



Henkel Adhesive Technologies

CHROMIUM-FREE DEEP-DIVE

A CHROMIUM-FREE FUTURE FOR THE METALS INDUSTRY

SUSTAINABLE AND HIGH-PERFORMANCE SURFACE TREATMENTS FOR METALS



**RESPECT
RETHINK
REINVENT**

CON- TENT

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INTRODUCTION

Chromium-free corrosion protections for metals are gaining popularity. These innovative solutions offer an effective and cost-efficient solution for applying conversion coatings that protect metal substrates against corrosion and support strong paint adhesion. These coatings act as a bridge between the metal substrate and the paint. They also play an important role in defining the final appearance, function and durability of painted metal items.

This deep-dive document explains how chromium-free solutions deliver outstanding efficiency and performance of coatings – and offer companies an opportunity to win a strong long-term market position as a pioneer for safety and sustainability. In conclusion, our experts offer six key reasons why companies should switch to chromium-free conversion coatings now.

As a supplier of safe and sustainable solutions, we stand side-by-side with our customers as a trusted partner and technology expert. Together, we can join forces to lead the metals industry to a transformational impact on the planet.

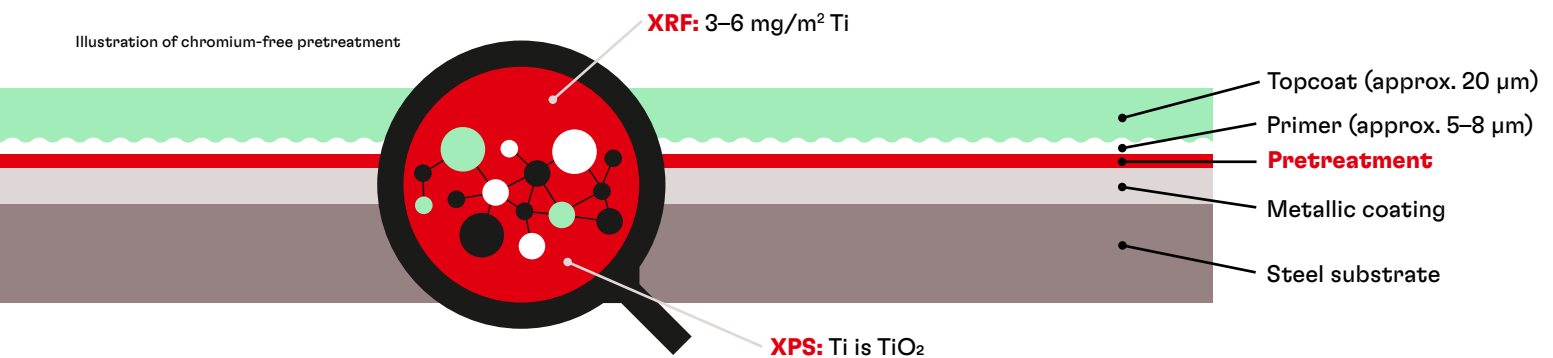
We hope you enjoy reading these insights! If you have any questions, please do not hesitate to contact us.

Your Henkel Surface Treatment team
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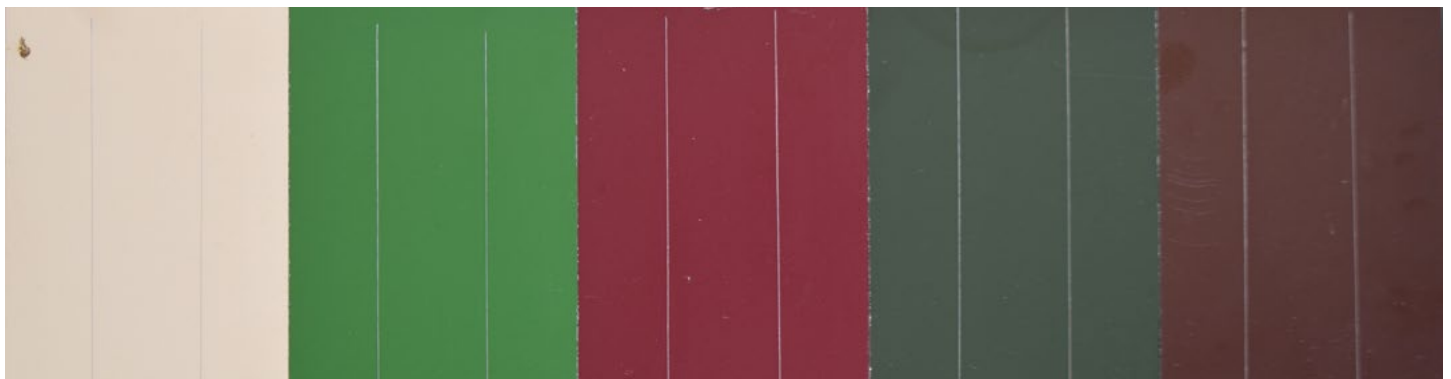


CHROMIUM-FREE
SOLUTIONS
THE FUTURE OF
THE METALS INDUSTRY

The availability and popularity of chromium-free metal pretreatment solutions has seen rapid growth in recent decades. Innovations based on combinations of titanium with polymers were introduced in the 1990s and have proven their performance in applications for architecture, household appliances and general industry worldwide.



The performance of these safe and sustainable solutions has been verified in laboratory examinations such as salt spray tests, as well as outdoor exposure evaluations. The benefits of using chromium-free systems are primarily around worker safety. These innovations also enable companies to reduce the need for extensive measures to reduce risks, keep workers safe and protect the environment. Another advantage is wastewater treatment because chromium-free systems can be easily flocculated with calcium hydroxide.



Outdoor weathering test over a period of six years

HOW ARE CHROMIUM-FREE
COATINGS
TRANSFORMING THE INDUSTRY?

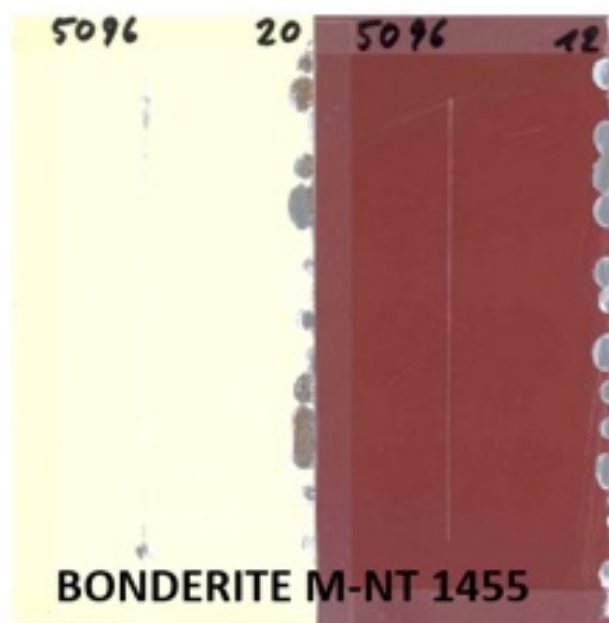
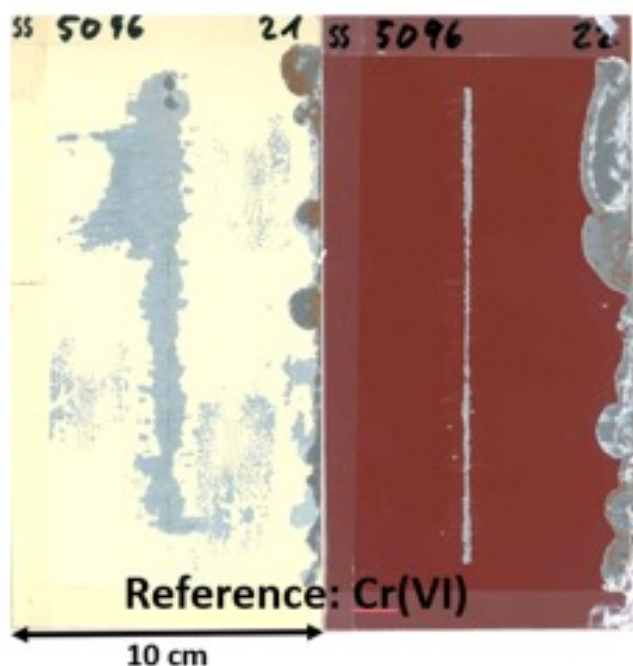
There are two key hurdles facing the transition to chromium-free surface treatments worldwide. The first hurdle is the global regulatory environment. Differences in regulation around the world mean some companies are choosing not to convert to chromium-free solutions until the relevant local or regional law requires them stop using traditional conversion coatings.

The second hurdle is testing requirements. There are long evaluation times involved in bringing chromium-free solutions to market. Tinplate requires packing tests that can last for 36 months. Architectural applications require outdoor testing such as storing panels near the coast to guarantee the performance of the conversion coatings – and these tests can take two years or more.

Cooperation with paint manufacturers is needed to help encourage more companies to embrace the switch to chromium-free solutions. However, weathering tests in Europe have already shown that the current generation of chromium-free solutions in combination with paint and primer are at

least an equivalent to other established technologies in terms of performance. Typically, coated and pretreated sheets with open edges are evaluated for up to 1,000 hours in salt spray testing. The result of a Henkel test showed that chromium-free solutions can be equal to traditional solutions.

The transition to chromium-free coatings may require adjustments to the primer, for example, to ensure adequate compatibility or adhesion. The pretreatment application method may also need to be adjusted. While traditional pretreatments are often applied by immersion, chromium-free treatments are usually applied by dry-in-place to minimize contamination of the working solution.



Tests show a significant improvement in the corrosion protection of chromium-free systems compared with traditional solutions.

*SIX REASONS TO SWITCH TO **CHROMIUM-FREE** **CONVERSION** COATINGS*

Save time and money

Expensive wastewater and air decontamination processes reduce the efficiency of industrial sites that use traditional conversion coatings. Chromium-free solutions eliminate several steps that cost time and money every day. Adopting chromium-free technologies also frees up time for employees to focus on other valuable production steps.



Boost safety for employees, customers and the environment

By switching to safe and sustainable chromium-free solutions, companies protect their employees and customers. They position themselves as a responsible employer and partner – with a passion for protecting nature's precious flora and fauna.

Prevent accidents

Traditional conversion coatings contain chemicals that may have a damaging effect on the environment. If these coatings leak into the soil, the company responsible may face severe consequences. This could include financial penalties or requirements to take immediate corrective action. Groundwater that is contaminated might need to be collected and taken off-site for treatment and disposal, which is costly and resource-intensive. And because groundwater naturally migrates through the soil, areas beneath the production site are also considered to be contaminated. This may require a site to be closed due to the accident, and can even lead to requirements for a building to be demolished and removed.



Sustainability is the key to a successful future

Commitment to sustainability is not just fashionable for companies. It is now seen as a commitment to the future – always with an eye on the next generations. This requires businesses to firmly anchor sustainability into their company values. The move to chromium-free solutions can be an important milestone in this approach.



Strengthen your reputation

Taking responsibility means gaining a better standing as a company. In the long term, chromium-free producers are perceived favorably by the public and can tap into a stronger market position. Companies that act before regulations change in their region or country can set a positive example by leading the switch to chromium-free solutions for metal pretreatment.

Drive positive change

Companies that take a stand for sustainability from their own motivation rather than because of industry peer pressure can become thought-leaders in the long term. They develop their business responsibly and economically, and can actively set trends in the market. Suppliers of pretreatment systems can support them with expertise as a trusted and globally active partner for every step in the switch to safe, sustainable chromium-free solutions.



ABOUT **HENKEL**

With its brands, innovations and technologies, Henkel holds leading market positions worldwide in the industrial and consumer businesses. The business unit Adhesive Technologies is global leader in the market of adhesives, sealants and functional coatings. With Consumer Brands, the company holds leading positions especially in hair care and laundry & home care in many markets and categories around the world. The company's three strongest brands are Loctite, Persil and Schwarzkopf. In fiscal 2021, Henkel reported sales of more than 20 billion euros and adjusted operating profit of around 2.7 billion euros. Henkel's preferred shares are listed in the German stock index DAX. Sustainability has a long tradition at Henkel, and the company has a clear sustainability strategy with concrete targets. Henkel was founded in 1876 and today employs a diverse team of more than 50,000 people worldwide – united by a strong corporate culture, shared values and a common purpose: "Pioneers at heart for the good of generations." More information at www.henkel.com.



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Thank you.

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An expert team at Henkel is always available to answer your questions.
Please contact your local Henkel sales representative.
We will be happy to help you.