hebro chemie
by Surventis

hebro chemie – Special-purpose products for industrial applications in the field of surface treatment technologies

Introduction and product overview

Key insights into **hebro** chemie

Experience and product diversity you can count on

hebro chemie, based in Mönchengladbach, Germany, is a reliable supplier of special-purpose chemical products of the highest quality. The company was founded in 1976 and, today, offers a broad range of innovative, highly effective premium products – for industry, the trades, the services sector and public institutions. Our products are designed to increase efficiency in day-to-day life – they preserve health and conserve natural resources.

A pioneer in a competitive market

All of **hebro** chemie's development efforts revolve around one central objective: to promote the well-being of people and protect the environment.

With the German headquarter in Mönchengladbach as the hub of our activities, we develop and produce high-quality products that increase efficiency and economy in our customers' everyday lives.

hebro chemie is part of the Surventis group.

Thanks to positive customer feedback, the company has been able to grow continuously and sustainably – products made by **hebro** chemie are very well represented in today's specialty chemicals market.

Focussing customer wishes

The broad range of **hebro** chemie products is aimed at industry, public institutions and the service sector.

hebro chemie is able to recognise customer needs and is always interested in generating solutions in partnership-like cooperation.

In order to meet and even exceed customer requirements, **hebro** chemie embraces all challenges that involve the continuous further development of our products, processes and services.

In this way, it is both a commitment and a promise at the same time for **hebro** chemie – developing and providing dependable solutions and quality products for both people and the environment.

Allow us to fascinate you.
We offer ideas for practical solutions for a wide range of applications in surface technology, which prove hebro chemie to be a capable market partner.
We provide user-friendly and, at the same time, environmentally friendly special chemicals.
And we have product quality that enables you to optimise your processes and procedures.

Find out more about our extensive range of services on our website: www.hebro-chemie.de

We understand your needs – you benefit

Our passion lies in surface treatment.

The basic idea behind surface treatment results from the functional separation of the mass of a component or tool and its surface finish. The shaped mass normally fulfils a primary function, for example as a gear wheel. With the help of specific surface treatment processes, the surface can be optimised to match a specific requirement profile and fulfil a wide range of properties. Since modern materials alone can hardly meet the demands placed on them in full, specific optimisation of surfaces by treatment represents a major extension of their usefulness.

Surface treatments are often a combination of processes: for example, shot-blasting involves material removal, forming and hardening. In addition, other surface finishing processes are sometimes included as surface treatments: simple vibratory finishing, for example. Common chemical processes are cleaning, degreasing, pickling and de-anodising.

Whatever surface treatment you use, **hebro** chemie offers you the necessary know-how and a wide range of proven special chemicals to make your day-to-day business even more successful.

Our working relationship will always begin with a comprehensive consulting phase. This includes a complete analysis of the status quo as well as an evaluation of potential optimisation opportunities. Together with you, the application experts from **hebro** chemie will analyse all the upstream and downstream processes and define the target parameters to be achieved. This allows us to select the ideal product system, individually tailored to your needs, from no less than eleven product categories.

One particular benefit is that our technical service will support you on site with the commissioning, configuration and optimisation of the required processes.

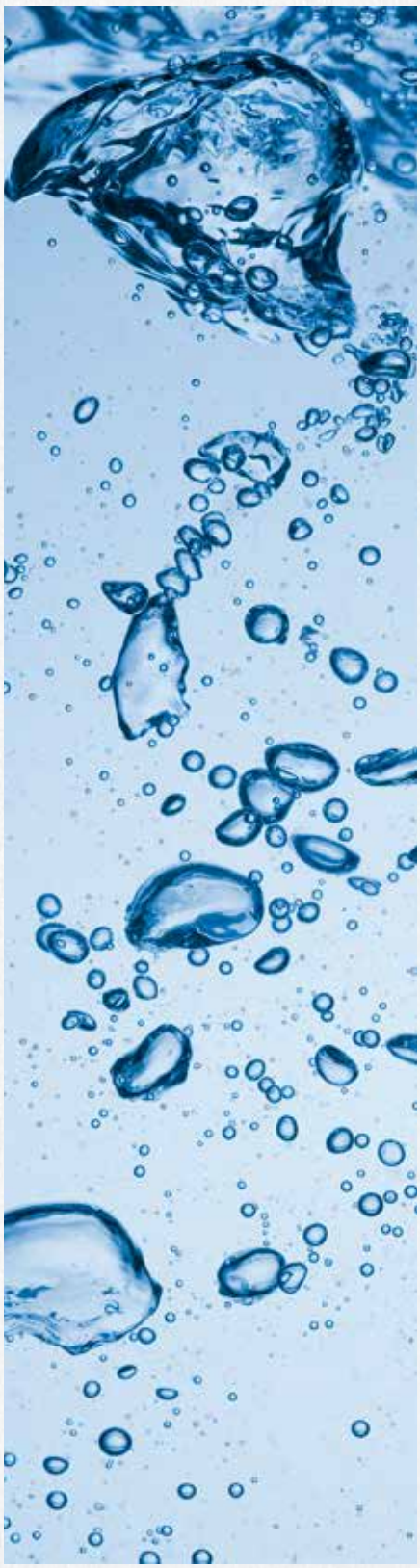
In addition, we train your employees in such a way that the achievable work results are always of the highest standard.

The **hebro** product range for special requirements in surface treatments provides the following noteworthy benefits:

- **Surface treatment chemistry with high environmental compatibility**
- **Provision of tried-and-tested peak quality coupled with the best possible value for money**
- **Sophisticated system solutions ensure focused application**
- **Greatest effectiveness within the scope of the respective application**
- **Simple and precise dosing**
- **Highly economical product use due to low dosing quantities**
- **Maximum functionality combined with high process capability**
- **Disposal of product residues in line with current regulations**
- **Support in all matters relating to the application**

hebro chemie – turning surfaces into perfect finishes

An overview of our eleven product categories



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02 Pickling

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01 Cleaning

hebro chemie offers you a comprehensive range of highly efficient and environmentally friendly cleaning products for a wide range of market requirements. After all, high-quality finishes require cleaned surfaces.

The cleaning quality has a direct impact on the quality of the end products. This may be cleaning between processing steps, degreasing before a conversion coating or the final cleaning phase.

Our products – your benefit

- **High economic efficiency due to low product concentrations**
- **Measurable extension of service life**
- **Both low-temperature and multimetal cleaners are available**
- **High environmental compatibility through low-labelling or label-free product alternatives**

Goals

- To achieve uniformly high reactivity for chemical surface treatment and galvanising
- Protection against staining (Crucial in the beverage canning industry)
- Improvement of gloss properties (e.g. for application on polished alloy wheels), matting or brightening
- Suitability for lacquer application and bonding
- Optimum preparation of painting or bonding processes

Good to know

In addition to the qualitative requirements, economic and ecological aspects are becoming increasingly important. This may lead to automatic process control or the creation of possibilities for more efficient and cost-effective bath maintenance, for example, by extending bath service life and installation of wastewater-free technology using an evaporator or a static separator for emulsion-splitting cleaner systems.

Overview of the process steps

Cleaning products

Gardoclean® series

Alkaline cleaners for spray and immersion application for removing coolants, residues of abrasives and polishing pastes. **Gardoclean®** is ideal for cleaning steel, galvanised steel surfaces, multimetal and aluminium.

Gardoprep® series

(Low temperature cleaning)

Neutral cleaner for cleaning plastics (Powerwash).
Gardoprep® can be used at room temperature (20 °C).

hebro clean series

(Low temperature cleaning)

Spray and immersion cleaner for a wide range of materials, including non-ferrous metals. Efficiently removes drawing oils, drawing greases, resinified oils, greases, coolant residues and particulate soiling. Can be rinsed off without leaving residues or stains.

hebro lan series

Cleaner for highly contaminated steel materials caused by bearing grease, burnt-in oils, residues from forging and more.

02 Pickling

Pickling is a commonly used chemical or electro-chemical process in surface treatment that allows the targeted adjustment of surface properties of a material. Soiling and welding or other residues such as scale and rust are thoroughly removed. In addition, laser-cut edges can be deburred with the help of pickling. Thanks to these capabilities, pickling products can create the ideal conditions for the smooth operation of subsequent processes.

hebro chemie pickling products offer highly effective methods for the efficient, but still gentle cleaning of metal surfaces. We provide both a wide range of products based on state-of-the-art environmentally friendly processes and others for traditional processes.

Our products – your benefit

- **Good value for money due to low consumption and long service life**
- **Installation-friendly and environmentally compatible ingredients**
- **Combined application as a pickling degreaser also possible**

Goals

- Oxide solution and efficient cleaning
- Metallic ally bright surfaces
- Deburring and removal of welding residues
- Optimal preparation of downstream processes
- Minimal degradation of base material

Good to know

Pickling agents penetrate the oxide layer and superficially dissolve the material underneath. In this way, the oxide layer dissolved loses its bond to the metal.
To ensure maximum effectiveness, the pickling process must be precisely timed to take account of the respective product and material.
Chemical reactions can also be influenced by regulating the temperature.

Overview of the process steps

Pickling agents

Gardacid® series

Environmentally compatible neutral pickling products are used to remove oxide layers and scale. Inhibited pickling agents based on phosphoric or sulphuric acid are used for cleaning off incrustations, for rust removal and descaling.

03 Iron phosphating

Phosphating is the oldest and most widely used process in surface treatments.
Primarily, it serves to improve corrosion protection and, additionally, to enhance paint adhesion.
In this process, chemical reactions between metallic surfaces and aqueous phosphate solutions form an adhesion primer for subsequent paint coatings.
Iron phosphating is often used for steel. However, it can also be used for galvanised steels or aluminium surfaces. In this field, **hebro** chemie offers perfectly matched products designed for convincing results.

Our products – your benefit

- **High-quality, uniform coating formation**
- **Can be combined with suitable cleaning systems for degreasing and phosphating processes**
- **Multimetal phosphating processes – can also be applied to zinc and aluminium or, alternatively, as a low-temperature process**

Goals

- The best paint adhesion achievable
- Effective corrosion protection
- Improvement of lubricating properties
- Improvement of the break-in properties of moving parts

Good to know

In the case of iron phosphating, the pickling agent initially interacts with the base material, resulting in the dissolution of metal cations and the formation of hydrogen. After that, the natural oxide layer on the metal is removed. The layer thicknesses from iron phosphating has a range from a few hundred nanometres to several micrometres.

Overview of the process steps

Iron phosphating products

hebro phos series

(Low temperature phosphating)

Combination product for degreasing and phosphating steel and ferrous materials in circulatory spraying systems and in high-pressure processes.

hebro bond A series

Combined cleaning and iron phosphating solution provides simultaneous cleaning and phosphating of ferrous materials. Production parts made of aluminium or zinc materials can be cleaned with this process and the surfaces can be given a light matt finish.

Gardobond® A series

Combined cleaning and iron phosphating solution for simultaneous cleaning and phosphating of ferrous metals, aluminium or zinc material.

04 Multimetal pretreatment

The automotive industry, in particular, is increasingly relying on a mix of metal substrates and these are frequently, alongside aluminium, zinc-magnesium materials.
The key factors of user and market relevance have to be catered for while, at the same time, encompassing multimetal combinations, stricter environmental regulations and increasing cost pressure coupled simultaneously with adhering to the most demanding quality standards.

For **hebro** chemie, this development represents a special challenge. We deliver effective solutions that provide the advantages of zinc phosphating, which has been tried and tested over many years, and also met new market requirements.

Our products – your benefit

- **Improves the quality of short runs (Two-stage process)**
- **Achieves the quality of iron phosphating plus passivation (At least three-stage process)**
- **Free of phosphates, nickel, chromium and VOCs**
- **Multimetal capable process**

Goals

- Creates an environmentally compatible alternative to traditional processes such as iron phosphating
- Compliance with specifications of higher industrial standards
- Increase in production output thanks to modular design of the pretreatment technology
- Increased quality and efficiency

Good to know

The multimetal pretreatment system is recommended as an alternative to iron phosphating with additional passivation or zinc phosphating for medium quality requirements.
It can be used primarily in standard paint systems and is suitable for powder coatings, such as polyester, epoxy and mixed systems, as well as for liquid coatings, like single-coat wet paints.
In addition, there are processes available that are compatible with cathodic or anodic dip coatings.

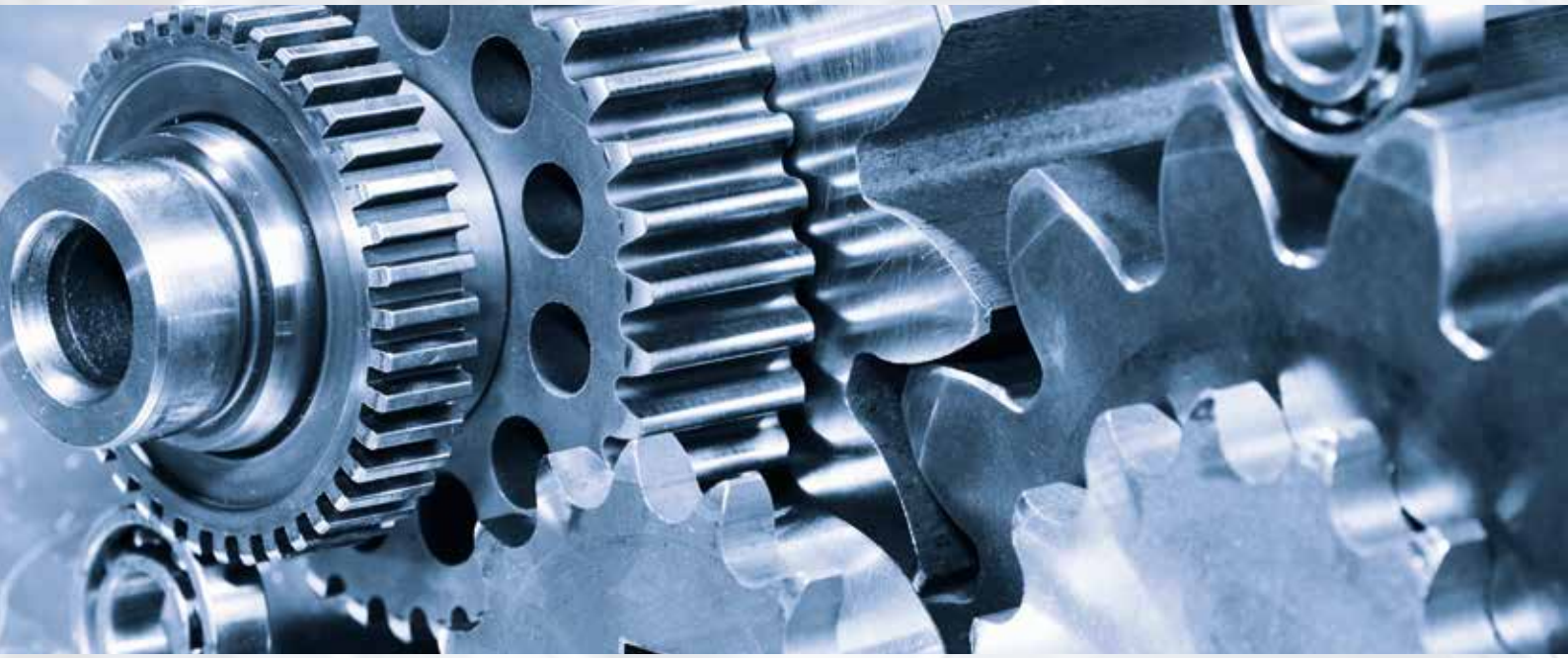
Overview of the process steps

Multimetal pretreatment products

Gardobond® X 2020

This product meets all the requirements of an easily applicable, environmentally compatible technology for multi-metal applications. Depending on individual customer requirements and environmental regulations, suitable, matched components can be assembled for each process step from our modular system. Compared to iron phosphating, our system requires a significantly lower product concentration. Almost no sludge is produced, which means that process costs can be reduced.

05 Manganese phosphating



hebro chemie understands the special requirements of manganese phosphating. By immersing low-alloyed ferrous substrates in acidic solutions, a fine-crystalline manganese phosphate layer is created by chemical reaction with the base metal and firmly bonded to the surface.

Since our Gardobond® process is purely a chemical one, this enables boreholes and interior surfaces to be equally efficiently coated. As a result, friction is reduced and sliding properties are improved. The phosphate layer features good absorbency and has excellent oil binding properties.

This means that continuous oiling of the materials improves both their sliding properties and corrosion resistance.

Our products – your benefit

- **High-quality, fine-crystalline layer formation**
- **Excellent sliding properties with low friction values**
- **Reduced wear on components**
- **Lower noise levels in gearboxes**
- **Improved dry running characteristics**
- **Improvement of break-in properties**

Goals

- Generate a conversion coating
- Reduce wear due to friction
- Durable bright surface corrosion protection

Good to know

Manganese phosphating is the preferred process for products that are subject to constant sliding friction – especially to improve the break-in properties of engines and machines.

The reason for this is the comparatively high wear resistance of the surfaces, which is because manganese phosphate coatings adhere more firmly to the metal substrate than zinc phosphate coatings.

Overview of the process steps

Manganese phosphating products

Gardobond® G series

We deliver particularly environmentally compatible, nickel-free phosphating processes with a wide range of applications. Perfectly matched, single-component pre-rinsing agents are used in the processes to generate homogeneous layers on steel surfaces.

Gardolene® V series

Powder or liquid activating pre-rinsing agents for metal surfaces prior to phosphating with manganese phosphating processes.
Activating the surfaces enables the formation of crystalline manganese phosphate layers, especially on production parts that have been alkaline degreased or acid pickled.

06 Zinc phosphating

Zinc phosphating is a tried-and-tested coating-forming passivation process. Activating the surfaces enables the formation of crystalline zinc phosphate layers, especially on production parts that have been alkaline degreased or acid pickled. Zinc phosphating coats a metallic surface with a "poor" conductor, as it were, and drives the precipitation of insoluble metal phosphate. This acts as an insulating layer and slows down electrochemical processes that are responsible for corroding the metal.

You can rely on the proven zinc phosphating products from **hebro** chemie. In addition to established products, nickel-free variants are also available as alternatives.

Our products – your benefit

- **Excellent paint adhesion and long-term corrosion protection**
- **Excellent adhesive properties due to the fine crystalline structure**
- **Outstanding layering properties for ideal post-treatment results**

Goals

- Improvement of corrosion protection and paint adhesion
- Effective sliding coating for metal forming processes

Good to know

Zinc phosphating focuses on corrosion protection, which is increased by the zinc content. In addition, the pores between the crystals promote the increased absorption of various anti-corrosion oils.
Zinc phosphate is also suitable as an anti-friction coating. Especially in the case of chipless metal forming, zinc phosphate is the preferred option because alkali soaps can be used in the process, which together with the zinc phosphate form friction-reducing zinc soaps.
The coating is light to medium grey and mat. It builds up in a coarse to finely crystalline manner and can be easily controlled – even at low layer thicknesses of only a few micrometres. As a rule, the coating thicknesses are in the range of 3 to 10 µm.

Overview of the process steps

Zinc phosphating products

Gardobond® R series

Nickel and nitrite-free pretreatment agent for ferrous and galvanised ferrous materials – ideal before conventional painting, electro-dip painting or e-coating.

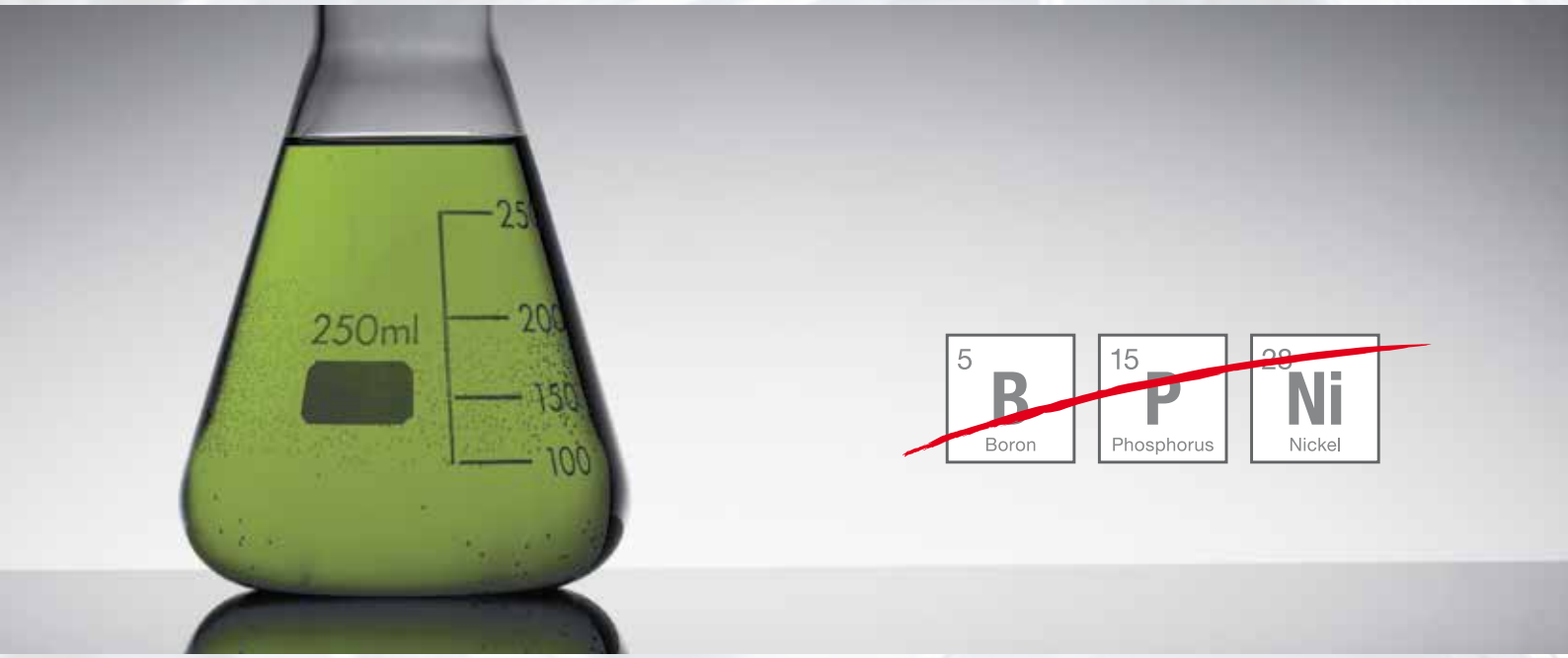
Gardobond® Z series

Pretreatment agent (batch solution) for ferrous materials before cold forming and to improve rust protection.

Gardolene® V series

Powder or liquid, activating pre-rinsing agents for metal surfaces prior to phosphating with manganese phosphating processes.
Activating the surfaces enables the formation of crystalline manganese phosphate layers, especially on production parts that have been alkaline degreased or acid pickled.

07 Oxsilan® technology



More stringent environmental legislation as well as ever more varied metal combinations in applications are giving traditional phosphating processes a hard time. That is why **hebro** chemie offers you an environmentally aware, multimetal, thin-film technology with the Oxsilan® process. This innovative process is now used in the household appliance industry as well as in the pretreatment of car bodies.

One thing is for sure, Oxsilan®, the sophisticated, tried-and-tested thin-film technology, complements the **hebro** product range and redefines standards in terms of technology and cost-effectiveness.

Our products – your benefit

- **Reduced process costs**
- **Completely metal free process**
- **Multimetal capability**
- **Excellent product quality**
- **Simple process changeover**
- **Free of phosphate and heavy metal, which means simple waste water treatment**
- **Reduced risks to safety, health and the environment due to proven compatibility**

Goals

- Higher productivity through reduction of process steps
- Process capable at room temperature
- Significant overhead savings

Good to know

The basic material used in Oxsilan® technology is silanes, which combine by hydrolysis to form polysiloxanes. In the coating process, for example, the silane groups react with the metal hydroxides on the metal surface, where they are chemically bonded. Through heat treatment or subsequent cathodic dip coating (CDP, the polysiloxanes cross-link and grow to form a thin coating. Coating thicknesses of only about 100 nm are sufficient to achieve corrosion protection that is comparable to zinc phosphate coatings ten times thicker. This reduces material usage, shortens pretreatment times and increases productivity: increases of between 30% and 65% have been achieved in practice.

Overview of the process steps

Variant 1

Variant 2

Oxsilan® products

Oxsilan®

An environmentally friendly process, completely free of heavy metals, which enables significant cost savings since it is used at room temperature and also simplifies waste water treatment.
Products for generating high-quality conversion layers on aluminium are applicable in either a rinse or no-rinse process.

08 Aluminium finishing

hebro chemie has exactly the right premium products you need for your aluminium pretreatment processes. The strengths of aluminium as a material is the high mechanical strength with appropriate alloying and heat treatment capabilities.

Outstanding features are its comparatively low specific weight, corrosion resistance after appropriate pretreatment, high reflectivity, good thermal and electrical conductivity, magnetic neutrality and particularly high cold formability.

Our products – your benefit

- **Optionally available for conventional immersion processes or environmentally friendly passivation processes using the spray method**
- **Proven surface treatment chemistry with high environmental compatibility**
- **Flexible applications due to high-quality surface finishing**
- **Simple and precise dosing**
- **Highly economical product use due to low dosing quantities**
- **Maximum functionality combined with high process capability**
- **Disposal of product residues in line with current regulations**

Goals

- Create perfect surfaces before painting
- Comply with quality requirements of the aluminium finishing industry, such as GSB and Qualicoat
- Best possible value for money
- Greatest effectiveness within the scope of the respective application

Good to know

Aluminium can be industrially processed in various ways. The appearance and texture of the surface is significantly influenced by the processing method applied – including a number of types of grinding, polishing, brushing and shot-blasting or a number of chemical processes.
During pretreatment and before organic final coatings, corrosion protection and paint adhesion are enabled by conversion coatings. Conversion coatings form a very good adhesive layer for subsequent coatings and significantly increase the corrosion resistance of the aluminium compared to untreated surfaces. In addition, conversion layers have a very low electrical resistance.

Overview of the process steps

Rinsing method

No-Rinsing method

Pretreatment products

Gardoclean® series (Degreasing)

Cleaner especially developed for the pretreatment of aluminium. The products can be applied by spraying or dipping. The products can also be combined to form single-component pickling degreasers.

Gardacid® series (Pickling)

Effective pickling processes that are characterised in particular by their economic efficiency.
The products are free of hydrofluoric acid and contain inhibitors to improve installation protection.
The high level of occupational safety, low system corrosion and high added value are key characteristics of these products.

Gardobond® & Oxsilan® series (Conversion/passivation)

Products for generating high-quality conversion layers on aluminium are applicable in either a rinse or no-rinse process. These multimetal products can be used for dipping, spraying and flooding.
They are free of hexavalent chromium and, depending on the application, offer good properties under paint as well as good corrosion protection on bright surfaces.

09 Passivation

The extensive product portfolio of **hebro** chemie is complemented by products for passivation.
In surface technology, this refers to the targeted creation of a non-metallic protective layer on a metallic material in order to prevent or greatly inhibit oxygen corrosion of the base material.

A distinction is made between oil-based and aqueous passivations. Oil-based passivations are used on both untreated and phosphated metal substrates to improve corrosion protection. In addition, oil-based passivations are used to adjust torque and tensile load.
Aqueous passivations, on the other hand, are applied in addition to phosphating and are used exclusively to protect against corrosion and improve adhesion properties before painting.

Our products – your benefit

- **Water-emulsifiable corrosion protection oils can be used as emulsion cleaners for production parts made of phosphated, burnished or bright ferrous materials.**
- **Chromium-free technologies based on zirconium or titanium fluorides are available**

Goals

- Effective corrosion protection
- Create an excellent adhesive base, for example for subsequent painting
- Preserve the surface appearance, for example gloss or colour tone

Good to know

If bare metal is exposed to air or another corrosive environment, it depends initially on the chemical nature of the metal as to whether corrosion will occur or not. While gold and platinum, for example, are ideally protected against corrosion due to their characteristic as precious metals, the base metals such as iron, zinc and aluminium have a fundamental tendency to corrode. Whether this actually happens and how quickly it happens depends to a large extent on the passivation layer.

Passivation products

Gardorol® CP series

Low viscosity, water emulsifiable Mineral oil-based corrosion protection oils are suitable for the treatment of phosphated production parts made of ferrous materials. Oiling of phosphated production parts made of ferrous materials is recommended to protect them temporarily from corrosion during storage in dry rooms.

Gardolene® D series

Weakly acidic, chrome-free, inorganic rinsing agents are used to improve the corrosion protection and adhesion properties of phosphated or otherwise chemically pretreated metal surfaces.
Silane-based, organic rinsing agents for phosphated metal surfaces help to improve corrosion protection and the adhesion of subsequent coatings.

10 Vibratory finishing

As an established separating process in surface treatment, vibratory finishing is indispensable for the machining of metallic workpieces, especially stamped parts. The workpieces to be machined are placed as loose bulk material in an oscillating or rotating drum together with abrasive particles (chips) and an aqueous compound. This generates a relative movement between the workpieces and the chips which results in material being removed from the workpieces. The surface appearance of the workpieces, their roughness, the amount of material removal and the deburring effect can be specifically controlled by the machines and tools used.

hebro chemie offers you vibratory finishing compounds which set standards in terms of blanking oil removal with a simultaneous high dirt removal effect.

Our products – your benefit

- **Outstanding degreasing performance**
- **Good temporary corrosion protection**
- **High biostability**
- **Low foaming**
- **High environmental compatibility**

Goals

- Increase in productivity through acceleration of the finishing process and reduction of throughput times
- Perfect surface appearance

Good to know

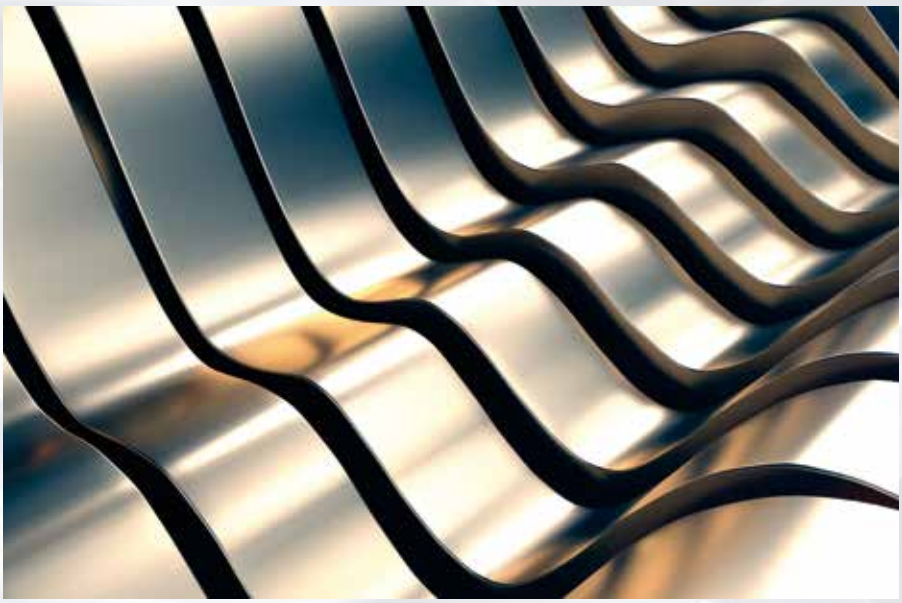
The following objectives can be achieved by vibratory finishing:
Deburring, degreasing, edge rounding, shining, smoothing, polishing, descaling, cleaning, matting and grinding. For flat workpieces or sheet metal parts, a release agent is often added (plastic beads < 1 mm to prevent the workpieces from sticking together.

Vibratory finishing products

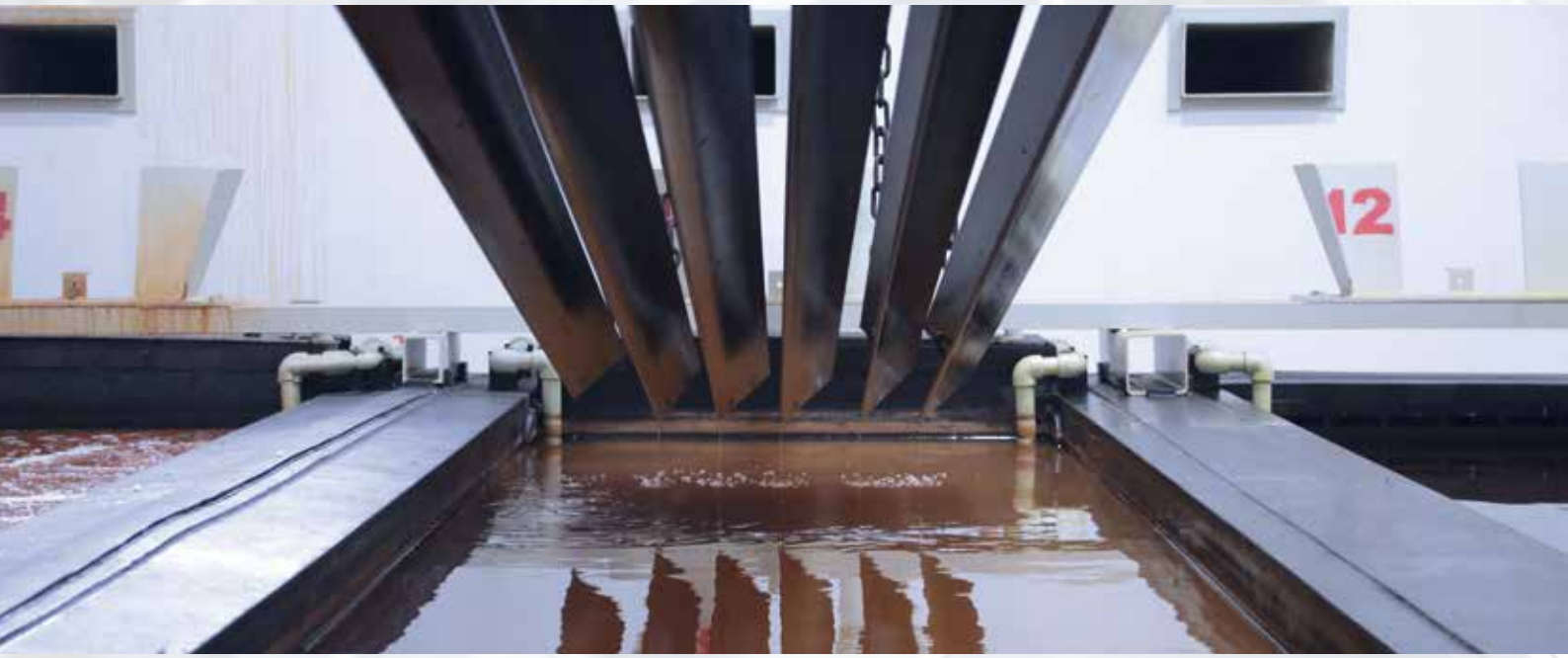
hebro clean S series

The vibratory finishing compound in the **hebro** clean S series ensures particularly fast and thorough degreasing at room temperature.

Adding a flocculant from the **hebro** flock series and/or a flocculant aid from the **hebro** prenol series achieves excellent sludge discharge. This measurably extends the service life and reduces costs.



11 Paint removal



The **hebro** chemie product range includes cold and hot paint strippers for different metal substrates, which enables perfect, economical paint stripping, for example, steel parts, galvanised steel or aluminium. Organic surface finishes are simply and thoroughly removed – leaving an ideal basis for subsequent processing steps.

The comparatively low deterioration of the metal substrates is particularly advantageous compared to other methods – even when removing the most stubborn coatings – a significant advantage of chemical paint stripping technologies.

Our products – your benefit

- **Short paint removal times**
- **Can be used for a wide range of paint & lacquer coatings**
- **Suitable for dipping and spraying processes**
- **Also recommended for sensitive surfaces**
- **Long service life**

Goals

- Simple handling
- Thorough paint removal
- Broad applicability
- Low impact on metal substrates
- Simple post-treatment with water

Good to know

Before the substrate is decoated, it should be thoroughly cleaned. Surface soiling can be washed off.
Heavier soiling can be removed with water pressure or in a water bath. Depending on the process, the workpiece must be allowed to dry before the paint stripping process.
Depending on the metal substrate, there are various possibilities for paint stripping:

1. Alkaline paint stripping –
   suitable for steel cables, steel sheets and magnets
2. Acid paint stripping –
   suitable for aluminium profiles, engine parts and alloy wheel rims
3. Solvent stripping –
   suitable for workpieces where the surface must not be chemically attacked

Paint removal products

Gardostrip® Q series

These paint strippers are used undiluted in an immersion bath or by spraying. Temperatures may range from 20 °C to 125 °C. These products are particularly suitable for steel, aluminium, copper and brass. The paint removal times depend on the type of paint, paint density, paint age and bath temperature.

hebro colourstrip series

These products are tried-and-tested, ready-to-use paint strippers for residue-free removal of various paint and powder coatings (including polyester paints) from all common metal surfaces – especially aluminium.

hebro chemie
Guaranteed Premium Quality
Made in Germany

hebro chemie
by Surventis

hebro chemie supplies premium quality in four product groups.

- **Detackification and water treatments**
- **Coolants and metalworking fluids**
- **Cleaning and surface treatment products**
- **Maintenance and repair products**

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If you have any queries, just ask us:

hebro chemie –
Zweigniederlassung der Rockwood Specialties Group GmbH

Rostocker Straße 40
41199 Mönchengladbach, Germany

Phone +49 2166 6009-0
info@hebro-chemie.de
hebro-chemie.de

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