

**Agricultural, Construction & Earthmoving:**  
Customized surface treatment technologies  
for extreme requirements.



**Chemetall**  
expect more 

# Expect more from a leading global supplier of applied surface treatment technologies



Chemetall Company Headquarters: Frankfurt am Main, Germany

As one of the leading global players, Chemetall focuses on surface treatment technologies in all their facets. Quality products and services are the prerequisite of our business success. However, at Chemetall, we know that it takes more than that to be a preferred global supplier.

The chemical treatment of metal surfaces is Chemetall's core competence. We base the focus of our worldwide activities on the development and implementation of customized technologies and system solutions for surface treatment. The portfolio comprises technologies for cleaning, corrosion protection and sealing, as well as to improve paint adhesion and facilitate the forming and treatment of metals. Globally established technologies, i.e. **Oxsilan®**, **Gardobond®** and **Ardrox®**, are used in the most diverse market sectors from automotive to aerospace, from the appliance to architectural and construction industries. Over the past decades, Chemetall has been playing a leading role in shaping metal treatment.

## **In focus: value added for customers**

Good products and quality services are the prerequisites for a successful business. However, at Chemetall we believe that true success lies in a close and partnership-based global cooperation with our customers. We offer value-added technologies to enhance processes, combined with an excellent, globally organized technical service.



Largest surface treatment facility in the world (Jackson, MI, USA)

### **Globally active, locally based**

The global business activities of our company are based on tradition and experience dating all the way back to the 19th century. Nowadays, Chemetall is one of the leading global players in surface treatment with its headquarters in Frankfurt am Main, Germany. With more than 2,100 employees, 40 subsidiaries and 22 production sites, Chemetall is a financially strong and fast growing company with a long-term orientation, and we continue to aim high: We intend to strengthen our quality and innovation leadership even further. With sales and service teams, laboratories and warehouses at locations all around the world, we are operating in close proximity to our customers.

### **Sustainably successful**

Responsible practices and sustainable development are key principles of Chemetall. Our first priority is to consistently implement environmental protection and work safety guidelines and to continuously improve the safety of our worldwide production sites. Chemetall acts responsibly with a view to society and the environment and puts them on an equal footing with its financial targets.

### **Reliable supplier to the Agricultural, Construction and Earthmoving (ACE) industry**

In the manufacturing of ACE vehicles and equipment metal pretreatment plays a vital role. It provides long-term corrosion protection for the construction equipment, industrial machines, agricultural and off-road vehicles and ensures optimal paint adhesion.

Chemetall is working with all leading ACE manufacturers worldwide on the development of advanced solutions for the pretreatment of metal substrates. Furthermore, we provide efficient maintenance technologies to complete the manufacturing process. With our global network of experts we are also cultivating close relationships with all leading paint producers, so that together, we can optimize existing processes and develop new technical solutions for the ACE industry.

Benefit from Chemetall's long-standing global experience in your line of business and from our high-performing and eco-friendly technologies.

➤ More to read on [www.chemetall.com](http://www.chemetall.com)

## Extreme conditions call for high-quality surface treatment



In the ACE industry, surface treatment is put to the test: a multitude of standards, diverse base materials and extreme conditions in everyday life. The requirements of the industry are very demanding. Agricultural and construction vehicles must be robust and withstand sometimes tough conditions and yet at the same time remain functional over a long period of time. Chemetall's eco-friendly and efficient pretreatment technologies are the solution when it comes to meeting all of these requirements.

In the agricultural and construction industry, corrosion protection coatings have to demonstrate that they are capable of giving the level of protection required whether it is for harvesters ploughing through densely grown wheat fields or construction machinery operating outside in all weathers, under attack from stone chippings, wet conditions and/or sludge.

### **High-quality pretreatment**

The pretreatment technologies used must be able to meet a wide range of demands: extreme robustness and longevity are required, on the one hand, in order to keep it cost-effective, this standard of protection has to be achieved with only a one- or two-layer coating, on the other. This notwithstanding, the machines must still look appealing to convince the customers in the showroom with an attractive design and a top quality surface finish. But good looks are not everything: it is also about meeting the precise corporate design specifications of each individual manufacturer and, importantly, their exact color match.



### **Different substrates**

Rising quality demands, a large variety of standards and the wide variation in the substrates used, characterize the ACE industry. Unlike the automotive industry, for example, where the quality of steel and zinc to be used are specified and sheet thicknesses are largely uniform, in the field of agricultural and construction machinery the pretreatment technologies have to generate consistently good results on both thin and on extremely thick sheets, of hot or cold rolled or of scaled steel. This requires a high degree of flexibility in the pretreatment technology and also in the subsequent baking process. The different sheet thicknesses also need different process times. Our technical service will advise you on the optimal conditions to run the process.

### **Reliable and suitable for multi-metal treatment**

Since the machine and equipment manufacturers nowadays also pay attention to reducing the weight of their products, a broad mix of materials is now commonly employed in manufacture in this sector. Although the axles, cross members and heavy duty components continue to be produced from cold-rolled, hot-dip or electrogalvanized steel, light-weight materials such as aluminium or magnesium alloys are also gaining ground. This is why a state-of-the-art pretreatment technology needs to be characterized by its ability to process such a variety of metals.

### **Optimum long-term protection**

In combination with the right paint system Chemetall's efficient technologies offer the highest level of corrosion protection, give excellent paint adhesion, and they are cost-effective. A broad process window offered by our technologies ensures that our customers' standards and specifications are met. Chemetall pretreatment processes can be trusted to give protection capable of withstanding the harshest conditions endured daily by construction and industrial equipment or agricultural and off-road vehicles.

# Gardo® Plus

## The flexible pretreatment technology



Improved quality at reduced process cost. This is in short the major benefit of the **Gardo® Plus** pretreatment technology. It fulfills today's demand for an easy to apply, eco-friendly and multi-metal technology.

### Advantages at a glance:

- ⊕ Improved quality for short lines (2 stages)
- ⊕ Comparable quality to iron-phosphate plus sealer (min 3 stages)
- ⊕ Free of phosphates, nickel and chrome
- ⊕ VOC-free
- ⊕ Multi-metal process

**Gardo® Plus** is the sophisticated alternative, when it comes to improving the quality of the existing production process while at the same time reducing the overall process costs. The technology can be used for any multi-metal application and has been developed to replace traditional iron-phosphate plus sealer or medium quality zinc-phosphate processes.

The advantages of the **Gardo® Plus** system lies in the large number of high-performance modules. Depending on the customer needs, the substrate throughput, the plant technology available as well as local market conditions and legal regulations, Chemetall chooses and combines the most suitable modules for each application and production line. As the technology is easy to implement in existing production lines, many customers have already benefited from the advantage and quality of **Gardo® Plus**.

**Gardo® Plus** can be used prior to all common paint system available on the market. It is ideally suited for powder paints such as polyester, epoxy and mixed systems and liquid paints such as monolayer systems. The latter one fulfills the harsh criteria of the ACE industry. Chemetall has also developed pretreatment processes which are compatible with a cathodic or anodic E-Coat.

# Oxsilan®

## Metal protection the next generation



The environmentally sound and multi-metal **Oxsilan®** thin film technology is well established in many industries around the world – due to many convincing benefits.

#### Advantages at a glance:

- + Eco-friendly, no nickel and no chrome
- + Multi-metal process
- + Ambient temperature operation
- + High savings on energy and water consumption possible
- + Practically sludge-free

To meet today's and tomorrow's market demands, **Oxsilan®** is the technology of choice when it comes to a high-quality, green and cost optimized pretreatment process. Our eco-friendly technology works at ambient temperature. Water consumption and waste water treatment can be significantly reduced compared to traditional phosphating processes. As **Oxsilan®** can be considered sludge-free, plant maintenance is much easier.

With the silane-based **Oxsilan®** technology, all common metals in the industries can be treated – with no limits in the substrate mix.

Many industries have already changed their pretreatment to the innovative **Oxsilan®** technology, which offers high process cost saving potentials in brownfield lines and even more in greenfield lines due to less investment.

## Broad portfolio of state-of-the-art technologies



### Pretreatment

**Cleaning** is an essential process stage prior to any surface treatment. Its performance has a direct impact on the quality of the conversion coatings. Chemetall offers a broad range of highly efficient and eco-friendly **Gardoclean**<sup>®</sup> technologies such as boron-free products, emulsifying systems or a demulsifying cleaning solution which provides a robust and easy-to-dose system with reduced waste-water amounts. A range of inter-operational and process cleaners round-off our cleaning portfolio.

**Activating** has a strong impact in case a zinc-phosphate layer is formed. Chemetall provides several high performing **Gardolene**<sup>®</sup> products for any kind of substrate mix or process condition. Based on zinc- or titanium-phosphate, our powerful activating products materially contribute to fine and continuous phosphate coatings.

A conversion coating process is the basis for both a good paint adhesion and excellent corrosion protection. The target is an appropriate conversion coating within a specified range of coating weight. Chemetall offers a broad portfolio of highly efficient technologies to the market. Besides **Gardo**<sup>®</sup> **Plus** and **Oxsilan**<sup>®</sup>, we provide traditional **Gardobond**<sup>®</sup> zinc- and iron-phosphate processes.

**Passivating** can be used in order to further increase the corrosion resistance of a phosphated metal surface. Chemetall provides a variety of **Gardolene**<sup>®</sup> technologies best suited for the specific process or individual customer specification in the agricultural and construction industry.



### Metal Forming

For metal forming operations, Chemetall provides a broad range of high performance technologies with distinct advantages, produced with due consideration for the ecological requirements of a modern production facility.

Our lubricant technologies, **Gardolube®** and **Gardomer®**, have become a global standard in the manufacture of high-quality tube and wire drawing as well as cold extrusion. They offer a reduced friction, an increased tool and die life, a cleanliness in the operation and low moisture absorption. A good surface quality, excellent corrosion protection and higher drawing speeds round-off the characteristics of our portfolio, which includes reactive soaps and oils, salt carriers, polymer lubricants and general lubricants.

Our coolants technologies **Gardocool®**, **TechCool®** and **Hebro®lub** provide a good cooling and rinsing effect and ensure an extended service lifetime of machine tool. They are designed for all metal substrates and operations including heavy duty operations on tough alloys where extreme pressure is required. Our customers can choose between a variety of high performance soluble oil, semi-synthetic and synthetic coolant products as well as ecological sound processes.

### Non-Destructive Testing

The term “non-destructive testing” describes a wide range of techniques used to analyze a material or component without actually damaging or even destroying it. Due to the different natures of these techniques, it is crucial to select the right method and technique for the specific application.

To efficiently detect surface and near-surface defects Chemetall offers Penetrant Testing (PT) and Magnetic Particle Testing (MT) processes. Low-odor products, new NPE-free developments, cost-effective rinse water treatment and an easy biological degradability (of our water-based and surfactant-based products) help to meet stringent environmental and health and safety standards.

Our customers benefit from our strong portfolio of approved **Britemor®**, **Checkmor®**, **Lumor®** and **Supramor®** products as well as from selected equipment around the NDT process and a broad range of services.

## Important maintenance technologies complete our portfolio in different ACE production fields



### Water treatment

In almost all industrial processes, legal restrictions with their limits for water polluting substances require an adequate treatment of any kind of waste water before this is discharged.

Chemetall provides a broad range of **Gardo® Pure** processes which include coagulants, adsorbents, flocculants and additives for specific requirements. Excellent service and technology packages can be supplied to the ACE industry. In addition, we offer a variety of advanced technologies for cooling systems or thermal units.

### Inter-operational cleaner

In addition to the different alkaline cleaners used during the pretreatment process, Chemetall offers other aqueous cleaning technologies. These cleaners can be used in spray or dip systems for inter-stage cleaning operations during the manufacturing process. They may also be required to give, without influencing the subsequent manufacturing steps, a level of corrosion protection if the components are to be transported or stored for a period of time.

Depending on the customer's application, Chemetall provides efficient cleaning processes to meet a variety of different requirements: suited for multi-metal applications or low temperature processes, low or no foam operations, emulsifying or demulsifying, low or high pressure application or prior to welding. Our portfolio includes eco-friendly technologies, which are free of phosphates, boron, nitrite or salt.



Chemetall's fully equipped laboratory for all paint applications.

### Paint detackification

During a wet paint application, overspray must be removed from the ambient air and treated in a paint detackification process. The **Gardofloc®** technology, which is added to recirculating water, ensures that particles and drops are effectively washed out of the air.

The **Gardofloc®** technology can be applied to all known paint systems used in the manufacturing industry. **Gardofloc®** virtually eliminates malfunctions in paint lines and the knock-on effects in the production process. With various options available to separate the paint particles from the water, the service lifetime of paint lines is maximized and longer periods of water usability can be achieved. In addition, the build-up of contamination in machine components can be prevented, which reduces costs caused by machine downtime.

### Paint stripper

Increasing raw materials costs have led to the fact that rejected manufactured parts are rather stripped than scrapped because of poor finish quality. And stripping is also used to precede maintenance refinishing for some products. Whatever the reason is to implement a paint stripping process, Chemetall offers a broad range of **Gardostrip®** technologies which remove residues from steel, galvanized steel or aluminium substrates. Our chemical paint strippers are formulated to remove even the most durable coating with little effect on metal substrates.

Depending on the regulatory and technical environment as well as our customers' health, safety and environment policy we can provide a variety of processes such as non-methylene chloride, N-Methyl-2-Pyrrolidone-free, alkaline, thickened, or solvent-based paint stripper technologies. Many of our **Gardostrip®** technologies hold important approvals and specification conformances.

# Chemetall at a glance

Chemetall is a leading global surface treatment company, headquartered in Frankfurt, Germany. With our 2,100 employees, 40 subsidiaries and 22 production sites, we are a financially strong and fast growing company with a long-term orientation. Our aim is to further strengthen our quality and innovation leadership. With our own sales offices, production facilities, service teams, laboratories and warehouses at locations all around the world, we are operating in close proximity to our customers.

The chemical treatment of metal surfaces is our core competence: Our products are developed for cleaning, giving corrosion protection, sealing, improving paint adhesion, and facilitating the forming and treatment of metals. Our globally established technologies are used in the most diverse industry sectors and have played a leading role in shaping metal treatment.



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