November 2005
(Replaces September 2003)

INSTALLERS GUIDE

GALVSTEEL™ COLORSTEEL® Zincalume®

CONTENTS

INTRODUCTION

This Guide has been prepared to detail the correct installation of COLORSTEEL®, ZINCALUME® steel and GALVSTEEL™ material.

These quality products from New Zealand Steel Limited require different handling and fixing procedures.

COLORSTEEL®

COLORSTEEL® prepainted steel describes those steel building materials which have oven-cured paint applied to a galvanised or ZINCALUME® steel base on a continuous 'coil to coil' operation at the New Zealand Steel Glenbrook works.

The prepainting process gives excellent adhesion of the coating to the substrate, allowing rollforming to be performed after painting without delamination or deterioration of the paint film.

A variety of COLORSTEEL® prepainted steel coating types is offered. All COLORSTEEL® products are produced using either a ZINCALUME® steel substrate with an AZ150 or AZ200 coating class, (i.e.: 150 g/m^2 or 200 g/m^2 of zinc/aluminium alloy), or a galvanised steel substrate with a ZM275 coating class (i.e. 275 g/m^2 of zinc).

Data sheets on each of the COLORSTEEL® prepainted steel coating types may be obtained from New Zealand Steel Limited or any stockists of COLORSTEEL® prepainted steel.

COLORSTEEL® Maxx™

COLOUR FOR THE EXTREME

COLORSTEEL® MAXX™ products have an AZ200 ZINCALUME® coated steel base. This product is intended for Very Severe environments.

COLORSTEEL® Endura™

COLOUR FOR THE FUTURE

COLORSTEEL® ENDURA™ products have an AZ150 ZINCALUME® coated steel base and are available in a range of colours, selected for their ability to provide optimum performance, durability and appeal.

Zincalume®

ZINCALUME® zinc/aluminium alloy-coated steel has a 45% zinc, 55% aluminium alloy coating which offers superior corrosion resistance compared to galvanised steel in most environments (particularly coastal environments).

GALVSTEEL™

Traditional galvanised steel is offered under the trade name of GALVSTEEL™. This material has a 100% zinc coating and is available in a range of dimensions, grades, zinc coating weights and types.

QUALITY OF INSTALLATION

New Zealand Steel Limited takes a great deal of pride in manufacturing these top quality products and knows that the final appearance is influenced by the skills and care taken with the material. The reputation of both the fixer and the product is enhanced by quality workmanship.

You have your part to play, not only in the installation but also in the advice for on-going maintenance which you can leave with the home-owner at the end of your contract.

A QUICK GUIDE TO CARING FOR OUR PRODUCTS

DO

- Do check the delivery to make sure you have the right product, delivered in prime condition.
- Do arrange for suitable dry storage if the material is not going to be used immediately.
- Do ensure the appropriate fasteners are selected for the environment.
- Do cut with shears or snips.
- Do remove swarf from the job as the work progresses, or at least at the end of each day.
- Do wear clean, flat, rubber-soled footwear.
- Do lift sheets onto the job, rather than drag them.

DON'T

- Don't mix product or brands on a single job.
- Don't cut sheets with an abrasive disc cutter.
- Don't attempt to solder COLORSTEEL® prepainted steel or ZINCALUME® steel surfaces.
- Don't use lead-headed nails.
- Don't use touch-up paints.
- Don't leave off-cuts or other debris on the roof.
- Don't slide tools down the roof.
- Don't use lead flashings with ZINCALUME® steel or COLORSTEEL® products.
- Don't use with wet concrete.
- Don't store in an environment that allows moisture to pool between sheets.

Correct storage of COLORSTEEL® prepainted steel, ZINCALUME® steel and GALVSTEEL™ material, will help give optimum performance.

MIXING OF BRANDS

Where different brands of prepainted material are used on the same building, differences in colour, gloss and weathering performance may appear obvious within a short period of time. This will be due to the different paint formulations used by different manufacturers.

New Zealand Steel Limited will not accept liability for problems caused by the mixing of brands.

When material is delivered to the site, inspect deliveries to ensure the correct brand and product type has been supplied.

Ensure that COLORSTEEL® products with widely differing production dates are not mixed in any contract.

Note: COLORSTEEL® is clearly branded on the reverse side to assist identification.

STORAGE

Before it goes up on a roof, COLORSTEEL® prepainted steel, ZINCALUME® steel and GALVSTEEL™ products can be ruined by poor storage practices.

Follow these simple guidelines to help give optimum performance. (See photograph on page 1)

- On arrival, ensure the steel sheets are dry. If wet, open the pack immediately and separate the sheets to allow them to dry.
- Store packs of the material off the ground in a sheltered position.
- Cover packs with a loose fitting tarpaulin, allowing air to circulate.
- Provide some fall to drain water.
- Cross stacking of sheets allows air to circulate to help keep material in prime condition.
- Use only dry, untreated timber fillets for block stacking.
- Contact with wet concrete should be avoided.

Note: Failure to follow these handling and storage precautions could result in spoiling the surface appearance of the products and severely reducing their service life. On GALVSTEEL™ material this will appear as a white corrosion product (white rust), whereas on ZINCALUME® steel the corrosion product is black. This should not be confused with fretting. On COLORSTEEL® prepainted steel, the result of wet storage damage could be a bubbling of the paint surface.

Damage resulting from such failure invalidates the warranty and is not recoverable from New Zealand Steel Limited.

INSTALLATION

HANDLING

General

New Zealand Steel Limited products are top quality and perform best when handled correctly.

- Don’t handle them roughly or carelessly.
- Don’t drag or slide new sheets over other products or rough surfaces.
- All equipment and materials taken on to the roof should be clean and care taken to prevent damaging the surface.

Use of Lifting Booms

- Long lengths of roofing are best lifted with the aid of a lifting boom.
- Lifting booms may be available from the profile manufacturer.
- Ensure loads are secure prior to lifting.

Footwear

- Anyone walking on the roof should wear flat rubber-soled footwear to prevent marking.
- Put an old mat or piece of carpet at the base of the ladder so that shoes can be cleaned before going up on the roof.
- Care should be taken walking on roofs as they may be slippery at times.

STRIPPABLE PROTECTIVE FILM

Strippable film is applied to some COLORSTEEL® prepainted steel products to protect them during transportation and rollforming. Where present, strippable film normally remains on the COLORSTEEL® prepainted steel product through roll-forming, transportation and installation but should be removed within a maximum of two weeks after fixing. If allowed to remain on COLORSTEEL® prepainted steel for an extended period, strippable film can be difficult to remove, especially when the effects of exposure make the film brittle.

FASTENERS

The selection of the appropriate form of fastener is a task which should not be solely influenced by cost. Fastener costs are minimal relative to the overall project and there is no benefit to be gained through the use of inferior fixings. The fastener durability should equal or exceed that of the roofing or cladding product.

The Metal Roofing and Wall Cladding Code of Practice provides some information on selection, fixing methods and placement of fasteners. This handbook is available on request from members of the New Zealand Metal Roofing Manufacturers Incorporated or New Zealand Steel Limited. More detailed information can also be obtained from fastener manufacturers.

- Fastener performance should conform with the requirements of AS3566 (and Amendments) “Screws – Self Drilling for the Building and Construction Industries”.
- Stainless steel and stainless steel capped fasteners are **not** recommended for use with ZINCALUME® steel and COLORSTEEL® prepainted steel products in all environments due to incompatibility.
- Low carbon, non conducting sealing washers are required for use with COLORSTEEL® prepainted steel and ZINCALUME® steel products.

The advice of specialist fastener manufacturers is readily available and these manufacturers should be consulted, particularly where COLORSTEEL® prepainted steel products are to be fixed in Very Severe or Severe Environments. (Refer to the New Zealand Steel Limited Environmental Categories Brochure for definitions of environmental categories).

- Fasteners with heavy zinc or zinc-tin coatings or zinc alloy coated heads complying with AS3566:2002 Class 3 and 4 are fully compatible with all products.
- Fasteners used on COLORSTEEL® prepainted steel products should be factory coated to provide an accurate colour match with COLORSTEEL® prepainted finishes.
- Use the nailing fastener pattern recommended by the rollformer for the building design and roofing profile.
- Overdriving, over-tightening or using too many fasteners can cause purlin marking and other damage.

A general guide to selecting the correct fastener for your roofing material is as follows:

FASTENER RECOMMENDATIONS

Environmental Category*	ISO	GALVSTEEL™	ZINCALUME®	COLORSTEEL® ENDURA™	COLORSTEEL® MAXX™
Coastal:					
Very Severe	C5	NR	NR	NR	4
Severe	C4	NR	NR	4	4
Moderate	C3	3,4	3,4	3,4	3,4
Industrial:					
Very Severe	C5	NR	NR	NR	4
Severe	C4	NR	NR	4	4
Moderate	C3	3,4	3,4	3,4	3,4
Inland:					
Moderate	C2	3	3	3	3

NR: New Zealand Steel product not recommended for these Environmental Categories.

4: Heavy zinc or zinc-tin coatings or zinc alloy coated heads complying with AS3566.2–2002 Class 4.

3: Heavy zinc or zinc-tin coatings complying with AS3566.2–2002 Class 3.

* Refer to the New Zealand Steel Limited 'Environmental Categories Brochure' for full definitions of Environmental Categories.

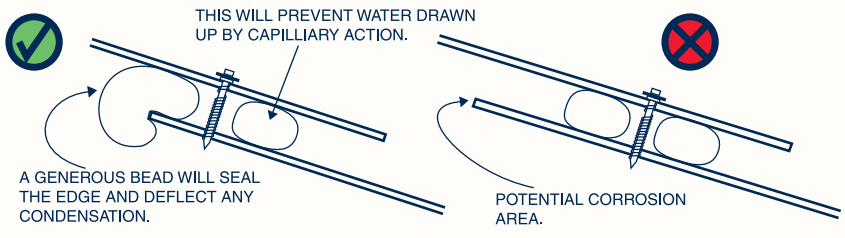
Rivets

- Use aluminium rivets for joining all New Zealand Steel Limited products. (Ensure rivet is of a suitable strength for the purpose. Refer to your rivet supplier).
- Monel rivets are not recommended as they are incompatible due to their copper content.

Note: Sealing washers that contain carbon black filler levels of more than 15% by volume may lead to corrosion of ZINCALUME® steel and COLORSTEEL® prepainted steel roofing. Therefore, all fasteners for New Zealand Steel roofing products should have low carbon, non-conducting sealing washers. Refer to Information Bulletin 10.

JOINING, SEALING AND LAP PRIMING

- Soldering should only be used on unpainted galvanised steel (Not on COLORSTEEL® prepainted steel or ZINCALUME® steel).
- Use only neutral cure silicone rubber sealants.
- Thoroughly clean off surplus sealant using a dry, lint-free cloth or plastic scraper.
- Do not rely on sealants alone for joining. Mechanical fasteners (e.g.: rivets, self-tapping screws etc) should always be used as well.
- **End laps** in profiled metal roofing should be avoided where possible. When unavoidable, the end lap of ZINCALUME® steel and painted profiles should be sealed with a double bead of sealant as in the illustration below.
- Unpainted galvanised corrugate profile **end laps MUST** be primed on both overlapping surfaces with an appropriate paint system.
- **Edge laps** on unpainted galvanised corrugate profiles **do not require lap priming.**
- **End or edge laps** of unpainted ZINCALUME® steel **do not require lap priming.**



MARKING, CUTTING AND DRILLING

- Black lead pencils must never be used for marking GALVSTEEL™, ZINCALUME® steel or COLORSTEEL® prepainted steel products. The carbon in the pencil promotes corrosion which will etch the surface of the material, leaving a permanent mark. Use a pencil of any colour other than black.
- Cut and drill COLORSTEEL® prepainted steel material with care to avoid marring the high quality finish.
- Use nibblers or hand shears instead of a friction blade. A friction blade will damage both the metallic coating and the COLORSTEEL® prepainted steel surface. It will also generate hot swarf which will become imbedded in the paint surface.
- All debris must be swept off the job at the end of each day.
- Prevention of swarf damage is far easier than its cure.

ALLOWANCE FOR EXPANSION

- All roofing and cladding is subject to expansion and contraction due to temperature extremes. This is particularly evident with darker colours and long spans where the expansion may be as much as 8.0mm for a 10.0 metre sheet.
- Fixing systems used must allow for expansion and accommodate the longitudinal movement which results. If this is not done, 'canning' of the profile may occur and ponding of low pitch roofs, or noise may become a problem.

TYPICAL ROOF EXPANSIONS

Based on 0.01mm/m/(˚C)

	8 metre run	12 metre run	18 metre run
Light Colours	5mm	7mm	11mm
Medium Colours	6mm	10mm	14mm
Dark Colours	7mm	11mm	17mm

Note: Light colours include unpainted galvanised and ZINCALUME® steel material.

FLASHING MATERIALS

Recommendation

Flashings and ridge capping should be manufactured from the same coating system as used for the main roof area to ensure equal durability. For COLORSTEEL® prepainted steel and ZINCALUME® steel products, extended ridge caps, soft zinc or practices such as cutting and notching are recommended.

Where penetration flashings are required, neoprene or silicone rubber, EPDM aluminium or soft zinc all give excellent performance.

For GALVSTEEL™ products, prepainted lead flashings can be used, as well as the above.

Compatibility

When two different metals are in contact and moisture is present, one metal is relatively protected while the other suffers accelerated corrosion. This is known as galvanic or bi-metallic corrosion. A similar problem commonly occurs with water flowing over dissimilar metals.

Copper

Copper is not compatible with GALVSTEEL™, ZINCALUME® steel or COLORSTEEL® prepainted steel products, especially where it is in contact with water or where water can flow from it. Every effort must be made to prevent the overflow of water from copper pipes on to the roofing and guttering material.

Lead

Lead is not compatible with ZINCALUME® steel products. Corrosion will result from contact between lead and ZINCALUME® steel material or from water run-off from lead to ZINCALUME® steel products.

For this reason New Zealand Steel Limited does not recommend the use of lead with ZINCALUME® steel or COLORSTEEL® prepainted steel.

COMPATIBILITY

ZINC/
ZINCALUME® /
ALUMINIUM
STEEL
LEAD
COPPER
STAINLESS STEEL

More Active Metals

More Noble Metals

This Chart lists commonly used metals in a “Galvanic series”. If any two of these metals are in damp contact or a run-off situation, the metal higher on the table will sacrifice itself to protect the metal lower on the scale. Therefore the simple rule is to remember that you can run water down but not uphill. For example zinc to copper is alright but copper to zinc is not.

If lead is used with unpainted ZINCALUME® steel, a suitable barrier paint system must be applied to both products to prevent direct metal to metal contact. The entire surface of the ZINCALUME® steel roof must be painted. A barrier paint system must also be applied to the top surface of the lead to prevent indirect contact through water run-off.

If lead is used with COLORSTEEL® prepainted steel, a suitable barrier paint system must be applied to both surfaces of the lead to ensure there is no metal contact or indirect contact through water run-off.

In both cases, consideration must be given to the choice and maintenance of the barrier material or coating system to ensure it continues its insulation function for the expected life of the ZINCALUME® steel or COLORSTEEL® prepainted steel. In most cases the expected durability of the ZINCALUME® steel or COLORSTEEL® prepainted steel will far exceed that of the barrier system unless maintenance of the barrier system is carried out.

Some lead products are provided with a factory applied primer coat. The lead supplier should be contacted for advice as to a suitable finish coat barrier system and the ongoing maintenance requirements for this system.

New Zealand Steel Limited will not accept responsibility for any corrosion claims which occur as a result of the use of lead with ZINCALUME® steel or COLORSTEEL® prepainted steel products.

EDGE SEALING OF COLORSTEEL® PRODUCTS

Edge sealing of COLORSTEEL® prepainted steel products is not recommended. (See Environmental Categories and Product Recommendations section).

GUTTERS, ADDITIONS AND ALTERATIONS

(Combining Different Roofing Systems)

Care should be taken when combining products on a roof system. If products are combined incorrectly, severe localised corrosion may occur as a result of ‘inert catchment’.

WHAT IS INERT CATCHMENT?

The collection of rainwater running into gutters is influenced by atmospheric conditions, industrial fallout and rainfall intensity and frequency. Acid rain, which is quite corrosive to metal, is a feature of industrial and heavily populated areas with fumes from motor vehicle exhausts. Rain near the coast can pick up chlorides from salt air depending on the turbulence of the surf prior to precipitation.

When acid rain falls on a large area of roof, it is collected and directed in concentrated streams into a small area of gutter/spouting. If there is any tendency for coatings on metals in the roofing system to be affected by water, it is more likely to occur here.

The condition which can arise to cause corrosion to occur in this way is for water to fall on roofs which do not affect the corrosive properties of rain in any way. Such a roof is called an ‘inert catchment’ and typical examples are glazed terracotta tiles, fibreglass, decking formed from aluminium, COLORSTEEL® prepainted steel and ZINCALUME® coated steel.

Roofs which alter the corrosive components of rain are unglazed cement tiles and unpainted zinc-coated materials. These actually counteract to some extent the acids and chlorides in rain so that by the time it reaches the guttering/spouting, it is far less reactive and the gutter will have a longer life.

Some examples of Inert Materials:

• ZINCALUME® steel • COLORSTEEL® prepainted steel • Glass • Fibreglass • Glazed Tiles • PVC • Acrylic • Aluminium

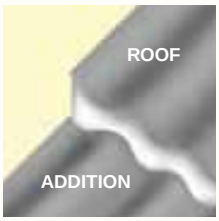
To achieve maximum life from your rainwater goods, we recommend that they are manufactured from either ZINCALUME® coated steel or COLORSTEEL® prepainted steel products.

ZINCALUME® coated steel gutters will give a longer service life than traditional galvanised steel.

Unpainted galvanised steel must not be used for roofing or rainwater goods including valleys and gutters to collect water run-off from ZINCALUME® steel products or any other inert material.

ZINCALUME® coated steel and COLORSTEEL® prepainted steel products can be used to collect water from galvanised or any inert catchment material.

These points are summarised in the diagrams below:



ROOF	ADDITION Compatibility
GALVANISED	ZINCALUME®
	COLORSTEEL®
	GLASS
	GLAZED TILES
	ALUMINIUM
	ACRYLIC
	FIBREGLASS
	PVC
	GALVANISED

ROOF	GUTTER Compatibility
GALVANISED	ZINCALUME®
	COLORSTEEL®
	PVC
	GALVANISED

ROOF	ADDITION Compatibility
ZINCALUME®	ZINCALUME®
COLORSTEEL®	COLORSTEEL®
GLASS	GLASS
GLAZED TILES	GLAZED TILES
ALUMINIUM	ALUMINIUM
ACRYLIC	ACRYLIC
FIBREGLASS	FIBREGLASS
PVC	PVC
	Incompatibility
	GALVANISED

ROOF	GUTTER Compatibility
ZINCALUME®	ZINCALUME®
COLORSTEEL®	COLORSTEEL®
GLASS	PVC
GLAZED TILES	
ALUMINIUM	
ACRYLIC	
FIBREGLASS	
PVC	
	Incompatibility
	GALVANISED

WATER PONDING

Roofs

Where the roof pitch is low, changes in roof loadings may result in a negative pitch and consequently lead to water ponding. Water ponding is detrimental to the performance of COLORSTEEL® prepainted steel products. The following conditions commonly cause water ponding:

- Over-spaced purlins.
- Deformation of timber purlins.
- Placement of external loads such as air conditioning units.
- Rigid fixing on long spans which causes deformation of the profile as a result of thermal expansion.

Design Guide:

1. Never use a pitch of less than 3 degrees. Pitches of less than 3 degrees invalidate the warranty.
2. Design the roof according to the profile manufacturer's specifications.
3. On minimum pitch roofs, ensure that the gutter end of profiled sheets is turned down.
4. Allow for thermal expansion to prevent profile distortion.
5. Consider the use of walkways to prevent damage where the roof may be subject to heavy foot traffic.
6. Ensure roof penetrations do not block the flow of water from the roof.

Gutters

Gutters must be installed with adequate fall to ensure all water is transported to appropriately located downpipes. Ponding occurs when water remains in the gutter when the fall is inadequate. Over time, this causes degradation to the coating and ultimately leads to gutter perforation. Perforation of the gutter as a consequence of inadequate fall or ponding invalidates both the manufacturer and producer warranties. The installation and downpipe construction should allow the gutter to drain completely.

Regular gutter cleaning and maintenance is required to remove leaves and other debris that may restrict water flow to downpipes. Particular care should be taken at the entrance to downpipes and corners, to avoid blockages leading to water ponding.

A gutter protection system (or any other product) that entraps water between itself and any steel product surfaces, restricting the coated steel's ability to dry, is not recommended and is an exclusion in the product warranty.

MIXING PRODUCTS ON A ROOF

Unpainted galvanised and ZINCALUME® steel products are fully compatible in direct contact or side-by-side, however, care should be taken when mixing on a roof for the following reasons:

- Early corrosion may occur because of the inert catchment effect. (Refer to page 6).
- Galvanised material is less durable than ZINCALUME® steel and therefore would weather more rapidly.
- When combined on a roof, galvanised steel and ZINCALUME® steel have a markedly different appearance.

Where different brands of prepainted material are used on the same building, differences in colour, gloss and weathering performance may appear obvious within a short period of time. This will be due to the different paint formulations used by different manufacturers.

New Zealand Steel Limited will not accept liability for problems caused by the mixing of brands.

SWARF STAINING OF STEEL ROOFING AND CLADDING

Introduction

Swarf is the term given to the steel debris arising from cutting or piercing operations when using friction saws, drills etc., on steel roofing and cladding products. The use of abrasive discs is not recommended. Whilst comprising mostly fine steel particles, in this context swarf may also be taken to include any other discarded steel objects such as rivet shanks, nails, screws and nuts, which may come into contact with coated products; ie: COLORSTEEL® prepainted steel, ZINCALUME® coated steel and galvanised steel.

Swarf particles, if left on the surface, will corrode and cause rust stains which will detract from the finished appearance of a project. These stains are often mistaken for early deterioration of the roofing and cladding itself.

Prevention of swarf staining is the responsibility of the installer and it is strongly suggested that the recommendations contained in this brochure be followed.

Generally, swarf particles come in contact with coated steel sheet products in three ways:

1. Loose particles left after cutting, drilling and riveting operations.
2. Hot swarf particles from disc cutting or drilling operations which may adhere to the finished surface.
3. Loose particles which may be trodden in or become embedded in the surface film of prepainted products under pressure from adjacent equipment or materials.

Prevention

Cutting

- Power shears or hand snips produce the least amount of debris.
- Power nibblers give a clean cut but generate debris which if left is prone to corrosion.
- Metal friction blades produce fine hot particles which can imbed easily into the coating surface and corrode rapidly.

If there is no alternative but to cut with a friction blade, the sheet should be cut away from the job and any other sheets. Where this is not practical, newly fixed roofing should be masked off with building paper or similar material to allow for the collection and disposal of any swarf particles. The sheet should be cut with the top surface downward to minimise top damage. Hand shears should be used to trim back any ragged edges.

Drilling

The area around the hole should be masked to shield the product from hot swarf.

Installation

Smooth soled shoes should be worn when working on a roof; avoid the ribbed type which will carry swarf and other objects.

Clean up

Swarf should be swept or hosed from the job progressively, and certainly at the end of each day. This action will remove loose particles. Maximum care should be taken when attempting to detach swarf which has become stuck. This can be done, but no action which is likely to remove the paint or metal coatings should be attempted. Any damage to these coatings will lead to reduced life of the material.

When sweeping or hosing into a gutter, clean out the gutter before leaving the job in order to prevent premature corrosion. On completion of the job, give a final wash or sweep down.

For critical applications, inspection of the job should be made after two weeks when rain or condensation will have caused any remaining swarf to rust, and will highlight affected areas. TREAT AS FOR REPAIR.

Note: Many swarf staining problems arise not from installers, but from other contractors working in the vicinity. Architects and builders need to be aware of this possibility, and warn contractors accordingly.

Identification

Fresh swarf stains are characterised by small red-brown coloured areas with a central dark spot (the remains of the steel particles). The surface will feel like sandpaper, and the particle may be lifted with a fingernail.

An old swarf stain will appear as a localised red-brown stain, the steel particle having corroded away, and the surface will be smoother.

Effect on Performance

The effect of swarf staining itself on COLORSTEEL® prepainted steel products, is generally aesthetic and may not be detrimental to the performance of the product. The product life will, however, be severely affected where attached swarf particles have penetrated the prefinished film and are in contact with the protective metallic coating, although this only occurs in severe cases. This is because, on prepainted surfaces, red oxides of iron are insoluble in water, and the stain will take considerable time to weather away.

On metallic coatings, concentrated corrosion can occur over a small area as the zinc in the coating sacrifices itself to prevent oxidation of both the swarf and, if allowed to continue, exposed areas of the steel base. Removal of swarf in the first place is far superior to repair of damage.

Repair

Metallic-Coated Steel Sheet

Brush the surface with a stiff bristle (not metallic wire) brush to dislodge particles which must then be completely removed, not just swept into the guttering. Wire brushing will mar the appearance of the sheet if brushing is not followed by painting. If the coating is severely damaged by swarf corrosion, the area should be painted.

STEELWOOL MUST NOT BE USED as it breaks up and becomes swarf itself. It will also damage the paint surface.

It is the responsibility of the installer to rectify swarf stains. New Zealand Steel Limited cannot be held responsible for remedial action outside their control. No cure will restore the surface to its original condition. However, damage can be reduced by prompt action.

Mild Staining

A household cream cleanser, used according to directions, will remove most mild swarf stains. Take great care to remove the stain only and not to cause damage to the paint film. Minimise the cleaning of unaffected material.

Severe or Extensive Staining

In these cases, where aesthetic factors are important, such as on COLORSTEEL® prepainted steel finishes, overpainting may be the quickest solution.

The whole visible area should be repainted, as air drying paints will weather more rapidly, and in a different manner to prepainted roofing and cladding products.

If swarf particles are painted over, rust bleedthrough is likely to occur. These particles should be removed (see above).

COLOUR MATCHING PAINT

- Colour-matching paint must not be applied to COLORSTEEL® prepainted steel.
- Air-dried paints will weather at a rate different from that of COLORSTEEL® prepainted steel products.
- Minor scratches are best left alone. They become less evident as the coating weathers.
- Widespread coating damage to any COLORSTEEL® prepainted steel product can only be rectified by replacement of the affected sheets.
- Colour-matching paint may be used to paint roof accessories prior to installation.
- Colour-matched fasteners are available.

FIELD PAINTING

ZINCALUME® coated steel is readily paintable using good quality primers and water-based acrylic topcoats.

GALVSTEEL™ roofs can be painted immediately after installation, and to achieve optimum results, it is recommended that the painting be carried out within one to two months of installation. Apply a good quality acrylic galvanised iron primer and water-based acrylic topcoats.

Paint manufacturers' instructions should be followed.

Dirt, grease and any loose materials must be cleaned off so the surface is clean and dry prior to the first coat being applied.

DRINKING WATER

Rainwater collected from roofs clad with products made from GALVSTEEL™, ZINCALUME® coated steel and COLORSTEEL® prepainted steel, will comply with the provisions of NZBC G12.3.1, provided the water is not contaminated from other sources.

The first 25mm of rainfall from a newly installed roof must be discarded before drinking water collection starts.

Where a paint or paint system is applied to the roof, its suitability for the collection of drinking water must be established.

MAINTENANCE

- All roofing and cladding products are subject to the cumulative effects of weather, dust and other deposits. Normal rain washing will remove most accumulated atmospheric contaminants from roofs.
- For wall cladding, manual washing every 3 to 12 months, depending on the paint system, is recommended in moderate to very severe environments to prevent accumulation of dirt, debris or other material not removed by rain washing.
- For areas that do not receive any or adequate rain washing (called unwashed areas) such as soffits, wall cladding under eaves, underside of gutters, fascias, sheltered areas of garage doors and unwashed roof areas, more extensive manual washing is required.
- Other **High Risk** areas, around flues, under television aerials or overhanging trees and sites prone to mould, lichen, bird droppings or debris, need to have extensive manual washing.
- Regular washing of COLORSTEEL® prepainted steel products increases the durability by reducing attack from airborne salts and pollutants. GALVSTEEL™ products and ZINCALUME® coated steel products will also benefit from routine washing.
- COLORSTEEL® prepainted steel surfaces should be manually washed with water and a sponge or a soft nylon-bristled brush. For large areas it may be more appropriate to use water blasting at pressures up to 20 MPa.

MAINTENANCE AND THE NEW ZEALAND BUILDING CODE

The New Zealand Building Code requires roofing and cladding elements of any building to have a durability of 15 years, with maintenance. It also requires that buildings be constructed to 'provide adequate resistance to penetration by, and accumulation of moisture from the outside.'

If New Zealand Steel Limited products are maintained according to the following recommendations, the requirements of the New Zealand Building Code B2 for a 15 year durability for roofs and exterior walls will be met or exceeded.

Note:

1. The New Zealand Building Code durability requirement does not include aesthetic appearance.
2. The New Zealand Building Code requires a durability of 15 years minimum (with maintenance) for roofing, including valleys, and wall cladding products. This means no moisture penetration due to product failure.
3. The New Zealand Building Code requires a durability of 5 years minimum (with maintenance) for rainwater products, gutters and downpipes. This means no perforation due to product failure.
4. New Zealand Steel Limited products are designed to exceed the New Zealand Building Code B2: Durability Requirements. Continued maintenance and over-painting will greatly extend the ultimate life of all products.
5. Where a 50 year durability is required OR where a product is to be used in aggressive internal environments, New Zealand Steel Limited should be consulted.
6. In Industrial Environments, the type of pollution generated may alter the above recommendations. If in doubt, consult New Zealand Steel Limited.

The following maintenance information in the Environmental Chart is for guidance only.
Each proprietary building product should carry its own manufacturers' recommendations for usage.

New Zealand Steel Limited will not accept responsibility for proprietary roofing and cladding products which do not conform to our recommendations for manufacturing, environmental use or maintenance.

INTRODUCTION

New Zealand has a wide range of environmental conditions, from the harsh West Coast beaches, to the relative shelter of the Waikato farming region. Therefore, New Zealand Steel Limited offers a range of steel products which are suitable for most locations.

VERY SEVERE – ISO CATEGORY 5

Characterised by:

- Heavy salt deposits.
- The almost constant smell of salt spray in the air.
- Close to breaking surf (typically 0-100 metres) such as is found on exposed coasts.

This environment may be extended inland by prevailing winds and local conditions.

Roofing

Wall Cladding

Gutters/downpipes

Fascia

SEVERE – ISO CATEGORY 4

Characterised by:

- Light salt deposits.
- A frequent smell of salt in the air.
- Typically 100-500 metres from breaking surf such as is found on exposed coasts.
- In the immediate vicinity of large expanses of calm salt water such as harbour foreshores.

This environment may be extended inland by prevailing winds and local conditions.

Roofing

Wall Cladding

Gutters/downpipes

Fascia

MODERATE COASTAL – ISO CATEGORY 3

Characterised by:

- Little or no salt deposits.
- The occasional smell of salt in the air.
- Typically 500-1000 metres from breaking surf such as is found on exposed coasts, OR
- In the immediate vicinity of calm salt water such as estuaries.

MODERATE INLAND – ISO CATEGORY 2

Characterised by:

- No obvious marine or industrial influences.
- Typically more than 1000 metres from the exposed coasts or more than 500 metres from industrial emissions.

Roofing

Wall Cladding

Gutters/downpipes

Fascia

COMMERCIAL WARRANTY

Such as schools, warehouses and buildings, refer to New Zealand Steel Limited for details of commercial warranties. Maximum warranty offered on commercial buildings is 15 years.

IMPORTANT

- As product use is dictated by local conditions, seek advice from your roofing supplier or fixer for the best New Zealand Steel Limited product to suit your specific environment.
- Gutters should be installed according to manufacturer's instructions.
- Unwashed and high risk areas – manual washing every 3 months.

0 metres **50 metres**

COLORSTEEL® Maxx™

COLOUR FOR THE EXTREME

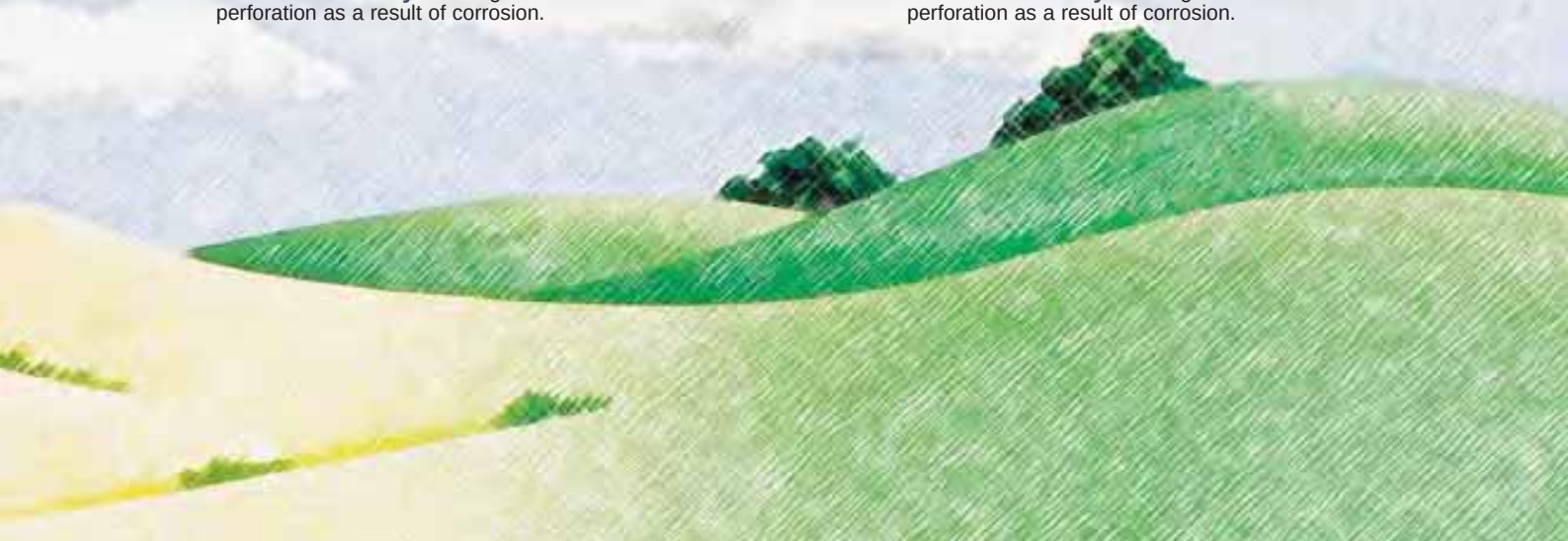
Greater than 50m from breaking surf on the East Coast.
Greater than 100m from breaking surf on the West Coast.

WARRANTIES	MAINTENANCE
15 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Rain washing
15 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Rain washing plus manual washing every 3 months.
10 years: covering the paint surface against flaking, peeling and excessive fade. **10 years:** against perforation as a result of corrosion.	• Manual washing every month.
10 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Manual washing every month.
15 years: covering the paint surface against flaking, peeling and excessive fade. **20 years:** against perforation as a result of corrosion.	• Rain washing
15 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Rain washing plus manual washing every 6 months.
10 years: covering the paint surface against flaking, peeling and excessive fade. **10 years:** against perforation as a result of corrosion.	• Manual washing every 3 months.
10 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Manual washing every 3 months.
15 years: covering the paint surface against flaking, peeling and excessive fade. **30 years:** against perforation as a result of corrosion.	• Rain washing
15 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Rain washing plus manual washing every year.
10 years: covering the paint surface against flaking, peeling and excessive fade. **10 years:** against perforation as a result of corrosion.	• Manual washing every 6 months.
10 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Manual washing every 6 months.

COLORSTEEL® Endura™

COLOUR FOR THE FUTURE

WARRANTIES	MAINTENANCE
Not recommended	Not recommended
15 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Rain washing
Not recommended	• Rain washing plus manual washing every 6 months.
5 years: covering the paint surface against flaking, peeling and excessive fade. **10 years:** against perforation as a result of corrosion.	• Manual washing every 3 months.
5 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Manual washing every 3 months.
18 years: covering the paint surface against flaking, peeling and excessive fade. **30 years:** against perforation as a result of corrosion.	• Rain washing
15 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Rain washing plus manual washing every year.
10 years: covering the paint surface against flaking, peeling and excessive fade. **10 years:** against perforation as a result of corrosion.	• Manual washing every 6 months.
10 years: covering the paint surface against flaking, peeling and excessive fade. **15 years:** against perforation as a result of corrosion.	• Manual washing every 6 months.



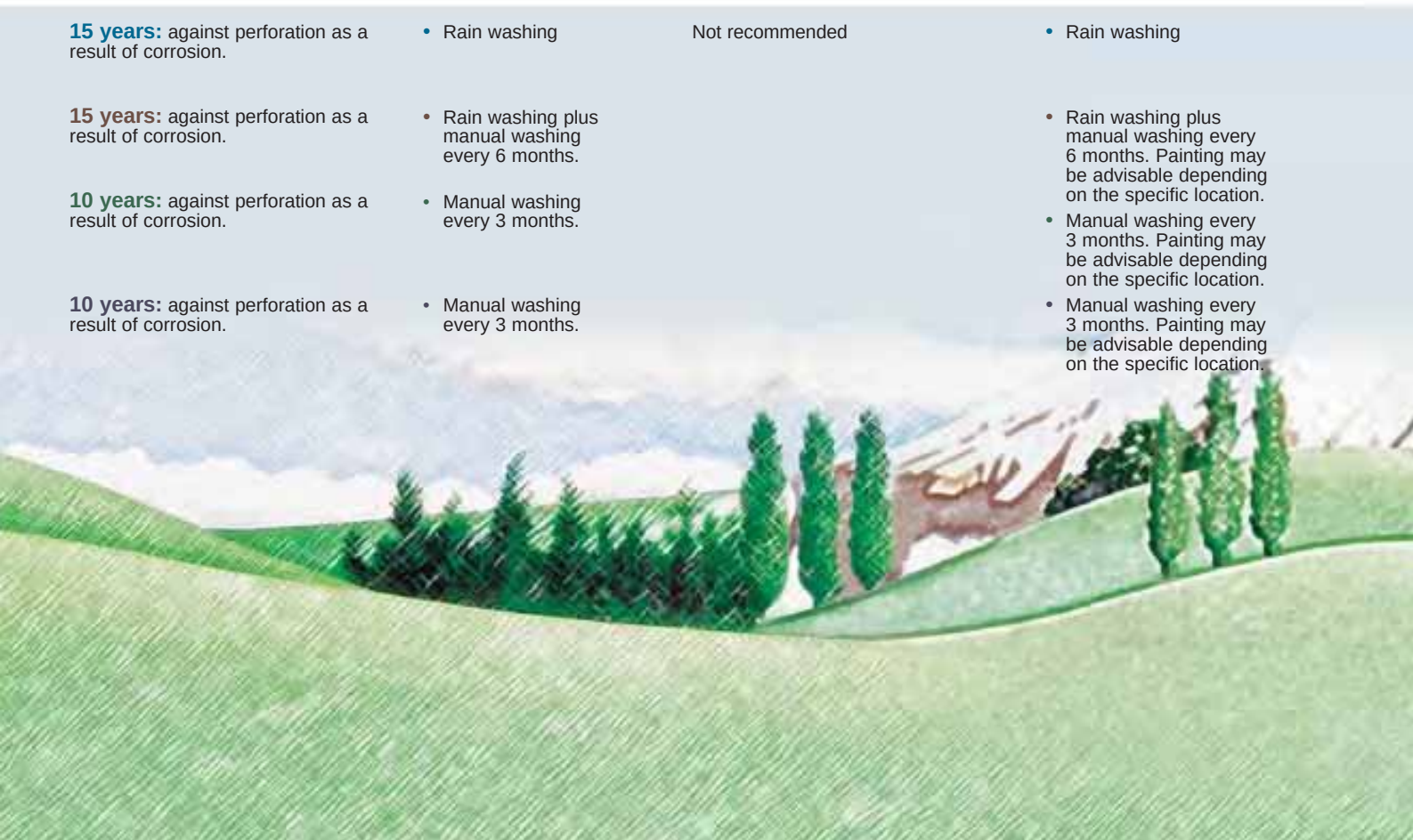
VERY SEVERE COASTAL

100 metres

SEVERE COASTAL

500 metres

Zincalume® WARRANTIES	Zincalume® MAINTENANCE	GALVSTEEL™ WARRANTIES	GALVSTEEL™ MAINTENANCE
Not recommended	Not recommended	Not recommended	Not recommended
Not recommended	Not recommended	Not recommended	Not recommended
15 years: against perforation as a result of corrosion.	• Rain washing	Not recommended	• Rain washing
15 years: against perforation as a result of corrosion.	• Rain washing plus manual washing every 6 months.		• Rain washing plus manual washing every 6 months. Painting may be advisable depending on the specific location.
10 years: against perforation as a result of corrosion.	• Manual washing every 3 months.		• Manual washing every 3 months. Painting may be advisable depending on the specific location.
10 years: against perforation as a result of corrosion.	• Manual washing every 3 months.		• Manual washing every 3 months. Painting may be advisable depending on the specific location.



MODERATE COASTAL — **500** metres

MODERATE INLAND — **1000** metres

SPECIAL ENVIRONMENTS

In New Zealand there are areas where local conditions create an increased likelihood of corrosion. Special consideration should be given to material selection in these areas. They include:

1. **Geothermal Areas**
   Hydrogen sulphide associated with geothermal activity creates a corrosive environment. Variations in natural activity or draw-off from steam bores plus the effects of weather conditions make the high risk areas hard to define. Please consult New Zealand Steel Limited for further details.

2. **West Coast, South Island**
   In this area, smoke from the coal burning fires may cause high concentrations of sulphur dioxide in the air. The combination of this and the high rainfall for the region creates an aggressive situation which must be considered when choosing the appropriate COLORSTEEL® prepainted steel coating. The effects of a severe coastal environment aggravate the situation.

   This area combines the most severe features of both industrial and coastal environments. Please contact your local supplier for the best COLORSTEEL® prepainted steel product to use.

3. **Internal Environments**
   Some commercial or agricultural applications may create internal environments in which the build-up of pollutants or fumes is a potential source of corrosion. Similarly a corrosive environment can develop within sheds used for intensive animal farming. Please consult New Zealand Steel Limited for further details.

4. **Industrial Environments**
   Close to corrosive industrial emissions and subject to heavy fallout from them. Please consult New Zealand Steel Limited for further details.

Further Assistance
Further advice on the selection of the appropriate product to suit your particular location can be obtained from New Zealand Steel Limited or your local COLORSTEEL® prepainted steel supplier.

VERY SEVERE SPECIAL ENVIRONMENTS

COMMERCIAL WARRANTIES

Commercial warranties are issued through the Rollformer by New Zealand Steel Limited and the terms are specific to each contract.

In order to ensure the appropriate product is specified for the intended service life in any given environment, New Zealand Steel Limited is keen to be consulted as early as possible in the design stage to ensure correct material selection and backing by an appropriate warranty.

Warranty applications are generally made through the roofing manufacturer and warranty periods and conditions are assessed by New Zealand Steel Limited.

Factors such as roof design, roof pitch, profile, coating type, internal and external environments and special conditions (such as requirement for “Clean in Place”) are all assessed at the time of the warranty application. Maintenance requirements will be specified as part of the warranty.

Draft warranties are available from New Zealand Steel Limited to support tenders for specific projects. The terms and conditions of the draft will remain unchanged providing that the terms of the project are unaltered.

A warranty is issued on the satisfactory completion of the contract. Installation must be carried out in accordance with New Zealand Steel Limited’s requirements and according to good trade practices as detailed in the Metal Roofing and Wall Cladding Code of Practice.

A site inspection by New Zealand Steel Limited may be carried out prior to the issuing of any warranty.

The maintenance programme specified in the warranty must be complied with to validate the warranty.

FURTHER INFORMATION

For additional information, literature or technical assistance, please contact:

Roofing and Cladding Sector
New Zealand Steel Limited
Private Bag 92 121, Auckland
Telephone: 0-9-375 8999
Facsimile: 0-9-375 8213
Free Phone: 0800 100 523
Email Address: info@colorsteel.co.nz
http://www.colorsteel.co.nz

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COLOUR FOR THE FUTURE

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THE ROOF OF NEW ZEALAND®

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This edition of the New Zealand Steel Installers Guide supersedes all previous editions.

NEW ZEALAND STEEL

COLORSTEEL® THE ROOF OF NEW ZEALAND®

NEW ZEALAND MADE

New Zealand Steel Limited, Private Bag 92 121, Auckland, New Zealand. Ph 0-9-375 8999 Fax 0-9-375 8213

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