Atkore™

White paper

New coatings for steel: Longer life, lower cost

For decades, engineers have had limited choices when it came to protecting steel from corrosion in outdoor environments. Hot-Dip Galvanised (HDG) has long been the standard and provides a good level of protection, but most often will not protect the steel for the entire service life of the facility. Stainless Steel has been another option to provide superior protection, but at a much higher installation cost.

This paper examines a cost competitive, new alternative that offers a longer service life than HDG, extending the useful life of many projects without the need for much more expensive Stainless alternatives.

About Atkore

Atkore is forging a future where our employees, customers, suppliers, shareholders and communities are building better together – a future focused on serving the customer and powering and protecting the world. With approximately 5,600 employees and 49 manufacturing facilities worldwide, Atkore is a leading provider of electrical, safety, and infrastructure solutions.

Steel vs. the elements

Although the battle between man and the elements has raged for millennia, it has been less than 200 years since metallurgists began developing strategies for protecting steel from corrosion. Galvanised steel was first created in 1840, and Stainless Steel only emerged in 1913, just over a century ago. Still many different types of steel – including Carbon Steel – are widely in use for a broad variety of applications.
When it comes to construction applications, contractors and engineers have traditionally segmented the steel corrosion protection requirements into three broad categories.

These are:

- Indoor applications that are relatively free from corrosion issues and most commonly satisfied with Pre-Galvanised or Electro-Galvanised Zinc coatings, or other powder coated or painted coatings.
- Outdoor applications that present some corrosion issues and are most commonly serviced with a Dot-Dipped Galvanised coating paired with Stainless Steel threaded fasteners.
- High corrosion or chemical exposure applications, typically served with type 304 or 316 Stainless Steel, or other corrosion resistant materials such as Fiberglass or Aluminium.

Although Hot-Dip Galvanised is the most common finish, there are some serious drawbacks when using HDG for outdoor applications.

Firstly, Hot-Dip Galvanised steel typically reaches 5% red rust after approximately only 1,000 hours of continuous salt spray exposure, based on industry standard testing.

As a result, the anticipated service life for Galvanised steel in outdoor applications is often less than that of the facility in which it is installed. Therefore, making it a less suitable option for outdoor applications.

Over the long term, particular attention must be given to exposed struts and fittings fabricated from Galvanised steel, since these components are especially vulnerable to the elements.

Outdoor applications: Stainless or what?

For these reasons many engineers and builders instead utilise Stainless rather than rely on Galvanised. Stainless offers great performance in comparison, but at what price differential? Stainless Steel is often two to five times more expensive than Hot-Dip Galvanised for a given application.

So, the trade off has been whether to have the superior protection of Stainless at a higher cost, or lesser protection at a significantly lower cost. Until now, no effective alternatives have been available. Engineers and contractors still want improved protection from corrosion, while maintaining a lower price point than Stainless Steel.

Fortunately, new coatings that have entered the market are making a huge impact on the construction industry and are providing better coating options for Unistrut, Fittings, Cable Management solutions and other products.

New coatings

New Non-Stainless Steel alternatives now offered in the market can offer a longer useful life than Hot-Dip Galvanised steel for almost any application. New coatings can help ensure that products and projects stand the test of time. Thus, not only offering peace of mind to engineers and contractors but also, yield larger overall project savings.

The perfect material for outdoors

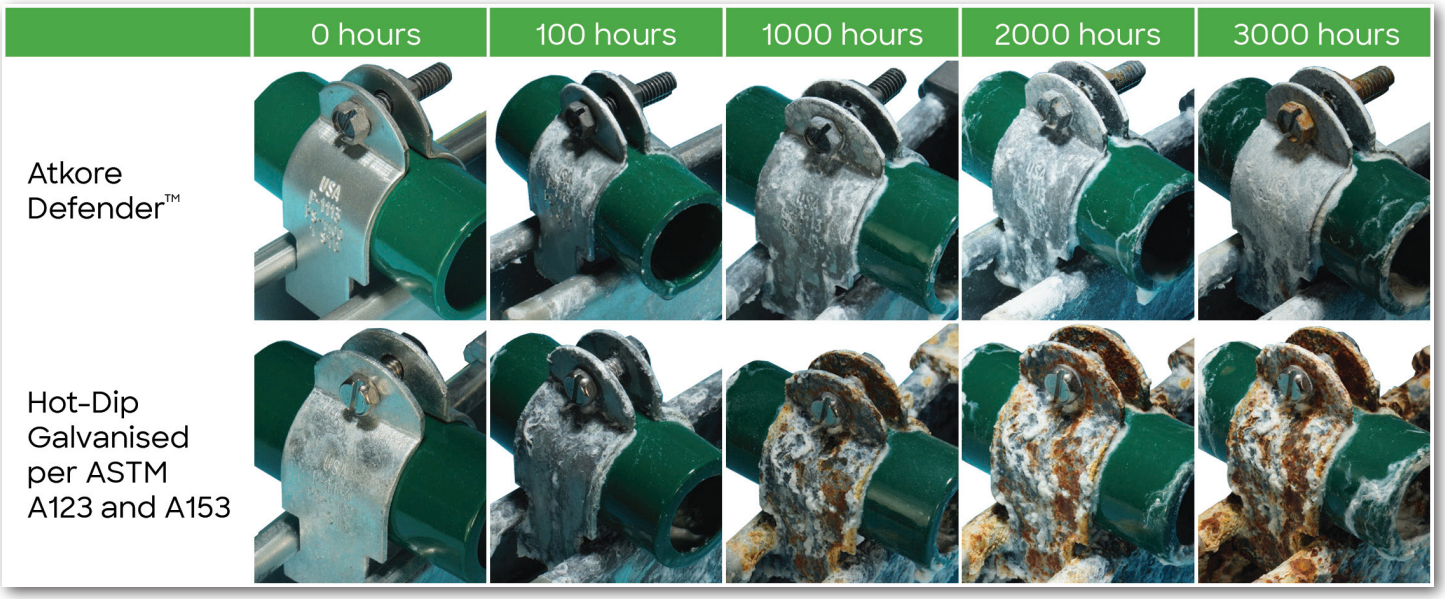
The ‘ideal’ material for outdoor and corrosion-prone locations should:

- Offer a direct substitution and replacement for Hot-Dip Galvanised and Stainless Steel.
- Provide superior performance to eliminate or reduce any future need to repair or replace the system.
- Be available at a lower price than Stainless Steel options.
- Offer a consistent coating layer to ensure proper engagement of threaded fasteners.
- Eliminate the binding of threads that is typically found in Hot-Dip Galvanised steel.
- Have a proven track record that can alleviate the fears of change industry-wide.

Introducing Atkore Defender™

Atkore now offers a new line of coated steel products under its Atkore Defender™ brand. With this introduction engineers and contractors now have an alternative to Stainless Steel for high corrosion, outdoor applications.
It's rust-free appearance outlasts Hot-Dip Galvanised alternatives, whilst its coating has self-healing properties that enables the steel to re-protect itself when cut or scratched.
Overall, Atkore Defender™ coated steel enables delivery of systems that last against outdoor corrosion.

ASTM B117 Salt Spray Test



Building with Atkore Defender™ can offer significant lifetime savings for a project, enabling teams to avoid replacement and costly maintenance that would otherwise be required with lesser types of steel coatings. By using Atkore Defender™ engineers and contractors can

- Reduction in project costs by avoiding Stainless Steel fasteners.
- Greatly reduce labour costs as it can eliminate touch ups of cut ends.

Why Atkore Defender™?

Atkore has a rock-solid history with nearly a century of experience in steel Unistrut, conduit, tubing and other products. More importantly, the new Atkore Defender™ coatings are available exclusively from Atkore.

To help engineers and contractors gain confidence in Atkore Defender™ coatings, Atkore also provides a comprehensive set of tools for their evaluation. These include:

- 3rd party, accredited laboratory tests and ASTM standards to back up performance claims.
- Real-world cases demonstrating the advantages of Atkore Defender™ under various conditions and in a variety of applications.

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