Automotive Industry: Performance-driven surface treatment technologies
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. Gardobond®, Oxsilan® 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.
Globally active, locally based
The global business activities of our company are based on tradition and over 100 years experience. 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 automotive industry
Metal pretreatment plays a vital role in car manufacturing. It provides long-term corrosion protection and ensures optimal paint adhesion. Chemetall is working with all automotive manufacturers worldwide on the development of advanced solutions for the cleaning and pretreatment of metal substrates. With our global network of experts we can offer our customers comprehensive and reliable solutions with excellent service.

We are also cultivating a very close relationship with all leading paint producers and equipment manufacturers. Together, we optimize existing processes and develop new technical solutions for the automotive industry.

Benefit from Chemetall’s longstanding global experience in your line of business and from our top-quality and eco-friendly technologies.

More to read on www.chemetall.com
The variety of the metal mix in automotive applications, the continuous search for process cost optimization and more stringent environmental legislation are key drivers for our product development. Traditional surface treatment processes need to be modified to meet today’s demands, such as higher amount of aluminium.

Chemical processes for surface treatment are constantly changing. This is due on one hand to the ongoing global economic changes and resulting customer demands, the legal framework and industrial production processes, while on the other hand scientific and technical innovations open up new possibilities for surface treatment. The traditional phosphating process is a good example to review the evolutionary development of surface treatment technologies.

**Phosphating – successful for many years**

1919 was the first time that a vehicle with a phosphated body left the Ford production line. Back then, corrosion protection based on phosphating was revolutionary. Today, the process has proven to be successful and has become the standard in the automotive industry. Worldwide it is regarded as a reliable metal pretreatment prior to painting as it provides excellent corrosion protection and ensures very good paint adhesion.
New demands require rethinking
Over the years, the phosphating process has been permanently developed further to meet increasing market demands. Higher sensitivity for environmental issues, continuously rising energy costs, as well as the increasing use of aluminium on car bodies and automotive components are now becoming considerably more relevant. These new demands have driven the search for alternatives.

Foreseeing tomorrow’s demands
Chemetall’s research and development efforts are geared towards providing customers around the world with advanced and innovative technologies for today and tomorrow. To ensure that we are working on key market demands, Chemetall works in close cooperation with customers. In addition, we collaborate with several universities and external institutions around the world to capitalize on their know-how about the latest developments and innovations.

Green and flexible for sustainable success
Economic viability, ecological compatibility, cost-efficient application, process flexibility and reliability, and an excellent quality are vital criteria in the highly demanding automotive marketplace. In response to these demands, Chemetall has developed many innovative processes over the years. The latest technologies are the eco-friendly Oxsilan® and our customized Gardo®Flex processes. Our broad portfolio of cleaning and pretreatment technologies ensure that Chemetall customers receive tailor-made solutions for their production lines – with globally available technologies.

With Chemetall, you can rely on working with highly experienced and skilled professionals around the world. We understand our global customers and can respond to their local needs, which might vary from country to country.
Gardo® Flex
The advanced zinc-phosphate technology

Automotive OEMs require customized, flexible and robust multi-metal processes. The Gardo®Flex zinc-phosphate system offers high performance technology modules for simple and cost-efficient applications.

**Advantages at a glance:**
- Multi-metal process
- High aluminium throughput
- Broad operating window
- Less process costs
- Energy savings
- Less chemical consumption

**With flexibility to excellent performance**

The Gardo®Flex pretreatment system for our automotive industry customers provides the flexibility that is needed nowadays. It copes with the increasing use of aluminium substrates as well as with the different local market needs and legal restrictions.

Gardo®Flex is made up of a variety of high performing modules, which are individually combined for each single customer line in order to maximize output. Significant cost savings are achieved by a reduced coating weight and a possible reduction of the zinc-phosphate temperature down to 35 °C.

When treating higher amounts of aluminium, the process allows lower etching rates on this substrate and thus produces a reduced amount of phosphate sludge. On aluminium Gardo®Flex generates a phosphate layer which helps to cover substrate defects and therefore minimizes E-Coat sanding operations.
Oxsilan® multi-metal thin film technology is already well-established in automotive pretreatment lines around the world due to its many advantages over more traditional technologies.

**Advantages at a glance:**
- Eco-friendly, no nickel, no chrome
- Multi-metal process
- Ambient temperature operation
- Significant savings possible on energy & water consumption
- Almost sludge-free

**Ecological profile**
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. The process requires less water and as a consequence waste water treatment costs can be significantly reduced compared to traditional phosphating processes. Plus Oxsilan® technology is almost sludge-free, making plant maintenance much easier.

With the silane-based Oxsilan® technology, all common metals in the automotive and component industries can be treated — with no limits on the substrate mix. The latest Oxsilan® success is its use in combination with a primerless paint system.

Many automotive OEMs have already changed their pretreatment in various component or car body plants to Oxsilan®. The advanced technology offers high process cost savings in brownfield lines. However the savings achieved for green field lines are even greater. The fewer stages and installation required for the Oxsilan® pretreatment process can reduce the investment costs by around 20 percent.
Broad portfolio of state-of-the-art technologies
From cleaning to maintenance processes

**Pretreatment**

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

**Activating** has a strong impact on the formation of the zinc-phosphate layer. Chemetall provides several high performing Gardolene® 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, good paint adhesion and excellent corrosion protection. The target is a coating with a fine and compact crystalline structure within a specified coating weight range. Our customers benefit from the comprehensive portfolio of highly effective technologies we offer. Besides Gardo®Flex and Oxsilan®, we also provide traditional Gardobond® zinc-phosphate processes, whereas for the special requirements of aluminium pretreatment, we have introduced Gardobond® X, also known as SAM technology (self-assembling molecules).

**Passivating** can be used in order to further increase the corrosion resistance of a phosphated metal surface. We provide a variety of Gardolene® technologies specially developed for our automotive customer’s specific process or individual specification.
Metal Forming
Wire and tube drawing, extrusion, forging and reactive soaps as well as coolants and lubricants are part of Chemetall’s portfolio for metal forming operations. Our customers from the automotive metalworking industry benefit from our high-performance technologies offering distinct advantages: excellent cleaning results, improved lubrication properties, maximum forming efficiency, good cooling performance and long-term corrosion protection - of course always with due consideration for the ecological requirements of a modern production facility.

Coolants play a crucial role in the metalworking industry. Our technologies Gardocool®, TechCool® and Hebro®lub provide a good cooling and rinsing effect and ensure an extended service lifetime of machine tool. Our portfolio is designed for all metals 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, semisynthetic and synthetic coolant products as well as ecological sound processes (DCHA-free, bactericide-free, non-chlorinated).

Our lubricant technologies, Gardolube® and Gardomer®, have become a global standard in the manufacture of high-quality metal forming processes such as tube and wire drawing as well as cold extrusion. Our processes offer enhanced performance features, such as a reduced friction and 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 high performing technologies. Our lubricant portfolio includes reactive soaps and oils, salt carriers, polymer lubricants and general lubricants.
From metal components to glass applications: Chemetall technologies play an important role in car manufacturing.
On the safe side with quality-driven performance
Important maintenance technologies complete our portfolio for the automotive production

**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 automotive industry. In addition, we offer a variety of advanced technologies for cooling systems or thermal units.

**Inter-operational cleaning**
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 customers’ 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.
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.

Our Gardofloc® technology can be applied to all known paint systems used in the automotive 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.

Purge fluids
Over time, paint and varnish deposits build up on the interior surfaces of the apparatus used in the mixing and application of water-based primer, base and clear coats. To ensure fast and efficient cleaning and purging of this soiled equipment, the ideal solution is to use Gardostrip®.

Our technologies are available with low or even without any VOC content and can significantly reduce the level of foam created during the cleaning process to zero at room temperature. With Gardostrip® the productivity can be increased and the functioning of the paint apparatus be improved leading to a higher first run ratio. The low conductivity and low product concentration required allows for easier recycling, treatment and disposal of the liquid waste.

Our portfolio also contains rinsing fluids used to clean high electro-static bells, compressed air sprayers and paint application apparatus and components. This new generation of fluids contains sustainable and highly concentrated solvents.
New European regulations on chemicals
The impact of REACH and CLP

REACH is the European Community Regulation on chemicals and their safe use, which came into force on June 1, 2007. It applies directly and uniformly throughout the European Union and makes great demands on manufacturers, importers and users of chemicals. In order to meet the regulations of REACH and CLP, Chemetall has established a dedicated team.

To comply with the REACH initiative (Registration, Evaluation, Authorization and Restriction of Chemical Substances), we have established a central REACH group in Frankfurt/Germany. For Chemetall companies located outside the EU and exporting directly to the EU, Chemetall GmbH was appointed as the “Only Representative” to fulfill the REACH requirements. Therefore, customers of Chemetall are not importers under the regulation, but instead are regarded as downstream users.

To ensure continuity of delivery to our customers, we pre-registered all relevant substances that require registration at the European Chemical Agency (ECHA). Building on these pre-registrations, we intend to register all relevant substances by 2018. As part of the registration process, the uses for chemical substances must be identified and detailed according to ECHA Guidance. We are working closely with our customers and associations to ensure all uses for our chemistries are registered and detailed.

The goal of REACH is to ensure a higher level of protection of human health and the environment, and to establish an extensive risk assessment for the complete life-cycle of chemicals, involving the complete value chain. With REACH a uniform system is established providing information on registration of new notified substances and risk assessment for existing substances.

GHS – Globally Harmonized System
GHS provides a unified system to identify and to communicate hazards related to transporting and supplying chemicals across the world. The regulation describes criteria for the classification and labeling of substances and mixtures, its goals being the following:

- to ensure a higher level of protection of human health and the environment,
- to enhance free trade, competitiveness and innovation.

The more countries all over the world implement the GHS criteria in their legal system, the more valuable it becomes for all companies.

CLP – implementation throughout the EU
The CLP Regulation will ultimately replace the current rules on Classification, Labeling and Packaging of Substances (Directive 67/548/EEC) and Preparations (Directive 1999/45/EC) after the transitional periods given in the regulation, and Chemetall will meet the deadlines for classification and labeling described in it. Several substances have already been classified and labeled according to the CLP regulation by December 1, 2010. The transitional period for mixtures ends on June 1, 2015.

Chemetall’s Product Safety group, which is supported by EHS responsible persons in every legal entity, is intensively working on implementing the requirements resulting from the REACH and CLP regulations.

Expect more working with a leading supplier of surface treatment technologies. Chemetall is familiar with the legal, quality and environmental requirements and globally coordinates all its activities. Working with Chemetall, you can rely on a reliable, strong and innovative partner for sustainable success.

More to read in our GHS and REACH brochure or on www.chemetall.com
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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