

# ***HENKEL ALUMINIUM*** SURFACE TREATMENT SOLUTIONS





For more than 100 years, Henkel, as an industry leader, has been committed to the innovation and development of metal surface treatment technology, including steel, aluminum, and stainless steel. Henkel has set high standards in corrosion protection, paint film adhesion strength, and environmental protection. To better cope with today's challenging manufacturing environment, our chemical experts and engineers have built strong partnerships with our customers, helping to achieve significant improvements in design, assembly, capacity, and profitability. Whether it is product consulting or process design, Henkel can provide the right solution.



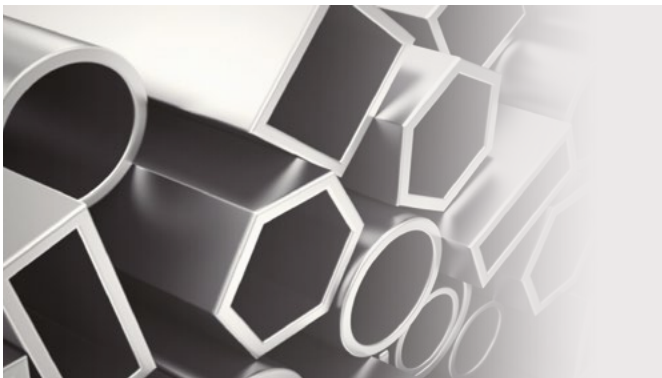
# **BONDERITE®**

Henkel's BONDERITE® is one of the first brands to be deeply involved in surface treatment technology and process solutions, establishing a competitive edge in the industrial manufacturing market. With its reliability, sustainability, and proven results, BONDERITE® helps customers optimize the cost of use and increase operational efficiency in flow processing through its complete line of surface treatment technologies. Based on innovative solutions, BONDERITE® has created competitive business advantages with a complete range of surface treatment products, including cleaners, metal pretreatment and equipment.



## **Cleaners**

- Alkaline Cleaner / Etchers
- Acid pickles & deoxidizers



## **Metal Pretreatment**

- Conversion Coating
- Anodising Additive
- Electrocoloring
- Sealing



## **Certification of Product range for Aluminum by**

- Qualicoat
- Qualanod
- GSB
- Aero Approved Products

## **APPLICABLE INDUSTRIES**

Henkel is currently the world's largest supplier of surface treatment technologies and products.

In the field of aluminum surface treatment, Henkel offers the most comprehensive and widely adopted range of proven solutions, including industrial cleaners, etchants, anodizing products, and eco-friendly chrome-free pre-treatment solutions. From architectural applications to aerospace, customers can rely on Henkel for professional solutions that deliver consistent quality and performance.

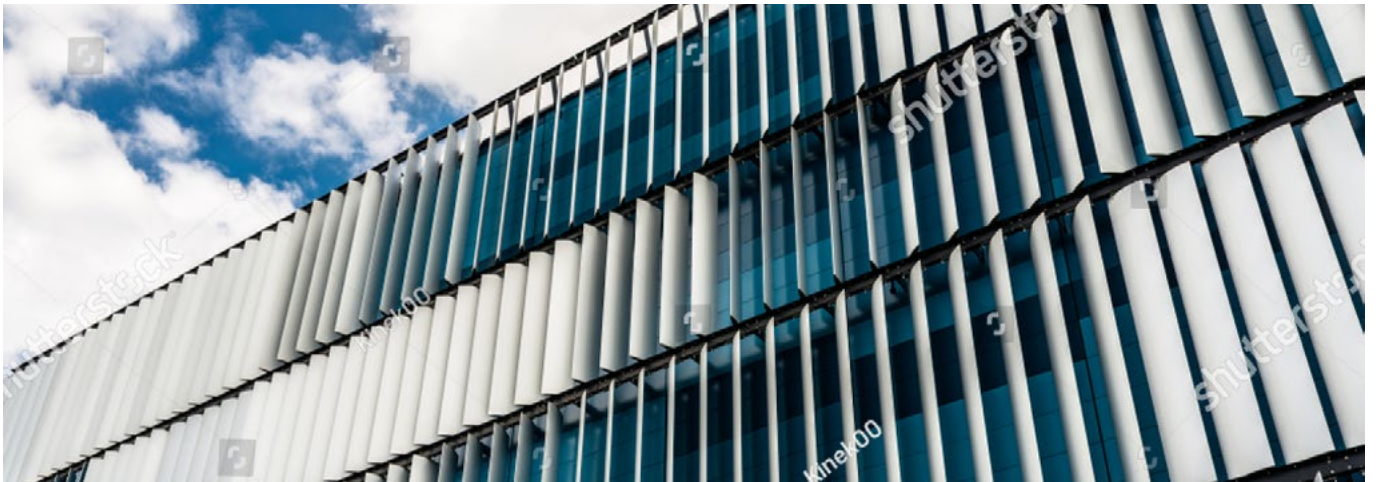
## **PRODUCTS & TECHNOLOGIES**

### **Solutions for Powder Coating**

- Alkaline Cleaners / Etchers
- Acid Pickles & Deoxidisers
- Conversion Coatings
- Equipment

### **Solutions for Anodising**

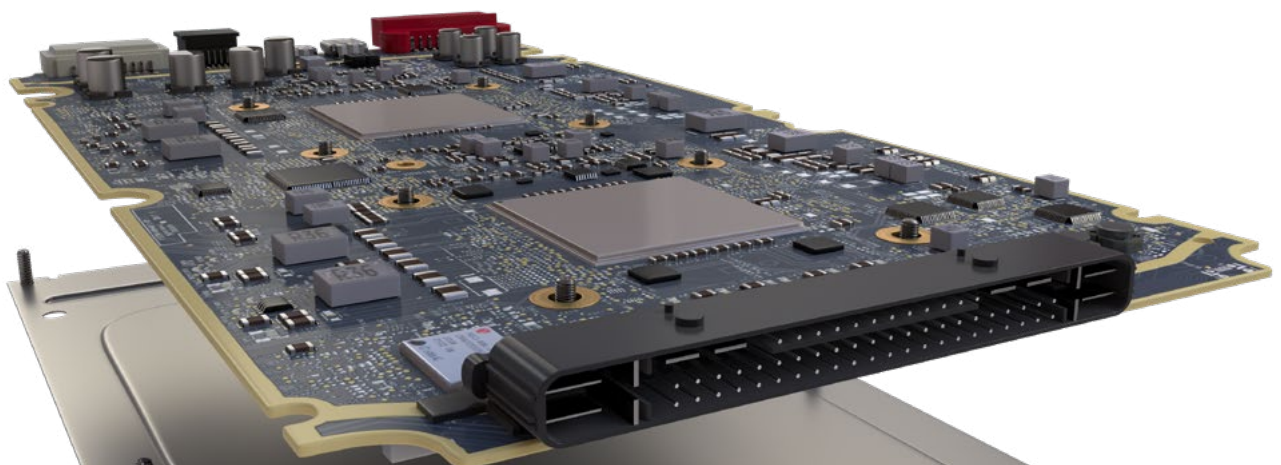
- Alkaline Cleaners / Etchers
- Acid Cleaners / Pickles
- Anodising Additive
- Electrocoloring
- Sealing



Architectural Structure



Aerospace



Electronic Components



# HENKEL CLEANERS

Suitable for surface treatment of steel, cast iron, and light metal alloys



*ACHIEVE* **MORE**  
**WITH LESS**

**RESPECT**  
THE PLANET  
**RETHINK**  
DESIGN AND  
PROCESSES

# ALUMINUM CLEANER/ETCHERS

| Product Name          |        |          |           |                  |               | Substrates   |                 |          |
|-----------------------|--------|----------|-----------|------------------|---------------|--------------|-----------------|----------|
|                       | Liquid | Spraying | Immersion | Temperature (°C) | Concentration | Iron & Steel | Galvanized Part | Aluminum |
| BONDERITE C-AK 62115  | X      |          | X         | 50–70            | 3–5 %         |              |                 | X        |
| BONDERITE C-AK 2105   | X      | X        | X         | 50–65            | 0.5–1.5 %     |              |                 | X        |
| BONDERITE C-AK 2260   | X      | X        | X         | 20–100           | 4–6 %         |              |                 | X        |
| BONDERITE C-AK G 34 A | X      | X        | X         | 45–60            | 2–6 %         |              |                 | X        |
| BONDERITE C-AK G 414  | X      | X        |           | 40–60            | 3–5 %         | X            | X               | X        |
| BONDERITE C-AK 430    | X      | X        | X         | 45–60            | 1–5 %         |              |                 | X        |
| BONDERITE C-AK 24600  | X      | X        | X         | 40–50            | 1–5 %         |              |                 | X        |
| BONDERITE C-AK 2114   | X      | X        | X         | 45–55            | 1–5 %         |              |                 | X        |
| BONDERITE C-AK 62113  | X      |          | X         | 50–70            | 2–5 %         |              |                 | X        |
| BONDERITE C-AK 62111  | X      |          | X         | 50–70            | 3–5 %         |              |                 | X        |
| BONDERITE C-AK EC     | X      | X        | X         | Ambient–70       | 3–5 %         |              |                 | X        |
| BONDERITE C-AK D-892  | X      | X        | X         | 50–65            | 4–15 %        |              |                 | X        |
| BONDERITE C-AK 14415  | X      | X        |           | 50–80            | 1–4 %         | X            |                 | X        |

**BONDERITE C-AK 62115** is a silicate and boron-free, slightly alkaline cleaner for aluminum, effectively removing oils, fats, and polishing paste while maintaining surface brightness.

**BONDERITE C-AK 2105** is a highly alkaline liquid for aluminum etching, deoxidizing, or phosphate removal, reducing maintenance costs and increasing bath life.

**BONDERITE C-AK 2260** is an alkaline, multifunctional industrial cleaner for metal surfaces, suitable for dephosphating, electrolytic cleaning, paint-stripping, and descaling, with high saponification capacity.

**BONDERITE C-AK G 34 A** is a strong alkaline cleaner for etching aluminum, minimizing maintenance costs by preventing scale and sludge formation in dip and spray equipment.

**BONDERITE C-AK G 414** is a low alkaline, silicate-free cleaner for aluminum and alloys, suitable for spray processes, and also effective on steel and various metals.

**BONDERITE C-AK 430** Alkaline Etching product for Alu business. Sequestrants package to avoid residues in the rinses

**BONDERITE C-AK 24600** is a silicate- and surfactant-free alkaline cleaner for aluminum etching, offering uniform results, low temperature operation, and reduced maintenance.

**BONDERITE C-AK 2114** is a high-alkaline liquid for cleaning steel and zinc-coated steel before painting, free from silicates, and easy to rinse.

**BONDERITE C-AK 62113** is a liquid alkaline cleaner for all metals, specifically effective in removing oil, fat, and cleaning paste from aluminum and alloys.

**BONDERITE C-AK 62111** is a liquid alkaline cleaner for immersion, effective on aluminum, CRS-EG, and HDG, removing oil, fats, and polishing paste.

**BONDERITE C-AK EC** is a versatile alkaline cleaner for phosphate lines, effectively removing organic deposits, scale, and grease from tanks, heat exchangers, and spray circuits.

**BONDERITE C-AK D-892 SM** is a silicate- and surfactant-free alkaline cleaner for spray or dip cleaning/deoxidizing aluminum, preventing sludge formation and scale buildup on heaters.

**BONDERITE® C-AK 14415** is a liquid alkaline cleaner for steel and aluminum, ideal for removing heavy grease, pigmented residues, and contaminants after metalworking.

# ACID PICKLES & OXIDISERS

| Product Name                            |        |          |           |                       |               | Substrates   |                 |          |                 |
|---|--------|----------|-----------|-----------------------|---------------|--------------|-----------------|----------|-----------------|
|   | Liquid | Spraying | Immersion | Temperature (°C)      | Concentration | Iron & Steel | Galvanized Part | Aluminum | Stainless Steel |
| BONDERITE C-IC SMUTGO NC AERO           | X      | X        | X         | 10–37                 | AERO : 18–20% |              |                 |          |                 |
| BONDERITE C-IC 241                      | X      | X        | X         | 25–60                 | 1–5 %         |              |                 | X        |                 |
| BONDERITE C-IC 18010 LIQUID             | X      | X        | X         | Ambient–60            | 50–100 %      |              |                 |          | X               |
| BONDERITE C-IC 18010 PASTE              |        |          |           | Ambient               | 100 %         |              |                 |          | X               |
| BONDERITE C-IC 1095                     | X      | X        | X         | Ambient–40            | 0.6–4 %       |              |                 | X        |                 |
| BONDERITE C-IC 3502                     | X      |          | X         | 40–80                 | 10%–25%       | X            |                 |          |                 |
| BONDERITE C-IC ST                       | X      | X        | X         | 20–40                 | 1–4 %         |              | X               | X        |                 |
| BONDERITE C-IC 4104                     | X      |          | X         |                       |               |              |                 |          | X               |
| BONDERITE C-IC 1097                     | X      | X        | X         | 20–40                 | 0.6–4 %       |              |                 | X        |                 |
| BONDERITE C-IC NSC-210                  | X      | X        | X         | Room temp until 40–45 | 1–3 %         |              |                 |          |                 |
| BONDERITE C-IC BR + M-AD 338/ M-AD 339L | X      | X        |           | 49–68                 | 0.3–0.5 %     |              |                 | X        |                 |
| BONDERITE C-IC 65001                    | X      | X        | X         | Ambient–40            | 1–4 %         |              |                 | X        |                 |

**BONDERITE C-IC SMUTGO NC AERO** is a chromate-free deoxidizer for aluminum alloys, offering adjustable etch rates for anodizing, conversion coating, bonding, or welding preparation.

**BONDERITE C-IC 241** is a liquid acid cleaner for aluminum, effective in de-oxidizing and brightening surfaces, preventing sludge and scale formation during spray or dip treatments.

**BONDERITE C-IC 18010 LIQUID** is an acid cleaner for stainless steel, removing iron oxides and contaminants from welds and machining, and does not contain nitric acid.

**BONDERITE C-IC 18010 PASTE** is an acid cleaner for stainless steel, effectively removing iron oxides and contaminants from welds and machining, restoring the surface's appearance. It does not contain nitric acid.

**BONDERITE C-IC 1095** is a borate- and phosphate-free acid for aluminum deoxidizing and micro-etching, providing smooth surfaces, energy savings, and sludge-free processing at ambient temperature.

**BONDERITE C-IC 3502** is a sulfuric acid-based cleaner for iron and steel, used for pickling and derusting in industrial immersion processes at 40–80°C.

**BONDERITE C-IC ST** is a liquid acid for micro-etching aluminum before conversion or brightening, offering even appearance, low sludge, reduced wastewater costs, and enhanced safety.

**BONDERITE C-IC 4104 AERO** is a clean, colorless acidic liquid that enhances nitric acid solutions for descaling and pickling stainless steels, titanium, and other alloys.

**BONDERITE C-IC 1097** is an acid cleaner for aluminum, offering smooth, even surfaces at ambient temperatures, with no sludge, improved coating adhesion, and lower smoke emissions.

**BONDERITE C-IC NSC-210** is an uncolored acid for deoxidizing, desmutting, and etching aluminum, ensuring proper adhesion for conversion coatings without requiring neutralization.

**BONDERITE C-IC BR** is a liquid acid cleaner for deoxidation, used in immersion processes to remove oxides and rust, preparing surfaces for coating and deposition.

**BONDERITE C-IC 65001** is a toxic-free, acidic cleaner for deoxidizing and micro-etching aluminum before conversion coating or polishing, offering smooth surfaces and energy savings.



# ADVANCED PRETREATMENT FOR ALUMINUM

## LIGHT METAL CONVERSION COATING

| Product Name                      |        |          |           |                  |               | Substrates   |                 |          |
|-----------------------------------|--------|----------|-----------|------------------|---------------|--------------|-----------------|----------|
|                                   | Liquid | Spraying | Immersion | Temperature (°C) | Concentration | Iron & Steel | Galvanized Part | Aluminum |
| BONDERITE M-NT 400, R-2, R3, R IM | X      | X        | X         | 20–40            | 0.5–2 %       |              |                 | X        |
| BONDERITE M-NT 2040 R2, R8, R9    | X      | X        | X         | 18–45            | 1–3 %         |              |                 | X        |
| BONDERITE M-NT E                  | X      | X        | X         | 15–40            | 4–7 %         | X            | X               | X        |
| BONDERITE M-NT 5992               | X      | X        | X         | 20–35            | 4–5 %         |              |                 | X        |
| BONDERITE M-NT 4830/4831          | X      | X        | X         | 20–40            | 0.5–2 %       |              |                 | X        |
| BONDERITE M-NT 5700 AERO          | X      |          | X         | 20–50            | 7:1 points    |              |                 | X        |
| BONDERITE M-CR 871                | X      | X        | X         |                  |               |              |                 |          |
| BONDERITE M-NT 65000 AERO         |        |          | X         | 20–30            | 25–60 % v/v   |              |                 | X        |
| BONDERITE M-NT 160/161            | X      |          | X         | 20–30            | 1–3 %         |              |                 | X        |

**BONDERITE M-NT 400** and its variants are liquid products for chrome-free conversion of light metals, providing colorless layers, excellent corrosion resistance, and paint adhesion.

**BONDERITE M-NT 2040** is a chromium-free etch passivation for aluminum, enhancing electrical resistance, adhesion, and paint corrosion resistance, suitable for spray and immersion processes.

**BONDERITE M-NT E** is a chrome-free pretreatment for aluminum, steel, and zinc, offering excellent corrosion resistance and environmental compatibility, producing a colorless, compact conversion layer.

**BONDERITE M-NT 5992** is a trivalent chromium-based product creating a hexavalent chrome-free conversion layer on aluminum, enhancing paint adhesion, corrosion protection, and electrical contact resistance.

**BONDERITE M-NT 4830** and **M-NT 4831** produce chromium-free conversion layers on aluminum, offering corrosion resistance and excellent paint adhesion. Approved by Qualicoat and GSB.

**BONDERITE M-NT 5700 AERO** Chrome Free Alu conversion coating. Ready to use product. Organic and inorganic compounds. Also used prior bonding on aluminium parts.

**BONDERITE M-CR 871** is a non-hexavalent chromium conversion coating for aluminum, providing corrosion protection and bonding capabilities, and meets Mil-DTL81706B, Classes 1A and 3, Form V.

**BONDERITE® M-NT 65000 AERO** is a trivalent chromium-based coating for aluminum, providing corrosion protection, paint adhesion, and low electrical resistance, and is sulfate-free.

The **BONDERITE M-NT 160/161** process creates a yellowish, chrome-free conversion coating on aluminum or magnesium, offering excellent corrosion protection and adhesion for painting.

# ANODIZING PORTFOLIO

## ADDITIVE FOR ALKALINE ETCHING (OR CLEANING)

| Product Name         |        |          |           |                  |  | Substrates   |                 |          |
|----------------------|--------|----------|-----------|------------------|--|--------------|-----------------|----------|
|                      | Liquid | Spraying | Immersion | Temperature (°C) | Concentra-<br>tion                           | Iron & Steel | Galvanized Part | Aluminum |
| BONDERITE C-AK 62250 | X      |          | X         | 50–60            | Used at 30 % of Caustic Soda present in bath |              |                 | X        |
| BONDERITE C-AK 4851A | X      |          | X         | 50–70            | Used at 30 % of Caustic Soda present in bath |              |                 | X        |
| BONDERITE C-AK 62201 | X      |          | X         | 50–60            | 2 %–10 %                                     |              |                 | X        |
| BONDERITE C-AK 62350 | X      |          | X         | 50–60            | Used at 30 % of Caustic Soda present in bath |              |                 | X        |

**BONDERITE C-AK 62250** is an additive for caustic soda in aluminum etching. It ensures even finishing, reduces foam, and minimizes aluminum precipitation and material loss.

**BONDERITE C-AK 4851A** enhances chemical etching of aluminum, ensuring even finishing, reduced material loss, high aluminum concentration, and easy disposal of sludge.

**BONDERITE C-AK 62201** is a liquid, silicate-free alkaline cleaner for steel cleaning, aluminum etching, and paint stripping in dip, spray, or electrolytic processes.

**BONDERITE C-AK 62350** is a liquid additive for caustic soda in aluminum etching, ensuring even finishing, reducing foam, and improving rinsability with minimal material loss.

## ADDITIVE FOR ANODIZING

| Product Name         |        |          |           |                  |               | Substrates   |                 |          |
|----------------------|--------|----------|-----------|------------------|---------------|--------------|-----------------|----------|
|                      | Liquid | Spraying | Immersion | Temperature (°C) | Concentration | Iron & Steel | Galvanized Part | Aluminum |
| BONDERITE M-AD 2000A | X      |          | X         | 18–24            | 1.4 %–1.6 %   |              |                 | X        |

**BONDERITE M-AD 2000A** is a liquid additive for anodic oxidation baths, enhancing the anodizing process for aluminum and its alloys.

# ANODIZING SEALING

| Product Name         |        |          |           |                  |               | Substrates   |                 |          |
|----------------------|--------|----------|-----------|------------------|---------------|--------------|-----------------|----------|
|                      | Liquid | Spraying | Immersion | Temperature (°C) | Concentration | Iron & Steel | Galvanized Part | Aluminum |
| BONDERITE M-ED 11100 |        |          | X         | 23–28            | 4–6 g/l       |              |                 | X        |
| BONDERITE M-ED 11102 |        |          | X         | 20–30            | 3–5 g/l       |              |                 | X        |
| BONDERITE M-ED 11001 | X      |          | X         | >95              | 1–3 g/l       |              |                 | X        |
| BONDERITE M-ED 11011 | X      |          | X         | >95              | 3–5 g/l       |              |                 | X        |
| BONDERITE M-ED 11201 | X      |          | X         | 85–95            | 3–5 g/L       |              |                 | X        |

**BONDERITE M-ED 11100** is a powder for cold impregnation of anodized aluminum, enhancing oxide film hardness and meeting multiple international corrosion resistance standards.

**BONDERITE M-ED 11102** is a powder for cold impregnation of anodized aluminum, preventing green discoloration and enhancing oxide film hardness while meeting international corrosion standards.

**BONDERITE M-ED 11001** is a slightly acidic liquid additive that prevents sealing smut and regulates pH to about 5.8 in hot water sealing and impregnation.

**BONDERITE M-ED 11011** is a slightly acidic liquid additive that prevents sealing smut and regulates pH to about 5.8 in hot water sealing and impregnation.

**BONDERITE M-ED 11201** is a liquid, slightly acidic product for medium-temperature sealing of anodized aluminum. It ensures uniform surface finishing and excellent sealing, with pH around 6.0.



# ELECTROCOLORING

| Product Name         |        |          |           |                  |               | Substrates   |                 |          |
|----------------------|--------|----------|-----------|------------------|---------------|--------------|-----------------|----------|
|                      | Liquid | Spraying | Immersion | Temperature (°C) | Concentration | Iron & Steel | Galvanized Part | Aluminum |
| BONDERITE M-ED 12001 | X      |          | X         | Ambient          |               |              |                 | X        |
| BONDERITE M-ED 12003 | X      |          | X         | Ambient          | 2–2.5 %       |              |                 | X        |
| BONDERITE M-ED 12000 | X      |          | X         | Ambient          | 7–9 %         |              |                 | X        |
| BONDERITE M-ED 11009 | X      |          | X         |                  |               |              |                 | X        |
| BONDERITE M-ED 12005 |        |          | X         | Ambient          | 2–2.5 %       |              |                 | X        |
| BONDERITE M-ED 12006 | X      |          | X         | Ambient          | 8–15%         |              |                 | X        |

**BONDERITE M-ED 12001** is a tin sulfate (II) solution for anodized aluminum coloring. It includes complexing agents and oxidation inhibitors, ensuring stable, reproducible colors without pollutants.

**BONDERITE M-ED 12003** is a concentrated additive for anodized aluminum. It stabilizes bivalent tin in electro-colouring baths, ensuring consistent and reproducible color results.

**BONDERITE M-ED 12000** is a tin sulfate solution for anodized aluminum electro-coloring, supplying bivalent tin to ensure effective color application in the process.

**BONDERITE M-ED 12005** is used to prepare and maintain electrocoloring baths for achieving gold shades on anodized aluminum. Combined with sulfuric acid, it facilitates the formation and upkeep of the bath, allowing for a full range of electrolytic gold shades on aluminum surface.

**BONDERITE M-ED 12006** is a liquid acidic product used for preparing and maintaining electrolytic coloring baths for anodized aluminum, producing a burgundy red color. It contains all necessary components to achieve this shade while ensuring the conductivity and penetration of the electrolytic coloring bath.



# EQUIPMENT

## ***BONDERITE EP-APNR***



Corrosion resistance of painted parts depends on many factors: substrate, pretreatment, water quality, paint quality, polymerization and line setup & layout. Improving the performance of short (3 – 4 stage) metal pretreatment lines typically requires significant plant investment.

To avoid those investment costs Henkel has developed **BONDERITE® E-AP APNR (Adhesion Promoter No Rinse)**, offering a unique combination of equipment and chemistry. The system is based on a misting device that applies a solution (the adhesion promoter) to substrates, without any re-

quirements for rinsing. It improves the capabilities of the line by depositing the solution on parts at the end of the pretreatment process, increasing the corrosion resistance significantly: improvement up to 3-4 times (compared to Iron Phosphate). For galvanized material an even more impressive improvement can be achieved.

For Aluminum, its particularly important when it comes to transitioning from Chromium 6 process to Non-Chrome. It also significantly saves water & waste.

## ***BONDERITE E-CO AT 05***



With the **BONDERITE E-CO AT05**, automatic titration moves from the laboratory to the process. The simple unit is strong, installed in a sealed box, can control up to 6 tanks, and is able to perform analyzes in various processes. The titrator performs also routine autocalibration cycles, manages alarms on the measured values and it can carry out chemical washing cycles to keep it in an excellent state of efficiency and cleanliness.

The **BONDERITE E-CO AT05**, manages the addition of concentrated products necessary for restoring and maintaining the chemical parameters of the process. The sample is automatically lifted from the tanks, placed in the external sampler, introduced into the analysis cell, and titrated with reagents via a syringe dispenser. Reagents necessary for the preparation of the sample for analysis and calibration cycles are introduced in the cell via peristaltic pumps. A Panel Personal Computer unit manages all the titration phases and external interfacing (programming, data storage, remote connections).



# BONDERITE E-CO DMC XL

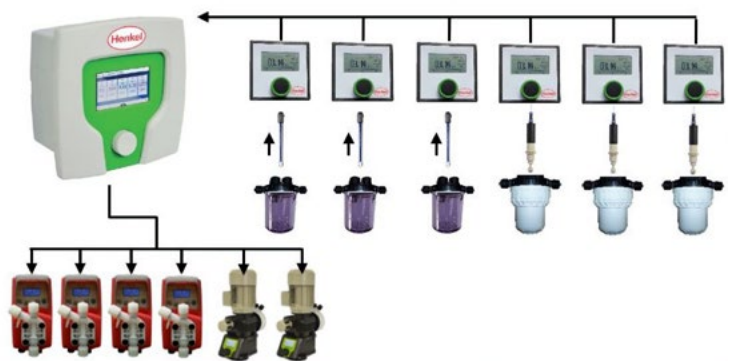


**BONDERITE E-CO DMC** is a process control system that allows users to run complex metal pretreatment lines with up to fifteen or more stages. It features an intuitive touch screen PLC interface and supports fully digitalized process control with flexible communication and remote access functionality.

**Bonderite E-CO DMC** minimizes chemical usage, water and power consumption as well as waste. In addition, it helps to avoid manual work and

chemical exposure in metal pretreatment. All equipment and process setup, adjustment, control and monitoring can effectively be managed by the controller, including bath preparation and refill. The multi-channel system supports both single and multiple production lines in one and the same or neighboring buildings. It can control a virtually unlimited number of process parameters and devices.

# BONDERITE E-CO FLEX



**BONDERITE ECO Flex** controllers feature multi-parameter digital control systems capable of meeting all chemical dosing management needs thanks to their simple interface and high-performance hardware and software. Is the uncompromising, complete, and versatile solution, equipped with all the main reading parameters and all the most important functions for managing dosing systems. Is a digital control instrument designed for multiparameter control of dosing systems, it is equipped with LINUX operating system, high-performance ARM A5 microprocessor and a large color touchscreen display. It enables you to manage all the main measurement parameters conductivity read and regulate setpoints of the 6 channels. For each reading channel it has 2 digital setpoints (ON/OFF), 2 proportional setpoints (PULSE), 1 mA output setpoint and 1 Temperature setpoint.

## BONDERITE E-CO LDS

**BONDERITE E-CO LDS** instruments are single control systems equipped with setpoints with PID control. They have an input for flow control, permanent data storage (without battery) with system log, PT100 temperature probe, Stand-by input, pulse emitter counter input, alarms, delayed start programming of the dosage, automatic temperature compensation, probe value display, dosing systems, automatic or manual dosing, mA current output (optional), current water meter input (optional), probe cleaning and 5 relays.



## BONDERITE E-CO PH&COND



**BONDERITE E-CO pH&cond** Professional portable multiparameter with innovative high-resolution color display, Suitable to work in any conditions, thanks also to the possibility to adjust automatically and manually contrast and brightness of the display. Possibility to select the parameters you want to show. The guide onboard in setup and calibration mode allows a simple and intuitive use of the device. Automatic pH calibration with USA and NIST buffers up to 3 points and 2 points custom defined by the user.

Automatic calibration of conductivity up to 5 points and 1 point custom defined by the user. Adjustable reference temperature and selectable cell constant. Indication with icons of the calibrated points. Measurement stability indicator and possibility of selecting 3 levels of stability. All operations and errors are constantly monitored and shown to the operator via the colored LED above the display.

## **BONDERITE E-CO PH&COND**



The **PRIUS series motor-driven dosing pumps** have been designed and manufactured to meet superior requirements. The dosing power is combined with resistance against aggressive chemicals, vibrations and leaks to ensure the utmost reliability. PRIUS pumps can be used in a wide range of applications, such as, industrial process water treatment, purification processes, and the chemical industry.

The dosing rate can be controlled through mechanical stroke length adjustment. PRIUS MF multifunctional models are also available for higher-level requirements, offering the possibility of programming according to different operating modes.

The materials ensures resistance and safety depending on the type of substance to be dosed: from the most viscous liquids to particularly aggressive chemical agents, from acidic to basic solutions. Designed for industrial level dosing requirements and built with diaphragm or piston technology, the PRIUS MF series has an electronic unit that controls and manages dosing through 10 different working modes. The graphical interface accessible from the display simplifies programming and pump management.

## **BONDERITE PUMP VMF 10 LT/H**



The new **"VMF" series of dosage pumps** is the point of reference for precision dosage. From the manufacturing materials to the design, everything has been created to offer the higher level of performance. The "VMF" series dosage pumps are the ideal solution for the small and medium dosage of chemical products. It is equipped with a microprocessor controller to regulate speed, level, pulse input and mA input; vertically mounted and offers constant dosage and level alarms with a floating magnetic sensor.



# **HENKEL, AS A LE SURFACE PRETREATMENT TO SUSTAINABIL**



**RESPECT**  
THE PLANET  
**RETHINK**  
DESIGN AND  
PROCESSES



# LEADER IN THE METAL INDUSTRY, IS COMMITTED TO SUSTAINABILITY.



## **Water Resource**

Henkel is committed to the efficient use of water throughout customers' production process. Water consumption has been reduced by 30 % through recycling wastewater. Meanwhile, Henkel continuously optimizes the process, thus effectively saving water and production costs for customers.



## **Carbon Emission**

Henkel is concerned about carbon emissions. By providing energy, materials, and treatment solutions, we are committed to improving energy efficiency in the production process. Through innovation, Henkel shortens the flow and reduces treatment time, resulting in less energy consumption in the process and a 30 % reduction in emissions.



## **Circular Economy**

Henkel actively promotes the circular economy. Through recycling solutions and new designs, waste is transformed into valuable resources. In addition, Henkel works with our partners to research and develop new recycling technologies to increase the reuse of waste. We encourage our customers to use environmentally friendly materials and recycling designs to reduce waste.



## **Safety**

Henkel is committed to providing safe and reliable solutions. Through the development and application of clean production technology, Henkel reduces harmful substances in the production process to ensure the health and safety of personnel. Henkel's products not only meet the relevant safety standards but also comply with the industry's phosphorus-free and nickel-free development trend, ensuring the safety of customers during use.

Through continuous innovation and collaboration, Henkel provides customers with sustainable solutions and enables them to succeed in an ever-changing environment. In the future, Henkel will drive the industry in a more environmentally friendly direction and contribute to the sustainable development of the manufacturing industry.



**Henkel AG & Co. KGaA**

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[next.henkel-adhesives.com/us/en/industries/metals/aluminum-components.html](https://next.henkel-adhesives.com/us/en/industries/metals/aluminum-components.html)