



Pulcra Chemicals
The solution specialist

SUSTAINABILITY REPORT

2022

Together for a Sustainable Future

Dear Customers, Partners, Stakeholders and Team members,

It is with great pleasure and a profound sense of responsibility that we present to you the Pulcra Chemicals GmbH annual Sustainability Report for the year 2022.

As we navigate the complexities of the modern landscape of the Fiber, Textile and Leather auxiliaries business, we understand that sustainability is not merely a choice but imperative for the well-being of our planet, communities, and future generations.

This report represents our commitment to sustainability - a commitment that is deeply embedded in our values and corporate beliefs. In a world facing unprecedented environmental and social challenges, we recognize the important role our businesses play in driving a positive change.

At Pulcra Chemicals GmbH sustainability is not a box to be ticked; it is a guiding principle that shapes our decisions and actions. We believe in the seamless integration of economic success, environmental stewardship, and social progress.

As we unveil the contents of this report, we invite each of you - our customers, partners, stakeholders and team members - to join us in our pursuit of a sustainable future. Your feedback, insights and collaboration are extremely valuable to us as we strive to make a meaningful contribution to the global sustainability agenda.

In conclusion, we extend our gratitude to everyone who has contributed to the Pulcra Chemicals GmbH sustainability journey. Together, we can create a world where business thrives in harmony with the environment and society.

Sincerely,

Bernd Schalk Lommer, CEO

Pulcra Chemicals Group

Dr. Holger R. G. Bender, CTO

Pulcra Chemicals Group

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1. Executive Summary

In the 2022 Sustainability Report, Pulcra Chemicals GmbH outlines its commitment to sustainability and its efforts to minimize its environmental footprint, enhance social responsibility and maintain economic sustainability.

The **Greenhouse Gas (GHG) Emissions** from production activities (Scope 1+2 of the GHG protocol) have been **reduced by 6.1 %** with respect to 2021.

There are important improvements in monitoring the energy demand within the production and successive work regarding the change to renewable carbon (Scope 3).

This report has been prepared **according to Global Reporting Initiative (GRI) Standards**.



2. About Pulcra Chemicals

Pulcra Chemicals GmbH is part of the Pulcra Group and a leading chemical manufacturer specialized in development and production of process chemicals for the fiber, textile and leather industries. Our mission is to provide innovative and sustainable solutions to our customers while minimizing our impact on the environment.

This aligns perfectly with the 4P core values of the Pulcra Group:

People, Partners, Planet and Profit. The following figures show Pulcra global:



4 Business Units

Fiber/Textile/Leather/
Performance



3,000

Over 3,000 customers



5,000

Over 5,000 products



16

Represented in 16 countries



1,000

Around 1,000 employees
worldwide



340

Turnover 340 Mio EUR

3 Main Global Business Units



TEXTILE

Specialty chemicals for the production of yarns, woven-, knitted fabrics, nonwovens and denim in the sizing, pretreatment, dyeing, printing, softening and finishing process stages.



FIBER

Specialty chemicals for primary, secondary spinning and nonwoven production.



LEATHER

Specialty chemicals and dyes for the production of leather and furs.

3. Sustainability Strategy

In this report, the results of all three sustainability core pillars are outlined: environmental sustainability, social responsibility and economic sustainability.

We are committed to continuous improvement in these areas to create long-term value for our stakeholders.



4. Environmental Sustainability



4.1. Greenhouse Gas Emissions

4.1.1. Scope 1 + 2

For the activities of Pulcra Chemicals GmbH, the following Energy consumption has been determined.

kWh	2020	2021	2022	Δ 2022 vs. 2021 [%]
Energy consumption, total	17.989.237	19.754.039	17.743.231	-10,2
Natural Gas	15.019.000	16.176.325	14.368.389	-11,2
Diesel fuel	142.237	173.364	145.432	-16,1
Electric Power, total	2.828.000	3.404.350	3.229.410	-5,1
<i>Electric power, CO₂ neutral</i>	<i>1.555.400</i>	<i>1.872.393</i>	<i>1.776.176</i>	<i>-5,1</i>

The analysis of GHG Emissions according to Scope 1+2 of GHG Protocol gave the following results:

	Unit	2020	2021	2022	Δ 2022 vs. 2021 [%]
Scope 1: Direct GHG Emissions	tCO ₂ equ	2.762	2.981	2.645	-11,3
Scope 2: Indirect GHG Emissions		665	800	904	13
CO₂-Emissions, Scope 1+2		3.427	3.781	3.549	-6,1
Total production volume	metric tons	30.724	38.400	30.872	-19,6
CO₂-Intensity* Scope 1	tCO ₂ equ /t	0,0899	0,0776	0,0857	10,4
CO₂-Intensity* Scope 2	of product	0,0216	0,0208	0,0293**	40,6
CO₂-Intensity*		0,112	0,098	0,115	16,8

*Intensity is related to production volumes (CO₂ emissions / production volume).

** Scope 2 conversion factor increased in 2022 from 0.23 to 0.28 kgCO₂/KWh

Scope 1: Fuel combustion at Pulcra Chemicals GmbH site (natural gas and diesel).
No coal is being used.

Scope 2: Purchased electricity. GHG emissions are reported in CO₂e. Carbon dioxide equivalent (CO₂e) emissions represent emissions of all greenhouse gases (CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆), aggregated and converted to units of CO₂e using global warming potential (GWP) values.

In the past year, our absolute emissions decreased by 6.1%. However, our CO₂ intensity increased by 16.8%, primarily due to a significant reduction in production volume and the related higher portion of base load. Also, due to the generally difficult energy situation in Germany, the conversion factor for electric power increased substantially – coal was partially reintroduced for power generation.

For addressing these challenges and reducing the carbon footprint of our plant, we have implemented the following actions:

- Adoption of energy reduction measures in alignment with ISO 50001 certification, which entails concrete steps for reducing energy consumption in both Scope 1 and Scope 2 emissions.
- Implementation of monitoring points and state-of-the-art evaluation software to track various energy consumption.
- Optimization of steam pressure to lower temperatures, thereby reducing natural gas consumption.
- Introduction of a refrigeration dryer to partially replace the energy-intensive adsorption drying process for compressed air.
- Optimization of energy consumption during weekends through the controlled slowdown of various plant components.
- Replacement of less efficient motors in reactors, raw material pumps, heating pumps, and fans with more energy-efficient alternatives.

4.1.2. Scope 3

Purchased Goods and Services: Use of renewable Carbon. Pulcra Chemicals GmbH has initiated a project for the introduction of renewable carbon-based raw materials, Pulcra Naturalis®. The project was implemented in all three Pulcra Chemicals GmbH Business units. Monitoring the use of renewable raw materials has been implemented. The portion of bio-based raw materials has increased 2,1% from 2020 to 2022.

	2020	2021	2022	D 2022 vs. 2021 [%]
% Bio-based, organic	32,5	31,5	33,6	2,1

% Bio-based organic raw material according to EN 16785-2

Transportation and distribution. Various projects for the transfer of production from Pulcra Chemicals GmbH to other affiliates of the Pulcra Chemicals Group have started. The goal is to serve our customers with locally produced products. This gives benefits both for upstream and downstream transport. Furthermore, an initiative on the use of local raw materials has started. As a first step, the improved monitoring of supply channels has started with our raw material suppliers / dealers.

Employee commuting. Regarding employee commuting, we have implemented a series of sustainability measures. These include the introduction of home-office policies, which have led to a 10-20% reduction in the number of employees driving to the workplace. To further support eco-friendly transportation, we have installed a charging station for electric vehicles. Additionally, in the framework of a national campaign we actively promoted the use of bicycles for commuting.

4.2. Water Usage and Conservation Efforts

The total consumption of water was slightly reduced in 2022. When related to the production quantities, the total usage of water increased by about 1,90 m³/t product. This effect is ascribed to the implementation of a new stripping unit for alkoxylation, due to legal restrictions on the 1,4-Dioxane content.

	2020	2021	2022	D 2022 vs. 2021 [%]
Service (Cooling) water (m³)	288.806	334.080	327.243	-6.837
Drinking water (m³)	39.941	49.920	37.046	-12.874
Service (Cooling) water (m³/tons of product)	9,4	8,7	10,6	1,90
Drinking water (m³/ton product)	1,3	1,3	1,2	-0,10

Total water consumption decreased in response to lower production volumes. However, particularly the use of cooling water related to production volume, has increased. This increase is primarily attributed to the reduction in the average batch size.

To address this trend and reduce water consumption, we have implemented several measures:

- Increase re-utilization of water from the cooling of exothermic processes, such as alkoxylation.
- A focus on increasing the average batch size to minimize water usage.
- Adopting a campaign-based production approach.
- Utilizing mobile cooling units for targeted and efficient cooling.

Regarding the usage of water, there is also a continuous initiative to reduce the amount of water in our recipes, which means less emissions for transportation of the final products.

In fact, the portion of water used in products was diminished by about 2.4%.

	2020	2021	2022	D 2022 vs. 2021 [%]
m³ water	6.748	8.675	6.226	
% water in products	22,0	22,6	20,2	-2,4

Waste Management and recycling programs

	2020	2021	2022	D 2022 vs. 2021 [%]
Hazardous waste, tons	32	54	71	17
Waste-water for re-utilization, tons	822	1.948	1.879	-69
Non-hazardous waste, tons	263	286	353	68
Hazardous waste, kg/tons produced	1	1	2	1
Waste-water for re-utilization, kg/tons produced	27	51	61	10
Non-hazardous waste, kg/tons produced	9	7	11	4
Recycling rate, residual waste, %	72.1	79.9	81.2	1.3

In our sustainability efforts for 2022, we observed notable trends in waste management and recycling rates. The amount of waste per unit of product increased during this year due to shifts in product demand favoring highly purified products, which require additional cleaning steps, consequently leading to increased wastewater production.

Despite this, an important success in waste management was achieved through an increase in the recycling rate for residual waste, including industrial packaging and consumables. This recycling rate has increased up to 81% in 2022, due to significant improvements in our waste recycling management.



5. Social Responsibility

5.1. Employee Well-being

In the third year of the COVID-19 pandemic, our continued efforts to ensure the safety and well-being of our employees have yielded positive results. We provided COVID-19 vaccinations through our company doctor and implemented various measures to reduce close contact. As a result of these initiatives, there have been no major COVID-19 outbreaks at Pulcra Chemicals GmbH and no severe COVID-19 cases have been reported among our workforce.

Our company doctor has been a valuable source of information on general and workplace-related health issues. We now offer appointments and counseling services with the company doctor through an internal communication platform, which has been widely utilized.

We maintained our inclusion program for employees who were absent for extended periods due to health reasons. Additionally, our efforts to create a specific guideline for fostering inclusion and diversity in the workplace are ongoing.

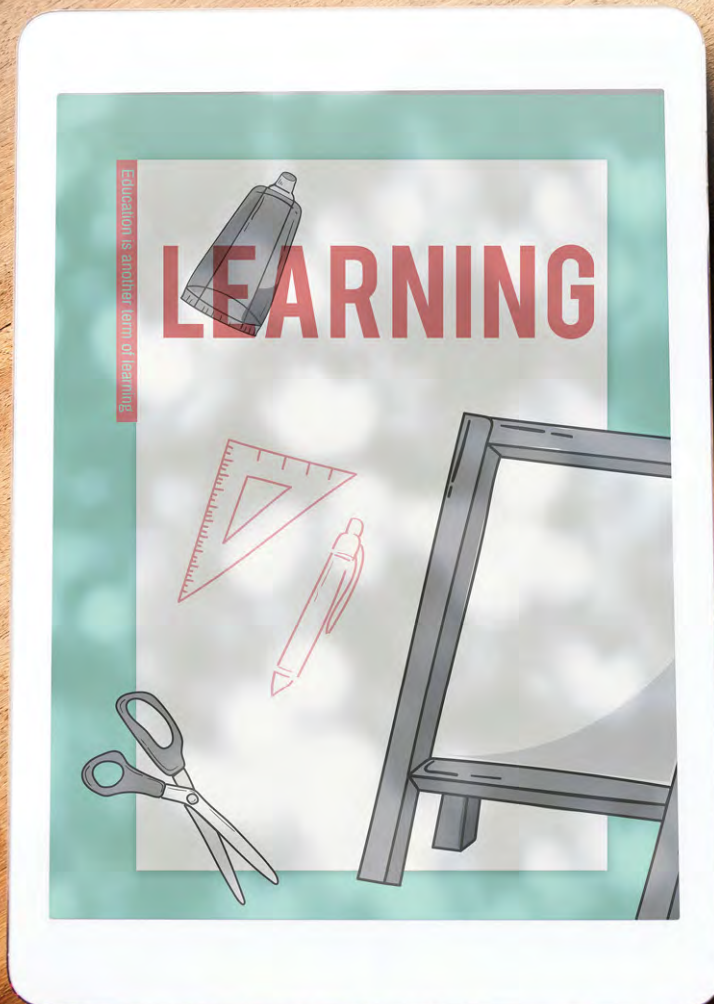
To enhance work-life balance, a significant achievement was the introduction of our Home-Office Regulation in 2022. This policy enables employees in roles where it is feasible to work from home, with a home-office share of up to 40%. This flexibility has improved time management for our employees.

In support of psychological well-being, we initiated a comprehensive psychological risk assessment program that will continue in the years ahead. Furthermore, we encourage well-being through regular informal meetings between employees and company management. These meetings serve as a platform for idea exchange, feedback and the identification of potential issues.



5.2. Learning and Development

Learning and development programs for our employees are paramount to our commitment to social sustainability. We have made a wide range of learning materials available on our internal IT platform, "Benefit World." Additionally, we conducted specific MS-Office training for many of our employees and we maintain an ongoing learning program for workplace safety measures.





6. Economic Sustainability

6.1. Supply Chain Sustainability efforts

Supplier sustainability is addressed by usage of the “Integrity Next” platform, which assesses the following criteria:

- Environmental protection (Environment)
- Health and Safety, Human Rights and Supply Chain Responsibility (Social)
- Anti-Bribery, Anti-corruption and Quality Management (Governance).

In 2022, 162 suppliers have passed information to Integrity Next for Pulcra Chemicals GmbH.

6.2. Product Sustainability efforts

Pulcra Chemicals adheres to the highest standards in the chemical industry. In order to achieve this goal, Pulcra is strictly committed to safety, environmental and legal compliance with all regulations and quality programs.

In addition, Pulcra Chemicals offers several products derived from Palm and Palm Kernel Oils certified by the Roundtable for Sustainable Palm Oil MB (RSPO mass balance). The production and marketing of RSPO-mass balance certified products follows a set of sustainability principles and criteria established by the RSPO, which inter alia verifies that forests are protected, and social and environmental safeguards are met during the oil's production and harvest.

By the end of 2022, the number of ZDHC certified products of Pulcra Chemicals GmbH was 395, about 90% of them in Level 3. Thus, more than 50% of all formally active products were certified in ZDHC Gateway. Of the top 50 products of Pulcra Chemicals GmbH, the Gateway certification rate was 100%. Among certification bodies are Bluesign, Inditex and Eurofins.

The site of Pulcra Chemicals GmbH was certified with ISO 9001, ISO 14001 and ISO 50001.

Pulcra Chemicals GmbH is a member of the Leather Working Group (LWG), Leather Natural (LN) and sponsor for Leather United.



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Reasons why successful

7. Stakeholder Engagement and Feedback Process

7.1. Communication

Internal communication channels

Internal communication at Pulcra Chemicals GmbH includes:

- Regular Employees meeting: open to any employee of Pulcra Chemicals
- Monthly newsletter: Titled “**unter uns ...**” Pulcra News Geretsried
- Semi-Annual newsletter: Named “**ONE PULCRA**” providing updates on developments within the Pulcra Chemicals Group.



INTERNAL COMMUNICATION PULCRA GROUP 0222
Pulcra Chemicals
Geretsried

Dezember 2022

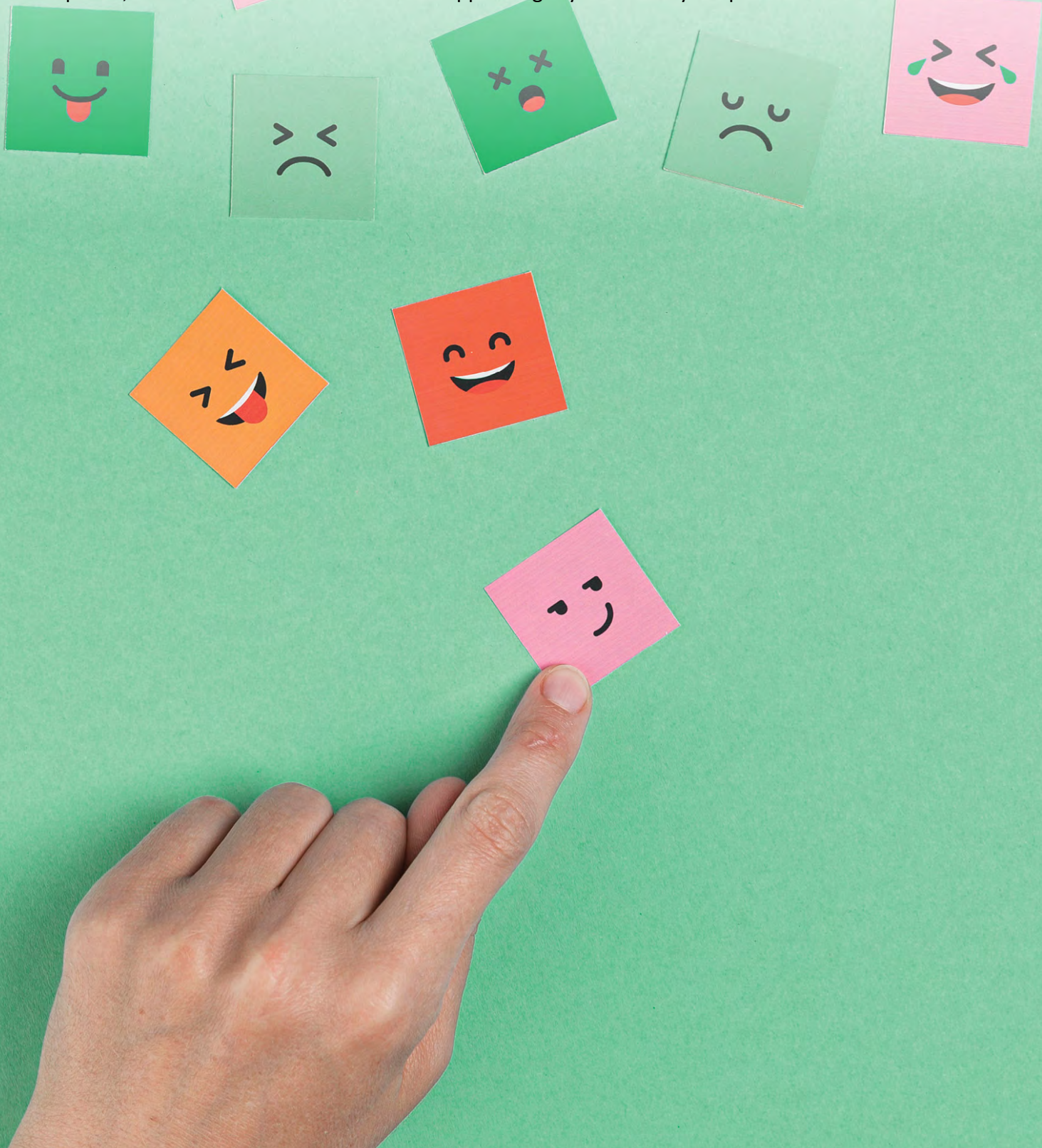


INTERNAL COMMUNICATION PULCRA GROUP 9122
Pulcra Chemicals
Geretsried

September 2022

7.2. Feedback and Response

In 2022, Pulcra Chemicals GmbH conducted a customer satisfaction survey using Survey Monkey, involving all three business units. A total of 261 customers were asked to answer the survey, representing their opinions on their relationship with Pulcra Chemicals. The response rate for the survey was approximately 20%. The survey revealed an improvement in overall satisfaction compared to a similar survey conducted in 2020. On a scale from 1 (very satisfied) to 6 (very unsatisfied), overall satisfaction increased from 1.84 to 1.74. Notably, assessments of reliability in delivery and delivery times showed an improvement of approximately 0.2 points, while satisfaction with technical support slightly declined by 0.2 points.





8. Performance Highlights - Key achievements in sustainability

8.1. Carbon Footprint

For 2022, a key achievement is the successful introduction of the Pulcra Naturalis® initiative, which is focused on the use of renewable carbon for chemical processes. By that, the emissions of Scope 3, which are undoubtedly a major part of Pulcra's GHG emissions are going to be reduced in the mid-term. Besides that, the efforts for energy reduction, which are aligned with ISO 50.001 are going to play an important role in reduction of the impact on climate change (Goal 13 of UN Sustainable Development Goals).

8.2. Chemical Stewardship

As for reducing the hazard risks associated with our chemicals, Pulcra Chemicals has invested in further cleaning operations for alkoxyates, by which the traces of dioxane are reduced. Important projects on abandoning the use of substances with more severe hazard classification were worked on in 2022 (Goal 12 of the UN Sustainable Development Goals - Responsible Consumption and Production).

8.3. Sustainable Supply Chain Management

Pulcra Chemicals continued its commitment to responsible sourcing by enhancing its sustainable supply chain management. This includes working with suppliers who share our values and implementing processes to assess and improve the sustainability performance of the raw materials used in our products. By doing so, we contribute to Goal 12 of the UN Sustainable Development Goals (Responsible Consumption and Production).

8.4. Water and Resource Efficiency

Efforts to minimize water use and improve resource efficiency were a focal point in 2022. Implementing best practices in water management not only reduces our environmental impact but also helps achieve cost savings. Reducing water usage and optimizing resource utilization aligns with Goal 6 (Clean Water and Sanitation) and Goal 12 (Responsible Consumption and Production) of the UN Sustainable Development Goals.

8.5. Stakeholder Engagement and Transparency

We engaged with our stakeholders, including customers, employees, and local communities, to gather feedback and incorporate their perspectives into our sustainability initiatives. This proactive communication and collaboration foster stronger relationships and ensures that we address their concerns and expectations effectively, contributing to Goal 17 (Partnerships for the Goals) of the UN Sustainable Development Goals.

8.6. Employee Well-being and Safety

Pulcra Chemicals remains committed to fostering a safe and healthy working environment for its employees. In 2022, we implemented programs to enhance employee well-being, safety, and professional development. These initiatives are aligned with Goal 3 (Good Health and Well-being) and Goal 8 (Decent Work and Economic Growth) of the UN Sustainable Development Goals.

8.7. Innovation and Research

Innovation remains at the core of our sustainability efforts. We continue to invest in research and development to create more sustainable and environmentally friendly chemical processes and products, including the Pulcra Naturalis® initiative. Our commitment to innovation contributes to Goal 9 (Industry, Innovation, and Infrastructure) of the UN Sustainable Development Goals.

Pulcra Chemicals developed with external partners, a combined pretreatment and dyeing process for cotton and polyester/cotton resulting in water, time and energy savings.

This sustainable dyeing concept is based on newly engineered process chemicals which allow a one bath pretreatment and dyeing process for dark, medium and light shades of cotton and polyester/cotton fabrics by exhaust method. This can reduce the processing time by up to 60 % and the water and energy consumption by up to 80 and 60% respectively. The state-of-the-art products allow a one bath treatment which is the key in saving resources.

Wool is a fantastic gift from nature. Its unsurpassed properties result from the harsh natural conditions in which the animals live – with snowy, freezing winters and hot dry summers. Thanks to our customers excellent processing, it makes the wool garments luxury clothing for all seasons and occasions. Pulcra Chemicals lubricants and spinning preparations are used to optimize spin-ability of natural wool and their blends with synthetic fibers. One of our greatest corporate goals is promoting sustainability. We provide support to our customers through the development of modern, sustainable products by following various ecological and social standards. SELBANA® 4554 V is internationally well known as the outstanding wool carding lubricant in Wool Top Making. The technical characteristics of the global standard SELBANA® 4554 V fulfils most-up-to-date ecological standards.

8.8. Continuous Monitoring and Reporting

Pulcra Chemicals will continue to monitor and report on its sustainability performance. By maintaining transparency and accountability, we aim to demonstrate our dedication to responsible business practices and sustainability. Regular reporting aligns with Goal 17 (Partnerships for the Goals) of the UN Sustainable Development Goals.



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