

***COLORCOTE***<sup>®</sup>

# TECHNICAL

INFORMATION



***COLORCOTE***<sup>®</sup>

PRE-PAINTED METAL PRODUCTS



# Technical Information

ColorCote® ARX™ and AR8™

Conforms to AS/NZS2728: 2007

Product Type 6 (Table 1.1)

Suitable for ISO9223

Atmospheric Classifications C1- C5I and C5M

## Description:

A highly durable and corrosion resistant product with high formability, outstanding gloss and colour retention, and premium weatherability designed for all applications, particularly Very Severe.





# Specification

**Substrate:**

Aluminium alloy type 5052 or 5005 Marine Grade, H34 or H36 temper.

Chemical composition of aluminium alloys typically used for ARX™ and AR8™

Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Other	AL
5005	0.30%	0.70%	0.20%	0.20%	0.5-1.1%	0.10%	0.25%	0.15%	Remainder
5052	0.25%	0.40%	0.10%	0.10%	2.2-2.8%	0.15-0.35%	0.10%	0.15%	Remainder

Note : higher chrome and magnesium levels increase tensile strength & corrosion resistance.

**Pretreatment:**

Corrosion resistant chromate conversion coating.

**Primer:**

ARX™: High build, flexible corrosion resistant chromated primer on both sides. Nominal film thickness  $5\mu \pm 1\mu$  on the top side and  $5\mu \pm 1\mu$  on the reverse.

AR8™: High build, flexible corrosion resistant chromated primer on both sides. Nominal film thickness  $5\mu \pm 1\mu$  on the top side and  $5\mu \pm 1\mu$  on the reverse.

**Finish Coat:**

ARX™: 70% PVF2 system. Nominal film thickness  $20\mu \pm 2\mu$ . The exterior coat of ColorCote® ARX™ is a PVF2 (polyvinyl difluoride) paint system containing at least 70% PVF2 resin in the dry paint film.

AR8™: Flexible exterior acrylic, polyester or modified polyester coating. Nominal film thickness  $18\mu \pm 1\mu$ .

Note: the finish coat can be applied to one or both sides of

the sheet in the same or different colours. Colours outside the standard range may be available depending on colour and quantity.

**Backing Coat:**

ARX™ and AR8™: Shadow Grey (Standard Colour) wash coat,  $5\mu \pm 1\mu$  nominal thickness.

**Gloss:**

Typical gloss levels are 23% measured in accordance with ASTM D523-89 (60 degrees). Non standard gloss levels may be available on application.

**Strippable Film:**

Products can be supplied with an optional strippable protective film at extra cost. This material has a relatively short life span when exposed to sunlight and weather. It should be removed either just before, or immediately after installation. If stored indoors strippable film should be removed within 12 months of delivery from Pacific Coilcoaters.

# Performance

ColorCote® ARX™ or ColorCote® AR8™ pre-painted aluminium products are excellent solutions for roofing and cladding in all environments, particularly Very Severe.

**Outdoor Durability:**

ColorCote® ARX™ and AR8™, under normal well washed conditions of exposure, can be expected to show no cracking (other than that which may occur during forming), flaking or peeling of the paint film for 15 years from date of installation.

Colour change during service will depend on the colour chosen, aspect, design of the structure and the environment. Maximum colour change levels of ColorCote® ARX™ and AR8™ colours in normal environments

after 15 and 20 years of service are given in warranty documentation. Colour change is measured using an instrumental colour spectrophotometer, according to ASTM D-2244-93, and determined on clean surfaces, free of all dirt, chalk, oxidized film, oil, grease, and other foreign contaminants.

Some chalking may occur. A maximum rating of 2 is expected after 20 years exposure, when measured in accordance with AS/NZS 1580.481.1.11: 1998. Scale is between 0 and 5 with a lower number indicating less chalking.

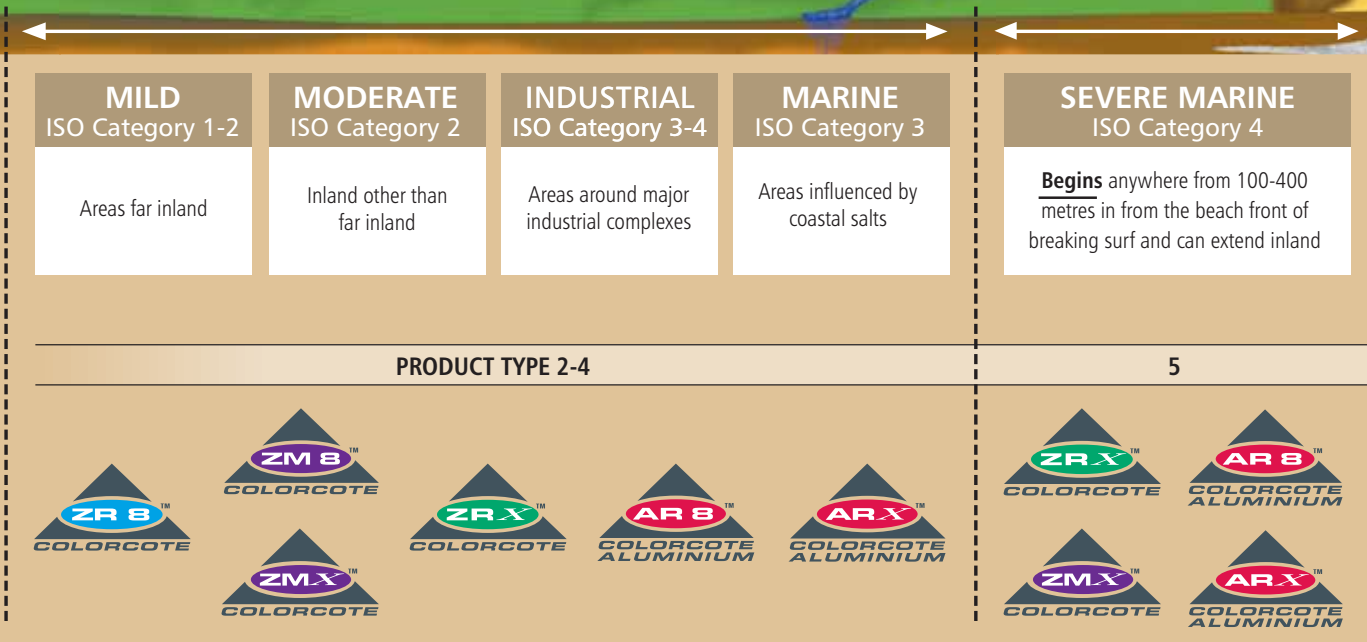
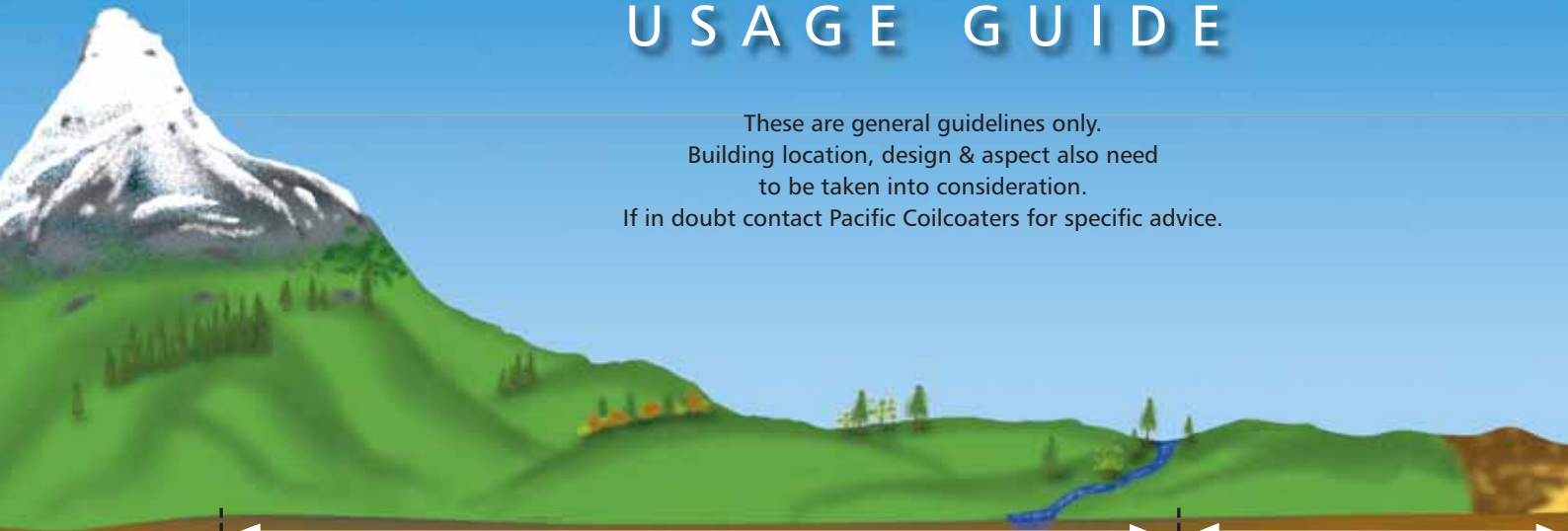
The above are subject to minimum maintenance requirements.



# Atmospheric Environments

## USAGE GUIDE

These are general guidelines only.  
 Building location, design & aspect also need  
 to be taken into consideration.  
 If in doubt contact Pacific Coilcoaters for specific advice.



## Design Information

### Thermal Movement:

When using ARX™ and AR8™ aluminium, only thermal movement along the sheet length need be considered as thermal movement across the sheet is accommodated by the profile shape. Installation should allow for the amount of thermal movement likely to occur over the determined roof temperature change.

When pre-painted ARX™ and AR8™ roofing and cladding is fixed to a steel structure, both the structure and the ARX™/AR8™ expand and contract under the same thermal influence.

Although aluminium has twice the coefficient of expansion as steel (0.024mm/m per °C to 0.012mm/m per °C) the effect of this is often overestimated.

*Note: As an approximation, pre-painted aluminium expands 1.2mm/m over a 50°C temperature change.*

The temperature extremes of any metal roof will depend on a number of factors especially the surface colour. The use of light colours will help reduce the thermal absorption of the paint coating and the subsequent thermal expansion.

*Contact your roofing manufacturer about thermal movement and maximum lengths as well as fastening or fixing options.*



**COLORCOTE®**  
PRE-PAINTED METAL PRODUCTS



**VERY SEVERE**  
ISO Category 5

Very Severe Marine  
Offshore and anywhere within 100-400 metres  
from the water line of areas of breaking surf  
but can extend inland

Industrial and Geothermal

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## Lifecycle Costings

The roof and cladding provide the prime protection for a building and its contents from the elements. The design decision taken today will have a direct affect on the incurred and consequential dollar costs of maintaining future protection.

For the extra initial installation cost of a ColorCote® ARX™ or AR8™ roof or cladding the long term durability of a ColorCote® ARX™ or AR8™ aluminium roof can be twice or more that of steel.

A pre-painted ARX™ or AR8™ aluminium roof can still have a residual recycle value after a 40 year life span.

## Typical Properties

### Mar Resistance:

Good

### Scratch Resistance:

Good

### Impact Resistance:

AS/NZS2728:2007 Table 2.2 and Appendix E – Greater than 10 Joules.

### Pencil Hardness:

AS/NZS1580.405.1 – F minimum

### Bend Test:

AS/NZS2728:2007 section 2.6.1 and Appendix F – No loss of adhesion or paint cracking when bent around a diameter equal to five times the thickness of the sheet.

### Heat Resistance:

Suitable for continuous service up to 100° C. Continuous service at higher temperatures may cause some colour change and damage to the paint film.

# Accelerated Corrosion Tests

Tests are conducted on a flat panel.

Pacific Coilcoaters as a New Zealand manufacturer and supplier of pre-painted metal products for roofing and cladding conducts testing in New Zealand environmental conditions. Test sites are at Penrose, Auckland, and Muriwai Beach, northwest of Auckland.

## Salt Spray

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Meets the requirements of AS/NZS2728:2007 Sections 2.8 and 2.10.

## Humidity Resistance

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Meets the requirements of AS/NZS2728:2007 Sections 2.8 and 2.9.

## QUV Resistance

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Meets the requirements of AS/NZS2728:2007 Sections 2.8 and Table 2.4.

All spillages should be removed immediately by wiping or washing

# Recommended End Uses

ARX™ and AR8™ have outstanding colour and gloss retention and are suitable for roofing, cladding, and rainwater goods. ColorCote® ARX™ and AR8™ are ideal for interior uses, and for exterior applications such as very severe marine and industrial sites where there is a very high risk of deterioration from corrosive elements in the environment. These include salt laden, geothermal, and heavy industrial environments.

ColorCote® ARX™ and AR8™ can be substituted as a premium alternative to ColorCote® ZRX™ and ColorCote® ZR8™.

## Roof Pitch

*Do not use a pitch less than three degrees (eight degrees for corrugated profile) to avoid ponding and premature degradation of the coating system.*

# Corrosion Resistance

In very aggressive environments ColorCote® ARX™ and AR8™ will give superior protection from environmental effects. Care should be taken to avoid galvanic attack when ARX™ or AR8™ is used in conjunction with certain other materials. Flashings should be ARX™ or AR8™ and fastenings should be aluminium or austenitic stainless steel.

## CARE MUST BE TAKEN WHEN USING COLORCOTE® ARX™ and AR8™ PRE-PAINTED ALUMINIUM PRODUCTS WITH THE FOLLOWING:

- a) **Steel:** if ARX™ or AR8™ is in contact with steel the two surfaces must be isolated by an inert membrane.
- b) **Cement:** wet cement can have a corrosive effect on ARX™ and AR8™, so care should be taken to avoid cement splashes on the material. If this does occur it should be cleaned off immediately.
- c) **Concrete & Plaster:** the structural properties of ARX™ and AR8™ are not significantly affected by contact with these materials. However, there may be some discolouration especially in wet conditions. Therefore, the ARX™ or AR8™ material should be protected by an inert membrane at the points of contact.
- d) **Wood:** unseasoned wood and certain timbers may contain acids or chemicals which can cause galvanic corrosion. In mild atmospheres it is enough to seal the timber surface with an inert membrane at the points of contact with the ARX™ or AR8™. In very severe and severe conditions the two surfaces must be fully isolated by a gasket of rubber, neoprene or similar material.

## Copper and Brass:

In no circumstances should ARX™ or AR8™ be used in contact with brass, copper or copper alloys as ARX™ or AR8™ will corrode very quickly. If water runs off brass or copper onto ARX™ or AR8™ rapid corrosion can occur.

# Handling & Roll-Forming

To avoid damaging the paint surface the material must be handled carefully during transport and roll-forming.

Pacific Coilcoaters does not recommend the use of roll-forming lubricants on ColorCote® products.

The use of roll-forming lubricants will affect performance of pre-painted metal and will lead to staining and uneven premature fading.

## Storage Of Coil

On no account should coils be allowed to get wet. Rain or condensation is drawn between the surfaces by capillary action, and then cannot evaporate normally. This can cause deterioration of the coating leading to a reduced life expectancy and poor appearance. The same applies for finished roofing and cladding sheets.

Roll-forming performance may be affected if coils are stored for more than 12 months.

## Site Practice

If nestable profiles become wet while closely stacked, formation of wet storage stain or corrosion is inevitable.

To minimise the possibility of inadvertent damage:

- a) **Inspect deliveries on arrival.** If moisture is present, individual sheets should be dried immediately with a clean rag and then stacked to allow air to circulate and complete the drying process.
- b) **Well ventilated storage is essential.** Always store metal products under cover in clean, well ventilated buildings.
- c) **Cross stack or fillet sheets** where outside storage is unavoidable and make provision for a fall to allow water to run off. Cover the sheets.

It is the responsibility of the roofing contractor to avoid damaging the roof sheeting during its installation and fixing. Never drag sheets from a pile. Remove by 'turning off' the stack. Lift sheets onto a roof, and do not drag over the eaves or the purlins. Use clean footwear. Remove swarf and other contaminants regularly. Refer to the MRM Code of Practice for further information.

## Installation

Refer to the MRM Code of Practice for correct installation guidelines, particularly in regard to underlays/building papers, penetrations, flashings, fasteners, pitch, etc.

## Touch Up Paint

ColorCote® is a baked on paint system which has different weathering characteristics to standard air drying paints. Do not use touch-up paint on ColorCote® products. Minor scratches should be left alone.

## Clean Up

Installation procedures involving self drilling screws, drills and hacksaws, etc, will leave deposits of swarf and metal particles. These particles including blind rivet shanks, nails

and screws should be swept and washed from the roof regularly. Refer to the MRM Code of Practice for further information.

## Fastenings

Match corrosion resistance of the fastenings with the expected service life of the ColorCote® ARX™ and AR8™ products.

Aluminium or 304 Stainless Steel screws will give the best service life with ColorCote® ARX™ and AR8™ products.

Oversized holes with profiled metal washers must be used to prevent crevice corrosion. They are also required for expansion and contraction.

In very severe environments isolate the stainless steel fasteners from the aluminum substrate using profiled washers and/or grommets to prevent corrosion from dissimilar metal contact.

In all cases ensure the fasteners are installed correctly with the ColorCote® ARX™ or AR8™ product.

For further details refer to the MRM Code of Practice or consult your fastening supplier.

## Sealing & Jointing

Where sealed joints are required, use only neutral cure silicon rubber sealant together with mechanical fasteners such as aluminium rivets.

**Do not weld or solder ColorCote® ARX™ or AR8™ products.**

## Cut Edge Sealing

Cut edge sealing is not necessary on ARX™ and AR8™.

## Unwashed Areas

These are typically those areas that are not washed by natural rainfall, such as the underside of eaves, sheltered roofs or wall cladding, etc. These areas are excluded from warranty. Pacific Coilcoaters recommends the exclusion of unwashed areas by design wherever possible.

In cases where this is not possible, then a regular washing programme should be put in place. Airborne contaminants should be removed by mechanical washing with water and a soft bristle brush at least every six months, or more frequently if contaminant build-up keeps occurring.



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