

Keep rust at bay

When it comes to protecting corrosion-prone surfaces, the right preparation and products make all the difference.

When we're focused on creating beautiful projects, the allure of colour often steals the spotlight while the materials that lay beneath the surface may be easily overlooked. However, keeping those coloured surfaces looking their best, while safeguarding the integrity and performance of your Resene products, depends on much more than just the hue you choose.

Rust is a silent enemy that gradually erodes materials, compromising their strength and aesthetic appeal. If your goal is lasting beauty and structural integrity, proper surface preparation and the careful specification of rust prevention products are essential steps that cannot be overlooked. It's crucial for architects and designers who influence product choices as well as the builders and painters who bring the project to life to understand that paint is only as good as what

left: Rust affects the integrity of your building materials, which can ultimately threaten the stability and longevity of your project's structure. Always be sure to take the time to properly prepare and protect corrosion-prone surfaces with Resene rust prevention products prior to applying your colour coats, as once the rusting process starts, it can't be reversed.

it adheres to, so the focus must shift from simply selecting colours to specifying a complete, holistic system that ensures both protection and longevity from the ground up.

What is rust?

Corrosion is the deterioration of the substance or its properties because of a reaction with its environment. Although the word usually applies to metals, plastics and other non-metals such as concrete, bricks and timber also deteriorate in natural environments. There are four conditions which all need to be present for corrosion to occur: a positive pole (or cathode), a negative pole (or anode), an electrical conductor (metal) or moisture such as rain, mist, fog, sea spray, relative humidity and condensation. This breakdown can be exacerbated by other harsh environmental conditions like wind and heat as well as exposure to industrial pollution, impact or abrasion.

Rust is a type of corrosion where iron oxide forms through exposure to air and water. It is voluminous and occupies one and three-quarter times the volume of the steel from which it originated, so it has the capacity to create a lot of damage. Rust that forms under a paint coating or in breaks in the coating can burst through and may creep under the coating, resulting in flaking. Once rust starts, it cannot be reversed, and repairing the damage is both difficult and costly.

Preventing rust by design

Proper planning at the design stage is essential to minimise corrosion and simplify future maintenance, and an arbitrarily chosen system may prove expensive by causing heavy maintenance costs or even the shutdown of a building.

Many metals that are frequently used in construction, such as aluminium, steel and cast iron are among the most prone to corrosion. Zinc, which also has a high tendency to erode, is often treated with corrosion products that form a tight layer on its surface to slow further corrosion. White metals such as stainless steel are the most resistant to corrosion, however, there are many cases where these metals are not practical or feasible. With stainless steel, a tight layer of iron and chromium oxides forms on



above: Protecting surfaces from rust and corrosion is important to the integrity of your project. If the look of rust is desired for aesthetic reasons, use Resene FX Faux Rust Effect on non-contact areas indoors or outdoors such as walls, light fixtures, sculptures and plant pots. Trellis finished in Resene FX Faux Rust Effect and fence painted in Resene Lumbersider Low Sheen tinted to Resene Element CoolColour. Project by Jane Wigglesworth, image by Bryce Carleton.

Resene
Element



above: Wall and plant pot in Resene FX Faux Rust Effect and shelf painted in Resene Lustacryl tinted to Resene Charcoal. Project by Amber Armitage, image by Wendy Fenwick.

Resene
Charcoal

top tip

Maintenance is key to keeping your project looking its best and can help prevent or slow down the formation of rust. Regularly wash exterior surfaces down with Resene Paint Prep and Housewash to remove salts and contamination and extend the life of the coatings.

the surface – which is what makes it so resistant to corrosion. Iron and steel, however, form rust when they corrode, which is porous, not firmly adherent and does not prevent continued corrosion.

The way a building is designed also impacts the formation of rust by minimising environmental exposure. A structure that has been designed with corrosion prevention in mind avoids sharp edges, crevices, rough welds, corners, depressions and pockets whenever possible. Be mindful that some types of materials will be difficult or impossible to coat once incorporated into the construction, so ensuring painting occurs prior to construction could prove vital for avoiding rust.

If rust-prone surfaces have been properly prepared, painting can prevent iron and steel from rusting by applying an anti-corrosive priming paint applied direct to the steel surface. These paints contain inhibiting pigments – such as zinc or strontium chromate, barium metaborate and zinc phosphate – which inhibit the occurrence of the anode reaction. It's also important to apply a sufficiently thick layer of paint so that pores in the film do not form continuous capillary channels through the coating and water and oxygen are prevented from coming together to form the cathode reaction. This is the function of epoxy, vinyl and chlorinated rubber paints, which have high water impermeability. Another method is cathodic protection, which employs another metal to be corroded or sacrificed instead of steel, such as the application of zinc rich paints, zinc being higher in the galvanic table, direct to the steel surface.

Preparation is fundamental to protection

The performance of any corrosion protection product is directly proportional to the amount of preparation that is undertaken. With surfaces that are already rusted, the performance of your coating system will depend on the thoroughness of the prep. Rust will continue to grow, so the aim is to remove as much rust as possible to slow down future rusting before applying any coating. While it may cost a little more for better surface preparation, the paint coating will last many times longer and the overall cost savings in maintenance will justify the initial expense. It's crucial that painting be carried out as soon as possible after surface preparation takes place, and in nearly all cases, it must take place the same day.

On new builds where virgin materials are being used and proper preparation has been undertaken, there are several Resene primers available that can help safeguard the longevity of your project's corrosion-prone surfaces. Resene Galvo-Prime is a popular waterborne option for new zinc surfaces that are in sound condition.

Another popular choice is Resene Galvo One, a single pack primer based on alkyd resins and special anti-corrosive pigments which has been specially developed for direct application to new and weathered galvanised steel. Effectively, Resene Galvo One welds itself to galvanised steel and stops zinc corrosion.

When painting pre-coated metal, such as COLORSTEEL®, COLORBOND® or ColorCote®, there can be adhesion issues. If you are painting these materials, Resene Pre-Coated Steel Primer is a great primer to help overcome this concern.

In circumstances where corrosion-prone materials must be used and the preparation conditions are less than ideal, your Resene representative can find Resene products to wet the surface out and improve its adhesion, barrier and anticorrosive properties. Depending on the job at hand, options like Resene ArmourX Rust-Arrest, Resene ArmourX Rust Sealer or Resene ArmourX GP Metal Primer are single pack options which are easy to use.

However, it's important to understand that the level of protection these products can offer is subject to the surface's environmental exposure.

Get a rusted look without the damage

For those who find a rusty patina appealing, Resene has a clever decorative option. Rather than inviting rust damage, which could have dangerous consequences on the structural integrity of your materials, Resene FX Faux Rust Effect is designed to give you the same look – even on non-metal materials such as walls, planters and many other surfaces. It's ideal for exterior architectural and landscaping features and can be used for non-contact interior features, such as rafters. It's best used in non-contact areas to avoid rubbing or marking.

Once Resene FX Faux Rust Effect is applied, it looks convincingly like rust. And like real rust, the look continues to develop as the coating ages. Leave it as is for a living rust effect or protect it with a clear finish of diluted waterborne Resene Aquapel. Since the colour intensity and look of your effect will depend on the application method and technique, always work on a sample area first and avoid 'cutting in' with the product, which could create a 'picture frame' effect. **BW**

If you are looking to prevent rust from occurring and are unsure which products are right for the job, get in touch with your Resene representative or use the free Resene Ask a Paint Expert service, www.resene.com/paintexpert, for project-specific suggestions.