



## WHITE PAPER

### The Importance of Liquid Surface Preparation Products and How to Pick the Best One for the Job

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## ABSTRACT

Corrosion remains one of the most significant challenges facing industries worldwide, leading to substantial economic losses and compromised asset integrity. Surface contamination, including soluble salts and debris, significantly contributes to corrosion and coating failure. Recognizing the critical need for effective surface preparation solutions, [Corrosion Innovations](#) brings together leading brands in the industry to offer comprehensive products tailored to address these challenges.

This white paper explores the detrimental effects of corrosion on asset life and emphasizes the importance of proper surface preparation. It highlights testing methods, as well as the innovative surface preparation product lines from Corrosion Innovations, including [Chlor\\*Rid™](#), [Corr-Ze™](#), and [HoldTight®](#), and how they enable customers to achieve superior surface cleanliness, extend coating life, and ultimately enhance the longevity of assets.

## INTRODUCTION

Surface contamination has consistently stood out as a primary factor contributing to corrosion and the failure of coatings. Over the years, industrial coatings contractors have employed various techniques to eliminate contaminants before applying high-performance coatings. In certain instances, contractors opt for wet abrasive blasting methods to minimize airborne contaminants while prepping the surface. Ultra-High Pressure Water Jetting (UHPWJ), including garnet-injected UHPWJ, is increasingly favored across multiple sectors. However, contractors generally shy away from any procedures involving liquids or water on the surface prior to coating to prevent moisture from affecting coating adhesion. Surprisingly, many contractors are unaware that abrasive blasting standards mandate the removal of residual dust from the surface in accordance with SSPC SP1 Solvent Cleaning. Due to concerns about introducing water during this phase, contractors typically avoid this approach, opting instead to use compressed air to blow down the surface before application. Consequently, atmospheric contamination and debris often reattach to the surface prior to coating.

Corrosion Innovations boasts an executive team comprising highly experienced individuals who prioritize both the owner's desire for a pristine surface and the contractor's need for an efficient workflow. Recognizing these dual requirements, we have partnered with industry-leading brands to offer a comprehensive solution for owners, specification writers, and contractors alike in surface contamination and soluble salt removal. Our lineup now includes top-notch alkaline cleaners and passivators like HoldTight 102, capable of extending the cleanliness of a blasted surface or providing a safe alternative to solvent cleaning. Additionally, we feature leading salt removers such as Chlor\*Rid and the innovative rust remover and soluble salt eliminator, the SP8 system.

Corrosion Innovations stands as a unique entity, as no other company before has consolidated such a diverse array of surface preparation solutions and extensive expertise under a single banner. Corrosion Innovations stands ready to assist with everything from basic surface cleaning to preparation for surface treatment, post-blast cleaning to prevent flash rusting, provision of passivators for use during wet abrasive blasting, removal of non-water-soluble salts and soluble salts, to restoring the original condition of a blasted surface after exposure to weathering. Whatever the challenge, Corrosion Innovations offers a tailored solution.

## TESTING



Salt is one of the leading causes of premature coating failure, resulting in billions of dollars in economic losses. Consequently, we have devised effective measures to tackle salt issues during the surface preparation stage. Initially, we assess the substrate for salt content using our Chlor\*Test ion-specific test kits, followed by the application of our Chlor\*Rid soluble salt liquid products to remove any detected salts.

Since the salts are non-visible, we use two different field methods of testing: ion-specific and conductivity. Conductivity testing has been around in the industry for many years and requires calculations to determine the estimated salt content. Conductivity considers all conductive ions, which may or may not be corrosive. Sodium Bicarbonate, for example, is conductive but not corrosive. This test takes approximately 10 minutes to complete.

The Chlor\*Test test kits are ion-specific and produce results in approximately two minutes, which reduces project time compared to the conductivity test method. The extract material used is more efficient and extracts more salt from the substrate. The Chlor\*Test kits test for corrosive salt ions, chloride, sulfates, and nitrates only and require no calculations for the result.

<b>Chlor*Test</b>	Chloride testing
<b>Chlor*Test "A"</b>	Chloride testing for abrasives
<b>Chlor*Test "C"</b>	Chloride testing for concrete
<b>Chlor*Test "W"</b>	Chloride testing for water
<b>Chlor*Test "CSN Salts"</b>	Chloride, sulfate & nitrate testing

# LIQUID SURFACE PREPARATION PRODUCTS

## Chlor\*Rid™, & Corr-Ze™, & HoldTight® Liquid Surface Preparation Products



In the marketplace, you can find both acidic and alkaline products, each tailored for specific purposes. Acid solutions excel in removing salts and are highly efficient in this task, ensuring thorough elimination of all salts, thus yielding the cleanest possible substrate ready for painting. On the other hand, alkaline products are utilized to passivate the substrate, providing a rust-resistant surface and allowing adequate time for coating without the risk of flash rusting. Moreover, alkaline products are effective in removing "topical" salts, loose debris, and other soluble contaminants from the substrate during the washing phase.

### LIQUID SURFACE PREPARATION PRODUCT COMPARISON CHART

Product	pH	Topical Salt Remover	Non-Water Soluble Contaminant Remover	Surface Passivator	Add to Blast	Fully Evaporative	Removes / Prevents Flash Rust
 CHLOR*RID™	Acidic	✓	✓		✓		
 CHLOR*RID™ <b>DTS</b>	Acidic	✓	✓				
 CHLOR*RID™ <b>SP8 GEL</b>	Acidic	✓	✓				✓
 CHLOR*RID™ <b>SP8 RINSE</b>	Alkaline	✓		✓	✓	✓	✓
 CHLOR*RID™ <b>Hold*Blast</b>	Alkaline	✓		✓	✓		✓
 <b>CorrZe</b> 100 Rinse	Alkaline	✓		✓	✓	✓	✓
 <b>CorrZe</b> 200 Gel	Acidic	✓	✓				✓
 <b>HOLDTIGHT</b> 102	Alkaline	✓		✓	✓		✓
 <b>HOLDTIGHT</b> <b>HT365</b>	N/A						✓

In a *Materials Performance* article titled "[Surface Preparation Chemicals for Salt Decontamination or Flash Rust Inhibition](#)," by H. Peters, the former Managing Director of Chlor\*Rid International, Inc., he discusses the critical role of surface preparation chemicals in preventing premature coating failures caused by residual salts, particularly invisible salts, which are a leading cause of such failures.<sup>1</sup> The discussion highlights the importance of using cost-effective chemical removal methods with the appropriate chemical functionality. It distinguishes between acidic products, which effectively lower salt levels to acceptable thresholds, and alkaline formulations, which provide surface-inhibiting properties to mask remaining salts.

Surface preparation is crucial as residual salts left on substrates can lead to corrosion and coating failure. Traditional methods like water washing after abrasive blasting have limitations, necessitating more effective approaches. Ultrahigh-pressure water and chemical treatments for salt decontamination are discussed, noting the industry's emphasis on updating standards to address salt contamination.

Chemical surface treatment options are explored, with acidic products effectively removing corrosion-inducing salts and alkaline formulations inhibiting flash rust formation by forming a barrier layer. However, it's emphasized that alkaline treatments may mask salts, potentially leading to coating failure if salts aren't adequately removed.

The discussion concludes that using specifically formulated acidic cleaning products for salt removal is crucial for coating performance and cost-effectiveness. It cautions against relying solely on alkaline treatments, as they may not fully address salt contamination, ultimately risking coating failure. Overall, thorough salt removal is paramount to ensure coating longevity and substrate protection.

## Applications

Chlor\*Rid, Corr-Ze, and HoldTight products are versatile and suitable for a wide range of applications, including:

- Marine structures: Bridges, piers, docks, and offshore platforms
- Industrial facilities: Pipelines, storage tanks, machinery, and equipment
- Transportation infrastructure: Highways, railways, and airports
- Architectural surfaces: Concrete, steel, and masonry structures
- Manufacturing facilities: Metal components, machinery, and processing equipment

## Benefits

The adoption of liquid surface preparation products offers several key benefits:

- **Effective Chloride Removal:** The products provide a comprehensive solution for chloride, sulfate, and nitrate decontamination, addressing the root cause of corrosion.
- **Versatility:** Chlor\*Rid, Corr-Ze, and HoldTight surface preparation products are suitable for various substrates and can be applied in diverse environments.
- **Ease of Application:** Both acidic and alkaline products are user-friendly, simplifying the surface preparation process for contractors and ensuring efficient application.
- **Cost-Effectiveness:** By preventing corrosion and extending the service life of structures and equipment, Chlor\*Rid, Corr-Ze, and HoldTight surface preparation products offer long-term cost savings.
- **Environmental Compatibility:** The products are formulated to minimize environmental impact, with biodegradable ingredients and low toxicity.

## CASE STUDIES

### The Use of Chlor\*Rid SP8 to Remove Flash Rust Without Re-Blasting



A recent article titled "[Removing Flash Rust Without Re-Blasting](#)" by William Corbett, COO of KTA-Tator, Inc., discusses the distinction between rust-back and flash rust, with the latter occurring during wet surface preparation methods.<sup>2</sup> It explores the use of Chlor\*Rid SP8 products to remove flash rust without re-blasting, emphasizing the importance of proper application and inspection.



Industry standards allow for the use of inhibitors/passivators to mitigate flash rust, but when coating over it isn't feasible, approved flash rust removers offer a solution. One such product system, Chlor\*Rid SP8 Gel and Chlor\*Rid SP8 Rinse, is described in detail, highlighting its application process and coating-neutral properties.

The article provides inspection checkpoints for ensuring proper use, covering aspects like approval, surface preparation, application thickness, safety measures, and environmental considerations. It concludes by underlining the significance of these steps for projects employing flash rust removers or contractors utilizing them.



## The Long-Term Effects of Surface Preparation Using HoldTight® 102

HoldTight Solutions conducted a [significant study in collaboration with NASA](#), focusing on the long-term impact of HoldTight® 102 on coating systems.<sup>3</sup> This five-year study aimed to assess the performance of coatings treated with HoldTight® 102 compared to untreated coatings under harsh environmental conditions. The ultimate goal was to determine if a water additive like HoldTight® 102 had long-term detrimental effects on coating systems.

The study involved two sets of panels: one group treated with HoldTight® 102 during surface preparation and another left untreated. These panels were subjected to rigorous exposure to sun, salt, and water at NASA's beachside testing facility on the Atlantic Coast.

After the five-year period, the results were striking. Panels treated with HoldTight® 102 demonstrated superior performance compared to untreated panels. Pull tests indicated either enhanced or equivalent adhesion in the treated panels, highlighting the product's efficacy in improving coating adhesion over time. Moreover, scribe tests revealed a remarkable extension of the coating system's lifespan by 25-50% when HoldTight® 102 was applied.



This NASA study serves as compelling evidence of the positive impact of HoldTight® 102 on coating systems' durability and longevity. It underscores the product's effectiveness in not only preventing flash rusting and improving coating adhesion but also in significantly extending the lifespan of protective coatings, making it an invaluable asset in corrosion protection and surface preparation across various industrial sectors.

## CONCLUSION

Corrosion is a pervasive problem that demands innovative solutions. Chlor\*Rid, Corr-Ze, and HoldTight products from Corrosion Innovations offer a proactive approach to corrosion prevention by effectively removing chlorides from surfaces. With their proven effectiveness, versatility, and environmental compatibility, these products are poised to make a significant impact across industries, ensuring the longevity and reliability of critical infrastructure and assets. For any questions, or help with surface preparation for your next project, please reach out to our seasoned team of AMPP-certified experts. Visit [corrinnovations.com](https://corrinnovations.com) for more information.

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