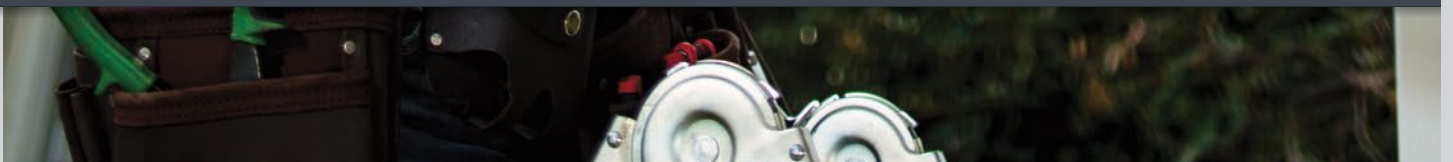




Selection, Use & Maintenance

Of Stratco Steel Products



Selection, Use & Maintenance Of Stratco Steel Products

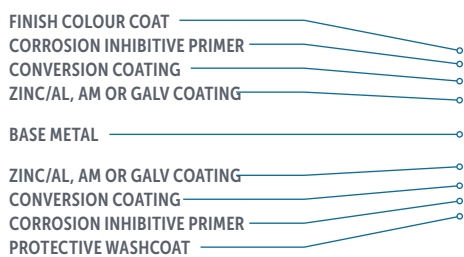
Product Selection

Wide Product Range

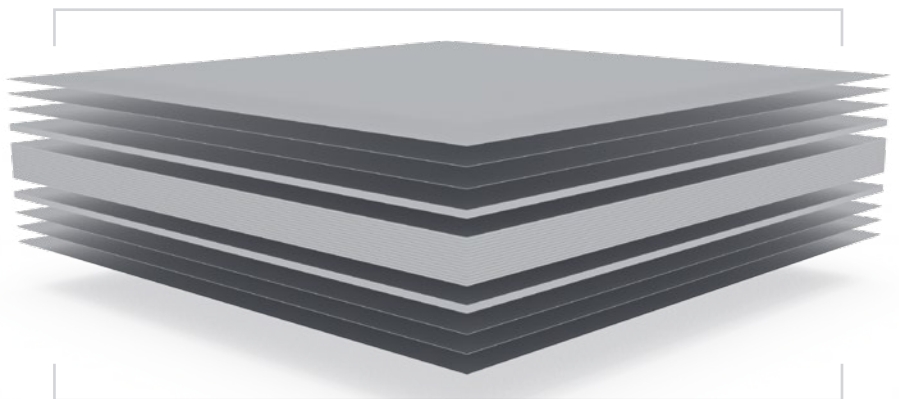
Stratco produces a wide range of products and materials for the building and home improvement industry as well as for industrial applications. Various thicknesses, widths, colours and finishes are often available, so it is important to clearly specify your requirements when placing an order.

Wide Colour Range

A wide range of colours is available to suit any environment. The colour is usually supplied single-sided with a light colour or washcoat on the reverse side. The colour surface is thicker on the main colour side for extra life. On the reverse side, some colour variation can occur. Due to our harsh Australian climate, some colour fading may occur over time; dark colours are more likely to fade, but the colour change is usually slow and even.



NOTE: CUT EDGES ARE CATHODICALLY PROTECTED BY GALV OR ZINC/AL COAT WHICH INHIBITS THE BASE METAL RUSTING.



Corrosion Prevention

Corrosion is prevented on Stratco steel products by either a galvanised (zinc), Zinc/Al (zinc/aluminium) or AM (zinc/aluminium/magnesium) protective coating. The product may have an additional colour surface. The raw edges of newly cut steel are unlikely to rust because this coating will sacrifice itself to prevent corrosion forming.

When flat steel is rolled into a profile, lubricant is applied to the steel to aid the process. This lubricant usually evaporates quickly. Sometimes the steel mill applies a yellow chromate coating to protect the steel, this coating will simply weather-off.

Some Stratco products have specific performance guarantees while others merely refer to a typical life in normal conditions. Consult your nearest Stratco to discuss details of your project.

Consider Your Environment

Your Design Is Important

Your steel product will have a long life-span if it's used according to Stratco specifications. Stratco can provide comprehensive literature on all our products. Literature that covers important points such as; roof pitch, support spacing, metal thickness and laying procedures.

Unusual loads such as wind, snow or other adjoining materials need to be considered by the owner when designing a structure.

Environmental Considerations

The area a steel product will be used in needs to be considered. While roofing and purlin materials in outer urban and rural areas may have a life-span in excess of 30 years, this can reduce to only a few years in severe coastal or industrial environments.

A steel product in a non-aggressive environment will have a long life-span. Non-aggressive areas are outer urban and rural areas, away from pollution and the shoreline. In an aggressive environment a steel products life-span may be reduced. These are coastal and industrial areas, close to salt water and pollution.

In very severe conditions material with a stainless steel base should be used. In both severe and some moderate conditions the material will need a thicker primer coat with a paint designed for aggressive environments. Alternatively, it may be suitable to adopt an increased maintenance program. In benign and moderate conditions, normal pre-painted steel is suitable.

Very severe conditions are within 200 metres of active surf and industrial pollution. Severe conditions are between 200 to 1000 metres of these areas. Moderate conditions can still contain salt or moist, acid laden air for up to 1000 metres

Figure 1.0 - Stratco Steel Cross Section

away from surf or industrial pollution. Benign conditions are outer urban and rural areas far away from the shoreline.

Severe conditions also include areas close to swimming pools and spas. Zinc/Al, AM, galvanised and pre-painted steel should not be used in these areas without an appropriate maintenance program.* Concrete should not be poured against Zinc/Al based products. Any material that retains moisture such as dirt, compost or paving sand should not be placed against steel and Zinc/Al based products.

Galvanised steel may be suitable in specific circumstances for areas around animal shelters, formwork, or embedded in concrete. Check with Stratco before using in these environments.

The steel manufacturer can provide additional information and they should be consulted whenever you are uncertain of what finish is suitable for your application.

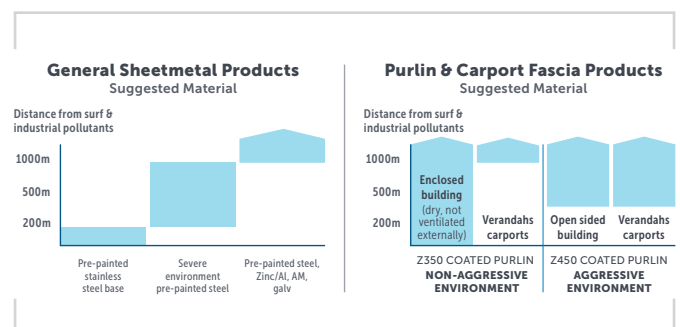


Figure 2.0

Things You Should Know About Steel

Why Steel Rusts

When iron comes into contact with air, a thin porous film of iron oxide forms on it. If moisture is present an electric cell is formed between the iron and the oxide. Current flows through the moisture dissolving the iron and forming rust. In seaside or industrial atmospheres, or where incompatible metals are used, the current in the cell increases causing rust to form quicker.

Incompatible Metals

Galvanised steel can be used with lead, but Zinc/Al, AM coated and pre-coloured steel cannot. Galvanised steel and pure zinc material can be used with Zinc/Al, AM. Copper cannot be used with these materials and monel should not be used with Zinc/Al, AM. Fixings such as rivets and self-drilling screws should be compatible with the material they are fixing. The best way of reducing corrosion is to keep incompatible metals apart.

Run-Off From Other Surfaces

Water should not be allowed to flow from copper or lead over Zinc/Al, AM sheet, or from copper over galvanised material. In addition water should not flow from Zinc/Al, AM or pre-painted steel over galvanised material. The overflow from air-conditioning systems often runs onto metal roofing causing rapid deterioration.

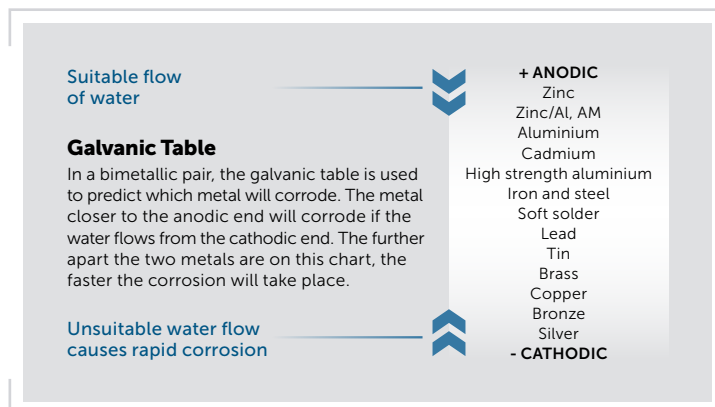


Figure 3.0

Expansion And Contraction

When using very long lengths of steel, thermal expansion should be considered. For example: a 15 metre metal sheet can expand up to 12mm over a temperature rise from 0°C to 65°C. The use of expansion joints can overcome this. Gutter expansion joints in steel should be included in any run over 20 metres.

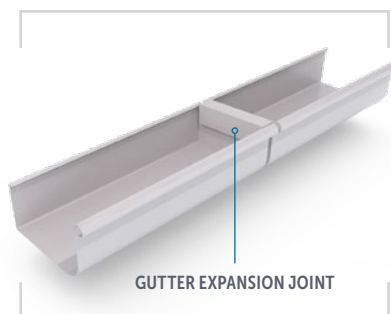
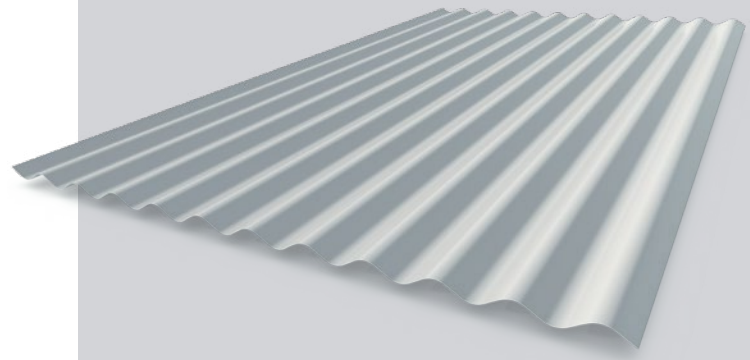


Figure 4.0

Condensation

Condensation occurs when there is a difference in temperature between two adjacent air masses, such as where warm moist air in a roof space meets a roof sheet in contact with cold outside air. Here the dew point is quickly reached and condensation occurs. To avoid this, a vapour barrier or sarking should be used to prevent moisture from forming.



Comply With Regulations

All building work must be carried out in accordance with the Building Code of Australia (BCA). This code refers to various Australian Standards, which provides acceptable standards of product manufacture and building practice. These include:

- AS/NZ 3500.3 Plumbing and Drainage, Stormwater Drainage

Prospective users of Stratco materials should first ensure that they understand these requirements and any other state or territory specific regulations that may apply. In some states of Australia (eg. NSW and Victoria) work involving the installation of roofing, rainwater goods and drainage may need to be installed by a suitably qualified tradesperson, and comply with statutory warranties. (Refer 'www.deus.nsw.gov.au/water/plumbing.asp')

Care should also be taken in the design and installation of roof drainage systems given the wide range of factors such as rainfall intensity, gutter capacity and selection, number and placement of downpipes and sumps.

Care should also be taken to select the most suitable gutter style. Gutters that have a front higher than the back are popular to hide the exposed ends of roofing, but unless manufactured with optional slots or fixed with the bead lower than the top of the fascia may contravene building regulations. Other fixing options can be used to eliminate overflow from the back of a gutter into a building. These include additional overflow weirs placed either in the gutter or stop end, rainheads with overflow weirs, custom back flashings, leaving a gap between the fascia and gutter back, or other proprietary systems or trade solutions.

Drainage, solar power generation, hot water systems and the installation of rainwater tanks may also be dependant on state and local government regulations. Users and installers should first check with these authorities when determining their requirements.

Up to date information about Stratco products, spans, installation requirements and technical advice can be found on our website at 'www.stratco.com.au' and it is advisable to obtain current information prior to ordering any materials. For information on installing High Fronted Gutters please refer to the Stratco 'High Fronted Gutters Information Guide' on the Stratco website. If additional information is required contact the Stratco office in your state.

Cutting Steel

Marking and Cutting

When marking steel for cutting use a coloured pencil. Black or lead pencil contains graphite that will promote rust. Use hand tools such as a hacksaw or snips for cutting steel. If this is impractical, use steel metal cutting blades in a power saw.

Swarf Damage

Power tools when cutting, drilling and filing steel cause hot metal particles called swarf. The hot particles weld themselves to surrounding metal surfaces, then rust, causing unsightly brown stains that are very visible on coloured steel.

Avoid swarf damage by cutting away from other sheets or by using a cover. When cutting coloured steel with a saw, use padded supports and cut the sheets with the colour face down.

After work has finished, always sweep down new roofs and clean the gutters to ensure rivet stubs and metal cuttings are removed. Mild swarf staining does not mean the steel itself will rust as the steel core is surrounded by a protective coating. The effect is mainly visual unless the damage is severe.

Swarf Removal

Swarf can be removed from steel by scrubbing the area with a stiff nylon brush dipped in a mild detergent solution. Rinse the surface with water afterwards to ensure any particles are washed away. If necessary, mop up any excess water with a clean cloth. Ensure any particles that are swept into the gutters are removed. If swarf staining has already occurred it is not easily removed and badly affected areas may need to be painted or replaced.



FIGURE 5.0

Fixing Steel Products

Fastener Selection

Rivets are ideal for holding together two thin layers of material, such as sheeting, or sheeting to a steel rail. There are several types of rivet available, choose one that is compatible with your material and is the correct size for your job. Rivets can be sealed or non-sealed, and a smear of silicon over the rivet is recommended where weather proofing is required.

Self-drilling and tapping screws are fast and strong and can be found with a neoprene washer for sealing. They have an unthreaded drilling point so that the drilling action is completed before the thread starts to engage. The length of the unthreaded point needs to be as long or longer than the materials thickness. Use screws with a seal for roofing. To prevent water intrusion, crest fixing is recommended to keep the screw out of the path of the water.

Type 17 screws work in a similar way to self-drilling and tapping screws but are used for timber. It is important that the fastener has the same life as the material being fixed.

Fasteners selected must be suitable for the environment.

Sealant Selection

While there is a wide range of sealants available, not all are compatible with Stratco steel products. Silicone sealants have the flexibility of being able to join galvanised, Zinc/Al, AM and pre-painted steels. Mastic type sealants will not usually last as long as is required. Soldering is an acceptable form of joining galvanised product together, but Zinc/Al, AM coated steel cannot be soldered.

When choosing a silicone sealant, it must be suitable for roofing and guttering use, and of a non-acetic, amine free, neutral cure type. Sealants that smell of ammonia, vinegar or lemons are not usually suitable.

Silicone sealants should be applied as a gasket, sandwiched between the two surfaces to be joined. Refer to Figure 7.0 through to Figure 9.0 for an example of creating a gasket. This method not only creates a strong joint but it protects the sealant from UV exposure. Always remove metal filings from the area to be joined and smear the sealant over any fasteners.

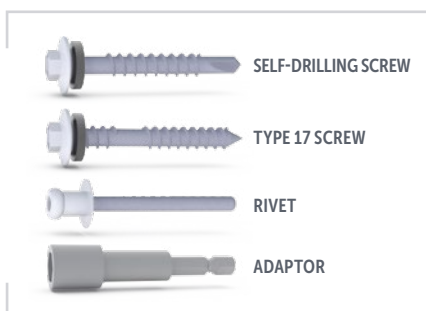


Figure 6.0



Figure 7.0



Figure 8.0



Figure 9.0

Protecting Your Investment

Standard Stratco Safeguards

Scuffing and scratching can damage steel with a pre-coloured finish. To minimise this, Stratco supplies some products such as gutters, downpipes, flashings and ridging with a removable plastic coating. Do not leave this coating exposed to the sunlight for long periods of time because it may be hard to remove. Coloured steel sheeting is supplied either wrapped in plastic and cardboard or with the top sheet turned over. The reverse side is normally unprotected, but extra packing sheets can be supplied at the customer's cost, and are a good idea if double sided colour fencing sheets are ordered.

Storage And Handling Of Steel

For safety, wear gloves when handling steel sheets. Ensure your hands or gloves are clean, especially when handling Zinc/Al, AM which can mark. Steel products should be kept dry before installation. This is important for tightly nested products such as packs of corrugated iron. Separate and dry these products immediately if they get wet, as discolouration can occur.

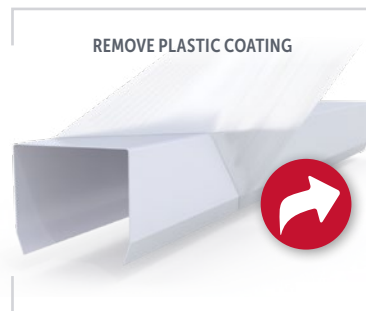


Figure 10.0

Painting Steel Products

Touching Up Scratches

Pre-painted steel may get scratched while being handled, however the use of touch-up paints is not recommended. They will weather differently to the original oven cured coating and this may cause variations in colour and exaggerate minor blemishes over time.

In most cases, minor damage to roofing and guttering cannot be seen and any attempt to overspray the damage may become more unsightly in the future.

The consumer must accept that some minor scratches will be inevitable on low-level projects such as verandahs and carports. Fabricators and erectors should ensure that maximum care is taken to protect pre-painted steel surfaces from damage. Replacements should be considered if the damage is severe. Additional over painting information is available from Stratco.

Over Painting

Zinc/Al, AM coated steel can be painted without the need for an etch primer. Some paints allow galvanised material to be over painted without priming so check your paint for details. Steel supplied with a pre-painted surface can be repainted with minimal preparation.



Figure 11.0

Safety First

Handling Steel

Always take appropriate safety precautions when handling steel products. The edges of many steel products, especially steel sheeting, can be very sharp and will easily cut. Always wear cut-resistant gloves that are clean and dry to prevent marking the steel surface, and to prevent the steel from cutting the skin.

Many steel products are used and installed outdoors and hence it is recommended that suitable sun protection is applied when installing or using steel products outside.

However, it is important to note that sunscreens that include semi-conducting metal oxides like zinc oxide (ZnO) and titanium dioxide (TiO₂) can speed the deterioration of paint. To protect the surface of pre-painted steel, prevent sunscreens that contain titanium dioxide (TiO₂) and zinc oxide (ZnO) from coming into contact with the painted surface.

Beware Of Wet, Windy Conditions

The installation of Stratco steel products in wet and windy conditions can be dangerous. When installing steel sheets, the wind can easily lift the sheets causing damage to people and property. Always ensure that roofing is securely tied down before fixing. Walking on roofing or using power tools in wet conditions is dangerous.

Walking On Roofing

On metal roofing, it is important to walk on the purlins. This is both for safety and to avoid damage to the roof. Try to keep your weight evenly distributed and walk flat footed rather than with a heel and toe action. When walking on corrugated iron, spread your weight over as many corrugations as possible. On high profile decking only walk in the pans of the sheet.

When delivered, some sheets have an oily film that can be slippery especially when damp. Take extreme care when handling them.

Translucent Sheeting

Stratco markets translucent fibreglass and polycarbonate. Special wire safety mesh must be used to support the sheeting when used in commercial and industrial applications. This is not typically required in domestic applications, but a danger of falling through the sheeting still exists and care should be taken.

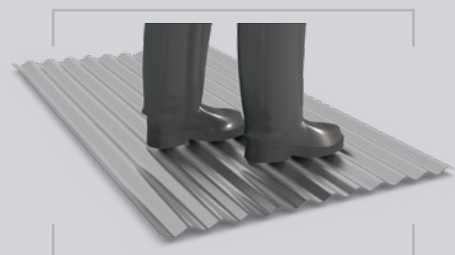


Figure 12.0

Selection, Use & Maintenance Of Stratco Steel Products

Maintenance

Normal Maintenance

Regular maintenance is essential to maintain the good looks of your Stratco steel product. It will ensure you receive the maximum possible life-span for a steel product in your location, this is especially important for coloured pre-painted steel.

To maintain the product's surface, wash it with clean water at least every six months. A more frequent wash is recommended in coastal or industrial areas.* Maintenance must be frequent enough to prevent dust, salts, pollutants and any other material to accumulate on the product and reduce its life. Products that are regularly washed by rain require no additional maintenance.

Avoid locating a Stratco steel product near polluted areas or in areas with aggressive environmental factors that could reduce the life of the steel. This includes areas near barbecues, diesel fumes, air-conditioners, clothes dryers, sprinklers, bore water, water softeners and industrial applications. Stratco steel products and materials are not recommended for use as enclosures for swimming pools or spas.



Figure 13.0

Areas Not Washed By Rain

More regular maintenance is required on the areas of a product that are not naturally washed by rain. These areas include the underside of verandahs and carports, roofing visible through exposed eaves, and steel fascias and gutters. Other products such as garage doors and cladding under eaves may also require additional attention. A products life-span may be reduced from not following a regular maintenance program because night time condensation in these areas can combine with salt and pollution on the surface, resulting in accelerated corrosion.

Wash areas that are not naturally cleaned by rain with fresh, clean water. It is recommended that you clean the surface as often as you would wash your car to maintain its duco. In marine or industrial environments you should wash more often. Maintenance must be frequent enough to prevent dust, salts, pollutants and any other material to accumulate on the product and reduce its life.

If washing with clean water does not completely clean the surface, a mild solution of detergent should be added to the water and applied with a soft bristled nylon brush. Rinse the coloured surface thoroughly. Never use abrasive or solvent based cleaners such as turps, petrol or kerosene.

For more information on the correct maintenance for your application, contact Stratco or the steel manufacturer.

**Refer to the 'Stratco Product Maintenance - Severe Environment Considerations' brochure.*

This brochure has been produced in the interest of customer education and good consumer relations. Stratco have endeavoured to provide the most technically correct and up-to-date advice possible but assume no responsibility whatsoever in relation to such information or advice. Alteration in the recommendations may occur from time to time. Please contact Stratco for the most up-to date advice available prior to using this information. Additional information is available from steel manufacturers, other Stratco technical bulletins, trade schools and other competent bodies, and these should be consulted prior to purchasing and installation of Stratco steel products. Consumers should satisfy themselves that they are using the correct materials, approach and techniques.



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How To.



Product Maintenance

Severe Environment Considerations



Your Environment

It is important to consider your environment when purchasing Stratco Steel products as certain locations will present a higher corrosion risk than others. These include areas close to marine or industrial sites or cases in which a swimming pool or spa is located in the vicinity of your Stratco product.

In these situations it is important an inspection and maintenance program is adopted in order to both maintain the aesthetic appeal of your product and ensure the product design life can be maintained.

The table below provides a summary of maintenance considerations in various environments.

Maintenance & Inspection Requirement

Just as you would look after large investments such as your car, boat or home, your Stratco product also needs appropriate consideration.

For products with accessible componentry such as Stratco open carports and patios, flat and gable roof sheds, Stratco garden sheds and Stratco fencing, it is not unrealistic to expect a maintenance and inspection program be adopted over the design life of the structure. In severe environmental conditions the need for inspection and maintenance is increased. Regular programmed inspection and cleaning of Stratco products to remove all salts, pollutants, chemical agents or any other corrosive materials is necessary.

It should be noted not all corrosion will affect the structural integrity of the product. In some cases corrosion will be localised and superficial affecting only the material coating. In these cases it is important to monitor the effected area to ensure corrosion does not become excessive and it is recommended areas of localised corrosion be treated immediately. There are a number of corrosion treatment processes available in the market.

Following are the increased maintenance and inspection requirements for Stratco products with accessible componentry in severe environment:

Severe Environment Inspection & Maintenance

Stratco products which are located in severe environments such as adjacent swimming pools or in marine or aggressive industrial areas are required to undergo increased maintenance and inspection in order to function adequately over their design life. Maintenance shall include washing the product with clean water (i.e. potable water) frequently enough to remove deposits of salt, dust build-up, pollutants, chemical agents or any other corrosive materials.

Table 1.0 - Maintenance Considerations

Classification	Environment	Requirement
BENIGN	Typically greater than 1km from marine/aggressive industrial and not adjacent pools or spas	Normal inspection and maintenance*
SEVERE (High Corrosion)	200m - 1km from breaking surf	Increased inspection and maintenance program required
	50m - 1km from non-breaking marine (e.g. enclosed bay, salt water canal)	
	Adjacent well ventilated swimming pools	
	200m - 1km from aggressive industrial sites	
EXTREME (Very High Corrosion)	Within 200m of breaking surf or aggressive industrial sites	Refer to Stratco for individual advice specific to environmental considerations
	Within 50m of non-breaking surf	
	Usage as industrial building	
	Pool enclosure	Not Recommended

NOTE: Aggressive industrial sites are those with dust and corrosive emission fallout which can affect the surrounding areas.

*Refer to the 'Selection, Use & Maintenance of Stratco Steel Products' brochure.



Cleaning must occur at intervals no greater than 3 months or more frequently upon observation of corrosive materials, dust or dirt build-up or when regular condensation is observed. If splashed with pool water, products shall be hosed off immediately following pool use. Unwashed areas which are not naturally washed by rain will require more attention.

A regular monthly inspection program must be adopted in order to check for salt, pollutants and the build-up of dust and debris as well as monitor for corrosion and coating damage. In the case coating is damaged, it may require recoating as part of the maintenance program. Any components which become excessively corroded as a result of failure to maintain and inspect, will require replacement at the owner's expense.

Unwashed Areas

Areas which are not naturally washed by rain are more prone to corrosion and require close attention during inspection and maintenance. These areas include, but are not limited to, the underside of carports and patios including roofing, framework and connections, the underside of gutters, wall sheeting immediately under a gutter and the top of roller doors. Unwashed areas tend to build up dust with potential pollutants present so regular cleaning of these areas is required to prevent premature corrosion.

Cleaning

Not only will regular cleaning prolong the design life of Stratco steel products but it will enhance the appearance. It is important to set a cleaning program, particularly in severe environment and perform additional cleaning if potential corrosive materials are noted during inspection or from general activity.

While keeping in mind any local water restrictions, regular washing with fresh potable water using a hose or with a sponge or soft brush will generally be suitable. If this is not sufficient to completely clean the product, warm water with a mild detergent should work ensuring no abrasive or solvent based cleaning products are used. All detergent needs to be completely rinsed away with fresh potable water.

Further Considerations

Water Ponding

Cleaning of gutters and roofing to avoid a build-up of debris is important to avoid ponding which creates a higher rate of corrosion. Any damage to roofing during a products design life will potentially lead to water ponding so it is recommended damaged sheets are replaced.

Soil & Garden Debris

Any moisture retaining material such as soil and garden debris must not be placed against Stratco steel products as premature corrosion will occur.

Column Base

Any pooling of water around the base of columns will rapidly increase the rate of corrosion so it is important maintenance ensures these areas remains dry (i.e. pooling of water is avoided).



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