Environmental Statement 2022 –
With applied data from 2021

Kelheim Fibres

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Validity Statement of the Environmental Auditor

The environmental auditors listed below confirm to have verified that the site, as indicated in this Environmental Statement of the organization Kelheim Fibres GmbH with the registration number DE-166-00081, meets all the requirements of Regulation (EC) No.1221 / 2009 of the European Parliament and of the Council of 25 November 2009 as amended on 28 August 2017 and 19 December 2018 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS).

Name of environmental auditor	Registration number	Approved for the areas (NACE)
Dr. Ulrich Wilcke	DE-V-0297	20 Manufacture of chemicals and chemical products
Jochen Buser	DE-V-0324	

Table 1

BY SIGNING THIS DECLARATION, IT IS CONFIRMED THAT:

- the verification and validation have been carried out in full compliance with the requirements of Regulation (EC) No 1221 / 2009 as amended by Commission Regulation (EU) 2017 / 1505 and (EU) 2018 / 2026,
- the result of the verification and validation confirms that there is no evidence of non-compliance with the applicable environmental legislation, and
- the data and information in the environmental statement give a reliable, credible and true picture of all the organization's activities.

This declaration cannot be equated with an EMAS registration. EMAS registration can only be carried out by a competent body in accordance with Regulation (EC) No. 1221 / 2009. This declaration may not be used as a stand-alone basis for informing the public.

Berlin, 04.11.2022

Dr. Ulrich Wilcke
Environmental auditor DE-V-0297

Jochen Buser
Environmental auditor DE-V-0324

GUT Certifizierungsgesellschaft für Management Systeme mbH
Umweltgutachter DE-V-0213

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Preface

Dear Readers,

At the beginning of this year, the world was once again shaken to its very foundations. The war in Ukraine — in addition to the ongoing challenge posed by the Corona pandemic — is not only causing indescribable humanitarian suffering, but also has unforeseeable economic consequences.

The conditions for companies, especially for energy-intensive companies in Europe, have changed significantly. In addition to supply bottlenecks and increased raw material prices, it is first and foremost energy prices and concerns about the security of supply with natural gas that present us and the entire industry with previously unknown challenges.

Many of our resources are therefore going into securing our production and the supply for our customers. Nevertheless, we never lose sight of our overriding goals. Energy and product transformation towards a sustainable future orientation of Kelheim Fibres remains one of our core objectives.

Our innovative, bio-based and biodegradable fibres make an important contribution to this transformation from a fossil-based to a bio-based economy.

Already today, they are a fully biodegradable and environmentally friendly alternative to synthetic fibres in a variety of disposable products, e.g., in hygiene articles. This year we have gone one step further and developed speciality fibres that can be used in washable and reusable hygiene products. Our concept for sustainable menstruation underwear was awarded third place in the Cellulose Fibre Innovation of the Year Award.

The cooperative development with STFI and Sumo of a washable absorbent pad for the Sumo cloth nappy received the Techtextil Innovation Award in the "New Concept" category.

These fibres are especially designed for reusable products. They serve the steadily increasing demand for resource-saving alternatives to disposable products and are a perfect addition to our hygiene fibre portfolio.

In addition to our product innovations, we were also anything but idle in the area of environmental protection. In January 2022, for example, we published our first sustainability report and in May, we joined the "Corporate Network Climate Protection" of the German Chambers of Industry and Commerce as a founding member.

Also in May, our new fire station was officially inaugurated. With an investment of more than 4.5 million euros, this building is not only a technically state-of-the-art home for our plant fire brigade, but also a visible commitment to our location here in Kelheim, with which we are inextricably linked.

It is our employees here in Kelheim who created what we stand for in the industry for more than 85 years: Innovative and functional fibres of natural origin that enable people to live a sustainable lifestyle while protecting our environment.

You can find out exactly what we are doing to protect our environment in this environmental statement. Thank you for your interest!

Sincerely,
Craig Barker

Craig Barker
CEO

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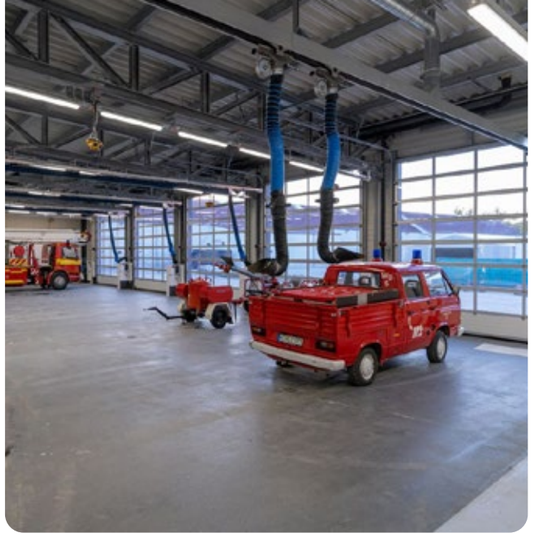
Highlights



3.1 Milestones

- Founding member of the "Corporate Network Climate Protection" of the Chambers of Industry and Commerce in Germany

- Publication of the first sustainability report of Kelheim Fibres GmbH

- Third place in the Cellulose Fibre Innovation of the Year Award for the concept of sustainable menstrual underwear

- Inauguration of the new fire station

- Techtextil Innovation Award, category New Concept for the newly developed, washable absorbent insert of the reusable Sumo cloth diaper

- Foundation of the CSR department and thus new orientation

3.2 Legal Compliance

EMAS stands for continuous improvement of environmental performance. This improvement process is based on a functioning environmental management system that has its origins in a legal tracking system. Full legal tracking stands for the consolidation of all applicable areas of law in a legal register that is constantly maintained and updated. Internally, we monitor compliance with regulations through the activities of appointed officers for waste, water protection and immission control, for example, and through internal audits. External monitoring by authorities also takes place in various annual inspections such as:

- the IE monitoring (Industrial Emissions Directive),
- the monitoring of the residue incineration plant,
- the annual wastewater discussion on the operation of the biological wastewater treatment plant,
- the fire protection inspection.

3.3 Key Legislation

Kelheim Fibres is subject to a wide range of legislation. Essential legal regulations include the following laws plus the associated ordinances and administrative regulations:

- the Federal Immission Control Act (BImSchG),
- the Recycling Management Act (KrWG),
- the Water Resources Act (WHG).

3.4 Important Legal Changes
since the last Environmental Statement

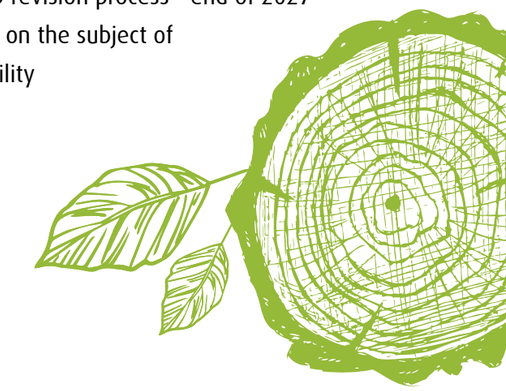
AIR
- Adoption WGC-BREF / BVT
- Fulfillment 17. BImSchV / BVT
- Revision LVIC-BREF for operation of the sulfuric acid plant

WATER
- No relevant changes

REACH
- Start revision process Reach
- Continuation of CORAP process for carbon disulfide

ENERGY
- Amendment of EEG obligation - elimination of apportionment obligation
- Adoption of the Energy Security Act
- Entry into force of the Energy Mitigation Program
- Adoption of Energy Financing Act

SUSTAINABILITY
- Start of SUPD revision process - end of 2027
- Clarifications on the subject of biodegradability



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Core Indicators

Core indicators have been established so as to better present the environmental performance of our company. After the big fire in 2018, we are currently still in the phase of rebuilding our spinning room. Production capacity is therefore limited.

"Sustainability is a decisive purchasing criterion for more and more consumers. With the EMAS validation and the associated publication of our environmental data, we have a unique selling proposition that positively distinguishes us from other viscose fibre manufacturers."

Theresa Schreiner,
Environmental Engineer, Kelheim Fibres

Production Capacity

	Absolute figures				Values for input / output related to production quantities			
	2019	2020	2021	Unit	2019	2020	2021	Unit
Production quantity								
Fibres produced	40.852	55.521	62.911	t				
Energy								
Current	72.133.000	86.376.490	102.056.327	kWh	1.766	1.556	1.622	kWh / t fibre
Steam	370.326.000	411.489.848	473.344.501	kWh	9.065	7.411	7.524	kWh / t fibre
Renewable energies	0	0	0	kWh	0	0	o	kWh / t fibre
Fuel for vehicles	202.478	178.654,6	204.776,7	kWh	4,96	3,2	3,3	kWh / t fibre
Material								
Pulp	42.411	57.328	64.778	t	1,038	1,033	1,030	t / t fibre
NaOH	21.195	28.661	32.352	t	0,519	0,519	0,514	t / t fibre
H_2SO_4	30.761	41.785	47.899	t	0,753	0,753	0,761	t / t fibre
CS_2	3.735	4.773	5.458	t	0,091	0,086	0,087	t / t fibre
Water								
Well water	13.252.014	14.014.095	14.710.176	m³	324	252	234	m³ / t fibre
Danube water	6.784.123	6.784.080	7.311.867	m³	166	122	116	m³ / t fibre
City water	22.062	16.181	16.980	m³	0,540	0,291	0,268	m³ / t fibre
Waste management								
Total waste	5.613	5.984	6.072	t	137,4	107,8	96,5	kg / t fibre
Process waste for recycling	195	117	112	t	4,8	2,1	1,8	kg / t fibre
Process waste for disposal	2.114	2.062	2.274	t	51,8	37,1	36,1	kg / t fibre
Other waste	3.304	3.805	3.687	t	80,9	68,5	58,6	kg / t fibre
Total hazardous waste	1.099	1.201	736	t	26,9	21,6	11,7	kg / t fibre
Hazardous process waste for recycling	73	35	32	t	1,8	0,6	0,5	kg / t fibre
Hazardous process waste for disposal	141	113	82	t	3,5	2,0	1,3	kg / t fibre
Other hazardous waste	885	1.053	622	t	21,7	19,0	9,9	kg / t fibre
Land consumption								
Total land consumption	211.934	211.934	211.934	m²	211.934	211.934	211.934	m²
Total sealed area	177.544	177.544	177.544	m²	177.544	177.544	177.544	m²
Total near-natural area at the site	34.390	34.390	34.390	m²	34.390	34.930	34.930	m²
Total near-natural area off the site	–	–	–		–	–	–	
Emissions								
Total greenhouse gas (Scope 1+2)	96.015[1]	102.081	112.825	tCO2e / t fibre	2,35	1,84	1,79	t/t fibre
Total greenhouse gas (Scope 1+2+ 3)			224.660	tCO2e / t fibre			3,571	t/t fibre
Total dust	92	83	95	kg	2,25	1,49	1,50	g/t fibre
SO_2	93.153	129.590	143.917	kg	2,28	2,33	2,29	kg/t fibre
NO_x	40.836	55.904	65.978	kg	1,00	1,00	1,05	kg/t fibre

[1] Due to the more detailed calculation, this value was adjusted compared to the Environmental Statement 2020

Table 1

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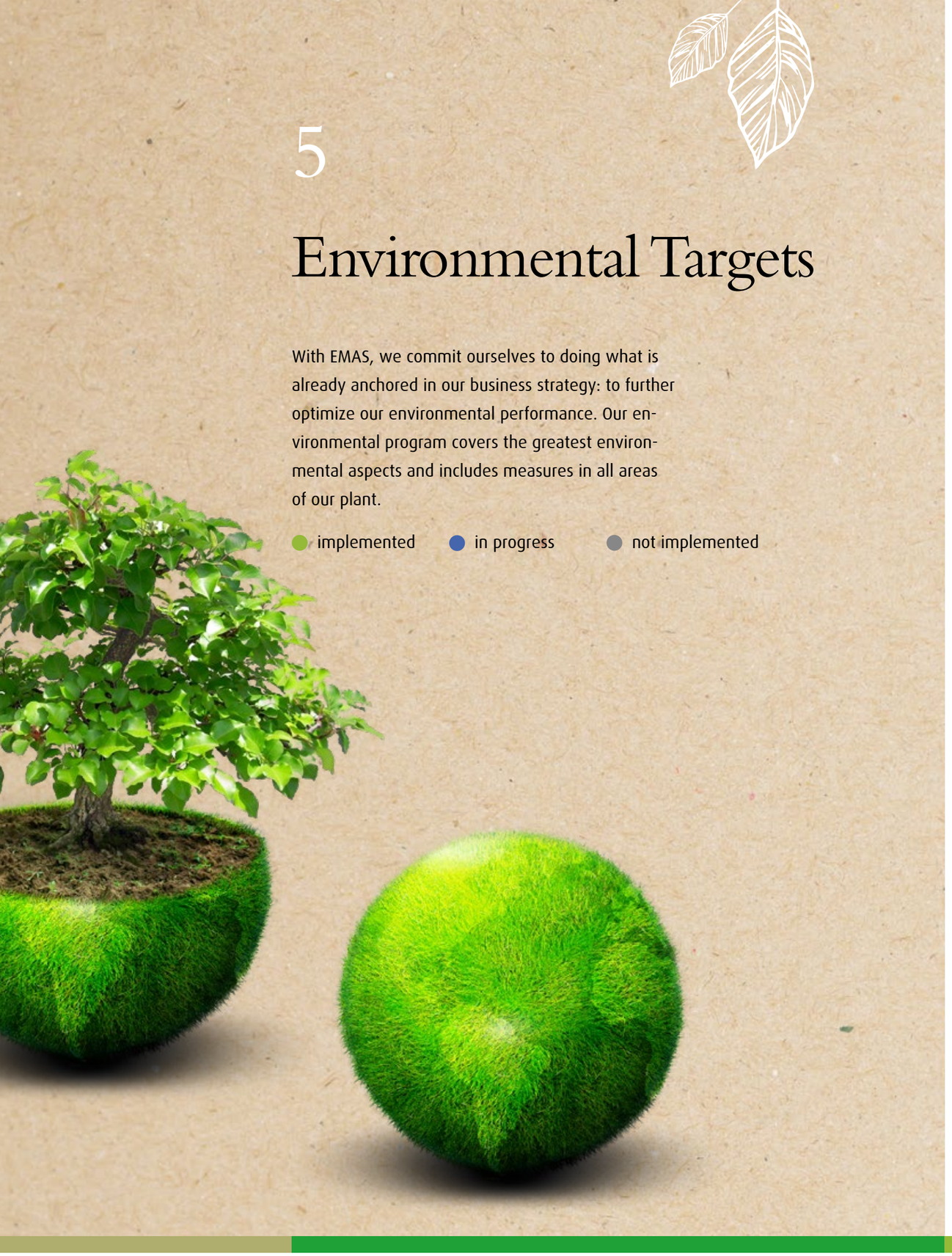
Environmental Targets

With EMAS, we commit ourselves to doing what is already anchored in our business strategy: to further optimize our environmental performance. Our environmental program covers the greatest environmental aspects and includes measures in all areas of our plant.

● implemented ● in progress ● not implemented



5.1 Water

Target		Activities	21	22	23	Status	Status October 2022	Responsibility
Qualitative	**Quantitative**							
Guarantee for safe plant operation	Saving compressed air (energy-relevant)	Conversion of the flotation plant	x	x		●	Project discontinued: too high of an investment with low savings and low plant availability	Environmental facilities
	Saving of compressor air and thus energy savings (energy-relevant)	Automatic recirculation of sludge from secondary sedimentation to activation	x			●	Project has been implemented. In 2022, 460 MWh of electricity had already been saved by August 31.	Environmental facilities
Comparative reduction of the inlet loads		Integration of the BHR 1 as upstream equalizing tank		x		●	The concept is ready. Current cost calculation → implementation 2023	Environmental facilities

● implemented ● in progress ● not implemented

Table 2

5.2 Air

Target		Activities	21	22	23	Unit	Status	Status October 2022	Responsibility
Qualitative	**Quantitative**								
	Reduction of specific sulfur emissions	Sulfur emissions from the spinning lines is fed to the CS_2-recovery system	-0,8	-1		[kg S / t fibre]	●	All sulfur emissions are integrated into the CS_2.	Spinning area
	Reduction of immission values CS_2	Discharge of defined individual sources (wash sectors) into the viscose stack and thus improvement of the discharge conditions		-55		Annual average: [µg / Nm³]	●	In the meantime, all washing sectors have been integrated into the viscose stack. In the coming years, dispersion calculations for the relevant substance parameters and for odor will be commissioned.	
				-233		Daily average: [µg / Nm³]	●		
	Reduction of odor hour frequency			-5		[% / a]	●		
Improved measurement recording		Installation of an emission evaluator and extended monitoring spectrum for CS_2 and COS parameters		x			●	The emission evaluation computer was installed and has been operating successfully since 01.07.21.	

● implemented ● in progress ● not implemented

Table 3

5.3 Noise

Target	Activities	21	22	23	Unit	Status	Status October 2022	Responsibility
Reduction of immissions	Implementation of immission measurements at the relevant receptor points to prove the previous measures from the noise remediation program (reference: specifications from subsequent order)	x			dB(A)	●	Postponed to 2022 / 23 when construction in the Spinning Room is completed.	CSR
Reduction of immission guide value	Installation of silencers in the viscose stack to reduce the sound power level in connection with further measures on the spinning room roof	- 6	–	-13	dB(A)	●	The project has been successfully implemented.	Technology

● implemented ● in progress ● not implemented

Table 4

5.4 Waste Management

Target		21	22	23	Status	Status October 2022	Responsibility
Improvement of operational safety	Feasibility study on the addition of high-calorific fractions such as wood	x	x			Trial operation with extensive emission measurements planned for December 2021. Trial operation extended to the end of 2022. .	CSR / Environ-mental facilities

● implemented ● in progress ● not implemented

Table 5

5.5 Energy

Target	Activities	21	22	23	Unit	Status	Status October 2022	Responsibility
Increasing the share of CO_2-free energy generation	Feasibility study for the construction of a 2,000 kWp PV plant as a basis for operational implementation	x	x			●	Feasibility study in progress as a medium-term project. This is a project of the planned energy transformation.	CSR / Energy department
Reduction of primary energy consumption	Step-by-step plan for energy transformation	x	x			●	Kelheim Fibres is working on a multi-stage transformation concept in terms of energy supply. Beyond the PV project, the combustion of wood / synthetic gas is being pursued as a further medium-term project and the conversion to hydrogen as a long-term project. For more information, please refer to the existing transformation concept.	CSR / Energy department
	Continuous improvement process from energy management as the sum of all energy projects.	-1	-1	-1	[%]	●	2021, a reduction of 1.1% was achieved through energy-saving projects.	Technology / facilities
	Installation of an alphameter for better air utilization and thus more energy-efficient operation of the compressor units.	-9,6	-9,6		[t CO_2 / a]	●	The project was successfully implemented.	Environmental plants

● implemented ● in progress ● not implemented

Table 6

5.6 Sustainability

With the various measures to be implemented within the framework of the environmental programme, we aim to improve our environmental performance.

Target	Activities	21	22	23	Status	Status October 2022	Responsibility
Biodegradability tests according to OECD 301 B	Verification of the biodegradability of viscose fibers under marine conditions according to OECD 301 B	x			●	During 2021, the fibers, Olea, Galaxy and Bramante were successfully tested according to OECD 301 B. **The objective for 2022** is to extend the scope of testing to DIN ISO methods (for all compartments). Further tests according to OECD 301 F have also been carried out. Tests according to DIN ISO 14851 are now still under discussion.	CSR / quality assurance
Annual sequestration of 10 t CO_2 per hectare with a humus build-up of 0.2	Project sponsorship for humus build-up programs in agriculture for CO_2 sequestration	x	x		●	Kelheim Fibres continues to be involved in local project developments. involved in the local project developments. A further concretization of the participation or the targets has not yet taken place.	Management
Energy transformation	Development of a concept on three levels with a focus on hydrogen		x	x	●	Setting up a regional hydrogen project. A hydrogen project is to be set up together with local partners (city, district, Bayernoil and Bayernets) and a further alternative to natural gas is to be created. Joint project start in Q1 2023 under the auspices of the Free State of Bavaria and the trade unions.	Management / CSR
Creating the basis for further energy projects	Creation of a multi-stage carbon footprint / corporate footprint as a basis for further energy projects	x			●	Carbon Footprint nach GHG Protocol intern berechnet und extern validiert. Hotspots sind identifiziert und erste Maßnahmen befinden sich in der Prüfung.	CSR / TT
Enforcement Circular Economy	Feasibility study on the use of alternative pulps	x	x		●	• LOI signed with Renewcell Goal: large-scale production of high-quality viscose fibers from up to 10,000 tons per year of the 100% textile recyclate Circulose®. • Screening of possible other alternative raw materials	Fibre & Application Development
Plastic reduction, materials from renewable raw materials	Project Femcare – Development of sustainable feminine hygiene products	x	x		●	• Phase: incorporation of the fibers into end products • Product development (commercial end products together with end product manufacturers (established players and start-ups)) in single-use (sanitary napkins, panty liners, tampons) and reusable products (menstrual underwear). • Target for single-use products: Replacement of petroleum-based fiber solutions by biodegradable / bio-based specialty viscose fibers with comparable performance of the end product. • Goal for reusable products: Textile solution for multiple use with high performance to further increase sustainability values.	New Business Development
Tracing sustainable textiles through viscose marker fibers	Go-to-market activities for viscose fibers with incorporated marker pigments to represent traceable supply chains (block chain) for doubtless identification of sustainable solutions and identification of product compositions for sensible feeding to circular loops	x	x	x	●	Is being determined	New Business Development
Use of alternative / cellulosic raw materials (other than wood) to diversify the raw material landscape and demonstrate circular approaches.	Screening of cellulose-containing raw materials with regard to their applicability in the viscose fiber process (feasibility study on laboratory scale) (e.g. food waste, recovered cellulose from textile recycling, agricultural by- / waste products)	x	x	x	●	Is being determined	New Business Development

● implemented ● in progress ● not implemented

Table 7

5.7 Consumption

Target	Substance	Target				State	Unit
		19	20	21	22	21	
Progress of the process	Pulp	1,038	1,031	1,025	1,025	1,030	[t pulp / t fibre]
Progress of the process	Sodium hydroxide solution [2]	0,519	0,514	0,52	0,52	0,514	[t NaOH / t fibre]
Progress of the process	Sulphuric acid [3]	0,752	0,747	0,75	0,75	0,761	[t H_2SO_4 / t fibre]
Progress of the process	Zinc sulfate [4]	6,2	5,7	5,7	5,7	5,88	[kg $ZnSO_4$ / t fibre]
Progress of the process	Carbon disulphide	91,4	87	87	87	87	[kg CS_2 / t fibre]
Progress of the process	Process water consumption	42	42	45	43	47,5	[m^3 water / t fibre]

Table 8

[2] In terms of the consumption factor for caustic soda, all technical possibilities for further improvement are currently exhausted. The goal is therefore to maintain this high level.
[3] In terms of the consumption factor for sulphuric acid, all technical possibilities for further improvement are currently exhausted. The goal is therefore to maintain this high level.
[4] The figures were changed in that the specific consumption of ZnO was determined and converted stoichiometrically to zinc sulfate.

5.8 Generation

Substance	Activities	Target				State	Unit
		19	20	21	22	21	
Sodium sulphate	Increased evaporation from drawing bath	0,55	0,57	0,57	0,58	0,53	[t Na_2SO_4 / t fibre]

Table 9

5.9 Emissions

Substance	Target				State	Unit
	19	20	21	22	21	
Sulphur emissions	6,9	6,4	6,1	6	5,53	[kg S / t fibre]
CSB	4,8	5,57	5	5	5,38	[kg CSB / t fibre]
Zinc	0,16	0,17	0,15	0,15	0,159	[kg Zn / t fibre]

Table 10

5.10 Immissions

Substance	Target				State	Unit
	19	20	21	22	21	
CS_2	80	75	75	25	17	Annual mean value: [µg / Nm^3]
Frequency of odour immissions	19	18	18	14	13	[% / a]

Table 11

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Abbreviations

a	Year
Ahp	Absorbent Hygiene Products
BHR	Biological wastewater treatment plant
CS_2	Carbon disulphide
CSB	Chemical oxygen demand (COD)
CSR	Corporate Social Responsibility
H_2SO_4	Sulphuric acid
kWh	Kilowatt hour
Na_2SO_4	Sodium sulphate salt
NaOH	Sodium hydroxide solution
OECD 301 B	Biodegradability test
S	Sulphur
SUPD	Single use plastic directive
t	Ton
Zn	Zinc
ZnO	Zinc oxid
ZnSO4	Zinc sulphate

Table 12

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Contact Persons and *Deadlines*

Contact persons for the environmental statement of Kelheim Fibres GmbH are:

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Email: Theresa.Schreiner@Kelheim-Fibres.com

Timo Thunitgut, Sustainability Manager
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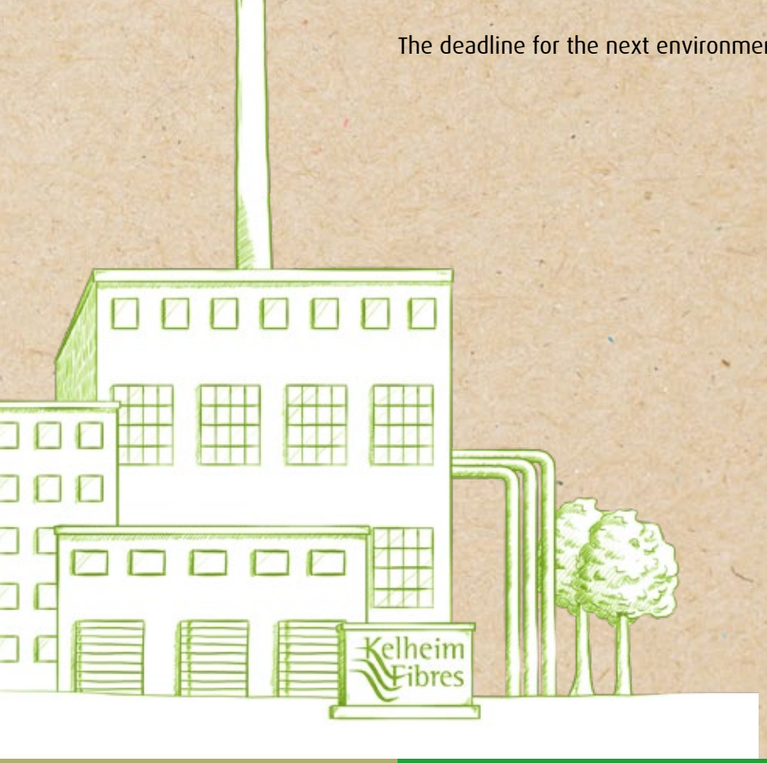
The deadline for the next environmental statement is **11 / 2023.**



Our aim is to constantly improve and prove that ecology and economy can be in harmony. Acting in accordance with the law is always the basis of our manufacturing processes. In addition, we use the most modern environmental and process technologies.

We regularly set, track and review targets to improve environmental performance. Being in harmony with nature, for the benefit of our customers, our employees and our neighbourhood, is and remains our constant claim and mission.

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