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LONGEVITY GUIDE

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LONG-LASTING, YOUR CONFIDENCE GIFT

What Do You Actually Mean by Long-Lasting?

Wouldn't it be nice if we could promise you a fixed lifespan? The honest answer is that how long your steel lasts depends so heavily on local conditions that a single number would be misleading. Let us explain how we think about it, and what you can reasonably expect.

Weathering Steel is known by various brand names, most notably Corten. The abbreviation of the original brand name Cor-Ten highlights its corrosion resistance and tensile strength as key qualities. These were pretty handy for coal wagons and bridges. It's super durable and therefore useful for garden edging as well.

It is helpful to understand that Weathering Steel is designed to be used in the air. Here, humidity and oxygen help develop the natural look of a rusty patina that provides its own protection over time. Crucially, this patina forms through repeated wet-dry cycles: the steel must be wet, then dry, then wet again, all in the presence of oxygen. It's this rhythm that builds and maintains the stable protective layer.

In the ground, however, it behaves similarly to mild steel, slowly corroding. That said, this corrosion becomes a form of protection over time. The layer that builds up acts as a barrier, dramatically slowing further corrosion. And the rate isn't linear, it's fastest in the first year and progressively slows with each consecutive year. Even so, corrosion of buried steel can affect structural integrity more quickly than corrosion in air would.

Therefore, predicting lifespan is problematic. The patina formation process is beyond our control and is influenced by various local factors. It's impossible to adopt a one-size-fits-all promise with the variety of soil and atmospherics that can impact this natural process. Not to scare you off, but there are examples of buildings and bridges that had to be demolished due to the lack of a patina forming (Omni Coliseum in Atlanta, after 25 years, is one example).

Galvanised Steel takes a different approach to self-protection. The zinc coating reacts with oxygen to form a thin oxide layer. This layer then reacts with moisture to produce zinc hydroxide, which further reacts with carbon dioxide to create zinc carbonate. Unlike iron oxides, which flake off easily, zinc carbonate is resilient, chemically stable, and adheres firmly to the surface of the metal. This layer acts as a protective barrier, preventing air and moisture from contacting the underlying substrate and preventing further corrosion and deterioration.

While the carbonate layer has protective properties, zinc is a reactive metal and will slowly erode due to corrosion over time. The rate of corrosion of zinc is, however, 1/30th that of steel. Therefore, zinc metals and components coated with zinc-based products have a significantly longer service life than other metals when exposed to the atmosphere.

UNDERSTANDING YOUR ENVIRONMENT…

What Affects How Long It Lasts?

Since Weathering Steel relies on that steady rhythm of wetting and drying in open air to build its protective patina, anything that disrupts that rhythm will affect how long your steel lasts. And since Galvanised Steel's zinc coating is also attacked by salt, acid, and persistent moisture, many of the same factors apply.

The factors below aren't obscure or unusual. They're common Australian conditions, and understanding them puts you in control of how your steel performs.

COASTAL AND MARINE ENVIRONMENTS…

Salt, Chloride, and Proximity to the Ocean

If you're near the coast, this is important to understand. Airborne salt, and the chloride it releases as it breaks down, are among the most aggressive factors in steel corrosion, and their impact varies depending on how close you are to the water.

Within 2km of the coast is considered a severe coastal or marine environment. Salt concentration in the air is high, and steel in this zone is under constant pressure. Corrosion is significantly accelerated, and patina formation is heavily compromised.

Between 2km and 10km from the coast is still considered coastal. Chloride and salt levels are elevated, and corrosion will occur more rapidly than further inland. The steel can still perform, but it's working harder and will need more attention and protection.

Between 10km and 50km from the coast is classified as light coastal. Corrosion resistance is reduced compared to a fully inland location, but the impact is more moderate.

That said, there's a specific condition in this zone worth knowing about. Dry winds can carry salt and chloride particles considerable distances inland, depositing them on surfaces throughout the day. When dew forms overnight, it absorbs those chemicals, and the corrosion reaction begins. So even at this distance, the combination of dry onshore winds and overnight moisture can be surprisingly aggressive.

Beyond 50km from the coast, salt and chloride are generally not a significant concern.

If you're in any of these coastal zones, the care steps you take at installation and throughout the life of your steel make a real difference. We cover these in detail in our Product Care Guide.

COMPOST, WOOD CHIPS, AND MULCH…

Organic Materials in Your Garden

This is one of the most important things to understand, because it's also one of the most common scenarios. Nearly every garden uses mulch, wood chips, or compost, and they're often placed directly against the steel. Here's why that matters.

Remember that Weathering Steel needs wet-dry cycling and oxygen to form its protective patina. Organic materials like compost and wood chips do the opposite on every count.

They hold moisture against the steel. Rather than allowing the surface to dry out between wetting, organic materials keep it permanently damp. The wet-dry cycle that the steel depends on never occurs.

They produce natural acids as they break down. As compost and wood chips decompose, they release organic acids that lower the pH right at the surface where they meet the steel. This acidic environment corrodes the steel and impedes the formation of a stable patina.

They restrict oxygen. Decomposing organic matter consumes oxygen unevenly at the steel's surface. Without consistent oxygen access, the steel can't form the stable oxide layer it needs.

They harbour microbial activity. Compost in particular is teeming with microorganisms. This biological activity accelerates the electrochemical reactions that drive corrosion.

The result is active, ongoing corrosion rather than a self-sealing protective patina. The steel doesn't stabilise; it just continues to degrade.

This doesn't mean you can't use mulch or compost in your garden. Of course you can. It means you should avoid prolonged direct contact between organic materials and the steel surface. Our Product Care Guide explains practical ways to achieve this.

SOIL CONDITIONS...

What's Happening Underground

Australian soils are incredibly varied. Many are acidic, many are alkaline, and a surprising number are quite saline. In moderate conditions, this is manageable; the steel corrodes slowly underground as expected. But in more extreme conditions, corrosion accelerates.

Soil pH in Australia can range from quite acidic to highly alkaline, and salinity varies widely as well. If your soil is at either extreme, or if you're in an area with naturally saline or brackish groundwater, corrosion of buried steel will happen faster than in neutral, well-drained soil.

Good drainage and thoughtful fill choices around your steel are the best defences here. **As a general guide, coarser fill drains better: rough gravel is better than fine gravel, fine gravel is better than sand, and sand is better than clay. One thing to be aware of in Australia is that commonly available gravel is often limestone-based, which is highly alkaline and not ideal for use against steel. Pea gravel is a better choice where it's available.** We cover drainage and fill recommendations in full detail in our Product Care Guide.

THE SOIL-LINE EFFECT...

Where Wet Meets Dry

There's one specific phenomenon worth understanding on its own, because it's the single most common cause of premature wear we see in the field. It happens at the point where buried steel meets open air, the soil line.

Here's what's going on. Below ground, the steel is damp and has limited access to oxygen. Above ground, the steel is exposed to air and cycles between wet and dry. At the soil line, you have both conditions meeting on the same piece of metal. That creates an electrochemical imbalance, where the oxygen-starved section below becomes more reactive than the section above, and corrosion concentrates in a narrow band right at that interface. Corrosion engineers call this differential aeration, and it's well documented in buried steel structures of all kinds.

In moderately aggressive Australian conditions, this effect can remove material from the soil line at a rate of roughly 100 to 300 micrometres per year. That's slow enough that you won't notice it day to day, but fast enough that a 1.6mm thick section of steel in harsher conditions can be structurally compromised at the soil line in 5 to 15 years. Thicker steel takes proportionally longer.

The important practical point is this: when soil settles or washes away and exposes previously buried steel, you effectively create a new soil line a little lower down. The old soil line is now fully exposed, and a new one starts forming where the soil now sits. Each new soil line begins concentrating corrosion at that point.

The fix is simple and costs almost nothing. Keep an eye on soil and fill levels around your steel and top them up whenever they drop, so the original soil line stays buried and stable. This is one of the highest-impact maintenance actions you can take on any steel installation.

WHEN FACTORS COMBINE…

The Compounding Effect

It's worth understanding that these factors don't just add up; they compound. A coastal location on its own is manageable with the right care. Organic mulch is manageable on its own if you take precautions. But a coastal location, combined with organic material packed against the steel in poorly drained or aggressive soil, creates conditions that most dramatically reduce product life.

These combined conditions are the primary drivers of early product failures and deep corrosion observed in the field. If your situation involves more than one of the factors above, extra care at installation is especially important.

DOING THE RIGHT THING…

Common Misconceptions

There are a couple of well-intentioned practices that come up regularly, and unfortunately, they don't help, and can actually make things worse.

The first is pre-rusting the steel before installation, with the idea that you'll build up a protective patina in advance. It's a logical thought, but it doesn't work that way. The patina will always rely on the ongoing wet-dry cycle in open air to keep functioning. A rust layer developed before installation doesn't carry any lasting protective benefit once the steel goes into the ground or into conditions where that cycle is disrupted. The patina isn't a one-time coating; it's a living process that needs to keep happening.

The second is placing a loose plastic barrier between the steel and the soil, to try to shield it from moisture. The problem is that moisture inevitably finds its way in, and once it's trapped between the plastic and the steel, it has nowhere to go. Instead of protecting the surface, the barrier creates a permanently damp environment right against the steel, accelerating the very corrosion it was meant to prevent.

If you do want to protect the buried section of your steel, the only approach that works reliably is a coating that adheres directly to the steel surface, something like bitumen paint or a self-adhesive membrane. These bond to the steel itself, leaving no gap for moisture to collect. Any method that creates a space between the protection and the steel will eventually trap moisture in that space.

We cover protective coatings and application methods in detail in our **Product Care Guide.**

STEELY TRUST

So What Lifespan Can I Expect?

We use quality-tested Weathering and Galvanised Steel and are selective about its source. Our supply and manufacturing partners are ISO-certified, and every batch includes a full test report covering strength, thickness, coating weight, and composition.

The Weathering Steel we use meets international standards (ASTM, EN ISO, BS ISO, DIN). Whether it's branded as Corten, Redcor, SSAB or something else, all Weathering Steel made to these standards shares very similar composition and the same performance expectations. The material is proven. What varies is the environment it goes into.

With soil and atmospheric conditions varying greatly, predicting a single number for lifespan isn't realistic. What we can share is an honest picture based on what we know.

In favourable conditions (a well-drained inland environment with proper installation and ongoing care) Weathering Steel can last structurally well beyond a decade, and Galvanised Steel longer still. These are the conditions the product is designed for and where it performs best.

In more challenging environments, lifespan can be significantly shorter. In the most difficult conditions, particularly coastal locations combined with direct organic material contact and poor drainage, structural lifespan may be reduced to just a few years.

Most installations sit somewhere between the best and most challenging conditions. Where yours falls depends on the environmental factors outlined above and the care steps you take, which is why we encourage every customer to read our Product Care Guide and take the actions that apply to your situation.

IT'S NOT AS BAD AS IT LOOKS...

What Rust Looks Like Over Time

Once your Weathering Steel has been in the ground for a while, the rust you see can looks more dramatic than it actually is. Here's some important context that will save you unnecessary concern.

Rust is approximately seven times thicker than the steel it came from. So a section of steel that has lost just 0.1mm to corrosion produces a rust layer around 0.7mm thick. In soil, this effect is amplified further, because soil particles become lodged in the rust, adding to the thickness of the crust. It's not uncommon to see flakes that are 2mm thick or more, but that likely represents less than 0.2mm of actual steel loss.

As a general rule, leave the rust layer in place. It may not look pristine, but it's doing useful work. That built-up layer acts as a barrier that slows further corrosion, and removing it exposes fresh steel to the cycle all over again.

There is one exception worth knowing about. If soil around your steel sinks or compacts over time, sections that were previously buried can become exposed. When this happens, the rust layer, which formed in damp, enclosed conditions, is now subject to sun and repeated drying. This can cause the flake to curve backward and lift away from the steel surface, creating a gap. That gap becomes a moisture trap, and moisture trapped against bare steel accelerates corrosion. This is another reason keeping soil levels topped up matters; it prevents previously buried sections from becoming exposed and creating this cycle.

WHAT CAN I DO...

To Lengthen Product Lifespan?

The good news is that regardless of your environment, there are practical steps you can take at installation and throughout the life of your steel to maximise its lifespan. Many of these steps are simple, and the earlier you act, the more impact they have.

Some of the most effective actions include improving drainage around the steel, using inorganic fill rather than organic material against the surface, applying a protective coating that bonds directly to the steel (such as bitumen paint) on buried sections before installation, and keeping soil levels topped up over time so that buried sections stay buried.

For the full set of actions you can take and the design considerations that matter when looking for longevity in your steel choices, see our **Product Care Guide.**

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