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Internationally renowned marine research institute reaffirms biodegradability of cellulose-based fibers

- A second study from Scripps Institution of Oceanography provides scientific proof that cellulose-based fibers, like LENZING™ Lyocell fibers, LENZING™ Viscose fibers and LENZING™ Modal fibers are biodegradable in sea-surface and on ocean floor
- The biodegradability of LENZING™ Lyocell fibers in sea-surface conditions was first confirmed in 2021
- Lenzing fibers offer a real alternative in combating plastic pollution in the world's oceans

Lenzing/San Diego – The Lenzing Group, a world-leading provider of specialty fibers for the textile and nonwoven industries, has received further scientific proof that Lenzing fibers are biodegradable in the ocean and revert to being part of the ecosystem at the end of their life cycle. Scientists at the prestigious academic research institute Scripps Institution of Oceanography (SIO) at the University of California, San Diego confirmed back in 2021 that LENZING™ Lyocell fibers completely biodegrade in sea-surface conditions in a remarkably short time. In a second study published in May 2023¹, the biodegradability of cellulose-based fibers, like LENZING™ Lyocell fibers, LENZING™ Viscose fibers and LENZING™ Modal fibers on the sea floor (approximately 12 meters depth) was also confirmed, providing definitive proof that they are a better alternative to petroleum-based fibers. The assessments are the result of an independent project aimed at understanding end-of-life scenarios for textiles and nonwovens that are discarded as waste in the environment.

SIO has a global reputation for being one of the oldest, largest and most important marine research centers. In its latest study, it compared the degradation processes of nonwovens made of petroleum and bio-based synthetic materials such as polyester and PLA, cellulosic materials such as cotton, and the Lenzing Group's wood-based LENZING™ Lyocell fibers, LENZING™ Viscose fibers and LENZING™ Modal fibers in specific scenarios. The materials were assessed in various real oceanic conditions and controlled aquaria conditions. The results of these experiments are striking: while the wood-based cellulosic fibers fully biodegraded within 30 days, both in

¹ <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0284681>

sea-surface and sea-floor conditions, the petroleum-based fibers tested were practically unchanged after more than 200 days.

“Our business model is one of a circular economy. The Lenzing Group uses a highly efficient system of processing all raw materials to produce fibers that will return to the ecosystem at the end of their life cycle. Our goal is to raise widespread awareness of major challenges such as plastic pollution and, above all, offer a truly sustainable alternative to petroleum-based fibers,” comments Michaela Kogler, Project Manager in Research & Breakthrough Innovation at the Lenzing Group. “It is also important to raise awareness of biodegradability, as not everything with an “organic” label is genuinely compostable and biodegradable,” adds Kogler.

The biodegradability of LENZING™ Lyocell fibers, LENZING™ Viscose fibers and LENZING™ Modal fibers has been tested in the laboratory of Normec Organic Waste Systems (OWS) in Belgium – one of the world's leading companies in biodegradability and compostability testing. The latter confirmed the results in real oceanic conditions and controlled aquaria conditions. The assessment was conducted in accordance with the prevailing applicable international standards and reflects all the relevant natural and artificial environments in which biodegradation can occur. Certificates from the certification organization TÜV Austria show that LENZING™ Lyocell fibers, LENZING™ Viscose fibers and LENZING™ Modal fibers rapidly biodegrade in all test environments (soil, industrial composting, home composting, fresh water and marine water) within the time periods set by the relevant standards.

Tailwind from legislation

Plastic pollution in the environment is a major problem of our time and may continue to impact many generations to come. The environmental damage caused by the fashion industry as a result of fast fashion business models is particularly extreme. The use of petroleum-based synthetic fibers in textiles has approximately doubled in the last 20 years. This trend is likely to continue. More than half of all textiles around the world currently contain polyester and this proportion is set to rise according to a report from the non-profit organization Changing Markets Foundation².

Consequently, Lenzing also welcomes the EU's targeted measures to combat plastic waste in general, such as those relating to the single-use plastic directive (EU) 2019/904³. In its recently adopted guidelines for implementing the directive, the EU Commission precisely stipulates the products that fall under this category, which will provide the necessary clarity for EU member states in their joint campaign against environmental pollution from plastic waste. Lenzing's wood-based, biodegradable cellulosic fibers can play a role in creating a

² http://changingmarkets.org/wp-content/uploads/2021/01/FOSSIL-FASHION_Web-compressed.pdf

³ Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment

sustainable and innovative solution to this man-made problem, which will escalate in the future. The single-use plastic directive introduced in July 2021 sets out standardized labelling requirements for certain products, either on packaging or on the products themselves, such as plastic-based feminine hygiene products and wet wipes for body care or household use. One of the first steps towards solving this problem is to educate consumers and offer alternative, more circular materials.

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About the Lenzing Group

The Lenzing Group stands for ecologically responsible production of specialty fibers made from the renewable raw material wood. As an innovation leader, Lenzing is a partner of global textile and nonwoven manufacturers and drives many new technological developments.

The Lenzing Group's high-quality fibers form the basis for a variety of textile applications ranging from elegant clothing to versatile denims and high-performance sports clothing. Due to their consistent high quality, their biodegradability and compostability Lenzing fibers are also highly suitable for hygiene products and agricultural applications.

The business model of the Lenzing Group goes far beyond that of a traditional fiber producer. Together with its customers and partners, Lenzing develops innovative products along the value chain, creating added value for consumers. The Lenzing Group strives for the efficient utilization and processing of all raw materials and offers solutions to help redirect the textile sector towards a closed-loop economy. In order to reduce the speed of global warming and to accomplish the targets of the Paris Climate Agreement and the "Green Deal" of the EU Commission, Lenzing has a clear vision: namely to make a zero-carbon future come true.

Key Facts & Figures Lenzing Group 2022

Revenue: EUR 2.57 bn

Nominal capacity (fibers): 1,145,000 tonnes

Number of employees (headcount): 8,301

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