlueScope Steel Sales Office for specific recommendations on suitable products.

**NOTE** - galvanised steel roofing is generally not recommended except for buildings where unique environmental conditions eg. intensive animal farming, make galvanised steel the preferred product or for buildings that qualify as heritage listed or exist under a heritage covenant. The reason for this is that ZINCALUME® steel or COLORBOND® steel generally provides superior corrosion performance in most roofing applications. For galvanised steel roofs on heritage buildings, specific conditions apply in regard to warranty eligibility - refer to your local BlueScope Steel Sales Office for advice.

Information should also be sought concerning the correct choice of fasteners and accessories, and good installation practice. In relation to fastener suitability, fastener manufacturers are also familiar with these recommendations and will give the appropriate advice (refer to Technical Bulletin TB-16 “Fasteners for Roofing and Walling Product – Selection Guide”).



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The information and advice contained in this 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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## **BlueScope Steel**

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