

BONDERITE®

Superior Functional Coating Technologies.

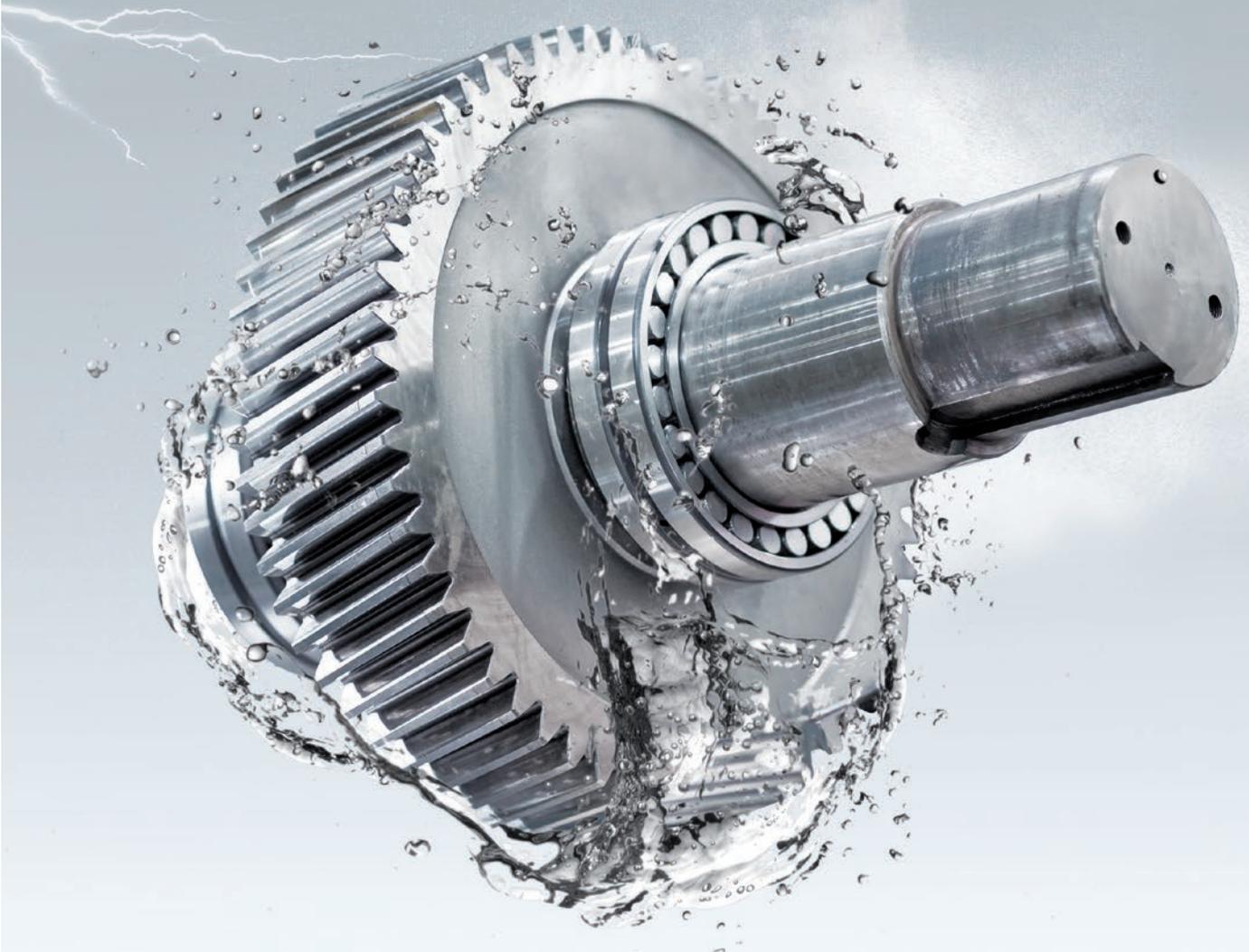


Excellence is our Passion

BONDERITE® – Upgrades your standards.

Content

- 03 Preface
- 05 Functional coatings
- 06 Industrial and maintenance cleaners
- 08 Metal pretreatment
- 10 Coatings
- 12 Process sequences
- 14 Services
- 15 Equipment
- 16 Sustainability



Upgraded by the power of elements.

Welcome to the world of BONDERITE®.

BONDERITE stands for technologies that set new standards for your total functional coating process. In the field of cleaners, metal pretreatment and coatings, BONDERITE delivers performance, process reliability, efficiency and sustainability.

You are invited to access a wide range of leading technologies, sophisticated knowledge and state-of-the-art services in becoming a partner of the worldwide market leader in adhesives, sealants and surface treatment. Profit from Henkel's global presence, innovation power and leading position in sustainability.

Henkel's experienced team provides you with innovative and custom-made solutions, focusing on your current needs, while facing prospective challenges of your business. Whether your business is agriculture, construction vehicles, white goods, electronics or architectural elements – we make technologies available to you that improve your overall processes.

This results in our brand promise:
BONDERITE® – Upgrades your standards.

A handwritten signature in black ink that reads "De Weert". The signature is stylized with a long horizontal line underneath the name.

Paul De Weert
Functional Coatings Manager Europe.



Upgrade your standards. BONDERITE functional coatings.

BONDERITE solutions create competitive advantages across the industrial manufacturing marketplace. Its processes deliver superior cost-in-use and operational efficiency through a broad portfolio of cleaners, surface treatment and coating products.

BONDERITE encompasses improved paint adhesion, enhanced corrosion resistance, clean components and superior surface properties. Minimised energy consumption leads to reduced waste and a smaller footprint.

BONDERITE cleaners help to increase efficiency and lower operating costs.

BONDERITE metal pretreatment technologies range from traditional iron phosphates to green, heavy metal and phosphate-free nanotechnologies for multi-substrates.

BONDERITE coating processes lead to superior performance. Your manufacturing operations benefit from the combination of reliable and sustainable coating processes and improved product properties.

The BONDERITE portfolio:

Cleaners

- Maintenance
- Process
- Industrial
- Speciality

Metal pretreatment and conversion coating

- Iron phosphate, zinc phosphate, manganese phosphate
- New generation coatings (nanoceramics)
- Light metal finishing (chrome, non-chrome technologies, anodising)

Coatings

- Electro-Ceramic Coating
- Autophoretic coating
- Water-based primer

Equipment

- Dosing, measuring and controlling

Services

- Selection service
- Analytical services
- Lab testing
- Process optimisation
- Customer training

Easy to use.

BONDERITE industrial and maintenance cleaners.

BONDERITE cleaners simplify your daily business and increase efficiency at the same time. They improve your environmental footprint. Thanks to a complete range of alkaline, neutral and acid cleaners, you will get the perfect solution for your cleaning demands.

Types of cleaners

	<p>Alkaline cleaners</p> <p>Used in spray, immersion and ultrasonic baths, strong alkaline cleaning is particularly recommended at the beginning of BONDERITE processes and is typically used for body cleaning. Alkaline cleaners remove organic soils such as:</p> <ul style="list-style-type: none"> • Oils, grease • Dust • Pigments
	<p>Acid cleaners and pickles</p> <p>Acid pickling is a necessary step to prepare a substrate before conversion coating. Acidic cleaners remove inorganic soils such as:</p> <ul style="list-style-type: none"> • Oxides • Lime scale
	<p>Neutral cleaners</p> <p>It is essential to remove all undesired materials such as cutting fluids and chips from the metal surface before the next operation can be performed. Neutral cleaners are designed to do so with the additional benefit of providing temporary corrosion protection. Neutral cleaners are typically used for:</p> <ul style="list-style-type: none"> • Intermediate and final cleaning • Cleaning after assembly • Temporary corrosion protection

Maintenance cleaners

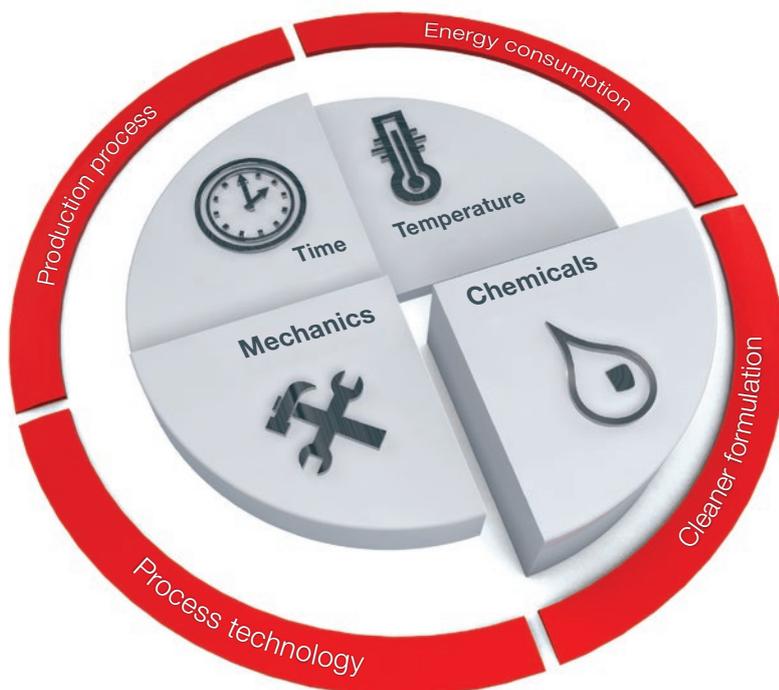
Vehicles, industrial facilities and equipment require professional maintenance, while the environment is to be respected and the operator's safety guaranteed. Such maintenance extends the lifetime of the equipment, avoiding long and costly downtimes.

In order to be compatible with the latest regulations in place, Henkel develops innovative products fulfilling complex specifications and requirements of modern maintenance.

Key applications among many others: vehicle interior and exterior cleaning, tank and pipe cleaning, floor cleaning, parts cleaning before revision, paint stripping, graffiti removal and protection, heat exchanger descaling, odour prevention, hand cleaning.



Parameters for efficient cleaning.



Herbert Sinner, surfactant chemist and former head of the laundry detergents' technical team at Henkel, recognised that the success of a cleaning process was mainly determined by four parameters: time, temperature, mechanics and chemistry.

Since all four of these factors are interdependent, using an optimised cleaner will considerably improve operational processes and hence save time, money and energy.

Reliability unleashed.
BONDERITE metal pretreatment.



BONDERITE metal pretreatment technologies set the highest standard for corrosion protection and paint adhesion. With these high performance, sustainable products and Henkel's high service level, we are committed to improve your process reliability.

Henkel offers multiple options in conversion coatings for metal pretreatment processes in dip or spray applications. Our new generation coatings (NGC) offer green alternatives to conventional phosphating processes based on nanoceramics for multi-substrate applications, while being phosphate and heavy metal free.

Iron, steel, zinc and multi-metals

Iron phosphate	These conventional chemical coatings convert the metal surface to a nonmetallic, iron phosphate coating that inhibits corrosion and improves the adhesion and durability of paint finishes.	Benefits <ul style="list-style-type: none"> • Lower process costs • Fewer stages/baths • Simple and flexible
Zinc phosphate	The process covers the metal surface with a polycrystalline structure containing iron, manganese, nickel and zinc phosphates.	<ul style="list-style-type: none"> • For multi-metals • Excellent corrosion protection and paint adhesion
Manganese phosphate	These coatings produce a dark grey up to black manganese & iron phosphate layer. This layer reduces the friction and therefore shortens the running in time of machine parts. Combined with anticorrosive oils or waxes excellent corrosion protection can be achieved.	<ul style="list-style-type: none"> • State-of-the-art process for reduced friction properties • High corrosion resistance
New generation coatings	BONDERITE zirconium-based nanotechnologies are the green alternative to traditional phosphate coatings. These processes convert metal substrates and leave a nano-thin layer without toxic heavy metals or phosphates.	<ul style="list-style-type: none"> • For multi-metals • Phosphate-free, no toxic heavy metals • Lower energy costs and less sludge • Simplified wastewater treatment • Fewer steps and shorter contact time • Easy control and reliable quality

Light metal finishing (aluminium, magnesium, titanium and their alloys)

Non-chrome technology	BONDERITE offers an extensive range of chrome-free conversion coatings based on zirconium, titanium or cobalt for treating non-ferrous alloys with excellent corrosion resistance and paint adhesion by increased process stability.	<ul style="list-style-type: none"> • RoHS and ELV compliant • Excellent anti-corrosion properties and base for bonding • No toxic heavy metals • Simplified wastewater treatment
Chrome technology	Conventional chrome-VI and chrome-III conversion coatings for bare metal protection and aluminium parts prior to painting offer excellent corrosion protection.	<ul style="list-style-type: none"> • Excellent corrosion protection • Non-hazardous chrome-III • Chrome-VI used for aerospace and MIL-Spec applications.
Anodising	Anodising is a controlled oxidation process. Corrosion resistance, abrasion protection, insulation or aesthetic appearance are the main benefits.	<ul style="list-style-type: none"> • Cleaning – e.g. borat-free and low/no foam behaviour • Etching – low foam and less viscosity at high Al concentration • Bright etch – ready-to-use solution • Desmut – NOx reduction and no etching on surface • Electrolytic colouration – high uniformity and high throwing power • Sealing – Ni-free cold seal (24 °C – 28 °C) and Ni-free hot seal (< 95 °C)

Performance redefined. BONDERITE coatings.

BONDERITE coating processes lead to outstanding performance thanks to innovative, reliable and sustainable solutions. Your manufacturing operations benefit from the simplified coating processes and improved corrosion resistance features. This leads to higher value, while meeting the stringent environmental requirements of today and tomorrow. Using these treatments, your parts can get functional properties such as anti-corrosion, anti-friction, improved heat resistance.

BONDERITE Electro-Ceramic Coating (ECC) for aluminium surfaces.

ECC is an electro-ceramic multi-functional coating based on titanium oxide that can also function as a final finish. ECC coatings increase the efficiency of many applications, save process costs and allow to replace steel parts by lighter metals. ECC is heavy metal free.

Benefits

- Surfaces extremely resistant against corrosion, temperature impact and chemicals
- Reduced friction, improved wear characteristics
- Process cost reduction
- Good basis for paint adhesion
- Improving surface finishing of cast materials

BONDERITE Electro-Ceramic Coating is available also for magnesium surfaces (MgC) with the following benefits:

- Surface protection
- Excellent basis for paint adhesion

BONDERITE autophoretic coating for ferrous surfaces.

The BONDERITE M-PP autodeposition process delivers a highly corrosion-resistant, thin organic coating, while increasing process efficiency over traditional finishing methods. It combines metal pretreatment and finishing in one process, providing a lasting finish – both inside and outside of parts.

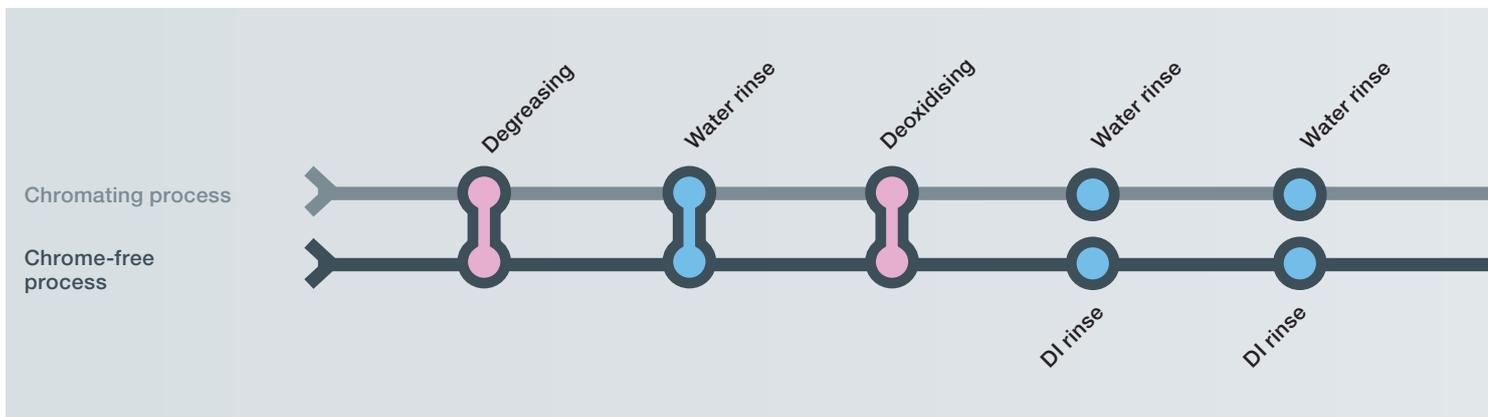
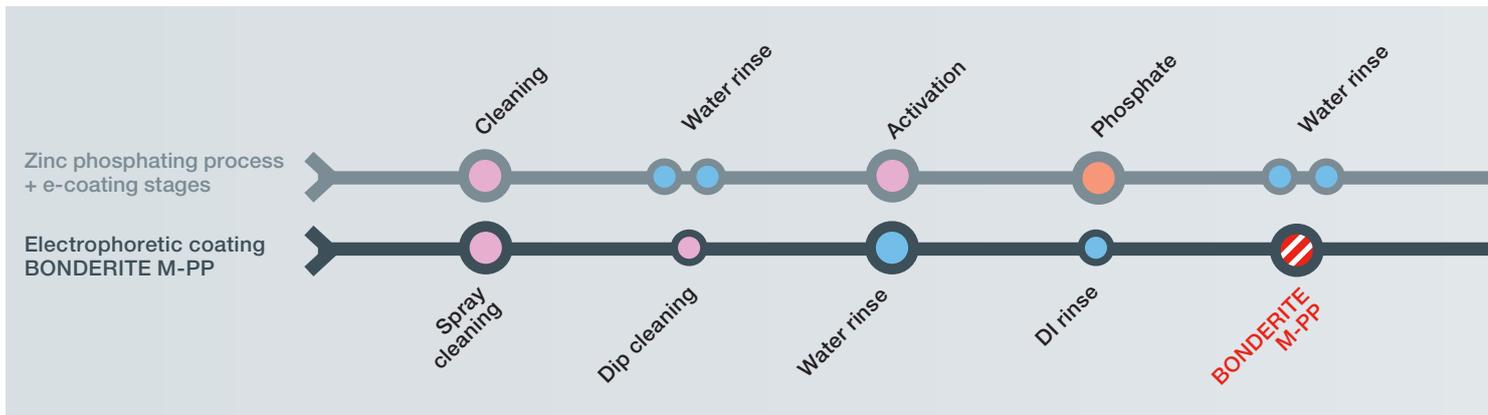
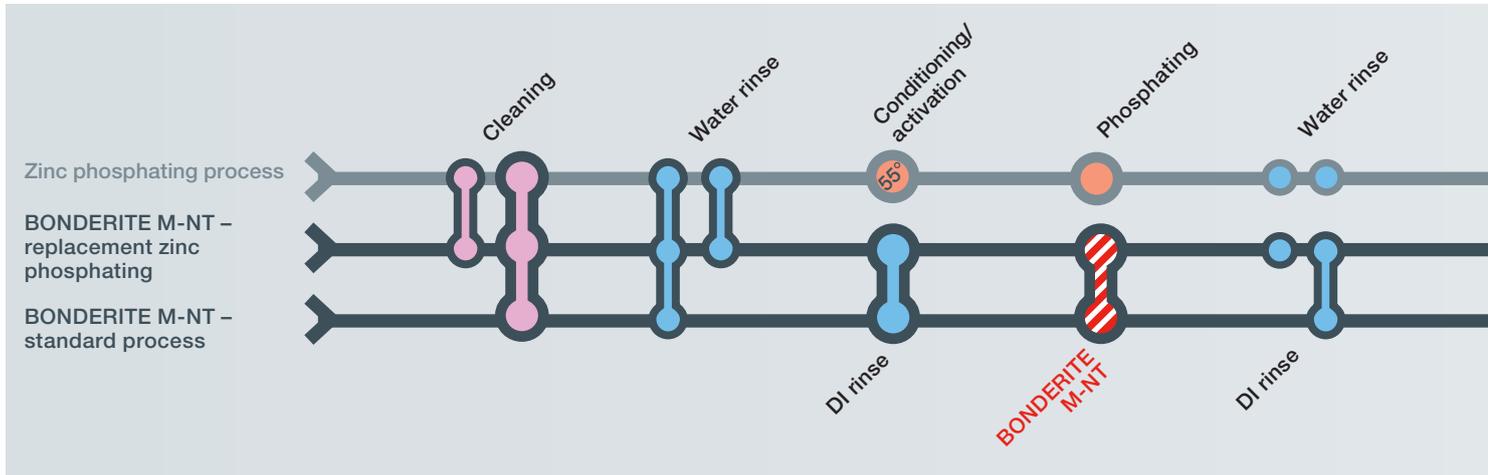
Benefits

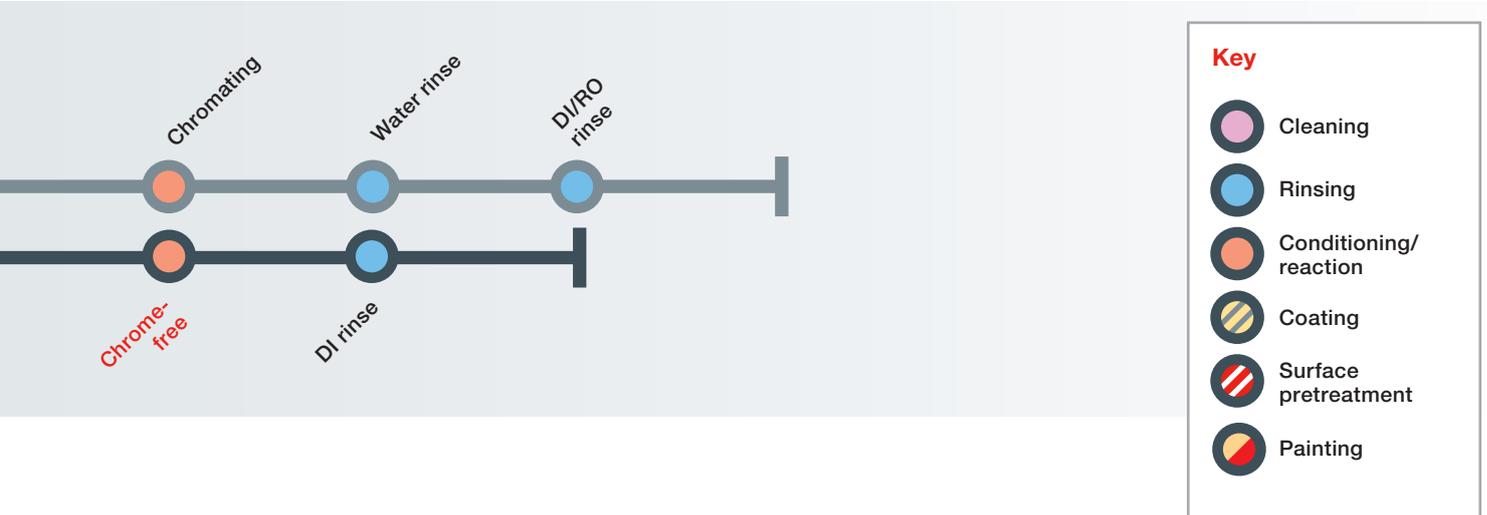
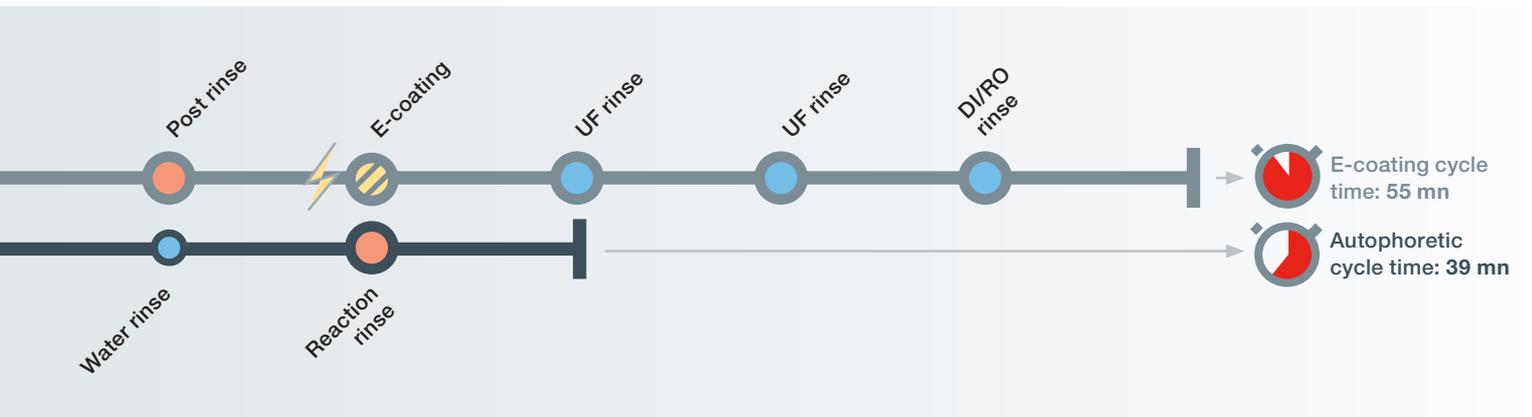
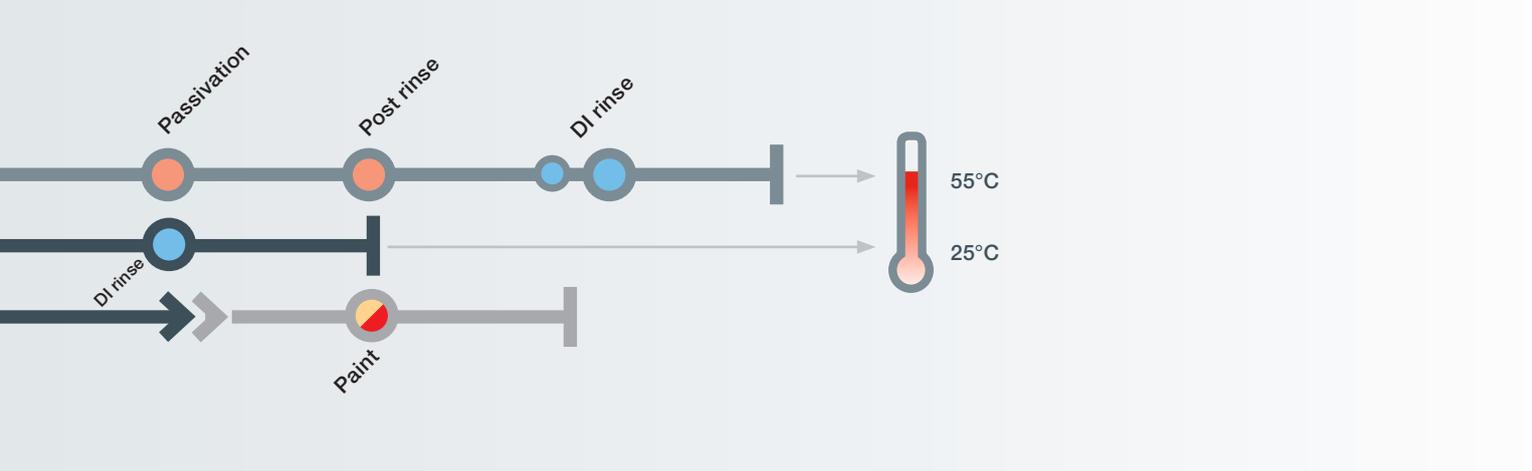
- Lower investment and running costs compared to the combination of electrocoating and pretreatment
- Smooth (black) coating on ferrous metal surfaces
- Metal pretreatment and painting in one process
- Superb cavity corrosion protection (suitable for tubular or intricate design areas)
- Consistent coating thickness around edges
- Fewer steps compared to conventional painting (reduced footprint)
- Water-based non-electrical process without the use of solvents or heavy metals (fire/worker safety)
- Flexible to variable throughput rates (racking/line speed)
- Coats only reactive metals (assemblies are possible)



At a glance.

Process sequences.





Life cycle reliability. Henkel process services.

Besides being a supplier of superior functional coating technologies, Henkel is in the business of solving customers' problems and improving their production operation. From design and consultancy, product development and dispensing equipment to process control, Henkel has a solution for every process cycle. Available worldwide. Together with customers and partners, Henkel develops products that assure reliable and optimum compatibility.



Selection service

BONDERITE offers an extensive portfolio of premium surface technologies and process solutions in general industries. Experienced specialists with significant knowledge consult and support customers matching individual requirements. Detailed information and training help to find the best solution.

Analytical services

Henkel can analyse the complete production process for customers. In this step, Henkel reviews all parameters required to create detailed documentation such as test data, material input, process improvements. The evaluation decreases failure rates. The result is a custom-made solution with reduced production cycle times and rejection rates by applying the appropriate Henkel products.

Lab testing

Henkel is able to test applications of your process in its own labs. Individual process steps are perfectly matched to each other and can be smoothly integrated into your plant.

Process optimisation

Henkel helps customers to design more simple and more efficient production processes. Products are adapted to fit customer's individual requirements. All solutions are designed to all environmental safety criteria as well as meeting sustainability regulations. Henkel supports you in gaining advantages by continuous process optimisation.

Customer training

BONDERITE customers benefit from the enormous know-how of the world market leader for functional coating. In training sessions, customers learn about products in detail and how to apply them correctly. "What if" training sessions help to solve problems with customised training manuals.

Integrated process control. Equipment.

Henkel's equipment for functional coating products incorporates over 40 years of experience in design, dosing, measurement and control systems. It rounds off Henkel's complete programme, increasing your overall process reliability.

BONDERITE equipment package

BONDERITE equipment is designed to control the metal pretreatment process for BONDERITE products. They support the complete bath management. The baths can be analysed precisely, adjusted efficiently or even automatically by using BONDERITE equipment. Remote access and monitoring is possible. The BONDERITE equipment package is composed of three elements: basic, modular and customised lines to meet the customer requirements.

Benefits

- Linear and constant baths management
- Improved coating quality
- Increased safety
 - Process cost reduction
 - Documented and recorded process parameters
- Monitoring of process costs and chemicals



Committed to leadership. Sustainability with BONDERITE.

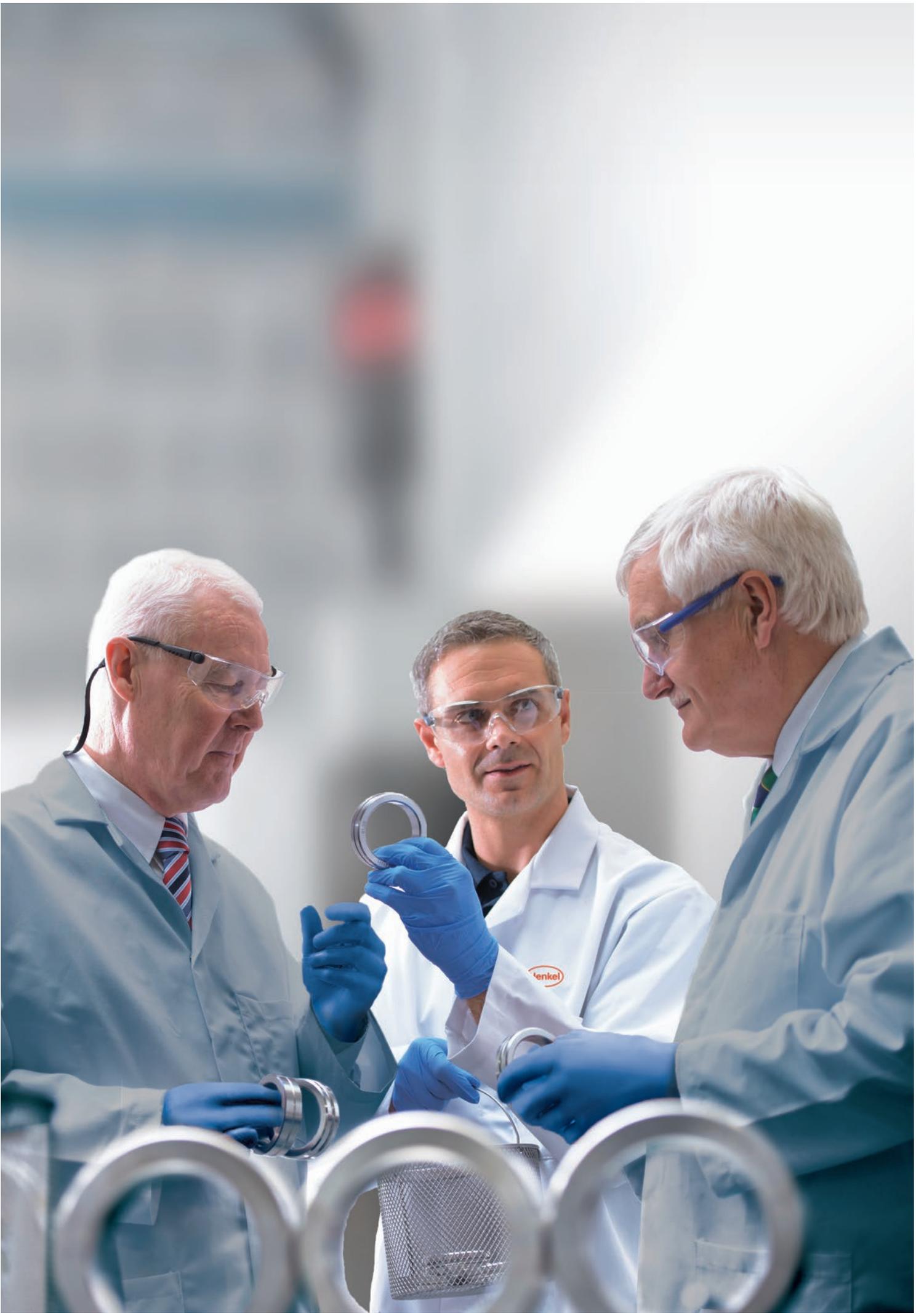
Henkel uses its in-depth knowledge of the industry as well as a broad portfolio of technologies to optimise production processes along the entire value chain accomplishing a reduction of CO₂ emissions, waste, water and energy consumption. Thus, Henkel’s focus is set on its customers and their own sustainability goals.

Sustainability is integrated into every step of product development so that customers anywhere in the world can use solutions tailored to their needs to increase their added value without having to worry about their environmental footprint. We ensure this by keeping to the standard of the six focal areas of environmental protection (see chart below).

For instance, processes such as new generation coatings and autophoretic coating are very resource-efficient since fewer chemicals are used. Less waste is produced and less time is required to maintain the equipment. In addition, energy consumption is reduced due to lower bath temperatures.

Continuous optimisation of products and technologies provide leading performance with best-in-class features for environmental and consumer protection as well as health and safety.





BONDERITE®

Henkel AG & Co. KGaA

Henkelstraße 67

40589 Düsseldorf

Germany

www.henkel-adhesives.com