

# ***HENKEL GENERAL INDUSTRIES*** 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, special coatings, and equipment.



## Cleaners

- Alkaline cleaners
- Aluminum cleaners
- Acid pickles & deoxidizers
- In Process cleaners
- Cleaning boosters



## Metal Pretreatment

- Nanoceramic technology
- Iron Phosphate
- Zinc/Manganese Phosphate
- Anodizing
- Aluminum Coating & Pretreatment



## Specialty

- Post Treatments
- Rust Preventatives
- Paint stripping



## Mil Spec Guide

- Military Specs



## Organic coatings

- Autodeposition coatings
- Functional coatings
- Passivation coatings



## Certification of Product range for Aluminum by

- Qualicoat
- Qualanod
- GSB

## APPLICABLE INDUSTRIES

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

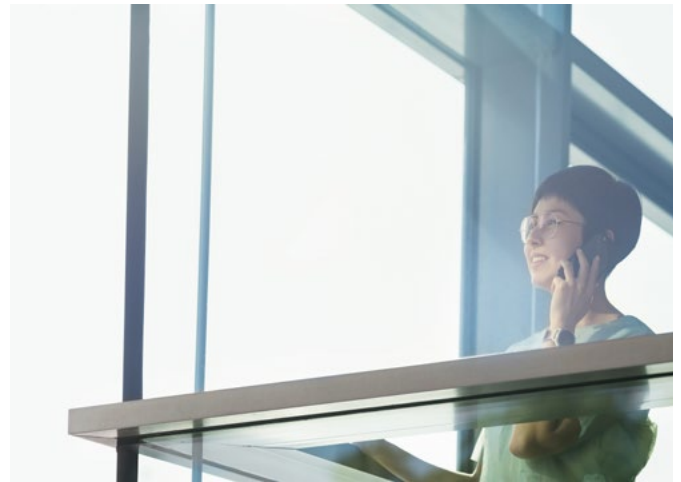
In the field of general industries, Henkel has the most widely used and complete lineup of mature products, including industrial cleaners, pre-treatment products, passivating agents, nanocoatings, anti-rust coatings, anodizing & eco-friendly Cr-free coating for aluminum etc. Whether it is general steel sheets, galvanized sheets, tin sheets, aluminum, and magnesium, whether it is for coating bases, rust and abrasion prevention, or plastic processing, customers can find professional solutions with reliable quality and stable performance.

## PRODUCTS & TECHNOLOGIES

- Cleaners
- Conversion coatings
- Specialties
- Mil Specs
- Aluminum Coating & pre-treatment
- Anodizing
- Deoxidisers
- Acid pickles
- Organic coatings



Energy Storage



Architectural Structure



Office and outdoor furniture



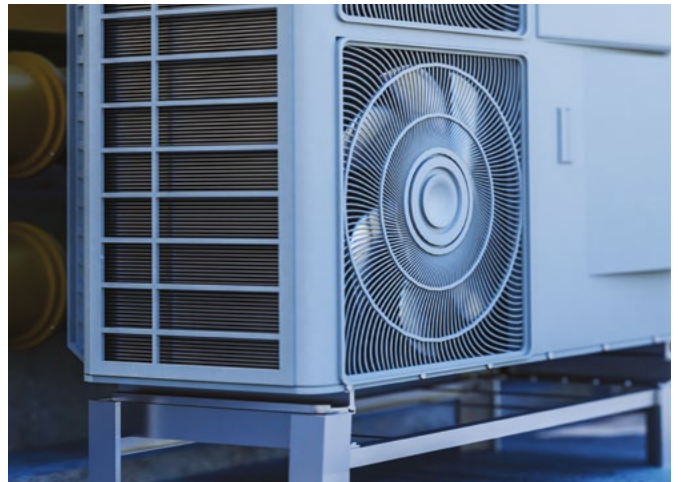
Special vehicle



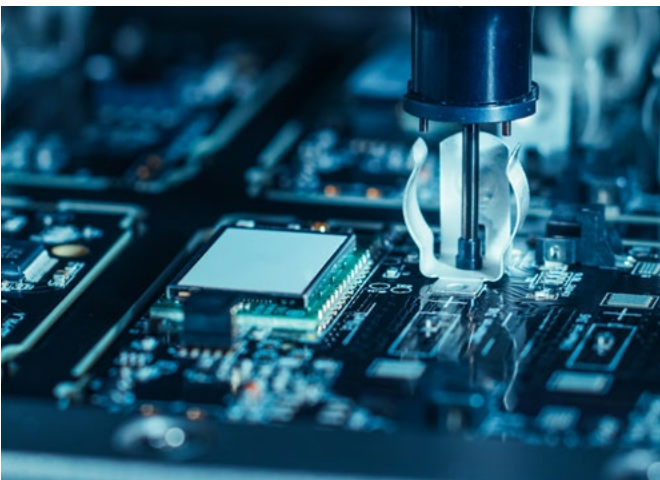
Agricultural and construction machinery



Home appliance



Heating ventilation/air conditioning engineering



Electrical



Remanufacturing industry



# 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

# ALKALINE CLEANERS

Product Name						Substrates		
	Liquid	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE C-AK 11010		X	X	50–80	0,3–3 %	X	X	X
BONDERITE C-AK 1574	X	X	X	30–80	0,3–3 %	X	X	X
BONDERITE C-AK 4181 L	X		X	70–90	10 % onwards	X		
BONDERITE C-AK 5800	X	X	X	40–80	4–8 %	X		
BONDERITE C-AK 7163 CF/5	X	X	X	30–80	0,3–3 %	X	X	X
BONDERITE C-AK LS NP-LT AERO	X	X	X	30–90	3–25 %	X	X	X
BONDERITE C-AK 1568	X	X	X	30–80	2–5 %	X		
BONDERITE C-AK 5948DPM (DE)	X		X	55–80	5–25 %			X

**BONDERITE C-AK 11010** is a powder cleaner for degreasing of all metals. It is composed of carbonates, phosphates, silicates and nonionic surfactants. The product does not affect the alloys of aluminium, copper, tin or zinc and may therefore be used to clean different metals simultaneously.

**BONDERITE C-AK 1574** is a liquid alkaline cleaner based on phosphate for steel but also suited for galvanized zinc plated steel and aluminium. Temperature dependent of the BONDERITE C-AD cleaning booster used.

**BONDERITE C-AK 4181 L** is a liquid caustic cleaner for immersion with protective power on steel (containing TEA and alkylpoliglucosides).

**BONDERITE C-AK 5800** is composed of alkalis, phosphates, salts of organic acid and non-ionic surfactants. Cleaning after cutting, stamping, pressing or cold forming of cast iron, steel parts and plastic. Removing of heavily soiled and greasy contaminations as well as pigmented, fatty acid containing drawing compounds. Due to its high polymer phosphate content it can also be used in hard water.

**BONDERITE C-AK 7163 CF/5** is an Alkaline liquid degreaser. Based on NaOH, KOH, phosphates, sequestrants. Temperature dependent of the BONDERITE C-AD cleaning booster used.

**BONDERITE® C-AK LS NP-LT AERO** is a liquid cleaner developed to remove shop soils, oils and drawing waxes from ferrous, aluminum, copper and titanium alloys. It does not contain free caustic or phosphates, readily rinses from metal surfaces with room temperature water.

**BONDERITE C-AK 1568** is a liquid alkaline cleaner based on phosphate for steel. BONDERITE C-AK 1568 is used in spray- or immersion processes. Temperature dependent of the BONDERITE C-AD cleaning booster used.

**BONDERITE C-AK 5948DPM (DE)** is an alkaline liquid product. Aerospace approval allowing cleaning painted and unpainted aircraft surfaces. Does not contain phosphates, nor chromates.

# 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.



# CLEANING BOOSTERS

Product Name	Substrates						
	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE C-AD 20202		X	35	0,1–1 %	X	X	X
BONDERITE C-AD 0508	X	X	40–80	0,1–1 %	X	X	X
BONDERITE C-AD 0555	X		35–60	0,1–1 %	X	X	X
BONDERITE C-AD 10004	X		20–35	0,1–1 %	X	X	X
BONDERITE C-AD 5003	X		50–80	0,1–1 %	X	X	X
BONDERITE C-AD CW-1	X		20–45	0,2–0,5 %	X	X	X
BONDERITE C-AD RT-1020S (DE)	X		20–60	0,1–0,3 %	X	X	X
BONDERITE C-AD B		X	50–80	0,1–0,3 %	X	X	X

**BONDERITE C-AD 0508** is a cleaning booster for temperature above 40°C. Some protection against flash rust.

**BONDERITE C-AD 0555** is a cleaning booster based on nonionic surfactant sprayable from 35°C onwards.

**BONDERITE C-AD 10004** is a cleaning booster, applicable in spray process. BONDERITE C-AD 10004 will be used in combination on a cleanaer-coater conversion coating of the BONDERITE M-NT range.

**BONDERITE C-AD CW-1** is a low temperature cleaning booster enabling significant energy savings and CO<sub>2</sub> footprint reduction.

**BONDERITE C-AD RT-1020S** is a low temperature cleaning booster typically performing from 25–30°C onwards. Higher temperature of 55°–60°C are also possible. At low temperatures, it enables significant energy savings and CO<sub>2</sub> footprint reduction.

**BONDERITE C-AD B** is a cleaning booster for dip application, with or without ultrasonics. Also used in fluxing baths.

**BONDERITE C-AD 20202** is an innovative cleaning booster especially designed to work at low temperature (35°C) for dip applications. A real breakthrough to enable Energy savings, CO<sub>2</sub> footprint reduction. What's more, it is biodegradable, and enjoys a Water Hazard Class rating of 1 by German standards (Low water hazard class).

# 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	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 deoxidizing 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.

# NEUTRAL CLEANERS

Product Name	Substrates						
	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE C-NE 175	X		50–80	0,5–3 %	X	X	X
BONDERITE C-NE 3300	X		30–80	1–3 %	X		X
BONDERITE C-NE 400	X		10–80	0,5–2 %	X	X	X
BONDERITE C-NE 5088	X		50–80	0,5–3 %	X	X	X
BONDERITE C-NE N	X	X	20–70	2–10 %	X	X	X
BONDERITE C-NE 7588		X	30–50	3–12 %	X	X	X

**BONDERITE C-NE 175** is nitrite free, with excellent rust protection. It is composed of inorganic corrosion protection components, organic corrosion protection components, phosphates, borates, nonionic surfactants and anti foaming agent. Cleaning after cutting, stamping or pressing, simultaneously passivating steel, cast iron and aluminium work pieces.

**BONDERITE C-NE 3300** is used for cleaning after cutting, stamping or pressing and simultaneously passivating of steel, cast iron and aluminium work pieces, e.g in the metal working industry as well as in the manufacture of engines and transmissions. BONDERITE C-NE 3300 is suitable for high pressure operations. It has very good demulsifying properties.

**BONDERITE C-NE 400** is a high concentrated neutral cleaner with excellent corrosion protection properties, sprayable from room temperature onwards, applicable for all substrates.

**BONDERITE C-NE 5088** is a standard neutral cleaner with best cleaning properties, organic based, with particularly good performances on steel substrates.

**BONDERITE C-NE N** is a neutral rust and scale remover designed for immersion and spray processes on a wide variety of materials including ferrous and non-ferrous metals. It is especially applicable for the removing of residues resulting from deburring processes or laser cutting.

**BONDERITE C-NE 7588** is a borate-free neutral cleaner.



# ADVANCED ZIRCONIUM PRETREATMENT PROCESS

It can optimize the production process, reduce equipment cost input, achieve carbon reduction, water conservation and emission reduction, and promote sustainable development.

MAKE *EVERY* **DROP**  
**COUNT**

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

# NEW GENERATION COATINGS

Product Name	Substrates						
	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE M-NT 1200	X		20–40	1–3 %	X	X	X
BONDERITE M-NT 20120	X	X	20–50	1–3 %	X	X	X
BONDERITE M-NT 30002	X	X	20–50	1–3 %	X	X	X
BONDERITE M-NT 40043	X	X	20–60	1–3 %	X	X	X
BONDERITE M-NT 41040	X		20–60	0,5–1 %	X	X	X
BONDERITE M-NT 5700	X		20–50	100 %			X
BONDERITE M-NT 1455	X		20–40	1–3 %	X	X	X
BONDERITE M-NT 50001	X		Room T°	0,2–1 %	X	X	X
BONDERITE M-NT 5923	X		Room T°	1–2 %	X	X	X

**BONDERITE M-NT 1200** is a Zirconium based thin film conversion coating, high performance, Phosphate free, specially designed for electrocoat applications. | high performance Phosphate free conversion coating prior e-coat

**BONDERITE M-NT 20120** is a robust, phosphate free, high performance zirconium based thin film conversion coating compatible with all paint types.

**BONDERITE M-NT 30002** is a phosphate free, high performance conversion coating designed for galvanized substrate. It is based on a blend of trivalent chromium and zirconium. | High performance Phosphate free conversion coating designed for galvanized substrate. Cr3+ / Zn.

**BONDERITE M-NT 40043** is a robust zirconium phosphate conversion coating. Could be also use as cleaner-coater, with addition of surfactant.

**BONDERITE M-NT 41040** is a zirconium based cleaner coater.

**BONDERITE M-NT 5700** is a titanium based conversion coating for aluminium substrates. Ready to use products. Organic and inorganic compounds. Also used prior bonding on aluminium parts. Aerospace approved. Possible use with APNR misting equipment.

**BONDERITE M-NT 1455** is a blend of inorganic and organic conversion coating.

**BONDERITE M-NT 50001** is a zirconium – polymer based conversion coating for dry-in-place application using APNR equipment.

**BONDERITE M-NT 5923** is a conversion coating containing trivalent chromium, for dry-in-place applications using APNR equipment.

# PHOSPHATE CONVERSION COATINGS

## IRON PHOSPHATE

Product Name	Substrates						
	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE M-FE 3960 W	X		45–70	1–2 %	X		
BONDERITE M-FE 3990	X		40–60	1–2 %	X		
BONDERITE M-FE HMF-1080 IT	X		45–65	1,5–2 %	X	X	X
BONDERITE M-FE F-814	X		30–55	1,5–3 %	X	X	X
BONDERITE M-FE LF-3820	X		30–70	1- 2 %	X	X	X

**BONDERITE M-FE 3960 W** is a low coating weight iron phosphate conversion coating, multimetal, with integrated cleaning booster.

**BONDERITE M-FE 3990** is a high coating weight iron phosphate conversion coating, multimetal, with integrated cleaning booster.

**BONDERITE M-FE HMF-1080 IT** is a high coating weight iron phosphate conversion coating, multimetal, with integrated cleaning booster. It does not contain HAS nor Boron.

**BONDERITE M-FE F-814** is a high coating weight iron phosphate conversion coating, containing integrated cleaning boosters. Construction equipment approval.

**BONDERITE M-FE LF-3820** is a low coating weight iron phosphate conversion coating containing an integrated cleaning booster.



# ZINC & MANGANESE PHOSPHATE

Product Name	Substrates						
	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE M-MN 117 MU		X	78–82	9 %	X		
BONDERITE M-ZN 20	X	X	70–80	4,4–6,6 %	X		
BONDERITE M-ZN 2722 E6	X	X	50–55	3 %	X	X	X
BONDERITE M-ZN 2742 R7	X	X	48–55	3 %	X	X	X

**BONDERITE M-MN 117 MU** is a nickel-free manganese phosphate. It avoids metal-to-metal contact and considerably lowers the friction coefficient of the parts. The anti-seize, anti-weld and anti-corrosion properties of BONDERITE M-MN 117 MU are outstanding. Benefits: Improvement of the frictional qualities of mechanical steel parts. Low temperature operation: energy saving; reduction of scaling. Excellent bath stability.

**BONDERITE M-ZN 20** is a nitrate, nitrite accelerated phosphating process, which produces microcrystalline zinc calcium phosphate layers on steel and iron surfaces.

**BONDERITE M-ZN 2722 E6** is a nitrite accelerated nickel-free bicationic phosphating process for steel, galvanized and alloy coated (Zn/Ni) steel. It generates a fine crystalline coating of manganese containing zinc phosphate.

**BONDERITE M-ZN 2742** is a nitrite- and nickel-free dicationic phosphating process for steel, galvanized and alloy coated (Zn/Ni) steel. It generates a fine crystalline coating of manganese containing zinc phosphate. The crystalline layer has very good corrosion protection properties and is an excellent foundation for subsequent painting or organic coating. For easier process steering no separate dosing of an accelerator is necessary.

# 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 ANODIZING

Product Name						Substrates		
	Liquid	Spraying	Immersion	Temperature (°C)	Concentra- 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.

# PAINTS / COATINGS

## PAINTS / COATINGS

Product Name					Substrates		
	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE M-PP 102		X	20–22	13 %	X		
BONDERITE M-PP 866 R		X	20–22	13 %	X		
BONDERITE M-PP 930 REPLENISHER		X	20–22	13 %	X		
BONDERITE O-PC 100		X	Room T°	100 %	X		

**BONDERITE M-PP 102** is an autophoretic coating for temporary corrosion protection as stand alone, or primer before powder paint. Transparent Acrylic. oven dry 90°C. 0 % COVs. 350H NSS when powder coated.

**BONDERITE M-PP 866 R** is an autophoretic coating offering low cure (90°C), but low T° resistance (100°C). Black PVDC. 0 % COVs.

**BONDERITE M-PP 930 REPLENISHER** is the best performing autophoretic coating, curing at 180°C. co-cure with powder top coat allowing to lower CO<sub>2</sub> footprint. Black cross-linked epoxy.

**BONDERITE O-PC 100** is a 100 % water-based conventional dip paint for steel substrates. No COVs. Oven dry at 50-80°C. Temperature resistance 80°C. A dry film thickness of 50µ enables to reach 500H neutral salt spray test. Mat black colour.

# PAINT STRIPPER, RUST PREVENTIVE & DEFOAMERS

## PAINT STRIPPERS, RUST PREVENTIVES & DEFOAMERS

Product Name	Substrates						
	Spraying	Immersion	Temperature (°C)	Concentration	Iron & Steel	Galvanized Part	Aluminum
BONDERITE S-ST 9210	X	X	60–80	30–50 %	X		
BONDERITE S-ST 99 A		X	20–40	100 %	X	X	X
BONDERITE S-PD 673	X		process T°	see TDS	X	X	X
BONDERITE S-PD 828 HK		X	process T°	see TDS	N/A	N/A	N/A
BONDERITE S-PD 951		X	process T°	see TDS	N/A	N/A	N/A
BONDERITE S-FN 6748	X	X	15–80	0,5–3 %	X		
BONDERITE S-FN 7400	X	X	15–80	0,5–3 %	X		
BONDERITE S-ST 600	X	X	65–110	5–20 %	X		X

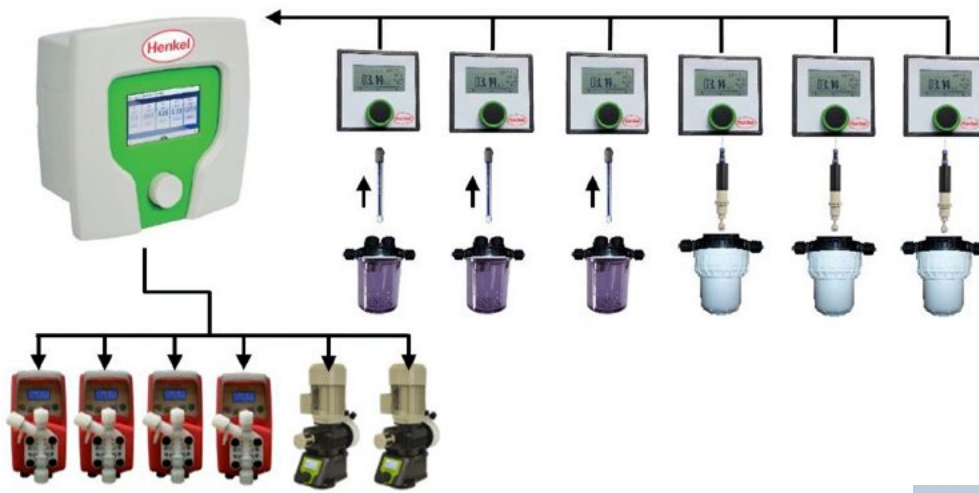
**BONDERITE S-ST 9210** is a paint stripper for steel, water based.  
**BONDERITE S-ST 99 A** is a paint stripper for all types of materials. Operating at room temperature. Very effective on powder coating.  
**BONDERITE S-PD 673** is a defoamer. Quick and effective foam destruction and a long-term foam prevention. Defoamer for paint coagulation, suitable for water-borne and solvent based paints.  
**BONDERITE S-PD 828 HK** is a neutral coagulation agent for solvent-based and water-borne paints. Suitable for all state of the art plant systems.  
**BONDERITE S-PD 951** is a paint flocculant used afterwards coagulation.

**BONDERITE S-FN 6748** is an aqueous temporary corrosion protection agent. Based on monoethanolamine.  
**BONDERITE S-FN 7400** is an alkaline liquid product for temporary corrosion protection of cast iron, steel and copper alloys. Based on triethanolamine.  
**BONDERITE S-ST 600** is a powerful, liquid additive for paint stripping. It is used hot, applied by dipping or spraying, for steel or aluminum parts. Special Features: Contains no phenols or naphtha derivatives. Safe to use. Non-foaming. Can be used on steel or aluminum in combination with an appropriate alkaline solution.



# EQUIPMENT

Product Name	Product Description & USP
BONDERITE EP-APNR	<p>Corrosion resistance of painted parts depends on many factors: substrate, pretreatment, water quality, paint quality, polymerization and line setup &amp; layout. Improving the performance of short (3 – 4 stage) metal pretreatment lines typically requires significant plant investment.</p> <p>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 requirements 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.</p> <p>For Aluminum, its particularly important when it comes to transitioning from Chromium 6 process to Non-Chrome. It also significantly saves water &amp; waste.</p>
BONDERITE E-CO AT 05	<p>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.</p> <p>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).</p>
BONDERITE E-CO DMC XL	<p>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.</p>
BONDERITE E-CO FLEX	<p>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, highperformance 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.</p>
BONDERITE E-CO LDS	<p>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.</p>



BODERITE E-CO FLEX



BODERITE E-CO AT 05



BODERITE E-EP APNR



BODERITE E-CO LDS



BODERITE E-CO DMC



# **HENKEL, AS A LEADER IN SURFACE PRETREATMENT TECHNOLOGY, IS COMMITTED TO SUSTAINABILITY**



**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.





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