A Major Step Forward in Circularity: Aquafil Breaks New Ground in Textile Recycling by Chemically Separating Elastic Fibers from Nylon

Aquafil's engineers and R&D team have found a way to separate what was once inseparable

TRENTO, Italy – What was once considered impossible is now within reach. After more than ten years of relentless research and innovation, Aquafil has unveiled a breakthrough in textile recycling: the world's first demonstration plant capable of chemically separating elastic fibers from nylon. This pioneering technology tackles one of the textile industry's most complex challenges, opening the door to new possibilities in recycling and circularity, confirming Aquafil's role at the forefront of responsible innovation.

The story began in 2013, when Aquafil partnered with Georgia Tech University to explore solutions for recycling mixed fibers-a task long deemed insurmountable. Although the initial patent did not lead to industrial-scale results, the company's Research & Development team refused to give up. Their perseverance paid off in 2022 with the filing of a new, refined patent that brought them closer to a long-sought solution.

Now, with the launch of this pilot plant, lab successes have translated into real-world application: for the first time ever, elastic fibers can be effectively separated from nylon in blended fabrics. This is a game-changer for recycling notoriously difficult textile waste-particularly from sportswear and swimwear-where different fibers are tightly bound and nearly impossible to recover.

For years, these composite textiles have been destined for landfills, despite containing valuable material that could be recycled. Aquafil's breakthrough process has solved this challenge. By overcoming the fiber separation barrier, the company can now unlock the potential of materials that were once discarded.

The next step? Refining and scaling the process to an industrial level in order to process impactful volumes of material. To support this, Aquafil has built a network of strategic partners to secure a steady supply of post-use materials and ensure the development of a robust, efficient recycling supply chain.

The nylon recovered through this process will be regenerated at the ECONYL® plant, transforming waste into high-quality regenerated nylon ready for new textile applications-significantly reducing reliance on virgin resources and lowering the environmental footprint of the textile sector.

"With this project, Aquafil proves that vision, dedication, and innovation can transform the future of our industry," said Giulio Bonazzi, CEO of Aquafil. "This milestone demonstrates how cutting-edge technology can tackle even the toughest environmental challenges-turning

waste into value and advancing the shift to a truly circular economy.”

About Aquafil

Aquafil is a pioneer in the circular economy having developed the ECONYL® regeneration system, an innovative and sustainable process able to create new products from waste and give life to an endless cycle. The nylon waste is collected in locations all over the world and includes industrial waste but also products – such as fishing nets and rugs – that have reached the end of their useful life. Such waste is processed to obtain a raw material – caprolactam – with the same chemical and performance characteristics as those from fossil sources. The polymers produced from ECONYL® caprolactam are distributed to the Group’s production plants, where they are transformed into yarn for rugs, carpet flooring, and for clothing.

Founded in 1965, Aquafil is one of the main producers of nylon in Italy and worldwide. The Group is present on three different continents, employing about 2,400 people at 19 production sites located in Italy, Slovenia, Unites States, China, Croatia, Chile, Thailand and Japan.

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