

SUSTAINABILITY REPORT 2013–2015

# WORLÉE – WE CONNECT





**CONNECTIONS** are an essential part of our business.

At Worlée, we have been active for more than 160 years in the market for binders and additives for the paint and coatings industry - chemical connections that are used in a great many areas and serve as important building blocks for the end products of our customers.

Our company's approach and attitude clearly reflect the great importance that we place on connections with people. We strive for the continuous development of our company, which we can only achieve by working together with our employees, customers and suppliers. They bring expertise, spur momentum and build the roots of our success. Additionally, to us a connection means that our work today is carried out with an eye to the future, as we are responsible for future generations.

Worlée connects chemistry and sustainability.

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# REPORT PROFILE

This is Worlée-Chemie GmbH's first sustainability report. Our intent with this report is to present a comprehensive view of the performance of our company with respect to economical, ecological and social concerns with the aim of conveying the high priority that we place on the consideration of sustainability aspects in our value-added chain.

In the preparation of this report, we have brought together topics that are relevant to the sustainability of our business activities. We have also included issues that have been particularly singled out for attention by our stakeholders.

The topics of company management, products, and customers, environment and employees make up thematic focal points. In this way, the structure of the report reflects our basic areas of activity.

This sustainability report covers the years 2013, 2014 and 2015. Unless otherwise noted, the figures and information refer to our two production plants in Lauenburg and Lübeck as well as to our Hamburg site, which is the location of our company headquarters as well as the chemicals division and Worlée Cosmetics. In the future, our goal is to inform interested parties about our sustainability activities every two years.

For questions and for very welcome feedback, please contact us:

Worlée-Chemie GmbH  
Barbara Eschke  
BEschke@worlee.de



# WELCOME TO WORLÉE-CHEMIE

We are pleased to present you with our very first sustainability report.

Sustainability emerged in our case as a product of our experience as a Hanseatic trading house and industrial company that has been located in Hamburg since the year 1851 with sites in Hamburg and Schleswig-Holstein. We continue to develop the tradition and style of our shareholder-managed family company, now in its fifth generation, with the collaborative establishment and pursuit of sustainability objectives.



Reinhold von Eben-Worlée

CEO and General Manager  
E.H. Worlée & Co. (GmbH & Co.) KG

Get to know Worlée-Chemie as a responsible supplier, producer and distributor of raw materials for the paint, varnish and coatings industry. We offer an extremely diverse, forward-looking product range of high-quality and safely produced binders and additives. Worlée's own products are developed in our R&D laboratories. Together with our commercial offerings, they are examined for suitability in our application service departments. These products are clarified and marketed by our technical sales team together with starting point formulations and samples, while our quality control ensures that only first-rate products are sent out from our plants and warehouses. Though they are not visible to end customers, our raw materials may be found in countless varieties of coating agents, insulation products, building protective agents and cosmetic products that are available at professional and DIY stores as well as in numerous other applications.

In order to develop our family company in a sustainable manner, our employees have built up relationships over the course of years – or often even over decades – with our development partners, principals, suppliers and service providers. These connections are mature and based on mutual trust, and they serve as important building blocks for our success. Our most demanding task, however, is the satisfaction of our customers at the highest level, for they are the ones who decide whether the raw materials we offer meet their standards for use in their production and processing – and not just in terms of quality, but also taking economical, ecological and social aspects into consideration.

**'Thinking about future generations is part of our business philosophy. For this reason, we continue to develop the tradition and style of our family company with specific sustainability objectives.'**

Working from this approach, a great opportunity presents itself to develop products and applications that contribute to environmental and climate protection along the entire value-added chain, from the use of renewable raw materials at the outset to CO<sub>2</sub> balance considerations to recycling. Achievement of these objectives requires not just a sustainable, forward-looking point of view but also a capacity for innovation that combines new solutions for climate and resource protection with economic benefits. On the part of our employees, most of whom have been trained in-house, this necessitates professional, responsible and socially oriented efforts as well as economical use of the materials that have been entrusted to us. A further requirement is readiness of the shareholders to reinvest a significant portion of earnings into maintenance and expansion of production and business activities.

As a producer and supplier of chemical raw materials, we are highly aware of our great responsibility in the area of safety with regard to production, storage, transport and conscientious handling of our products, continuing all the way to receipt by their end users. Accordingly, ever since the middle of the 1990s we have taken part in the German chemical industry association VCI e.V.'s Responsible Care initiative, and, in 2010, we became the first chemical company to join the Excellence Group of the Klimaschutz-Unternehmen (Companies for Climate Protection) coalition.

Building upon our integrated management system, we participated as a pilot company in the sustainability initiative Chemie³. In interdepartmental working groups, we defined and worked out twelve relevant sustainability topics. We were able to determine that we were already performing well or very well with respect to many of these sustainability concerns. In other categories for which there was still scope for improvement, we then set about taking appropriate measures. Findings, experiences and results from this work are part of the resources upon which we have drawn in the creation of this sustainability report.

**'We have established a company culture  
that promotes an awareness of sustainable thinking and action  
with regard to economy, ecology and society.'**

Worlée-Chemie makes up only a small part of the European chemical industry. However, we are an important connecting element in the value-added chain between producers of primary raw materials and the industries that continue the production process. We can only successfully master this function if all of our employees support us in the sustainable management of the company. This is why we have established a company culture that promotes thinking and action with an awareness of sustainability as it applies to economy, ecology and society. Our employees also receive instruction and further development education via seminars and training programmes focusing on sustainability topics.



Award: Umweltschutz-Nadel  
environmental protection badge

Only employees who have the opportunity to cultivate their own expertise and personality can truly take effective action in the development of forward-looking ideas and solutions. A cooperative working atmosphere with sufficient scope for action is an essential part of our concept of innovation and sustainability as we work together as a team to master the challenges of the future. I am thus particularly pleased that the employees of Worlée-Chemie were distinguished in 2016 for the eighth time to date for their dedicated efforts in protecting the environment with the award of the Umweltschutz-Nadel environmental protection badge from the Schleswig-Holstein economic study and development association Studien- und Fördergesellschaft der Schleswig-Holsteinischen Wirtschaft e.V.

In my role as managing shareholder of this family-led chemical company, now in its fifth generation, I have no doubt that only integrated further development and active promotion of our sustainability activities will provide us with the chance to carry our company over into the next leadership generation in a manner that is sustainable and oriented towards the common good.

I wish you an interesting perusal of this report.



Reinhold von Eben-Worlée  
CEO and General Manager  
Worlée-Chemie GmbH



Worlée along the Elbe River at Lauenburg

© Jenner Egberts Photography





# WE CONNECT ENGAGEMENT AND RESPONSIBILITY

During the 160 years of our company's history, endurance, foresight and courage have always helped us adapt to change. These same qualities have made Worlée into a successful, innovative and internationally active company. Along the way, sustainable development has at all times been more important to us than the acquisition of short-term profits, as we feel a strong sense of responsibility to our employees and for the environment.

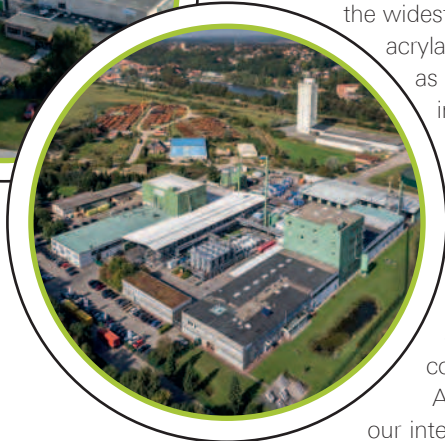


# COMPANY PORTRAIT

Hamburg location



Lübeck location



Lauenburg location

© Jenner Egberts Photography

Worlée-Chemie GmbH is a subsidiary of E.H. Worlée & Co. (GmbH & Co.) KG. The parent company holds 99% of the shares.

The Hanseatic family company was founded in 1851 and its headquarters are located in Hamburg.

More than 165 years ago, Worlée began importing and trading natural resins as binders for the paint and coatings industry. Today, with our customised solutions, we are an internationally active production and distribution company with customers throughout the entire world. In the value-added chain, our products serve as the connecting element between the raw materials industry and the processing industry.

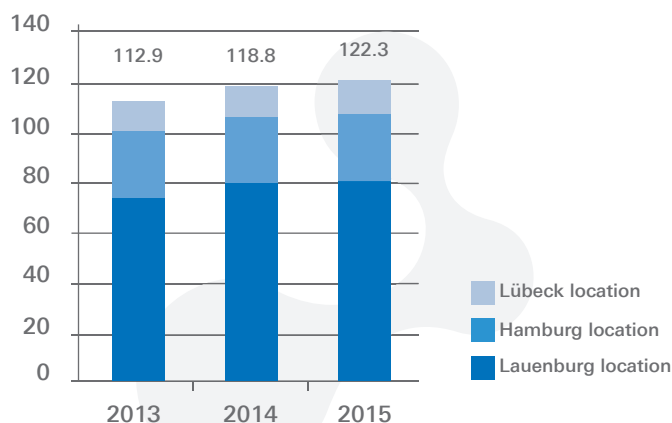
At its plants in northern Germany's Lauenburg and Lübeck, Worlée-Chemie GmbH produces modern and environmentally friendly binders and additives as components for the widest variety of coatings. The product range includes water-based and solvent-based acrylate and alkyd resins, water-based alkyd emulsions, polyesters and epoxy esters as well as numerous additives for diverse applications. Products from prominent international producers supplement our supply range. We deliver products to customers in the paint, coatings and printing-ink industry around the world.

Through our cosmetics division, Worlée Cosmetics, we offer a comprehensive selection of raw materials for decorative products and care cosmetics. Along with polymer chemical raw materials, our product portfolio includes numerous plant extracts and natural exfoliation particles, which are based on our modern particle technology and are particularly environmentally friendly and gentle on the skin. We sell and distribute our cosmetic raw materials to companies in the cosmetics industry in Europe, America and Asia.

Along with our headquarters and two production plants in northern Germany, our international presence includes twelve subsidiaries in Europe and overseas as well as 43 worldwide agents. In total, we employ approximately 300 employees, including about 200 at the Lauenburg location, 30 at the Lübeck location and 40 at the Hamburg location. Just over half of our sales activity is carried out in Germany and the other half abroad, mainly within Europe. Within the time period of this report, Worlée-Chemie generated the following total sales figures: €112.9 million in 2013, €118.8 million in 2014 and €122.3 million in 2015.

## Sales performance of Worlée-Chemie

In millions of €



# RESPONSIBILITY AND SUSTAINABLE DEVELOPMENT

## COMPANY MANAGEMENT AND FIRM ESTABLISHMENT OF SUSTAINABILITY IN THE COMPANY

Today's Worlée-Chemie GmbH is led by its fifth generation. The managing directors are Dr Albrecht von Eben-Worlée and Reinhold von Eben-Worlée as well as Joachim Freude. The managing directors specify the strategic direction of the company. Implementation is carried out in close coordination with the advisory board, which is the highest-level supervisory body.

Support for the managing directors is provided by the members of the senior management, which is composed of personnel management, plant management, sales management for DACH (Germany, Austria, Switzerland) and export management covering countries around the world, as well as various staff positions that are directly connected to the managing directors and whose responsibilities include, for example, the integrated management systems for quality, environment, occupational protection and plant safety.

Responsibility for matters concerning sustainability in the company falls within the purview of the managing directors. Operational management of sustainability-related issues is carried out via staff units within the company. The responsible parties ensure that objectives – also within the framework of established management systems – are set and that measures are agreed upon in order to attain those objectives. Together with experts in the individual areas and the employees who play the most essential roles in the sustainable development of our company, measures are put into place for the day-to-day operations of the company.

## RISK PREVENTION AT WORLÉE-CHEMIE

We are responsible for our employees and the environment as well as for customers and suppliers. Worlée finds it essential to minimise to the greatest extent possible any risks that might result from working activity and, accordingly, to act ahead of time to prevent damage to the environment and human health.

In our risk management, risks are identified and analysed early in the process, plan deviations are detected and countermeasures are undertaken. Possible events that could have a negative economic effect on the company are also highly significant for us. For example, climate change can affect our company in a variety of different ways. Growth conditions for our renewable raw materials in traditional cultivation areas could change, or crops could be destroyed through extreme weather conditions. This can have a considerable long-term effect on the raw materials market. Likewise, the markets of our customers could change if, for example, wood, corrosion protection and building protection products are demanded in new regions or if new requirements must be met. What financial results such changes would bring about for us or whether new business opportunities would arise from them cannot yet be predicted.

Our production sites in northern Germany must be prepared for more frequent and more extreme intense weather conditions. Large quantities of precipitation (rain, snow and hail) must be collected and diverted without damage to the buildings and equipment. Likewise, buildings and plants must be protected against powerful winds and resultant flying debris. Changes to relevant technical requirements could lead to higher expenses for new construction or retrofitting; such costs cannot be quantified at this time.

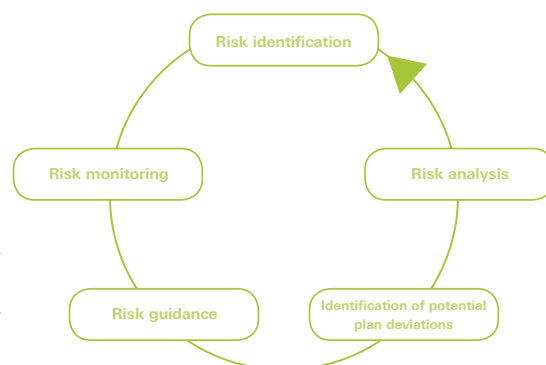


Reinhold von Eben-Worlée (l.) and Dr Albrecht von Eben-Worlée (r.)



Joachim Freude

### Risk management at Worlée





Flooded cultivation region after extreme weather episodes

To recognise possible environmental risks at an early stage, we work in accordance with certified environmental management systems at our Lauenburg and Lübeck plants as well as at our headquarters in Hamburg. Furthermore, the Lauenburg site maintains a safety management system as specified by the German Federal Emission Control Ordinance (12. BImSchV).

## PRINCIPLES AND GUIDELINES

As a company in the chemical industry, we are subject to various obligations to which we consistently adhere. Beyond this, our business dealings are characterised by our fundamental values and an array of voluntary commitments. Two very important policies for us are our Company Principles and our Code of Conduct.

With our Company Principles, we commit ourselves to the company goal of preventative and comprehensive occupational safety, health protection, societal responsibility and proactive environmental protection. It is clear to us that the high quality of our products, their environmental compatibility and economical handling of our resources are a prerequisite for the steady growth of the company. We are aware that our Company Principles are at once a commitment and a duty. With specific goal definitions and behaviour patterns, both managers and employees are working equally to apply these principles to daily work routines and to further develop our company.

We are convinced that integrity, fairness, responsibility and a high level of transparency are the basis for trustworthy and long-term business relationships. For this reason, responsibility, fair dealings with business partners and fellow employees, compliance with laws, high safety levels and preventive occupational health and safety as well as proactive environmental protection and resource conservation are the topics which comprise the focus of our Code of Conduct and are explicitly formulated therein. This Code presents the ethical values and principles of Worlée-Chemie and is compulsory for all employees of our company.

In our Code of Conduct, we commit ourselves to the Universal Declaration of Human Rights, the ten principles of the UN Global Compact and the fundamental tenets and core labour standards of the International Labor Organisation (ILO). We also expect adherence to these fundamental principles on the part of our suppliers and business partners; infringements will not be tolerated. We are confident that our suppliers take the principles included in the Code of Conduct into account when selecting their own suppliers and accordingly communicate these priorities to them.

In addition, we orient the way we carry out our business in accordance with the twelve guidelines for sustainability for the German chemical industry developed by the Chemie<sup>3</sup> initiative. This industry initiative pursues the goal of firmly establishing sustainability as a guiding principle in the chemical industry. As a chemical company, we have further supported the Responsible Care initiative as an active participant ever since it was first established. An important part of this initiative includes the constant improvement of health protection, environmental protection, safety and security.

Our plants in Lauenburg and Lübeck as well as Worlée-Chemie Hamburg with the Traded Products Division and Worlée Cosmetics maintain a comprehensive integrated management system that covers quality, environment, energy and occupational safety with certification in accordance with ISO 9001, 14001 and 50001 and OHSAS 18001. We are committed to the fundamental principles of the guidelines for social responsibilities as specified by ISO 26000.

Beyond this, the Lauenburg plant maintains a security management system in accordance with the Hazardous Incident Ordinance. A comprehensive workplace health management programme has been introduced that offers a wide range of social services and health care offerings for employees. Certification in accordance with DIN Spec 19020 is a current objective.



**RESPONSIBLE CARE**  
OUR COMMITMENT TO SUSTAINABILITY





# COMMITMENT ABOVE AND BEYOND COMPANY BOUNDARIES

We are convinced that to prevent climate change every individual and every company must make its contribution to the effort. For this reason, we first established our staff unit for energy and environmental management back in 2007. Our experience has demonstrated that there are no reasonable grounds – also none from an economic standpoint – not to take steps to reduce energy consumption, which is one of the main sources of carbon dioxide and its adverse effects on the climate. Based on this conviction, we applied in 2010 for acceptance in German industry's newly founded Climate Protection and Energy Efficiency Companies group.

This coalition of climate protection companies forms a national cross-industry network of excellence for climate protection and energy efficiency. It was founded at the initiative of the German Federal Ministry for the Environment, the German Federal Ministry of Economics and the Association of German Chambers of Commerce and Industry (DIHK) within the framework of the national climate protection initiative. All members have demonstrated through a demanding, scientifically evaluated acceptance procedure that, in the past, they have actively sought to improve energy efficiency within the company to a significant degree and in an innovative matter; furthermore, they have committed themselves to continue these efforts in the future as well. Lively exchanges of ideas take place within the network, such as discussions held at regular conferences regarding new projects and technical questions. The member companies' intent is both to demonstrate that climate protection and energy efficiency can have economic benefits and also to raise the awareness of other companies regarding these issues. The climate protection companies have close political contacts and make their expertise and experience available to politicians and interested companies.

After the conclusion of the project in 2013, its members made the decision to continue working in this vein and converted the initiative into an association. The Energy and Environmental Manager of Worlée-Chemie has been the chairman of this association since its founding and represents it throughout Germany.



Climate Protection Companies Political Dialogue with German Chancellery Chief of Staff Peter Altmaier



## Participation in research projects:



Participation as associated partner in the research project InReFF – Integrated Resource Efficiency for Reducing Climate Impacts in the Chemical Industry – which is supported by the German Federal Ministry of Education and Research



Participation in the EU Horizon 2020 research project MAESTRI Energy and resource management systems for improved efficiency in the process industries

## ASSOCIATION MEMBERSHIPS

In addition, we are members of numerous industry and expert organisations in which we actively participate by joining working groups or by giving expert presentations. We are also active at our sites in other associations and initiatives.

Association	Membership
AGA Business Association Wholesale, Foreign Commerce, Service Providers e.V.	Presidium member
Advisory board for Energy Transition and Climate Protection of the Ministry of Energy, Agriculture, the Environment and Rural Areas of Schleswig-Holstein (MELUR)	Member
BGA – National Association for Wholesale, Foreign Commerce and Service Providers e.V.	Member of BGA, Environmental Committee
Civic Foundation Region Lauenburg	Member of the Board of Trustees
CEFIC – European Chemical Industry Council ** Member in the Association as well as in the following trade association: Solvent Resin Manufacturer (SRM)	Member
DECHEMA e.V.	Member
Die Familienunternehmer – Family Companies ASU	Presidium member, Energy Committee member
Research Forum Schleswig-Holstein e.V. (Jugend forscht)	Member
Forschungsgesellschaft für Pigmente und Lacke (Research Society for Pigments and Coatings) e.V.	Research Advisory Board
Friends and Supporters of the Helmut-Schmidt-University HSU Hamburg	Member
Friends and Supporters of the Hamburg School of Business Administration HSBA	Member
GOES – Society for the Organisation of Hazardous Waste Disposal mbH	Board of Directors
H2 Wasserstoff-Gesellschaft (Hydrogen Society) e.V.	Member
IHK zu Lübeck	Member Committee for Environment and Energy
Industry Association Hamburg e.V. (BDI-Landesvertretung Hamburg)	Member
Industrieverband Hamburg e.V. (BDI-Landesvertretung Hamburg)	Member
Klimaschutz-Unternehmen (Climate Protection Companies) e.V.	National chairman
Künstlerhaus Lauenburg (Artists' House) Lauenburg	Supporting member
Netzwerk Oberfläche (Surface Network) NRW e.V.	Member
Neue Philanthropische Gesellschaft (New Philanthropic Society) e.V.	Member
Stiftung Herzogtum Lauenburg (Foundation Lauenburg District)	Member of the Board of Trustees
Society for the Study and Research of the Economy of Schleswig-Holstein e.V. (StFG)	Member of the Board of Trustees Chair of the Environmental Prize Jury Chair of the Environmental and Energy Committee
Übersee-Club e. V.	Vice president
UmweltPartnerschaft Hamburg (Environmental Partnership Hamburg)	Partner, Member
UVNord – Union of Company Associations in Hamburg and Schleswig-Holstein (BDI state representation for Schleswig-Holstein) e.V.	Vice president
VCI Landesverband Nord (VCI State Association North)	Deputy Chair Environmental Committee; Member working group Energy and Climate
VCI (German Chemical Industry Association) e.V.*  * Membership in VCI and the following trade associations: • Deutsche Bauchemie (German Building Chemistry) e.V. • Association of the German Paint and Printer Ink Industry e.V. • Industry Association Klebstoffe (Adhesives) e.V. • TEGEWA e.V.	Treasurer Presidium member Chair of the Committee of Independent Entrepreneurs  Member Associate member Member Member
VCI e.V. Landesverband Nord (State Association North)	Board member
Versammlung Eines Ehrbaren Kaufmanns zu Hamburg e.V.	Board member
VSW (Association and Service Organisation for the Economic Regions Holstein und Hamburg) e.V.	Member
Wirtschaftsrat (Economic Council)	State executive board member, Hamburg Member Federal Expert Commission for Energy Policy

## RECOGNITION FOR COMMITMENT TO SUSTAINABILITY

For many years, we have been committed to resource conservation and have developed improvements that make an impact on our daily business operations. We do this because we see our company as a responsible part of society. As such, we are all the more pleased when we receive external recognition.



Recipient of the Environmental Economy Prize by the Society for Study and Research of the Economy of Schleswig-Holstein e.V. (StFG):  
2000: For environmentally oriented company direction and integrated environmental management as well as a wide variety of measures for resource conservation and emission reduction  
2010: For Worlée's energy efficiency concept, through which an annual energy savings of 3.5 m. kWh or 774 t CO<sub>2</sub> was achieved



Multiple Responsible Care Prize awards from the VCI-LV Nord:  
2003 3rd place: Product responsibility category  
2005 2nd place: Resource conservation category  
2007 3rd place: Transport safety category  
2009 1st place: Resource conservation category  
2012 Prizewinner: Resource conservation category  
2016 Winner: 25 Years of Responsible Care – our best project



Bronze winner for the surface technology prize Die Oberfläche 2012, awarded by the Fraunhofer Institute for Production Technology and Automation (IPA) Stuttgart in cooperation with Messe Stuttgart and Deutsche Messe



Pilot company in the extensive sustainability check of the initiative Chemie<sup>3</sup> – commendation in July 2014



2016 recipient of the national Responsible Care Prize for small to medium sized enterprises in the category Product responsibility and the pursuit of sustainability in accordance with Responsible Care guidelines 4 and 7



2016 recipient of the Gold Recognition Level following analysis of Worlée-Chemie's overall sustainability achievements by the international assessment platform EcoVadis



Umweltschutz-Nadel environmental protection badge; (r. to l.) Jörg Esemann, Christine Wilkens, Reinhold von Eben-Worlée, Ulrich Finke, Jörg Behnke and Frank Schröder



Klaus Köhler (l.) and Jan Eschke (m.) accept the Responsible Care Prize for medium sized companies on Worlée's behalf

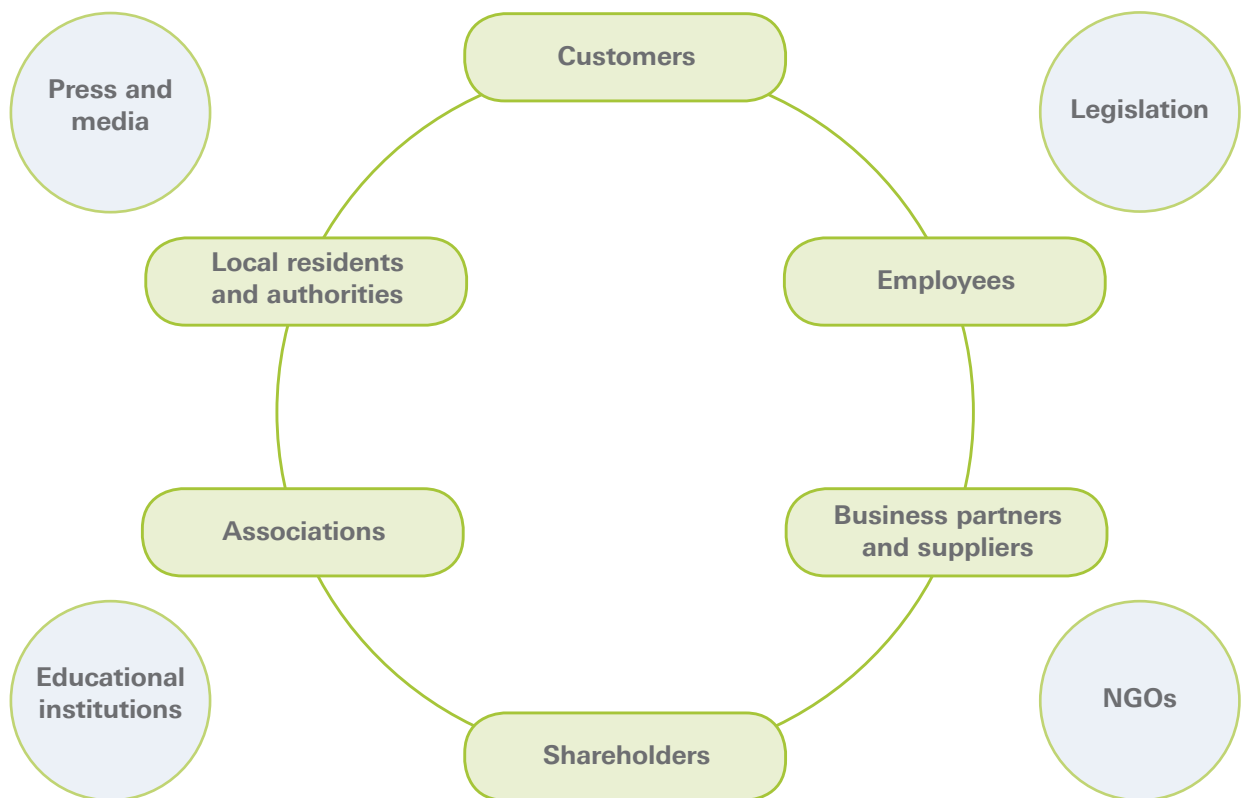
# MATERIALITY ANALYSIS AND AREAS OF ACTIVITY

## DEVELOPMENT OF ESSENTIAL ASPECTS

In 2014, within the framework of the sustainability initiative Chemie<sup>3</sup>, we carried out a self-evaluation check as we examined and assessed our sustainability activities in our role as one of twelve pilot companies nationwide, using the twelve “Guidelines for sustainability for the chemical industry in Germany” as our basis. For the materiality analysis in our first report, we used the 33 aspects of the sustainability check as our orientation. These come from a comprehensive analysis by the three alliance partners of the Chemie<sup>3</sup> initiative (VCI, BGAV, IG BCE) based on the participation and questioning of diverse stakeholders as well as the evaluation of diverse studies and literature. The results of this industry analysis helped us perform an initial sustainability assessment of important issues.

Within our Sustainability steering committee, we took the next step by identifying significant stakeholders, taking into consideration parties both internal and external to the company. As a company in the chemical industry, we are integrated into a large circle of internal as well as external stakeholders. The stakeholder groups relevant to Worlée are customers, employees, business partners, shareholders, associations, local residents and authorities, legislators, NGOs, educational institutions, press and media. The stakeholder groups are related in different ways to the interests of our company and exert influence upon us.

### Our stakeholder groups



We are convinced that improvements stem from interactions. Accordingly, we are actively involved in different initiatives (see “Commitment above and beyond company boundaries” section, p. 13), and we place great value on regular and continual interactions with our stakeholders. These emerge chiefly from day-to-day issues that connect us with the respective interest groups.

The interests and concerns of our stakeholders are diverse. Interactions with our customers mainly take place on an individual basis through our sales force throughout the world, local agents, export managers and our employees from the technical marketing division, who also work together with the customers to develop new products and solutions. Primarily, our customers expect us to provide straightforward and solution-oriented responses to their questions and to carry out their wishes in a swift and reliable manner. Important matters from their perspective are, above all, the quality and application security of our products (see “products” section, beginning on p. 20). Customer evaluations of our performance are analysed and possible shortcomings are discussed in detail with the departments in question in order to implement measures for correction and prevention.

Our employees are our central success factor and as such one of our most meaningful stakeholder groups. Their satisfaction and their dedicated efforts play a decisive role in our business success, for they possess the knowledge and the abilities necessary for the continual development process of our products. Because the concerns of our employees are important to us, we carry out work situation analyses and hold personal discussions with them; additionally, supervisors are ready and willing to listen to employees at all times, even during the daily work routine. Their concerns are particularly focused on the working environment, measures for training and continuing education and issues surrounding health and occupational safety (for additional information on this subject, we refer you to the “Employees” section beginning on p. 30). Furthermore, employees may introduce ideas and suggestions via our company suggestion scheme and in this way make a concrete contribution to Worlée’s development.

In accordance with the high quality and safety requirements for our products, long-term and trustworthy relationships with our suppliers and business partners are of great importance. In order to effectively manage issues relating to sustainability within our supply chain, we work closely together with them in different areas – in some cases even on the further development of products (see p. 27). Our partners expect integrity from us and a business relationship on equal terms. We clearly lay out the principles of our business dealings for our suppliers and partners with our Code of Conduct (see p. 12), with which we secure the success of the cooperative work for both sides.

We also have regular interactions with other stakeholder groups. In order to create as much transparency as possible, Worlée regularly opens its doors to the outside. Namely, we welcome visitors on a regular basis from the press, politics, authorities, associations as well as school groups and interested citizens. Every three years, we hold an Open House Day for the neighbourhood. We also provide a consistently up-to-date overview of our latest activities on our website at [www.worlee.com](http://www.worlee.com).



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Prevention programme according to the particular needs of individual employees



© Jenner Egberts Photography

Trainees at Worlée





Dr. Jürgen Lehmann,  
Head of quality laboratory

Worlée's plant in Lauenburg makes it one of the biggest local employers. We take part in a variety of projects in the area, among other activities. This includes working together with schools on a regular basis and providing raw materials for lesson preparation. We also provide financial support by donating the proceeds from the Open House Day to local social projects. Worlée's dedication to the education of the younger generation even goes beyond local borders – for example at the IdeenExpo in Hanover.

For this first sustainability report, as our focus is on the development of major aspects, we have chosen to forego a stakeholder survey.

## AREAS OF ACTIVITY

Since the founding of the company, sustainability has maintained its place at the centre of our company philosophy. Within the framework of the Chemie<sup>3</sup> initiative, we have begun to pool together numerous relevant activities and to strategically adopt new measures for orientation and expansion. This report is the first step for us in the process of reporting our actions in detail and also in developing our communication in this area. A detailed analysis of sustainability in the supply chain is being planned.

We have critically reviewed the 33 aspects of the Chemie<sup>3</sup> initiative, adjusted them in some aspects and expanded upon them with further relevant issues. The topics which we have judged to be relevant have been summarised in five areas of activity that are significant for Worlée-Chemie. Within these areas of activity, we have determined the essential aspects about which we shall report.

**Company:** We prioritise sustainable business practices in order to secure the survival and future of resources. Usage of renewable raw materials has the highest priority for us, and we are committed to ecological products.

Essential aspect	Essential...		Page
	within the company	external to the company	
Economic performance	<b>x</b>	<b>x</b>	10
Compliance and anti-corruption	<b>x</b>	<b>x</b>	62
Sustainable company processes and resource efficiency	<b>x</b>	<b>x</b>	11
Memberships	<b>x</b>	<b>x</b>	14
Dialogue with neighbours	<b>x</b>	<b>x</b>	62

**Product quality:** Our products are important building blocks in the final products of our customers. We pursue the objective of continually expanding the share of our products that are based on renewable raw materials. Our research and development team also works together with our partners and customers in this area. This is how we forge ahead with innovations.

Essential...			Page
Essential aspect	within the company	external to the company	
Sustainability in the supply chain		X	24
Materials used	X	X	26
Product-based compliance	X	X	22
Research and development	X	X	22
Customer health and safety		X	26
Customer communication and information	X	X	24

**Employee loyalty and expertise:** We work with sensitive materials; accordingly, expertise and experience are very important. Thus, we are particularly careful to retain employees at our company on a long-term basis and to offer them diverse possibilities for further development.

Essential...			Page
Essential aspect	within the company	external to the company	
Attractive working conditions, employee loyalty	X		33
Training and continuing education	X	X	37
Occupational safety	X		40

**Environment and safety:** In the course of our manufacturing process, we fulfil the highest requirements for the protection of the environment and people.

Essential...			Page
Essential aspect	within the company	external to the company	
Energy efficiency	X	X	47
Reduction of green house gas emissions	X	X	50
Water and waste management	X	X	53
Environmental safety	X	X	57

**Social responsibility:** We are an internationally active company. We obtain our raw materials from sources throughout the world. At every location from which we make a profit, we also give something back. For us, it's all about resource conservation.

Essential...			Page
Essential aspect	within the company	external to the company	
Active local participation	X	X	62







# WE CONNECT SUSTAINABILITY AND HIGHEST QUALITY

At Worlée, years of experience and the most modern technology go hand-in-hand with unconventional thinking and an intuition for future trends. This ideal combination yields products that not only meet the most demanding requirements but are also compatible with the environment.

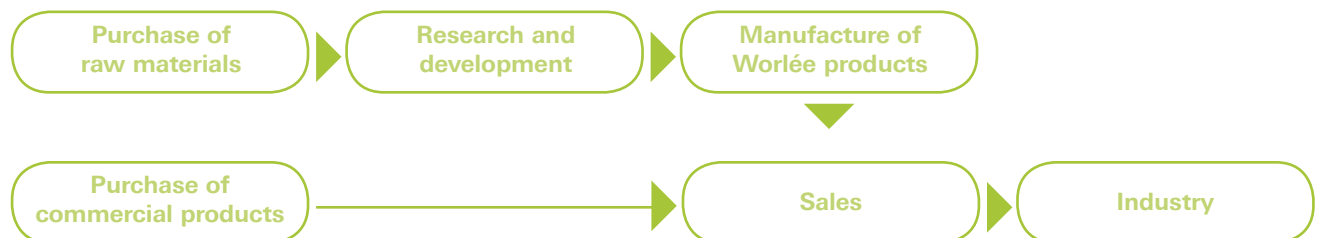
# VALUE-ADDED CHAIN AND RESPONSIBILITY

## RESPONSIBLE HANDLING OF RESOURCES

Worlée's roots go back 165 years to the company's origins in the import and trade of natural resins as binders for the paint and coatings industry. Continuing along this path, we have included sustainability as a fixed priority in the strategic direction of our company for many years now.

For our manufacturing process, we rely on resources such as raw materials, electricity and water; simultaneously, our activities have an impact on the ecological system. For this reason, we place particular importance on handling resources in a responsible manner and ensuring that our products are as environmentally compatible as possible.

### Our value-added chain



## INNOVATIVE PRODUCTS THROUGH CONTINUOUS RESEARCH AND DEVELOPMENT

The focus of our research and development department, which includes 60 employees, centres on new and continuing development of products made from renewable raw materials. Renewable raw materials make it possible for us to ensure the supply of binders for the paint and coatings industry in the long run via sustainable cultivation without causing damage to the environment.

In recent years, we have succeeded in developing new products based on alkyd resins that are composed of a particularly high percentage of renewable raw materials. Our goal is to manufacture alkyd resins entirely from renewable raw materials such as sugar, starch and oils without compromising any of the alkyd resins' important application qualities. At this time, the percentage of renewable raw material content can reach levels as high as 97%. We are continuing to work in this direction.

A second focal point of our development work involves the manufacture of water-based products. For not just the origin of production materials, but also the basis of the binder system is a factor in the environmental compatibility of these products. Indeed, while solvent-based products were very popular during the 20th century, today there is a clear increase in demand for innovative water-based products that are more environmentally friendly. In order to not just satisfy demand, but also to support this development and actively work to shape it, we already began developing and optimising water-based products in the 1980s. These are solvent-free, and as such they are particularly sustainable, environmentally friendly and less detrimental to health. Furthermore, in most cases, water-based

products merely require air-drying systems. After the application of paints and coatings that have been manufactured in this way, the products' water content evaporates during the drying process without any need for energy consumption on the part of the customer.

#### Our two development focuses:



Production of alkyd resins entirely from renewable raw materials such as sugar, starch and oils without compromising any of the important application qualities of the alkyd resins



Production and optimisation of water-based products with the aim of reducing or avoiding solvent use

Worlée currently offers two patented products that are based on renewable raw materials, forego solvent content and demonstrate virtually no performance loss. Two such innovative product examples from our company are WorléeSol VGT 8709 and WorléeDex 1177.

WorléeSol VGT 8709 is a water-based alkyd resin that is particularly environmentally friendly due to its high percentage of renewable raw material content (97%) while also demonstrating outstanding characteristics. For instance, despite its natural raw material origin, it achieves a considerable grade of hardness, equalling that of polyurethane systems, in addition to a high gloss level.

A further example of our innovative products based on renewable raw materials is WorléeDex 1177. This novel, patented copolymer was developed for the formulation of aqueous printer inks and overprint varnishes. It is produced with a starch base and significantly reduces the use of organic, non-renewable substances. The percentage of renewable raw materials in WorléeDex amounts to 73%. Due to its good compatibility with most resins and pigments, it is well suited for use in printing inks based on aqueous acrylic resins. Along with sufficient water resistance, printing inks produced with WorléeDex feature outstanding re-dissolving characteristics, for example, after print rollers have come to rest.



Sunflower oil is used as a renewable raw material

© Jenner Egberts Photography



Dr Toine Biemans, Head of R&D at Worlée-Chemie

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#### WorléeSol VGT 8709 and WorléeDex 1177 – two patented sustainable products



Based on renewable raw materials



Forego solvent content

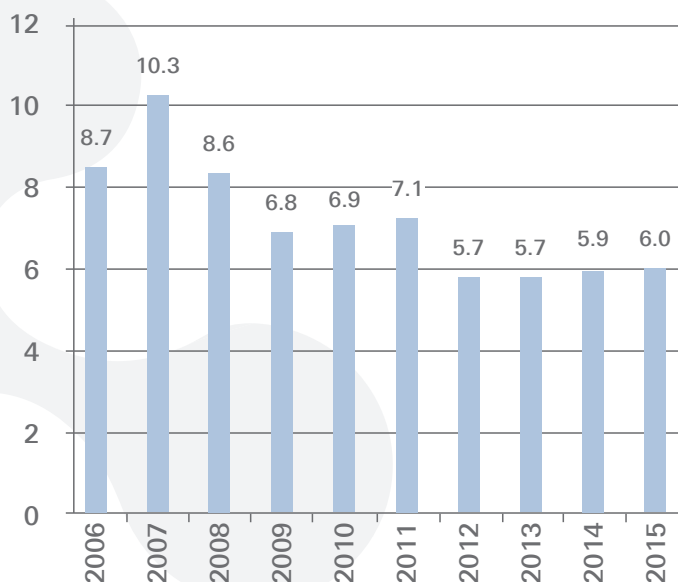


Demonstrate virtually no performance loss compared to conventional systems

Since the beginning of 2014, we have offered two products, WorléeKyd S23 for the printer ink industry and WorléeSol NW 474 for wood protection, that are certified in accordance with the Environmental Protection Encouragement Agency (EPEA) Cradle-to-Cradle® standard. These notable products may be integrated into nature's biological metabolic cycle, thus conserving natural resources.

### Total solvent use (Lauenburg and Lübeck)

In thousands of t



Many of our products are significant components in the manufacture of resistant, long-lasting paints and varnishes such as decorative, industry and powder coatings. With their weather resistance, good adhesion and chemical resistance, they add considerably to product durability, which helps to protect consumer and investment items and thus plays a part in resource conservation as well.

### SIGNIFICANT REDUCTION IN SOLVENT USE

Thanks to the employment of water-dilutable products and high-solid binders, we have been able to achieve a significant reduction in solvent use. At the same time, the share of water-based products in our range of offerings has increased considerably.

### INTERACTIONS WITH RESEARCHERS, SUPPLIERS AND CUSTOMERS

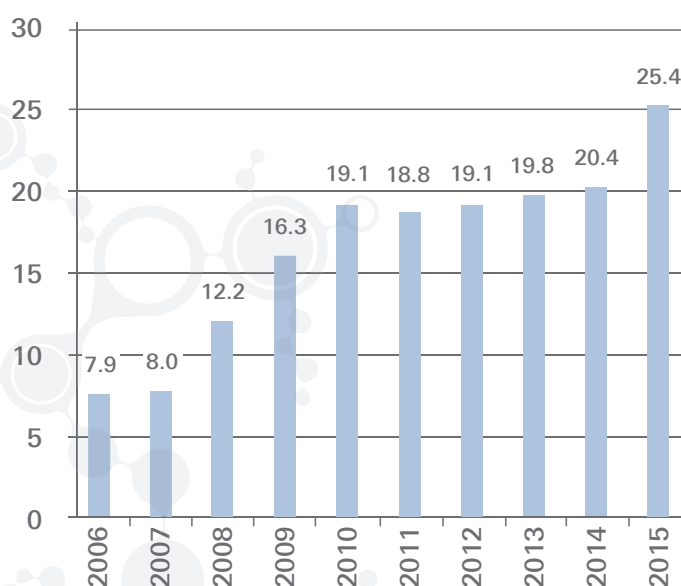
We are intensifying our progress in the development of new environmentally compatible products through cooperative work with research institutions and universities. Furthermore, interactions with our customers and suppliers help us in the development of new applications.

For instance, we support our customers in the process of changing over to water-based products by holding workshops for them that are particularly focused on R&D topics. In addition, we consult with them about which raw materials they need from us for their development and which projects they wish to implement. Together, we then work out appropriate solutions. An example of this would be the modification of existing systems to EU Ecolabel-certified systems, which involves products being developed according to customer wishes in order to meet the demanding criteria of this certification.

The product line Easaqua™ by Vencorex is, for one instance, of our cooperative work with our principals. Our application technicians worked together with the

### Percentage of water-based products in product range (Lauenburg and Lübeck)

In %



French Vencorex R&D team to evaluate the suitability of the application technology of the self-emulsifying isocyanates of the Easaqua™ line. This joint effort resulted in the optimisation of technical application properties. In this way, we worked together to develop solutions in line with market requirements for aqueous high-performance polyurethane coatings that are used in high-quality 2K coating systems, leather coatings, adhesives and floor coatings.

## RAW MATERIALS USED BY WORLÉE

As a producer of a wide variety of raw materials for coatings, we rely on a palette of raw materials that is likewise extremely diverse. These can have a petrochemical source or come from renewable sources.

Monomers and solvents are the two main petrochemical raw materials that are employed by Worlée. As there are no alternatives to many of these substances from renewable sources at this time, we must continue to rely on them to manufacture products for special uses. However, substitutes do already exist in many areas (e.g. bio-penta or bio alcohol); by making use of these, our development department has already been able to develop products for which the percentage of renewable raw material content reaches as high as 97%. These products are already commercially available and finding their way to increasing numbers of customers.

Renewable sources provide us with water- and plant-based oils, along with their fatty acids including, for example, linseed oil, sunflower oil, soy oil, wood oil, cotton oil and castor oil.

Use of raw materials that are identified as poisonous or very poisonous (mainly isocyanates for urethane formation) has been unavoidable for us to date. These raw materials are securely stored in accordance with regulations, used in compliance with all safety and protection regulations and predominantly handled within contained facilities.



Worlée manufactures products containing up to 97% renewable raw materials

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## MATERIALS USED BY WORLÉE



Ethanol and Xylol are used in manufacturing our products

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Raw goods	2013, amount in t	2014, amount in t	2015, amount in t
Fatty acids/oils	8,977	9,438	9,481
Carboxylic acids	3,977	4,299	4,353
Organic solvents/alcohols	11,570	12,211	13,149
Water as a solvent	5,259	5,574	6,597
Acrylic monomers	3,101	3,141	3,679
Isocyanates	461	493	542
Alkalies/amines	184	152	179
Epoxy resins	260	249	253
Silicic acids	337	375	334
Other	498	471	659
<b>Total</b>	<b>34,624</b>	<b>36,403</b>	<b>39,226</b>

The fatty acids/oils are renewable raw materials, and the silicic acid is a natural raw material. The carboxylic acid and organic solvents/alcohols partly consist of renewable raw materials.

Packaging materials	Packaging 2013, item	Packaging 2014, item	Packaging 2015, item
Can	5,916	6,187	8,019
Drums	61,000	60,728	58,102
Containers	9,104	10,510	13,401
Sacks	21,390	24,333	22,997
<b>Total</b>	<b>97,410</b>	<b>101,758</b>	<b>102,519</b>

The increase in raw goods and packaging materials is attributable to the fact that our production quantities are constantly increasing.

## SAFETY IN PRODUCT MANUFACTURING AND USAGE

Our products may be used in many different areas. Even if they are often not visible to human eyes in our customers' end products, they do indeed play a part in our daily lives. For this reason, it is important to address questions regarding whether our products are innocuous and safe in active use. Product safety is an inherent element of our company strategy and an aspiration that we emphasise through our membership in the Responsible Care (RC) initiative.

Extensive national and international legislative frameworks ensure safety in product manufacturing and usage. At Worlée, we do not just adhere to these regulations, but we also exceed them in the areas of environmental and occupational protection and safety. It is clear to us that our responsibility goes beyond mere compliance with the law.



Partial view of the Lauenburg facility

© Jenner Egberts Photography

## REGULAR REVIEW OF OUR PRODUCT CATEGORIES

We create a safety data sheet for every one of our products, whether this is required by the REACH Regulation or not. These are always accompanied by an evaluation of the risks that could arise from use of the product in question. If a risk classification should change into a more hazardous definition, we would categorically seek to reduce the content of or find a substitute for the affected component (e.g. formaldehyde, isothiazolinone). This type of evaluation is carried out by our R&D department together with our occupational health and safety section. All procedures and results involved in these processes are precisely documented.

We attach great importance to safety in raw material and product usage and application. During the period of time covered by this report, there were no cases in which we did not adhere to requirements or voluntary procedural rules regarding product safety. Furthermore, no fines were assessed on grounds of non-compliance with laws and requirements for the provision and usage of our products.

## COMPREHENSIVE PRODUCT INFORMATION CONTRIBUTES TO APPLICATION SAFETY

The extensive information that we make available to our customers in full is an essential contribution to the safe usage and application of our products. Technical data sheets, master data sheets (additional product information), safety data sheets and – as necessary – hazardous substance identification labels are available for all products. The contents of the data sheets and master data sheets are not specified by law. We compile them ourselves on a product-by-product basis and naturally keep them continuously updated.

We provide product information to our customers with every delivery. Additionally, these materials may be downloaded from our company website or sent directly upon demand. During the time period covered by this report, there were no violations of compulsory product labelling requirements.

## SUPPLIERS ARE IMPORTANT PARTNERS FOR THE FULFILMENT OF OUR SUSTAINABILITY COMMITMENTS

Worlée acquires its raw materials from suppliers and then processes them further or trades them. In the year 2015, we obtained raw materials with a value of just over €73 million from 212 suppliers. Our suppliers are predominantly European, and additional suppliers are based in America and Asia.

## SUSTAINABLE MANAGEMENT IN THE SUPPLY CHAIN

At Worlée, responsible business practices include sustainable management along the entire supply chain. Accordingly, we recognise that we have a role to play in raising the awareness of our suppliers concerning our expectations and standards so that they can support us in our sustainability objectives to the fullest-possible extent. For deliveries to both our own production facilities in Lauenburg and Lübeck and our business headquarters in Hamburg, dependable supplier relationships are imperative. In these partnerships, many of which have developed over the course of many decades, the cooperation goes beyond the usual customer supplier relationship. For instance, we will work together with our suppliers to further develop products, particularly with respect to sustainability considerations (see "Interactions with researchers, suppliers and customers", p. 24). For such interactions, a common understanding is indispensable. Correspondingly, we expect that our suppliers'



Product evaluation



Worlée employees at work

© Jenner Egberts Photography

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business practices are consistent with our basic principles and, furthermore, that they will take these into account whenever possible when choosing their own suppliers.

When we select our suppliers, environmental and social standards are as relevant for us as economic criteria. We orient ourselves in this respect on internationally recognised standards, such as the principles of the UN Global Compact, the conventions of the International Labor Organisation, the twelve guidelines for sustainability of the Chemie<sup>3</sup> initiative and the thematic guidelines of the Responsible Care initiative. Principles concerning our relationships with suppliers are embedded into our Code of Conduct in multiple contexts. In this way, we commit ourselves to fairness, forward-looking business practices and resource conservation (see p. 12).

#### **Inclusion of environmental and social standards extends to our choice of suppliers**



Principles of the UN Global Compact



Conventions of the International Labor Organisation (ILO)



Twelve guidelines for sustainability of the Chemie<sup>3</sup> initiative



Guidelines of the Responsible Care initiative



Code of Conduct of Worlée-Chemie

For established processes, we regularly ascertain the extent to which our requirements are being fulfilled. With this intention, we check ourselves on a regular basis by means of our integrated management systems in the areas of quality, environment, energy, occupational health and safety and facility safety. This also includes comparing information with our upstream suppliers. We know of neither significant negative ecological effects nor significant negative effects on working practices in our supply chain over the time period covered in this report.

Due in particular to the high levels of quality and reliability that we expect from our suppliers, long-term and trustworthy relationships are very important to us. Many of our supplier relationships have been established for many years; as these connections have developed, we have taken care to maintain transparency and build up a common understanding regarding sustainability. When choosing new suppliers, we also set high standards, and before entering into a business relationship with them, we ensure that they fulfil our requirements. A systematic review of our suppliers and supplier evaluation with respect to ecological aspects and labour practices is in the planning stage.

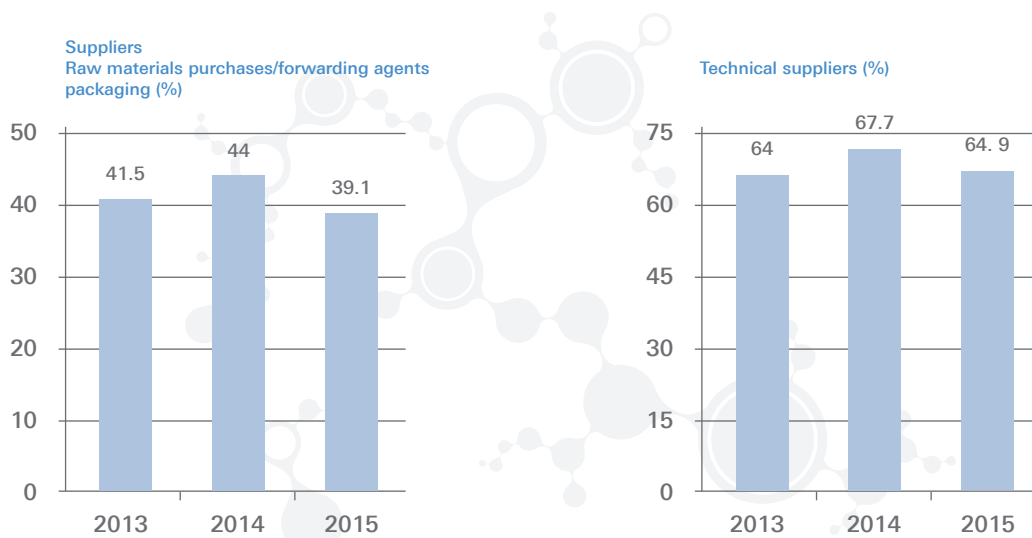


## OUR SUPPLIERS IN THE REGION

In our supply chain, we place a high value on supporting local organisations. Accordingly, for our production, we have maintained the ratio of regional suppliers to the total number of suppliers at a high, constant level during the last three years.

Our local suppliers come from the northern half of Germany and are located in Schleswig-Holstein, Hamburg, Lower Saxony, Bremen and Mecklenburg-West Pomerania.


### Ratio of local suppliers to the total number of suppliers in % (Lauenburg and Lübeck plants)







# WE CONNECT EXPERIENCES AND IDEAS



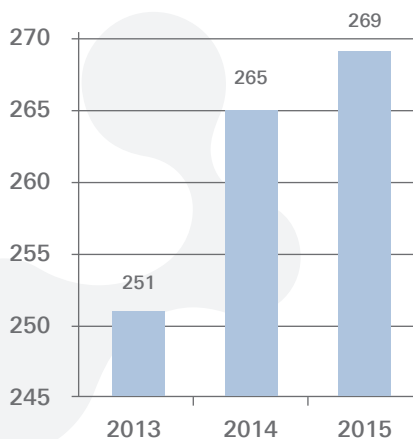
With their experience, creativity and dedication, our employees make an essential contribution to the success of our company. They are the ones who make our raw materials so valuable. We see it as our responsibility to offer them an attractive, diversified working environment and to support their continuing development.





# LONG-TERM FOCUS ON HUMAN RESOURCE MANAGEMENT AND ATTRACTIVE WORKING CONDITIONS

Growth of total  
employee numbers



HSH Nordbank Run in Hamburg

## PRIORITIES OF OUR WORK IN HUMAN RESOURCES

Our company is shaped by the people who work for the company – by their ideas, their knowledge, their experiences and their dedication. As their employer, we are responsible for our 269 employees (2014: 265; 2013: 251), and it is our job to create a working environment for them in which they can develop their potential and get a little better every day. This is how our employees can also provide the performance levels that are necessary to both ensure that our innovation and product quality remain at the highest level in the long run and achieve our company objectives.

A central focus of our work in the area of human resources involves our relationships with employees. We want our employees to have a sense of well-being at our company. For this reason, we emphasise fair employment contracts and compensation, and we support our employees in the form of different social services and benefits. Additionally, we support them by helping them stay healthy, ensuring that they are successfully able to manage career and family and treating them with respect and appreciation.

We place a further priority on the development of managers from within our own ranks. On the one hand, this serves to prevent a future lack of managers in our company, while, on the other hand, it keeps years of acquired knowledge within the company. The individual professional and personal training and continuing education of our employees as well as knowledge management therefore play a significant role at Worlée. Beyond this, we see development and encouragement of our employees as an important instrument in increasing their satisfaction and strengthening their ties to our company.

## LONG-TERM CONNECTIONS ARE HIGH PRIORITY

As in other company areas, long-range thinking also plays a significant role at Worlée in the area of human resources. Many of our employees have been working for us for more than ten years, and the average time spent with our company averages 16 years. Furthermore, our long-range approach paired with our connection to our employees is clearly reflected in the fact that we only conclude short-term working contracts with employees in exceptional situations – for example, in the case of a lateral entry position.



Open House Day 2014 in Lauenburg

Our employees feel strongly connected to our company as evidenced by the low level of fluctuation at our locations. At our plants in Lauenburg and Lübeck, nine people have left the company since 2012 because they wished to study, moved or retired. At Worlée-Chemie in Hamburg, there were four such cases during this time frame. At the same time, our total staff size at all locations has increased: in Lauenburg and Lübeck, a total of 35 new employees have joined us since 2012 (as of 31 December 2015) while this figure measured seven in Hamburg during the same time period (as of 31 December 2015).

Furthermore, our close connections to our employees are also reflected in the fact that former employees maintain intensive contact with our company, often over the course of many years. They regularly take part in company events and use their experience and knowledge to advise younger employees.

## ATTRACTIVE WORKING CONDITIONS INCREASE EMPLOYEE SATISFACTION

It is important to us that our employees enjoy coming to work and feel comfortable in their working space. To achieve this aim, it is essential that our employees encounter an unprejudiced working environment in which they experience appreciation, tolerance and respect, no matter what their gender, age, sexual orientation and identity, race, nationality, ethnic background or world view may be. We at Worlée take this very seriously. Upon introduction to the company, all of our employees are instructed regarding the Equal Treatment Act. New employees receive a portfolio with all important relevant information when they begin work with us, and they must confirm in writing that they have received and read these materials. Discrimination in any form will not be tolerated in the company and will be sanctioned with consequences that range as far as dismissal. There was one reported case of discrimination during the period covered by this report; appropriate measures were taken.

For us, an integral part of attractive working conditions involves employees taking part in a continual improvement process. With this objective in mind, we carried out a working situation analysis in our company last year. Within the framework of this process, which was accompanied by moderators, employees had the opportunity to express their opinions regarding various situations. The moderators recorded the criticisms as well as the positive feedback in protocols, rendered them anonymous and passed the information along to the company management. These suggestions and criticisms were intensely scrutinised and implemented in specific measures, such as, for example, different lighting in working spaces, an attractively designed break room and course and seminar offerings such as “Healthy leadership” or “Self-motivation and independent work”.

Additionally, we attach great importance to appreciating our employees for their work and remunerating them accordingly. Beyond this, we support our employees with different offerings to help them remain healthy and productive. For high employee satisfaction, we regard both economic and personal factors to be important, and so we have created the following corresponding framework conditions.



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## Health day at Worlée

Free vision test



Support in setting up  
an exercise programme



Free mobility  
check

## GUARANTEED COMPENSATION THROUGH COLLECTIVE BARGAINING COVERAGE

A feeling of security is part of a positive working environment. The collective bargaining coverage of our company, for instance, creates a dependable framework for our employees with respect to working conditions and remuneration. All of our employees are compensated as specified in collective agreements: the employees in the Lauenburg and Lübeck facilities in accordance with the wage agreements for the chemical industry and the employees at Worlée-Chemie Hamburg (Chemical Trade and Cosmetics) in accordance with the respective agreement for wholesale and export trade. This means that all wages and salaries, from starting wages to the salaries of employees who have already been with the company for years, are set with reference to collective agreements. As such, gender-related compensation differentials do not exist. Naturally, wages and salaries lie considerably above the legal minimum wage level.

## PROTECTION THROUGH EXTENSIVE COMPANY BENEFITS

Worlée goes a step further still for its employees. Along with the guarantees from the collective agreements, our employees receive financial and non-financial company benefits. Namely, we pay our employees attractive subsidies towards building up their financial assets for retirement – a benefit of which 100% of our employees avail themselves. The employees can choose if they want to pay into a provident or pension fund or if they prefer to go the way of a direct insurance plan. As an employer, we have chosen a well-known provider and reinsured all pension provisions with life insurance. Furthermore, the provident fund is insured via the pension insurance society. Employees receive information on an annual basis concerning the current status of their retirement assets.

Since 2014, all employees have been offered a private supplementary health insurance option that is entirely covered by Worlée and can be implemented without a health evaluation. The level of the benefit is solely proportional to the number of years of employment with Worlée and ranges from preventive examinations to dental insurance to treatment by head physicians. These company benefits and offers are, naturally, available to all employees and are independent of their hourly working time plan.

Additionally, we offer disability insurance that provides excellent protection for our employees. Worlée likewise covers these costs in their entirety.

## HEALTH PROMOTION AT ALL SITES

The illness rate at our company lies considerably below average levels. As we want it to stay that way, we make an active contribution to the health maintenance and performance ability of our employees. For this reason, we have developed a comprehensive operational health management system for our company that we have implemented at all of our sites. Employees can take part in offerings such as massage or back health courses in the workplace or they can receive a subsidy from us towards their membership fee at a fitness club. Further offerings for our employees include, for example, annual flu vaccinations, “active breaks” and weekly fruit baskets from which employees can help themselves. Beyond this, a health day is held at regular intervals featuring varying opportunities such as mobility checks. On these occasions, employees also have the chance to work with on-site coaches and receive support in mapping out a suitable training programme for themselves. We are currently working towards certification of our health management in accordance with DIN Spec 19020.

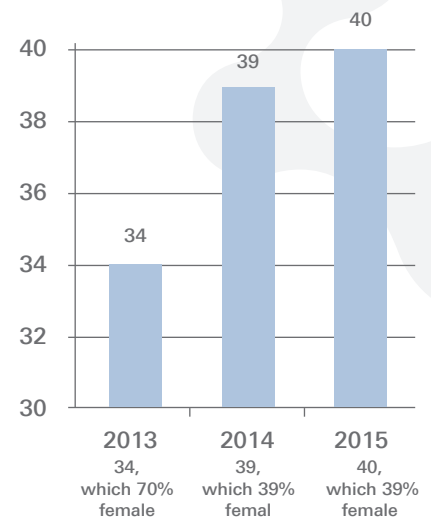
At our sites in Lauenburg and Lübeck, we guarantee our employees the possibility of partial retirement once they have reached the appropriate age. We see this as a way to lighten the burden on our employees and allow them to retain their good health as long as possible.

Furthermore, at Worlée we place great importance on the work environment. Working spaces are equipped with height-adjustable desks and ergonomic chairs in order to prevent back pain, and employees also have the chance to work standing up as needed.

## FAMILY-FRIENDLY COMPANY

A healthy work–life balance – the opportunity to smoothly reconcile career and family – further contributes to the satisfaction and motivation of our employees and also helps to ensure their work capability. For this reason, we offer our employees attractive flexible and part-time models that provide them with significant scope for organisation of their working time, thus allowing them to care appropriately for children or dependents. As of 31 December, there were a total of 40 employees working part-time at our company in 2015 (2014: 39; 2013: 34). In principle, our employees can make use of the full range of established collective agreements – for example, flexible time arrangements or part-time work models. The positive resonance from our working time models and their flexibility is reflected, among other things, by the return rate to the workplace after parental leave: every year, this figure stands at 100%. After parental leave, employees can return to us using their preferred working time model, and if they wish to make a change at a later date, this can also be considered and mutually implemented. At our Hamburg location, we also have a cooperative agreement with a day-care centre that provides employees with a nearby childcare option during working hours.

Part-time workers  
as of 31 December





Worlée has been a member of Worklife Hamburg for several years now. Worklife aims to retain valuable workforce potential in the Hamburg labour market by supporting companies and their workers as they seek to negotiate the balance between goals and needs. Within a cross-enterprise group, the companies learn from one another, share experiences and develop aspects of family-friendly human resources policy together.

In cooperation with the pme Familienservice, Worlée has begun offering a so-called life-coaching programme as of 1 January 2017. The programme offers employees a confidential resource to call upon for help and guidance in the face of difficulties such as financial problems, concerns about dependents or other challenging circumstances.

## **COOPERATIVE WORK BASED ON MUTUAL TRUST BETWEEN MANAGEMENT AND THE WORKS COUNCIL**

In order to ensure that employees' rights are protected at all times and that the interests of those employees are appropriately represented, we work closely together with our works councils. Many years of joint efforts have led to a relationship that is characterised by mutual trust. The works council is always involved in changes to company operations; they are informed unhesitatingly and without delay and collectively consulted. Through personal information, team meetings, staff meetings, notices, personal letters and emails, employees are informed about intended changes promptly and within legal deadlines. In the case of complaints from the workforce regarding working practices within

the company, the management and the works council – supported as needed by equal-opportunities representatives – are readily available for constructive conflict management. The rights of our employees regarding freedom of association and collective bargaining are guaranteed at all of our locations. There were no cases of formal complaint procedures during the year covered by this report or in previous years.



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Close cooperative work between management and employees



# TRAINING AND CONTINUING EDUCATION FOR EMPLOYEES

The motivation as well as the personal and professional development of our colleagues makes the difference in the quality and innovation of our products. Furthermore, it is our goal to develop specialists and managers from within our own ranks in order to prevent a future lack of suitable managers, as this is a trend from which our branch is also not immune. For these reasons, good, solid training of young people and consistent further and continuing education for our employees are essential pillars of our human resources strategy.

## TRAINING AT WORLÉE

We take the training of our junior staff at Worlée very seriously because we see clearly that our trainees of today are our employees of tomorrow. We place great importance on encouraging the abilities of our trainees on an individual basis and offering them a working environment in which they can directly apply and implement what they have learned. Young employees are supported and managed by an experienced team of trainers who make themselves available to them as contact partners at all times, provide thorough supervision and actively involve them in daily routines. Independent of training area or particular working activities, our trainees also have the opportunity to work abroad for a period of time at one of our foreign subsidiaries.

Young people can begin their experience in the working world with us in a total of six training careers: business management, wholesale and export trade, industrial management with the extra qualification of commercial assistance, chemist or laboratory chemist.

During the time period covered by this report, 15 trainees were active at various stages in their three training years at Worlée (2014: 15; 2013: 11).

In general, we take on trainees at Worlée as the need arises. Those with good performance records will be hired at the end of their training. During the time period in question, the retention rate reached nearly 100%.



Training at Worlée

## CONTINUOUS TRAINING AND FURTHER EDUCATION

As an innovative, quality-oriented company, we see continuous learning as an essential prerequisite for our company success. We constantly seek to improve ourselves as an organisation in order to be able to fulfil customer requirements as thoroughly as possible. Correspondingly, it is crucial for us that our employees are motivated, approach their responsibilities creatively, try new approaches and sometimes also give unusual ideas a chance. As this does require fresh inspiration, we create opportunities to help employees think outside the box. To this end, they are regularly provided with training and continuing specialist education and take part in selected workshops that impart further skills and expertise in their working area. Additionally, our employees receive offers to attend seminars that address personal safety and social competence topics. The seminar



Laboratory employee at Worlée

“Motivation and Individual Responsibility” is one example of such a training exercise from within the framework of our health management. Employees within the managerial ranks are regularly sent to management training, while managers who have been promoted from within the company are offered seminars such as “From Colleague to Supervisor” to assist them in rapidly adjusting to their new area of responsibility.

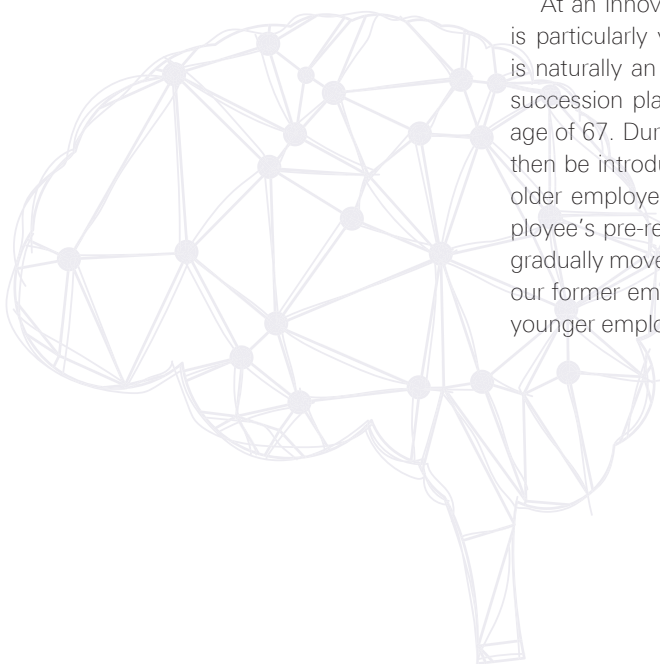
Naturally, we also support our employees’ private requests for continuing education – materially or through adjustments in their working hours – so that the employees can, for example, pursue technical school, a master’s degree or supplemental commercial training alongside their work responsibilities. On average, Worlée dedicates approximately 4,000 hours annually to training and continuing education.

## CONTINUOUS FURTHER DEVELOPMENT FOR EMPLOYEES

In order to support our employees’ development, we must be familiar with their wishes and objectives regarding their professional and personal advancement. In connection with our own operational interests, we make our employees aware of special continuing education measures as needed and seek regular dialogue with them. These discussions are conceived to be of a rather informal nature and are similar to coaching consultations. Our objective is a direct interaction with employees in order to clearly establish goals and wishes together with them and to set up an individual timetable for their professional development. The professional and personal accomplishments of the employees are also taken into consideration, but such factors do not stand at the forefront of this dialogue. The open atmosphere of these discussions helps our employees share their wishes, goals and potential with their managers and collaborate in the process of planning out their next steps. This high level of self-empowerment leads to increased motivation and thus better working performance.

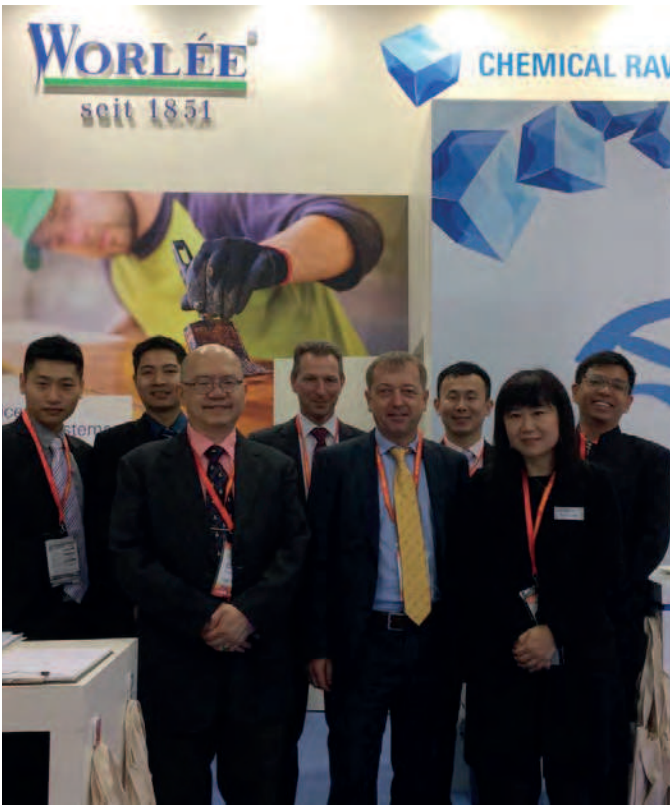
## EXPERTISE RETENTION THROUGH KNOWLEDGE MANAGEMENT AND TRANSFER

At an innovative, research-intensive company like Worlée, our employees’ knowledge is particularly valuable. Ensuring that this knowledge will be passed along and not lost is naturally an important responsibility for our human resource management. Employee succession planning plays a significant role here. Most of our employees work until the age of 67. During their last two working years, we search for a suitable successor, who is then be introduced to and guided within the company together with assistance from the older employee, who serves a mentor to the successor during this time. The older employee’s pre-retirement working time will be progressively reduced so that he or she can gradually move out of professional life and a transfer of knowledge can take place. Many of our former employees continue to advise and share their knowledge and experience with younger employees even after retirement.

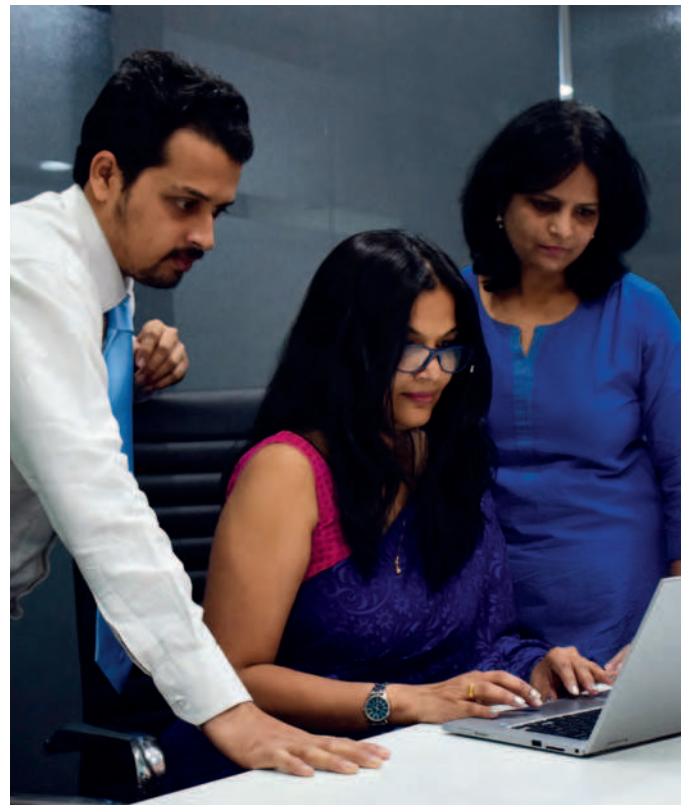


## CULTURAL COMPETENCE THROUGH LOCALLY RECRUITED MANAGERS

To the greatest extent possible, we fill management positions at our international locations with locally recruited managers. For our subsidiaries in India, Malaysia and China, for example, the percentage of locally recruited managers stands at 100%. Our decades of business experience in these regions have shown us how much we benefit from local employees. These advantages include their knowledge about cultural needs and particularities, interactions with local people, the short distance to our customers and their expert knowledge about coatings applications and local raw materials. At our domestic sites in Hamburg, Lauenburg and Lübeck, our managers are promoted from within our own development programmes. Trainee programmes are currently being planned; depending on the position, it can happen that appropriate external candidates are newly hired or brought in as replacements.



Employees at our Chinese location together with Dr Stefan Mansel (Global Sales Director) at ChinaCoat



Employees of Worlée-Chemie India

# RESPONSIBILITY FOR THE SAFETY OF OUR EMPLOYEES

## SAFETY TAKES PRIORITY

Our employees are the most important element at our company. One of our most important tasks is to protect them as they carry out their work and to ensure that they go home again safe and sound at the end of the working day. Consequently, safety policy is an essential part of the company policy of Worlée-Chemie GmbH and takes into account our recognition that safety is an indispensable prerequisite for our business activities.

We understand the concept of safety to mean accident-free and disturbance-free functioning of our facilities. Accident-free work that does not result in any employee health impairment is also an essential part of this idea.

As the handling of chemicals poses a heightened occupational health hazard, we have developed different strategies for minimising the risk as much as possible. Our stated goal in the area of occupational safety is "No Accidents". To achieve this objective, we have put the following measures into place:



OHSAS 18001 certification since 2013.



Regular risk assessments by occupational safety specialists at each location.



Establishment of working groups for occupational safety in the company. Meetings are held for each site four times per year. Representatives of the works council as well as our company safety officers represent the full workforce at the working-group meetings.



Creation of operational procedures for dealing with hazardous materials. These are accessible to employees at any time via the intranet or through handouts and instruction.



Regular instruction of employees regarding correct handling of raw materials and finished products.



Provision of appropriate protective clothing and personal protective equipment.



Training of a higher number of safety officers and first-aid workers than is legally required.



Motivation of our employees to carry out business with a priority on safety and encouragement of their training and continuing education.



Strengthening of the individual responsibility of employees: safety is a job for everyone, and everyone must contribute to its maintenance. Employees look out for one another and intervene when they detect unsafe behaviour.



Recording of near-accidents, making situation analyses and taking avoidance measures.



Consideration of contributions by all employees to safety in all areas and at all levels of the organisation. The topic of occupational safety at Worlée is included as a part of the company suggestion scheme and successful suggestions are correspondingly rewarded.



The success of our measures can be clearly seen by the significantly lower number of accidents recorded since 2012. To ensure that this trend continues into the future, we will continue to implement measures towards optimisation in the area of occupational safety and health.

Lübeck site	2013	2014	2015
Number of workplace accidents	0	0	0
Number of employees	31	31	31
Days missed	-	-	-

Lauenburg site	2013	2014	2015
Number of workplace accidents	4	2	1
Number of employees	179	191	192
Days missed	120	54	42*

\* The employee's sick leave extended beyond this period of time. As only 42 days of wages were paid, however, we are only using this figure.

Hamburg site including sales offices in Germany	2013	2014	2015
Number of workplace accidents	0	0	0
Number of employees	41	43	46
Days missed	-	-	-

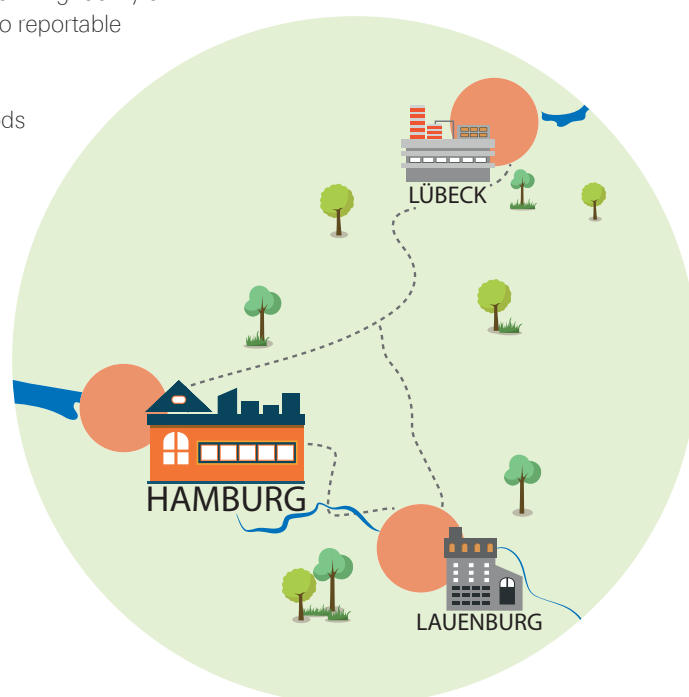
RCI, the employers' liability insurance association for the chemical industry, recorded a reportable accident rate of 14.5 per 1,000 employees for 2015. Our Lauenburg facility's rate of 5.15 reportable accidents for 2015 along with Lübeck's figure of zero reportable accidents per 1,000 employees is considerably lower than RCI's values.

We are unaware of any work-related illnesses involving prolonged periods of absence.



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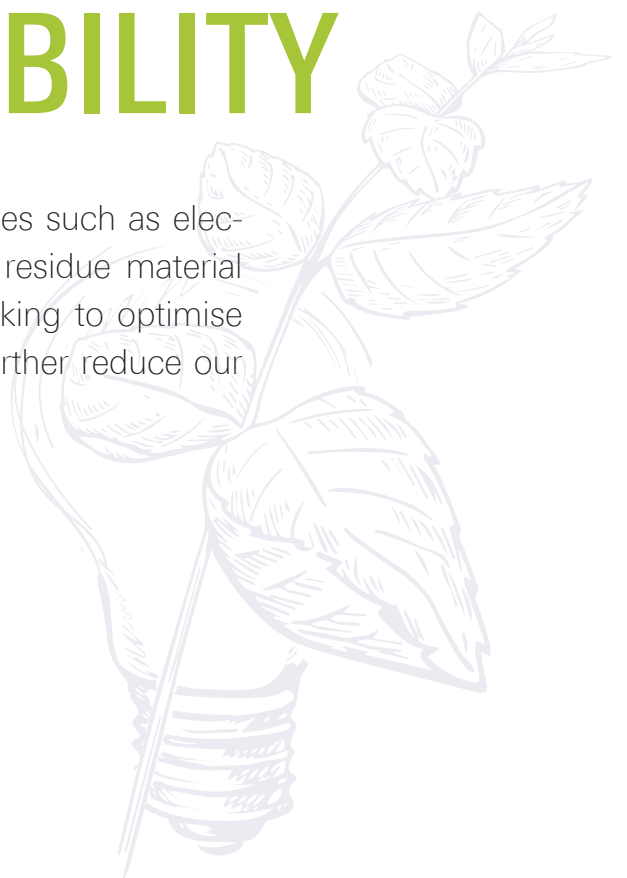
Protective clothing for the handling of raw materials





# WE CONNECT TECHNICAL PROGRESS AND ENVIRONMENTAL COMPATIBILITY

Our product manufacturing requires resources such as electricity and water, while CO<sub>2</sub> emissions and residue material also come into play. We are constantly working to optimise our procedures and processes in order to further reduce our impact on the environment.



# FIRMLY ESTABLISHED AT OUR COMPANY: ENERGY AND ENVIRONMENTAL MANAGEMENT

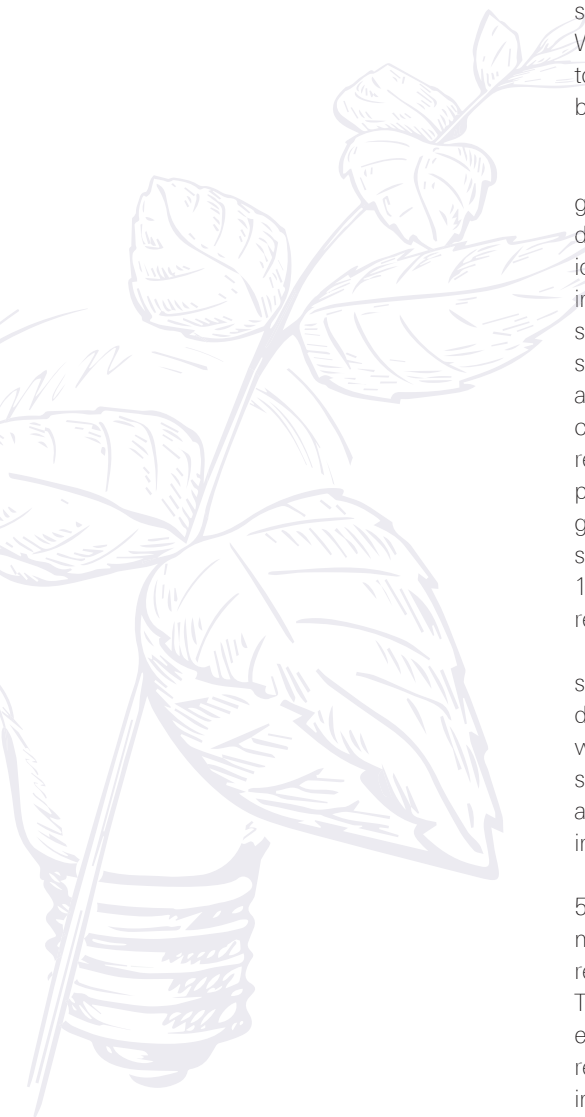
## ENERGY, EMISSIONS AND WATER

As a producer of chemical and cosmetic raw materials, we are aware that our business activities have an impact on the environment. Our product manufacturing uses resources such as raw materials, energy and water and gives rise to emissions and waste materials. While these cannot be avoided in our production processes, we can take active steps to increase our resource efficiency in order to minimise the environmental impact of our business operations.

Climate protection and resource conservation are essential elements of our company guidelines. They are not limited to the economical and efficient use of energy. In order to embed this objective firmly in our processes, determine our resource usage and identify potential for improvement, we established an environmental management system in accordance with ISO 140001 for our company in 2000 and an energy management system in accordance with the international standard ISO 50001 in 2013. The international standard ISO 14001 establishes requirements for operational environmental systems that are recognised worldwide. Ongoing improvement of the environmental performance of companies is the main emphasis of this standard. Correspondingly, ISO 50001 formulates requirements concerning the energy management of a company. Its focus is on the planning and implementation of measures designed to ensure the minimal use of energy for the amount of output and performance required. These standards as well as the standards for quality management ISO 9001 and occupational health and safety OHSAS 18001 comprise the foundation of our integrated management system. This system is regularly evaluated and certified by an independent accredited organisation.

The management system assists us in determining the in- and output of all of our essential material and energy flows, examining our procedures and processes critically and designing goals and action plans in order to reduce our ecological impact. Furthermore, we annually invest large sums in the improvement of our plants, we take an active role in sustainability and climate protection initiatives and we instruct and motivate our employees about business practices that are safe and environmentally conscious while also conserving resources.












By 2007, long before the international standard for energy management systems ISO 50001 even existed (2011), we had already organised the staff unit Energy and Environmental Management within our company. With this step, we allocated the personnel resources needed to effectively manage relevant topics within this area for our company. This department ensures that our environmental and energy management systems are effective, while it also mutually defines goals with the company management and the responsible working groups in the area of environment and resource preservation, coordinates measures that are necessary to reach those objectives and examines the degree to which the goals have been met with the intention of taking early countermeasures should deviations from the plans arise.










Within the framework of our environmental and energy management systems, we have, for example, formulated the following strategic and operative goals:

**Increase in energy efficiency of 20% by 2020  
(Reference year 2010):**

-  Modernisation of compressed air and nitrogen generation and distribution
-  Modernisation of lighting (including transition to LED)
-  Use of speed-regulated electric motors with a high efficiency class
-  Thermal insulation optimisation for equipment and systems
-  Heat insulation for buildings
-  Process optimisation as regards energy-related aspects
-  Use of regenerative energies (e.g. heating from a biogas CHP system)
-  Energy-efficient construction of new offices
-  Planning of a new thermal post-combustion with optimal energy consumption
-  Planning of an energy-efficient cooling-water supply system
-  Stronger employee integration and motivation

**Environmental and climate protection:**

-  Increase in the percentage of water to 40% as a substitute for hydrocarbon (both aliphatic and aromatic) solvents
-  E-mobility: acquisition of electric or hybrid company cars and pedelecs
-  Substitution of electric forklifts for gas-powered forklifts
-  Use of magnetically coupled (hermetically sealed) pumps
-  Video inspection of underground pipelines








Production plant

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#### Resource conservation:

-  Increased use of renewable raw materials
-  Increased use of domestic raw materials
-  Recycling of solvents
-  Reduction in use of tinplate pails
-  Reduction of paper use; use of paper exclusively from certified sources

#### Reduction of specific water use by 5%\* by 2015 (reference year 2010, \* less product water)

-  Usage analysis and monitoring
-  Usage of rainwater to replenish cooling systems

#### Waste reduction:

-  Optimal utilisation of sodium hydroxide detergents and cleaning agents
-  Reduction of production sample amounts
-  Construction of additional piggable pipelines

Additionally, our Energy and Environmental Management department ensures compliance with all regulations while also sensitizing and instructing employees regarding careful resource handling.



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Continuous monitoring of the production systems using sensitive measuring devices

## ENERGY EFFICIENCY IN THE LAST TEN YEARS HAS INCREASED BY 20%

We use energy in many different forms as we manufacture our products. On the one hand, we carry out chemical processes during which energy – thermal and kinetic – is changed into chemical energy. On the other hand, we carry out exothermic chemical processes for which the chemical reactions release heat and therefore require cooling. But energy must also be expended for a large number of secondary processes: for production of compressed air and nitrogen, for operation of heating systems and steam generators, for transport of raw materials and products within the company and, last but not least, for laboratory and office operations.

We continually strive to increase our level of energy efficiency in all company areas. Within the framework of our energy management, numerous measures have already been initiated and put into effect for the improvement of our energy efficiency – for instance, heat recovery from room ventilation systems and compressors, thermal use of refuse or procurement of process heat from a biogas system. Our energy efficiency team, which was established as we attained our ISO 50001 certification and is led by our energy and environment manager, meets four times per year, gives advice regarding possible measures for efficiency improvement and accompanies the implementation of measures that have already been approved. Our employees are another very important source of input concerning optimisation possibilities in energy usage. As they know all the ins and outs of company processes and systems, they often recognise further potential for improvement over the course of the working day, and they can pass this along to us via the company suggestion scheme. The success of our measures is evident in the significant improvement of our energy efficiency: over the last ten years, we have already been able to improve this figure by more than 20%.

The energy consumption of Worlée-Chemie during the timeframe of this report was as follows:

### Company-wide energy consumption in MWh

		2013	2014	2015
<b>Electricity</b>	MWh	8,360	8,377	8,513
<b>Natural gas</b>	MWh	16,116	16,328	17,135
<b>Heating oil</b>	MWh	1,665	1,105	1,203
<b>District heating*</b>	MWh	1,404	1,186	1,138
<b>Liquid gas</b>	MWh	20	15	39
<b>Resin/solvent blends**</b>	MWh	5,984	4,972	4,389
<b>Overall energy consumption</b>	<b>MWh</b>	<b>33,549</b>	<b>31,983</b>	<b>32,417</b>

\* Thermal energy with respect to its calorific value or substituted calorific value (district heating).

\*\* Calorific values for resin/solvent blends, which may vary greatly, are calculated as in the case of heavy heating oil.



20% increase  
in our energy efficiency



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Worlée-Chemie does not sell any energy.

The fact that our absolute level of energy consumption in the time period covered by this report has not continually decreased stems from changes in our product range during

this timeframe and a significant increase in our production quantities. Nevertheless, our energy efficiency has improved, as demonstrated by our energy intensity indicator. This intensity rating reflects energy consumption with respect to organisation-specific units – in our case, one tonne of manufactured products. During the time period covered by this report, we were able to reduce electricity intensity per tonne of manufactured products from 0.173 MWh/t to 0.161 MWh/t and heat intensity from 0.522 MWh/t to 0.453 MWh/t.

#### Energy intensity per tonne of manufactured products

		2013	2014	2015
Electricity	MWh/t	0.173	0.168	0.161
Heat	MWh/t	0.522	0.473	0.453

#### MEASURES FOR FURTHER IMPROVEMENT IN ENERGY EFFICIENCY

As our product manufacturing is energy intensive, we are particularly committed to the objective of ongoing improvement in the area of energy efficiency. In recent years, we have launched and successfully implemented numerous measures.

Our plants are outfitted with modern production equipment and kept in the best condition by means of regular maintenance and preventive servicing. For every new acquisition, plant renovation or new construction, energy efficiency considerations are firmly integrated into our project management. Each individual system is monitored as to its energy use. If there is a deviation from normal usage levels, the cause will be determined and remedied. Furthermore, plant standards determine the minimum energy efficiency requirements for specific operative elements.

Waste heat that arises from our operations is reused for other purposes whenever possible. The waste heat from machinery that is constantly in use, such as air compressors, is used to warm a heating chamber and a tank farm. Waste heat recovery from production processes, however, is not directly possible due to their non-continuous method of batch operation. Between the individual production steps, the machinery stands still and does not generate any consistent heat that could be re-employed elsewhere.

Our thermal post-combustion makes a great contribution to the improvement of our energy efficiency. This equipment also serves as a central instrument for the cleaning of exhaust gas. Even though our products are clearly moving in the direction of using water as a solvent, our operations do require the use of several carbon-based solvents that cannot yet be avoided. For example, the cleaning processes that are run after batch productions due to customer requirements result in mixtures of synthetic resins and solvents that are neither separable nor recyclable. At our Lauenburg plant, we take the calorific value of these mixtures as well as that of the solvent steam that results, for instance, from vacuuming the production and warehouse equipment, and we put these to use to create the process heat for our thermal post-combustion. There, the solvent-laden air and the mixtures (see also "Emissions" section p. 50) are combusted for the most part into CO<sub>2</sub> and water vapour. In this way, we save more than 4 GWh of natural gas usage annually. In addition, our own thermal recycling of these waste materials is advantageous in that they require no transport to an external waste disposal facility. Use of the thermal post-combustion is thus meaningful for us not just ecologically, but also economically.



4 GWh of natural gas  
are saved annually



The acidic water that accrues during alkyd resin production is collected and likewise combusted in the thermal post-combustion, as it is not suitable for disposal via sewage treatment facilities. Combustion energy is necessary for this procedure, of course; however, only approximately 25% of the thermal energy that we recover from the thermal post-combustion is used for vapourisation of the acidic water. The emissions of the thermal post-combustion are checked every two years by an outside expert. Taking matters one step further, we have worked together with an experienced operator of a biogas installation to develop a concept to generate process heat (290°C) in a biogas CHP unit and then feed it into our site grid. Approximately 5 % of the heating needs in our Lauenburg plant can then be provided by renewable sources. Originally, we planned to double this quantity by building an additional biogas CHP system. However, we were forced to give up this plan, as changes to the German Combined Heating and Power Act made it no longer economically feasible for the system operator. Our new office building that was constructed at the Lauenburg location in 2016 is likewise heated by low-caloric heat from the biogas CHP unit.



CHP on the grounds of the Lauenburg plant



Thermal post-combustion unit on the grounds of the Lauenburg plant



Biogas system in Lauenburg

### Measures to increase energy efficiency since 2007 and annual savings effects (selection)

Overhaul of all compression air systems with the goal of energy savings	369	MWh	Electricity	Measurement
Heat recovery in ventilation systems and from compressors	430	MWh	Heat	Calculation
Thermal use of waste materials	3,066	MWh	Heat	Calculation
Installation of high-speed doors	950	MWh	Heat	Calculation
Thermal equipment insulation	1,300	MWh	Heat	Calculation
Process heat obtained from a biogas system	1,138	MWh	Heat	Measurement
Reduction/replacement of standard lamps with LED lights	86	MWh	Electricity	Calculation
Optimised process management	516	MWh	Heat	Calculation
Usage of high-efficiency electric motors	360	MWh	Electricity	Calculation
Establishment and expansion of an extensive energy measurement system	n/a	MWh		
Usage of thermal imaging cameras to detect insulation weaknesses	n/a	MWh		

### EMISSIONS

As a company dedicated to climate protection, we constantly strive to reduce our greenhouse gas emissions (refer to “Company” chapter, p. 8). Primarily, this is accomplished by increasing the energy efficiency of our processes and, whenever economically justifiable, using energy from renewable sources such as process heat from a biogas CHP unit or hydropower (see “Energy efficiency” section, p. 47).

No greenhouse gases are generated by our chemical processes. The only greenhouse gas generated and released by Worlée comes from the carbon dioxide (CO<sub>2</sub>) that arises from combustion processes.

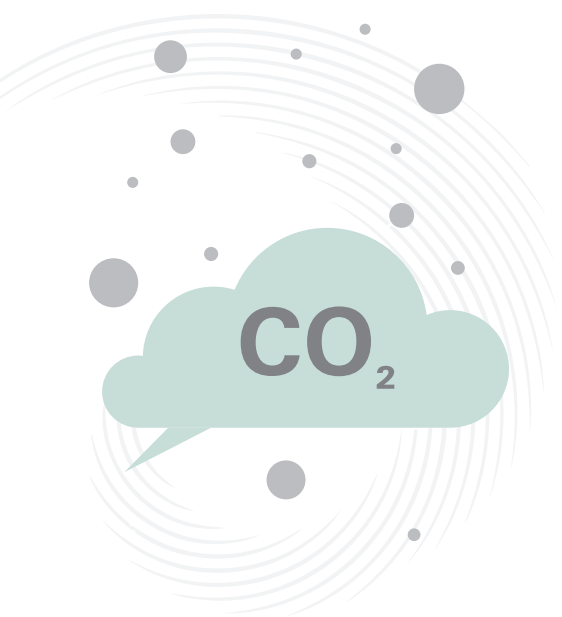
#### Greenhouse gas emissions\*

		2013	2014	2015
Scope 1**	t CO <sub>2</sub>	5,404.92	5,014.30	5,047.76
Scope 2***	t CO <sub>2</sub>	921.61	19.52	15.09

\* Only fuel and motor fuel are considered in calculating the CO<sub>2</sub> balance. Emissions factors are taken from the Allocations Ordinance of 2012 as well as from the Monitoring Guidelines (Decision 2007/589/EC to establish the Monitoring and Reporting of Greenhouse Gas Emissions Guidelines pursuant to Directive 2003/87/EC).

\*\* Energy-related emissions at the site; that is, essentially the emissions caused by the combustion of fossil fuels.

\*\*\* Energy-related emissions outside the site; that is, essentially the emissions caused by the electricity generation of the respective supplier.



Corresponding to our improved energy intensity level based on 1 t of manufactured products, our greenhouse gas intensity based on 1 t of manufactured products has also improved:

		2013	2014	2015
Scope 1**	t CO <sub>2</sub> /t	0.112	0.100	0.096
Scope 2***	t CO <sub>2</sub> /t	0.019	0.000	0.000

Reductions in greenhouse gas emissions are accomplished chiefly by increasing energy efficiency and purchasing electricity from renewable sources. In 2015, this led to a savings of 4,554 t of CO<sub>2</sub> as opposed to results when using electricity from the German electricity mix. (Source: Federal Environment Agency, Development of specific carbon dioxide emissions in the German electricity mix during the years 1990 to 2015).

During the new delivery period 2017/2018, we will be also able to cover 100% of our electricity needs (Scope 2) with hydropower-generated electricity (100% certified green electricity). We change our electricity provider regularly in order to optimise our selection in terms of economic and ecological possibilities.

In order to avoid harmful emissions (hydrocarbon vapours), the exhaust fumes from our processes at both production plants are collected by vacuuming or vapour recovery and directed to a central exhaust gas cleaning system.

At our Lauenburg plant, these waste gases are processed by our thermal post-combustion. The thermal post-combustion also handles combustion of the resin/solvent blends that are generated by cleaning processes as well as water resulting from the process of polycondensation that has become contaminated with raw materials, leftover products and solvents. (See "Measures for further improvement of energy efficiency", p. 48). This mainly gives rise to carbon dioxide and water vapour along with small amounts of nitric oxide and dust.

At our Lübeck plant, gaseous emissions, which also have a very strong odour, are converted to non-harmful forms by means of a UV system.

The installed combustion performance of the burning systems is under the limit of 20 MW at all of our locations. No greenhouse gases are emitted by our processes, which exempts us from required participation in emission allowance trading in accordance with the German Greenhouse Emissions Trading Act.

At both locations, emissions measurements are regularly performed by certified environmental laboratories (in Lauenburg every two years, in Lübeck every three years). In addition, measurements of odour concentration are carried out every three years at our Lübeck location.

#### Emission measurements, thermal post-combustion, Lauenburg plant

	2014	
	Max. measurement value [mg/m³]	Limit [mg/m³]
Total dust	9.9	30
Total carbon	<0.6	10
Nitric oxide	186.8	200
Carbon monoxide	<8.5	50

Accredited laboratory: Wessling GmbH; measurement date: 25 November 2014



4, 554 t CO<sub>2</sub> avoided  
by use of green electricity



### Emission measurements, UV system, Lübeck plant

2015		
	Max. measurement value [mg/m³]	Limit [mg/m³]
Acrylic acid	<0.6	20
Total carbon	19.7	50
Organic material, class 1	<0.7	20

Accredited laboratory: SGS-TÜV Saar GmbH; measurement date: 19 May 2015

### Odour measurements, UV system, Lübeck plant

2015		
	Max. measurement value [mg/m³]	Limit [mg/m³]
	362	1,800

Accredited laboratory: Odournet GmbH; measurement date: 19 May 2015

The low-emission fuel natural gas is primarily used for the plants' heating systems. This results in the usual emissions of carbon dioxide and water vapour along with sulphur dioxide that is only generated in the very smallest quantities.

Gaseous emissions from the laboratories are only released into the air in the form of tiny amounts of untreated material. Ozone-depleting materials are not emitted.

### ECOLOGICAL IMPACT FROM TRANSPORT



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Approximately 40% of our products leave our plants in tankers

We actively seek to minimise any ecological effects resulting from the transport of our raw materials and products. We must rely on street traffic for the transport of these goods. Transport with the railway system is not possible due to the comparably small quantities involved.

For transport of our products, we prefer to work together with forwarding companies that have ISO 14001 certification and employ low-emission vehicles. To maximise our utilisation of transport space, we pay close attention to complete loading or combined transport possibilities. In the past, we have set up warehouse space in order to be closer to our customers; furthermore, we are careful to optimise our route planning.



We also greatly reduce our transport needs by burning certain types of waste at the Lauenburg plant as well as by creating our own nitrogen for inerting our systems.

Nearly 40% of our products depart our plants in tankers while the rest travel as general cargo (drums or containers). Tankers must be cleaned before being freshly loaded while drums and containers are reconditioned and used again whenever possible. Furthermore, we are working on solutions for our employees' daily commute. Our locations may only be reached with difficulty when using public transportation. To encourage travel by bicycle, we have planned to make e-bikes available to our employees. Company cars reaching the end of their service should preferably be replaced by electric or hybrid models.

Our employees travelling on business trips within Germany are strongly advised to travel by train whenever possible.

### RESOURCE CONSERVATION: WATER USAGE

Water is an essential resource for our company. Careful and efficient water use is a key part of our environmental management system. In our processes, we mainly use water as cooling water, boiler feed water and as a component in aqueous products. Our need for water is highly dependent on weather (effects on cooling water requirements) and on production quantities (effects on cooling water and product water requirements).

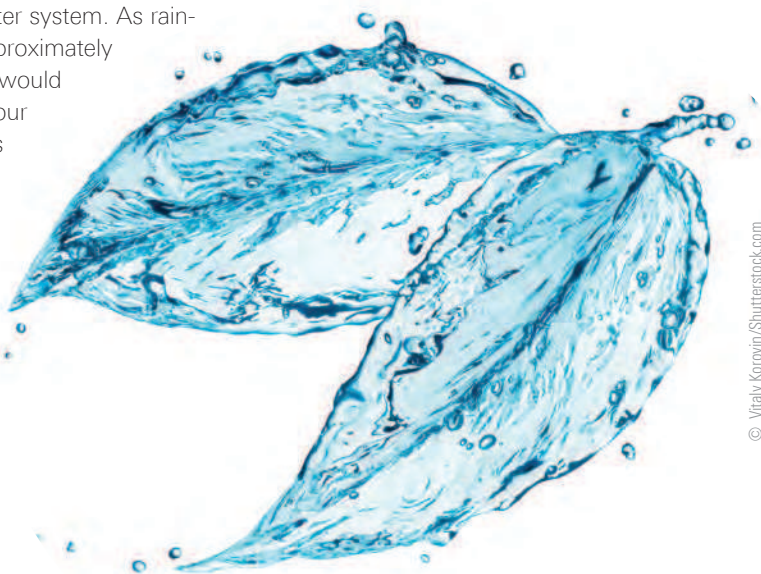
Potable water is partially softened for usage as cooling water. Replacement of potable water with surface water – for example, from the Elbe or Trave rivers – which run next to our production locations, is not a meaningful alternative for us due to various restrictions. It is therefore our goal to use water sparingly and to avoid water loss to the fullest-possible extent.

Water loss occurs at Worlée, for example, in the cooling towers. In the cooling water circuits, cooling water is advanced to the systems which need cooling, where it is warmed and then moved along for renewed cooling to the cooling towers, in the process of which a certain quantity of the water evaporates. This type of re-cooling is particularly energy efficient as its electricity needs are much less than those of, for example, a compressor cooling system, which provides another possibility for re-cooling.

Water loss that occurs due to evaporation in the cooling towers and the resultant need for desalination of the liquid must be offset, however. For this purpose, at the Lauenburg plant, along with partially softened potable water, we also use rainwater that is collected from the rooftops and, after cleansing, is sent to the cooling water system. As rainwater has no salt content, this provides an annual savings of approximately 1,800 m<sup>3</sup> in potable water plus the energy and additives that would otherwise be needed to condition that quantity for use. At our Lübeck plant, the possible use of rainwater for cooling purposes is currently being scrutinised. Potable water is used approximately 500 times before it is removed from the cooling circuits in the process of evaporation or desalination.



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Water is also needed for production of our water-soluble products. For this purpose, we use fully demineralised water that evaporates in a manner that is harmless for users and the environment during the drying process of paints and coatings made from our products. The percentage of water-based products in our product range is continually increasing, and this leads to a correspondingly higher level of water usage. This water, however, takes the place of organic solvent (from fossil sources) usage that should be reduced in accordance with EU specifications (VOC Directive). During the last ten years, we were able to decrease our usage of solvents by 40,000 t thanks to water-dilutable products.

#### Water replaces solvents in our products



The water evaporates during product drying in a manner that is harmless for users and the environment



Usage of nearly 40,000 t of environmentally harmful solvents over the last ten years could thus be avoided

In 2015, the total water usage of our company measured 45,361 m<sup>3</sup> (2014: 42,507 m<sup>3</sup>). Fresh water (well water) used in our processes comes from communal sources (43,791 m<sup>3</sup>; 2014: 41,147 m<sup>3</sup>) or is rainwater that we collect and reuse (1,560 m<sup>3</sup>; 2014: 1,360 m<sup>3</sup>).

## WASTE WATER AND WASTE MATERIAL

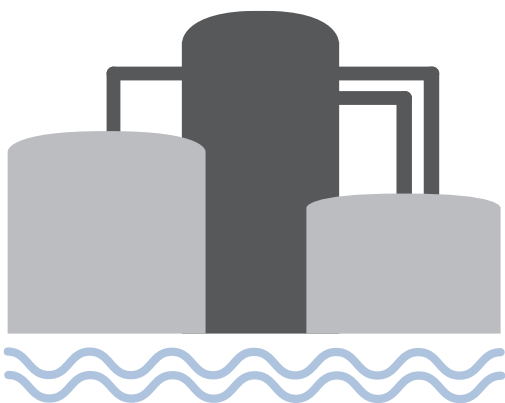
### WASTE WATER TREATMENT

At our Lübeck plant, production waste water is processed in a waste water treatment system and then sent into the municipal sewage system. Filter sludge is dehumidified and dried and then disposed of appropriately.

Surface water as well as cleaned waste water from the municipal waste water treatment plant is then directed into the Trave River.

At our Lauenburg plant, only the process of water softening leads to the generation of waste water, which is then fed into the public sewage system. Softened water is used as cooling water, boiler feed water and as a part of our products. The waste water is potable water with a somewhat higher concentration of dissolved salts than would be the case for fresh potable water.

Water that results from our production is channelled into the thermal oxidation system, where it is evaporated and resulting impurities are combusted into carbon dioxide. There is no further generation of industrial waste water.



Surface water as well as cleaned water from the municipal waste water treatment plant is fed into the Elbe. We are not direct dischargers of surface water at either location.

#### Waste water volume

		2013	2014	2015
Waste water	t	18,692.00	15,558.00	14,577.00

#### RECYCLING AND DISPOSAL OF WASTE MATERIALS

Naturally, waste materials are also a part of our company processes. As they cannot be entirely avoided, the handling practices involved with these recyclable materials are of even greater importance. Our own company recycling management system has the objective of avoiding waste generation as much as possible, for waste is made from resources, and often energy and labour expenditure also play a role. Unavoidable refuse is then separately collected and either used again after treatment or disposed of in a manner that is appropriate and environmentally correct. Material or thermal recycling is naturally given precedence in the removal process. At our Lauenburg plant, we have identified different possibilities for reusing waste materials meaningfully in order to protect the environment:



**Solvent preparation for reuse:** Solvent becomes contaminated after being used in processes. As it originally comes from petrochemical sources, it is a valuable resource. Considering our very high quality requirements for treated solvents, we are very satisfied with the recycling rate of approximately 60% that we have attained.



**Multiple uses for sodium hydroxide:** Sodium hydroxide is necessary for the cleaning of our production equipment. It is reused to the greatest extent possible and only discarded when it becomes unusable.



**Substitution of cardboard cups to replace metal containers for sampling purposes:** For quality reasons, sampling containers may only be used one time and require subsequent disposal. Much smaller quantities of resources are required to produce a cardboard container as opposed to one made of metal. However, as samples are very hot and contain solvents, the cardboard containers must be placed in metal cups for safe handling. Since the metal cups do not become contaminated, they can always be used again.



**After the combustion of certain types of liquid waste in our thermal post-combustion at the Lauenburg plant, the resulting calorific value can be used as process heating, which also avoids the need for truck transport of the materials to external disposal locations.**



**Constant quantity and cost monitoring via our recycling management system.**



Substitution of paper cups to replace metal containers for sampling purposes

© Jemmer Egberts Photography



No contamination  
by fuel, oils or chemicals

The measures named above have contributed to our company recycling rate of over 99%. The slight increase in the quantity of waste materials stems from the increased production quantities achieved during the period covered by this report.

## WASTE GENERATION

		2013	2014	2015
Overall quantity	t	3,164.20	3,585.79	4,043.23
Portion hazardous waste	t	2,811.87	3,386.33	3,835.98
Overall recycling rate	%	99.8	99.7	99.9

Worlée-Chemie does not import or export or transport any waste, nor does it transport any such material between its locations.

## BIODIVERSITY

Our Lauenburg plant is situated on a riverside meadow in the Elbe Valley. Although the plant is not located within a protected zone, we are still very much aware of the special value of this landscape and its protected areas, and we take great care not to do them any harm. By minimising our emissions and by protecting soil and groundwater (see p. 44), we ensure that our impact on this area is as small as possible. By taking precautionary measures to protect the environment, we prevent contamination by fuel, oil and chemicals. During the period covered by this report, no contamination occurred at any of our locations.

To offset existing or future encroachment in natural habitats, we have acquired many compensation areas in the vicinity of the plant.



Lauenburg plant

© Jenner Egberts Photography



# SAFETY

When operations involve the handling of chemical materials, safety management has a particularly important role to play. Our safety management system is divided into the three divisions of environmental protection, occupational safety and plant safety. These are closely connected with one another and cannot be considered individually.

Essential elements of our safety management system include our certified environmental (ISO 14001) and occupational safety (OHSAS 18001) management programmes (see p. 44 and 40). Furthermore, at our Lauenburg location, we also maintain a safety management system in accordance with 12. BImSchV (German Federal Emission Control Ordinance) to guarantee plant safety.

## ENVIRONMENTAL PROTECTION

In order to further reduce our effect on the environment, our environmental management system surveys our environmental impact and takes countermeasures as necessary (see p. 45). On average, we invest many hundreds of thousands of euros in environmental protection measures every year – for example, for plant renovations or for product adaptations. When constructing new equipment or systems, it is always our goal to find their optimal configuration with respect to environmental or efficiency aspects. In some instances, we make use of promotional loans from the German government-owned development bank KfW, which requires us to present proof of our savings achieved with the new system. This assists us in turn in summarising and tracking the development of our environment-related activities.

Via the supervisory authorities (State Ministry of Energy, Agriculture, the Environment and Rural Areas, LLUR), regular IED inspections are carried out to verify adherence to requirements and compliance with the conditions of operating licences.

Our extensive safety management system ensures that the risk of a hazardous environmental incident is reduced to a minimum. If such an incident should occur despite these safeguards, an alarm and emergency plan that has been coordinated with authorities will go into effect. This plan then regulates the subsequent actions to be taken within the premises of the plant and in the neighbourhood.

There was one odour-related complaint per report year from the neighbourhood of the Lübeck plant. These complaints were investigated, and in legitimate cases, steps were immediately taken to eliminate the cause. Additional investments have been made to substantially reduce the occurrence of odour-intensive emissions. The company and the authorities reported no breaches of laws or requirements during the report period.



## PLANT SAFETY

Before any changes are made at the plants, an interdisciplinary team of experts (consisting of the accident coordinator as well as employees from engineering, process engineering, production and product development) carries out documented safety appraisals in which unlikely system conditions and events are also analysed. Based on this analysis, organisational or technical measures are developed to prevent or handle hazardous incidents, and these are included in the approval application.

Our technical measures include not just consistent structural explosion protection and system inerting using nitrogen that we largely generate ourselves from the air in our own production plant, but also comprehensive systems for fire detection, gas detection and extinguishing purposes in specific areas. Of particular note are our reduced-oxygen spaces in which open flames are prohibited. Furthermore, all systems are tested before they commence operation and afterwards at regular intervals by internal and external experts.



## OCCUPATIONAL SAFETY

Along with technical devices such as overfill protection, catch basins and floor encapsulation, our employees are an important factor in creating a safe operational environment. An extensive instructional programme and precise guidelines establish safe working conditions for them (see p. 40).

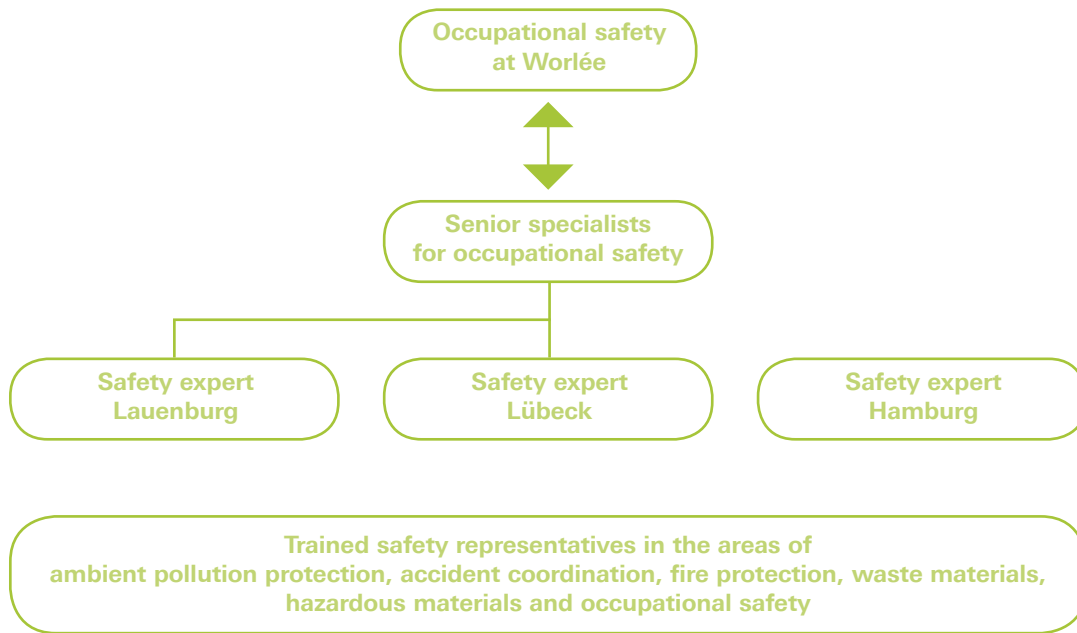
Our operational representatives (ambient pollution protection, accident coordination, fire protection, waste materials, hazardous materials, occupational safety) attend professional development events as required by law and serve as instructors for the employees in their respective areas of expertise.

They are called upon for advice before every product introduction or process alteration and have important supervisory functions in the company.

Risks for every performed activity or every workplace are analysed in detailed risk assessments, and appropriate safety goals and measures are determined and implemented. All operational areas are reviewed very precisely by means of regular inspections, the results of which are recorded in updates to risk assessments. Regular meetings of the committee for occupational safety include discussion of all subjects that can contribute to improvements in occupational safety.

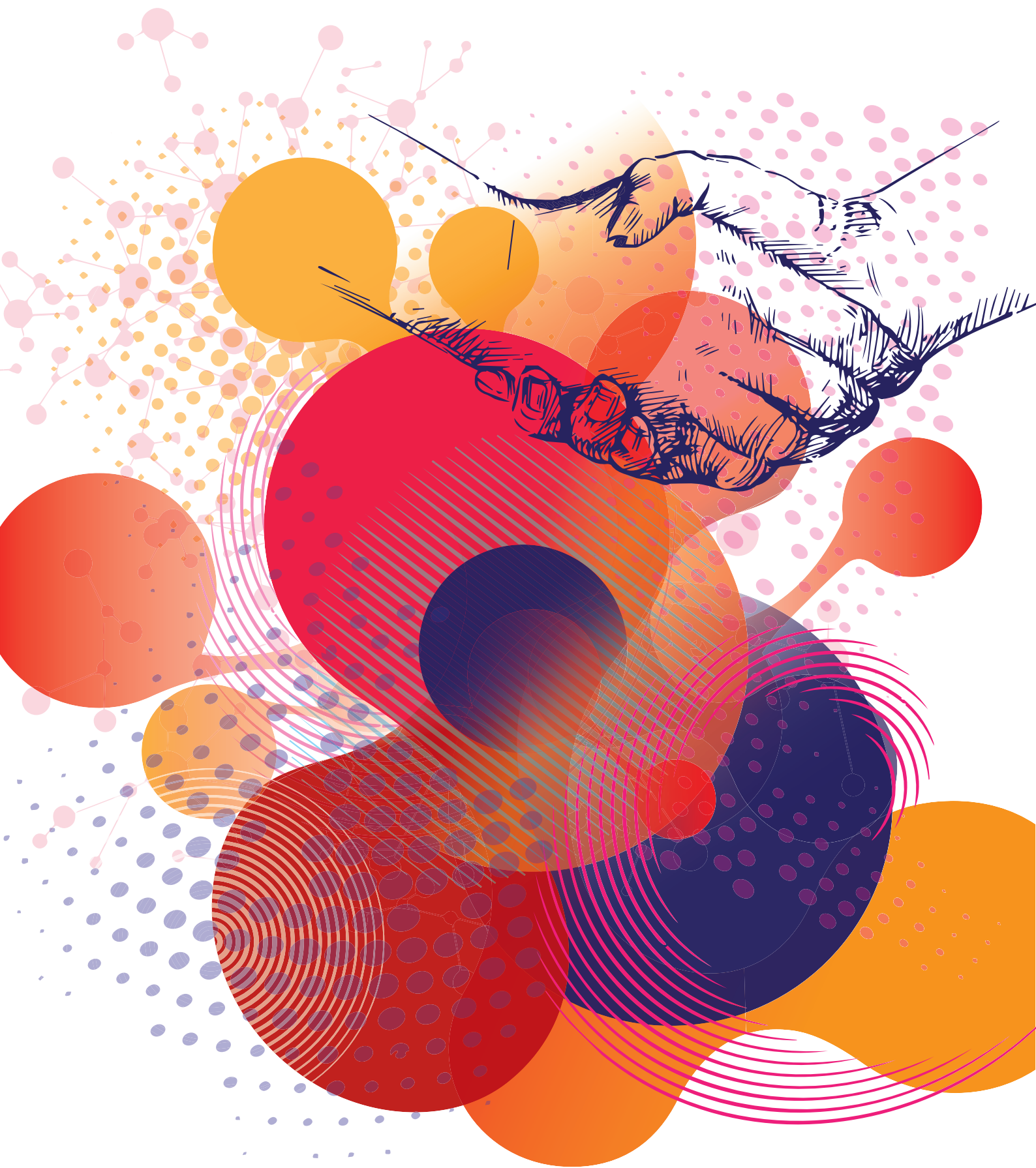


Along with our senior specialists in the area of occupational safety, three additional safety specialists and trained safety representatives at the Lauenburg, Lübeck and Hamburg locations demonstrate great commitment in their occupational safety work.



Every incident, from work accidents to the slightest injuries to near-accidents is meticulously recorded and evaluated in order to help eliminate future hazards.

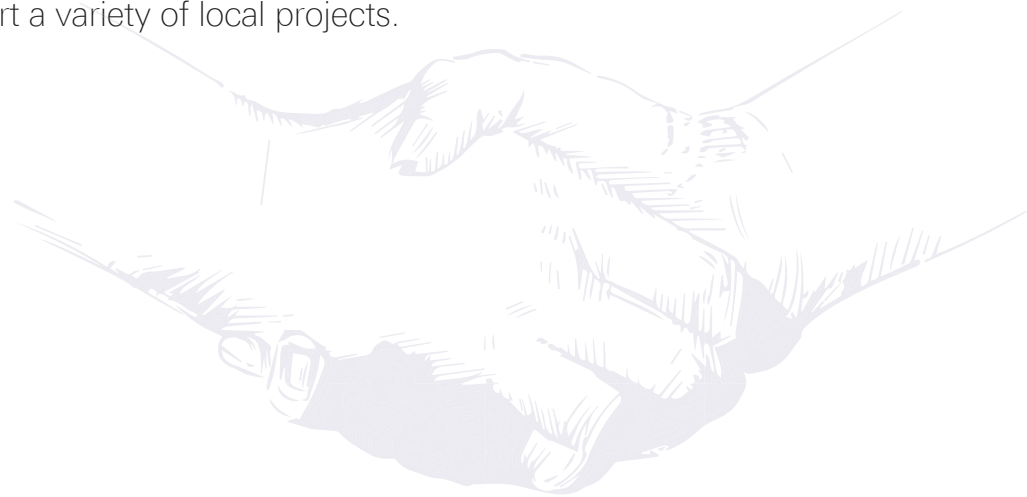
As outside companies that are commissioned to work for us should also be able to expect safe working conditions, they receive safety training before commencing work. We randomly monitor them to ensure that they are performing in accordance with our safety standards and in an environmentally friendly manner, and we correct them when necessary. Behaviour that does not conform to our safety standards will not be tolerated and can lead to expulsion of the contractor. We do everything possible to achieve our “No Accidents” objective. For this reason, we establish a multitude of measures every year in order to further increase the level of occupational safety in our plants.





# WE CONNECT ENTREPRENEURSHIP AND SOCIAL ENGAGEMENT

We are aware that we also have a responsibility outside our company. For this reason, we play an active role in our local communities and support a variety of local projects.



# SOCIAL RESPONSIBILITY AND ACTIVE REGIONAL PARTICIPATION

As an internationally established company, Worlée-Chemie clearly perceives its social responsibility outside of the company as well. This includes responsible dealings with employees, business partners, suppliers and service providers along with customers, neighbours and the regions surrounding our plants and subsidiaries. Neither our products nor our production plants should present hazards for people or the environment – this is the goal that we pursue.

Our compliance plays a significant role in Worlée's fundamental adherence to current applicable legal regulations and our own strict internal requirements. These conform with the relevant standards in the areas of human rights, occupational and environmental safety, sustainability and anti-corruption. We abide by customer data protection requirements as a matter of course with no exceptions. Furthermore, it goes without saying that we maintain the appropriate standards with respect to fair competition. Correspondingly, there were no such reported cases during the period of time covered by this report.

Integrity and compliant behaviour are prerequisites for cooperative, trust-based business relationships. When selecting our business partners, we pay close attention to whether or not they comply with laws and generally recognised rules of orderly business dealings.

As an employer and customer, Worlée-Chemie has diverse interactions with the regional communities surrounding our locations. This gives rise to duties as well as opportunities to help shape our social environment. For this reason, in Lauenburg we support, for instance, the volunteer firefighters and the citizens' foundation. We cooperate with the Albinus secondary school by, for example, providing visual aids for chemistry instruction and supporting the students with career consulting.

We take part in the German Future Day (former Girls' Day) to promote vocational orientation, particularly with respect to scientific careers, and we offer internships for schoolchildren and students.

We regularly hold informational events for visitors, neighbours and other interested parties, such as the Chemistry Open House Day. Furthermore, we take part in the Week of Industry.

Beyond this, we play an active role as volunteers by holding different offices in numerous regional and national associations such as the UVNord and the VCI, both of which are committed to the development and retention of the social market economy.

Numerous charitable and non-profit foundations and organisations receive donations from the shareholders and companies of the Worlée Group.



Sgd. Reinhold von Eben-Worlée



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