



COLORCOTE[®]
PRE-PAINTED METAL PRODUCTS



PRE-PAINTED
Metal Roofing & Cladding
GUIDE







inside

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Introduction

Your roof and cladding are two of the largest and most obvious visual features of your home.

When you're building or renovating there are a number of important questions you need to ask to get the right roof or cladding for your home. You want products that will give you the look and protection you are after and will stay looking good for years and years.

ColorCote® Pre-Painted Metal Roofing & Cladding Guide gives you the knowledge and understanding you need to have informed discussions on pre-painted metal roofing and cladding with architects, designers, builders and other trades people.

This knowledge will help you:

- Get the fundamentals right and avoid potential pitfalls,
- increase the lifespan of your roofing and cladding,
- save thousands of dollars in repair, maintenance and replacement costs.

Like many aspects of building or renovating a home, mistakes with your roofing and cladding can be expensive – not just in financial terms but in worry, stress and manual labour.

Decisions need to be made on a product's suitability for the house design, its suitability for its geographic or climatic environment, its lifespan and maintenance requirements -- not just the initial up front cost. Spending a little bit more now and getting it right can save you thousands of dollars and lots of extra work over the life of your roofing or cladding. It is important to remember too that the cost of your roof is only about 5% of the total cost of your home.

Product Overview

ColorCote® pre-painted steel and aluminium roofing and cladding products have been manufactured in New Zealand for more than 30 years.

To ensure all its colours and coatings are more than equal to the worst the New Zealand climate can throw at them, Pacific Coilcoaters runs a rigorous testing regime, with exposure sites at Muriwai Beach on the untamed west coast of the North Island and in the Auckland industrial suburb of Penrose.

There is a six-tier range of ColorCote® pre-painted metal roofing and cladding products – AR8™/ARX™, ZM8™, ZMX™, ZRX™ and ZR8™ – all using the latest coating technology. They have either a steel (with a corrosion-resistant zinc coating) or aluminium substrate and each product has a different level of primer and type of top-coat depending on the environment in which it is to be used.

There are ColorCote® systems to suit all New Zealand homes. Which is best for your home is determined by your climatic environment or geographic location.

ColorCote® ZR8™

Suitable for moderate climatic environments, ZR8™ has a hot-dipped aluminium/zinc alloy-coated steel substrate. It has a waterborne or polyester top coat baked on a polyester primer, giving an extremely durable paint system that resists UV damage and provides excellent gloss and colour retention.

ColorCote® ZM8™

Suitable for moderate and severe marine environments, ZM8™ has a hot-dipped aluminium/zinc/magnesium alloy-coated steel substrate which gives it enhanced cut-edge and wet-area performance. It has a waterborne or polyester top coat baked on a polyester primer, giving an extremely durable paint system that resists UV damage and provides excellent gloss and colour retention.

ColorCote® ZMX™

ZMX™ has a hot-dipped aluminium/zinc/magnesium alloy-coated steel substrate which gives it enhanced cut-edge and wet-area performance. It has

a thicker coating of polyester primer for improved corrosion resistance and a 70% PVF2 top coat. This system gives outstanding gloss, colour retention and durability in severe and industrial environments.

ColorCote® ZRX™

ZRX™ has a hot-dipped aluminium/zinc alloy-coated steel substrate with a thicker coating of polyester primer for improved corrosion resistance and a 70% PVF2 top coat. This system gives outstanding gloss, colour retention and durability in severe and industrial environments.

AR8™ and ARX™

Using type 5052 or 5005 marine grade aluminium alloy substrates, polyester primer, a choice of waterborne, polyester or 70% PVF2 top coats, AR8™ and ARX™ are designed for use in severe and very severe marine environments and are ideal for cladding.







Huge Range of Possibilities

ColorCote® pre-painted metal roofing and cladding systems provide design flexibility unmatched by any other roofing or cladding material. ColorCote® can be roll-formed or pressed into a range of profiles that look great and are warranted to last.

It is easy to install and can be adapted to almost any design or construction concept.

It has the strength to span wide spaces with simple and lightweight support systems and can be bent or curved to suit an almost unlimited range of innovative designs and roof pitches.

Colours

The expansive ColorCote® range of colours gives homeowners a great-looking choice whatever your architectural or design taste.

There are more than 80 colours in the ColorCote® palette – natural, earth and autumn shades, pastels, bold primary colours, metallics and even black and white. If none of these colours suit, custom colours can be manufactured on request.

Reflectivity

New Zealand local authorities and councils are looking to reduce the impact of construction and buildings on the visual landscape, particularly in rural, coastal and alpine areas.

Councils are wanting new buildings to blend in with the natural environment and are enforcing reflectivity levels based on standard ASTM E903-96 which measures the average values for reflected solar radiation from building products – the lower the value the less reflected light/glare.

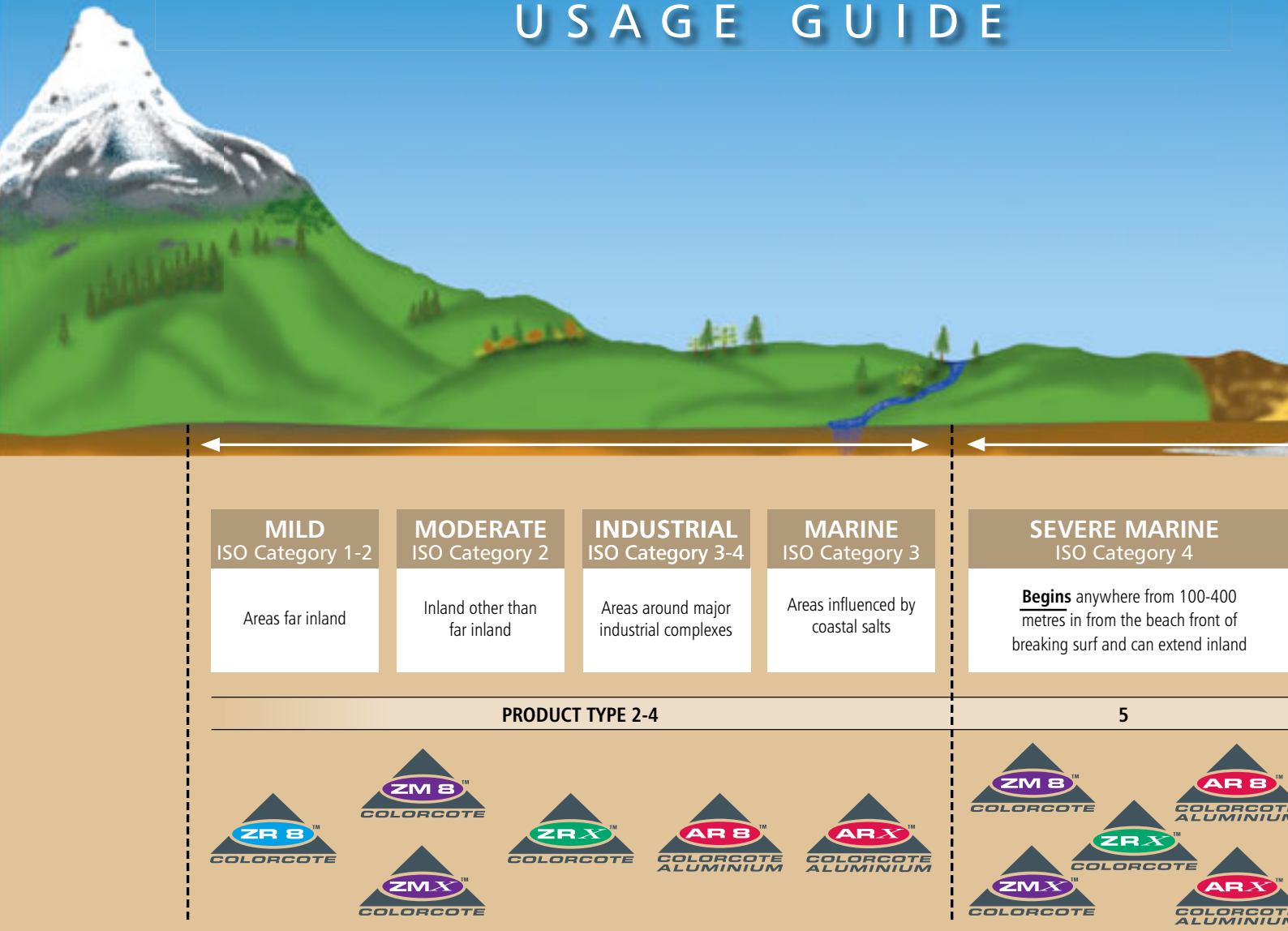
That is why ColorCote® has developed its Naturals range of earthy low reflectivity colours (each with low reflectivity, colour and gloss) to fit in with the New Zealand landscape. The reflectivity value for each Naturals colour is listed on the Naturals colour chart.

See www.colorcote.co.nz or your local council website for more details.



Atmospheric Environments

USAGE GUIDE



Atmospheric Environments

It is very important to use the correct ColorCote® pre-painted metal roofing or cladding system for the appropriate atmospheric environment. Installing a system designed for moderate environment in a very severe

environment will mean a shorter product lifespan, an onerous maintenance schedule and no protection under Pacific Coilcoaters' warranty programme.

It is also important to recognise that manufacturers' environmental usage tables are only rough guides to local climatic and geographical conditions. Salt-laden sea air does not stop where the chart says the boundaries

are. Prevailing winds and regional topographical variations can amplify the true range of severe marine environments to many kilometres inland from the sea.

A simple rule of thumb is that if you can see the sea from your property an aluminium substrate (ARX™ or AR8™) should be used.



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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If in doubt contact Pacific Coilcoaters for specific recommendations.

The design of your house can also dictate which system should be used. For example a house with a minimum pitch roof with parapets two kilometres from the surf should use ARX™.

The same house with a steeper pitched roof (which allows rainwater to wash off

the worst of the salt residue) could use ZR8™ but the cladding should still be ARX™.

In severe marine environments care needs to be taken with cut edges and penetrations --including screw holes -- to prevent the spread of corrosion (with aluminium substrates this is not as critical).

Using the best paint system for the job and choosing between a steel or aluminium substrate (depending on the environment) will add years to the life of your roof... and save you money too!!

It can be a false economy to buy a product on cost alone – particularly something like pre-painted metal roofing and cladding that is protecting your home from the elements.

Sometimes the initial installed price may be a little more up front, but over a 30 – 50 year lifespan you'll come out way ahead.

Warranty

Most roofing companies will give you a warranty for their products.

However, all warranties are not the same. Just because a company is willing to give you a warranty won't make your roof or cladding any more durable or resistant to the elements.

Some roofing companies might be prepared to give you a 15-year warranty on a basic roofing system in a harsh or marine environment. You might think you're saving money but look closely at the fine print: somebody's going to have to climb up on the roof every month and scrub it down with a hose and brush.

Who's going to do that? ...You?

Even worse; if you don't meet the onerous conditions, and the roof starts to fail after a few years, you'll have to replace it at your own cost.



All ColorCote® roofing and cladding products come with a Pacific Coilcoaters' written warranty. Our warranties are specific to a particular building, where it is sited, and the type of roofing and cladding product used. Because we make sure you use the right product for the job and its environment, only normal maintenance – usually a wash every six months – is required. Residential warranty terms and warranty applications can be accessed by visiting the ColorCote® website: www.colorcote.co.nz.

To avoid problems later, or for specific advice on your proposed roofing or cladding designs, you can email or fax your plans to Pacific Coilcoaters before you start construction. Pacific Coilcoaters will let you know which is the best coating and substrate solution for the design you want and will also recommend fixings based on environmental and design considerations. This means you'll get the correct ColorCote® product for your home and also means the solution provided will come with a pre-approved warranty.

Seismic

Because of New Zealand's geographic position on the Pacific rim-of-fire, our homes have to be designed to resist not only our weather but also volcanic or earthquake activity. A ColorCote® roof is strong and secure and also relatively lightweight. A ColorCote® pre-painted steel roof on the average 150 sq. metre home weighs less than a tonne. By contrast, a concrete tile roof on the same house could weigh more than eight tonnes and would require additional structural, engineering and labour costs.

Design & Installation Fundamentals

When designing your home make sure you take time to look carefully at your roofing or cladding plans.

Good design and a bit of good old-fashioned commonsense can save you a lot of time, effort, aggravation and heartache.

If you see anything in this section that you think might cause a problem for your home talk to your architect, builder or roofer about it.

Or contact Pacific Coilcoaters at www.colorcote.co.nz.





Design Issues

The design of your house will affect the life of your pre-painted roofing and cladding. It is best to avoid overhangs and designs that create unwashed areas. These are not naturally washed down by rainwater allowing dirt, salts and other corrosive elements to build up.

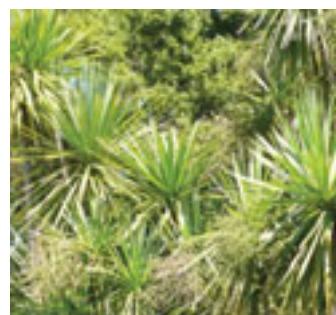
Good design can get rid of most unwashed areas at the planning stage. You also need to think of how the roof is going to be maintained. All roofs need to be washed down on a regular basis so you need to think of how you are going to access the roof. If the pitch of the roof is too steep to walk on safely you might have to hire a cherry picker or crane every time maintenance is required.

Orientation of the roof is important too, particularly in severe environments. It is important when looking at the aspect of the roof that the metal profile is protected from the effects of salt-laden air being driven in from the sea under the roof profile and accelerating corrosion. In severe and very severe environments it is also important that the right roof profile is chosen.

In such exposed environments care should also be taken when installing spouting. The spouting profile needs to be correctly fixed to prevent corrosive wind-driven water and salts being driven up under the sheets of roofing and causing possible early product failure.

Spouting, valleys and low pitched roofs also need to have the correct fall to prevent ponding which can accelerate potential corrosion.


The underside of all pre-painted metal roofing, including soffits, should be enclosed. The underside paint system is usually only a wash coat which is not designed for exterior exposure and has only limited corrosion resistance.



Basic Chemistry and the Properties of Metals

When different types of metals come into contact with each other, and particularly when water is present, chemical reactions take place which result in the metal higher up the galvanic hierarchy of metals (i.e. metals more resistant to corrosion) eating away metals lower down the order. Brass, copper, lead and stainless steel are higher up the galvanic hierarchy than the aluminium/zinc-coated steel and aluminium used as ColorCote® pre-painted metal substrates. Direct contact between these dissimilar metals will cause the ColorCote® systems to quickly corrode.





Water coming from copper and brass pipes or spouting can cause corrosion to pre-painted metal roofing and cladding too.

The best solution is to make sure there is no direct contact between dissimilar metals.

If necessary, inert membranes can be used to isolate two different metals. This is the case when ColorCote® AR8™ and ARX™ are fixed using stainless steel fasteners. A special low carbon washer is used between the two metals.

Other materials that will cause problems:

- Cement will have a corrosive affect on the paint systems and must be wiped off immediately
- Tanalised timber and some other timbers such as cedar can cause galvanic corrosion. In mild atmospheres seal the timber surface with an inert membrane at the points of contact. In severe and very severe conditions the two surfaces must be fully isolated by a rubber or neoprene gasket.
- Concrete and plaster can cause discolouration to the paint coating which should be protected by an inert membrane where they come into contact.



Holes, Penetrations, Fixtures and Fittings

Care needs to be taken every time you make a hole in your pre-painted metal roofing and cladding or fix or screw something onto it.

Holes and penetrations can let in moisture and accelerate corrosion if not sealed or flashed properly.

So can fixtures and fittings on your roof such as air conditioning units, fans, aerials, satellite dishes, and solar panels. Flues and chimneys need to be designed to allow fumes and smoke to dissipate. The roof near these will need to be washed regularly to remove contaminants.

There are also dissimilar metal issues to be aware of with fixtures and fittings on roofs. Television aerials and copper waste pipes from gas water heaters are just two examples that need to be fully isolated from pre-painted metal roofing.

Fasteners

It is important to use the correct fastener to install your ColorCote® pre-painted roofing or cladding system. The fasteners should be matched to the expected life of the roof.

For ZR8™ and ZM8™, class 4 coated screws are recommended and give the best service life. Galvanised nails with ZR8™ or ZM8™ pre-painted washers can also be used.

For ZMX™ and ZRX™, class 4 coated screws are recommended but galvanised nails are not to be used.

Stainless steel or monel metal fasteners are not to be used on ZR8™, ZM8™, ZMX™ and ZRX™ systems.

For ARX™ or AR8™ systems, 304 stainless steel or aluminium screws must be used. Holes should be drilled oversize to allow for movement and profiled metal washers used to isolate the different metals.



Maintenance

All roofing and cladding products require regular maintenance to keep them looking good, to prolong their life and to meet the terms of any product warranty.

The best way to reduce the amount of maintenance required is to pick the right product for the environment. The extremes of temperature, harsh UV rays and salt-laden sea air all eventually take their toll on all New Zealand buildings.

That's why it's important you get the correct pre-painted metal roofing and cladding system for your house whether you're living in the city, beside the sea or out in the country.

The harsher the environment the more important it is that a regular maintenance schedule is followed – particularly regular washing down of roofs and cladding -- to maximise service life and appearance.

Basic Maintenance Needs:

- All roofing and cladding needs to be washed down with clean water and a soft-bristle brush or sponge on a regular basis. For larger areas water blasting at pressures up to 20Mpa might be more appropriate. How often depends on the pre-painted system and the severity of the building environment. Give special attention to unwashed areas and around penetrations and fixtures and fittings. Pacific Coilcoaters recommends roofing or cladding should be washed down a minimum of every six months, or more often if contaminants build up.
- If you are not comfortable doing it yourself get a professional in. It must be done on a regular basis to meet the terms of your warranty.
- Clean and clear gutters and downpipes regularly too.
- Take sensible safety precautions when climbing on a roof. Secure your ladder properly, use non-slip shoes and safety harnesses if necessary, and don't go up on a roof in wet, windy or icy conditions.
- Make sure fasteners are also washed and inspected for signs of corrosion. Replace them immediately if they are showing signs of failure or rust.

Step by Step Guide for ColorCote® roofing and cladding



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Check with your roof manufacturer or Pacific Coilcoaters that your project meets pre-approved ColorCote® warranty conditions. www.colorcote.co.nz

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Select a suitable builder and/or roofing and cladding fixer.



Talk to your architect or designer about your ideas. Work with him or her to get the look you want. Ask any of the questions above or any others your research has raised.

Are there any big spans, curves or bends? Will that impact on which ColorCote® system you choose? What roofing or cladding profile is suitable for this design? Do you need to check with you architect/designer or the roof manufacturer?

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1

Look at various homes in the area you're looking to build. Compare the different styles of roofing or cladding and try and visualise how they might look on the type of house you have in mind.



2

Does the design of the roofing or cladding enhance the overall design of the house? Will the design be easy to build and maintain? Does it matter?



3

Can you design out any sheltered or overhanging areas or other features that allow the build up of salts and other contaminants and which might affect the long term performance of the roofing and cladding?

How can you keep penetrations and aerials and other fixtures to a minimum?

4

Colour: How does the roof colour work with the overall house colour scheme? Is it an expression of your personality? Will the colour scheme jar with its environment? Does it matter? Are there any local authority restrictions on the colours you can use?

5

Which way's north? How much sun will the site get and which way should you orientate your living and outdoor activities? Do you need to consider the roof's aspect to avoid wind/weather issues?

Which ColorCote® pre-painted metal system should you use? Your environmental profile will tell you. What is the natural environment like? What sort of climatic conditions? How far from the ocean or harbour? Prevailing winds? Harsh winters or summers? Any seismic or geothermal activity nearby? Industrial sites or airports?

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Sustainability and Recycling

Pacific Coilcoaters has an on-going commitment to sustainability and continuous product and process improvement. Recent developments include water-based coating systems and nil-heavy metal paint systems.

The company has developed processes to minimise water use with on-site cooling, recirculation and recycling processes.

Fumes generated during the paint curing process are reused to fuel the paint curing ovens, reducing the plant's overall energy costs. Excess heat from the drying process is

also used to heat the factory in winter.

All ColorCote® products are coated with paint systems which are lead and cadmium-free and suitable for rainwater collection systems.

All ColorCote® pre-painted steel and aluminium products are fully recyclable. Any scraps or old roofing material can be recycled in New Zealand.

Pacific Coilcoaters recycles or reuses all its metal scrap.

Where to go for more information, ideas or help?

Pacific Coilcoaters recommends you always use a registered architect or reputable designer for your roofing and cladding designs.

The following links may be helpful:

New Zealand Institute of Architects (NZIA): www.nzia.co.nz

Architectural Designers New Zealand (ADNZ): www.adnz.org

All metal roofing and cladding should be installed according to the Metal Roofing Manufacturers' Code of Practice.

For more details see:

Metal Roofing Manufacturers Inc: www.metalroofing.org.nz

Roofing Association of NZ: www.roofingassn.org.nz

For overall building/construction information:

Registered Master Builders' Federation: www.masterbuilder.co.nz

New Zealand Certified Builders' Association: www.certified.co.nz



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