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Hohenstein's New Testing Method Determines Microfibers' Environmental Impact

BY SARAH JONES

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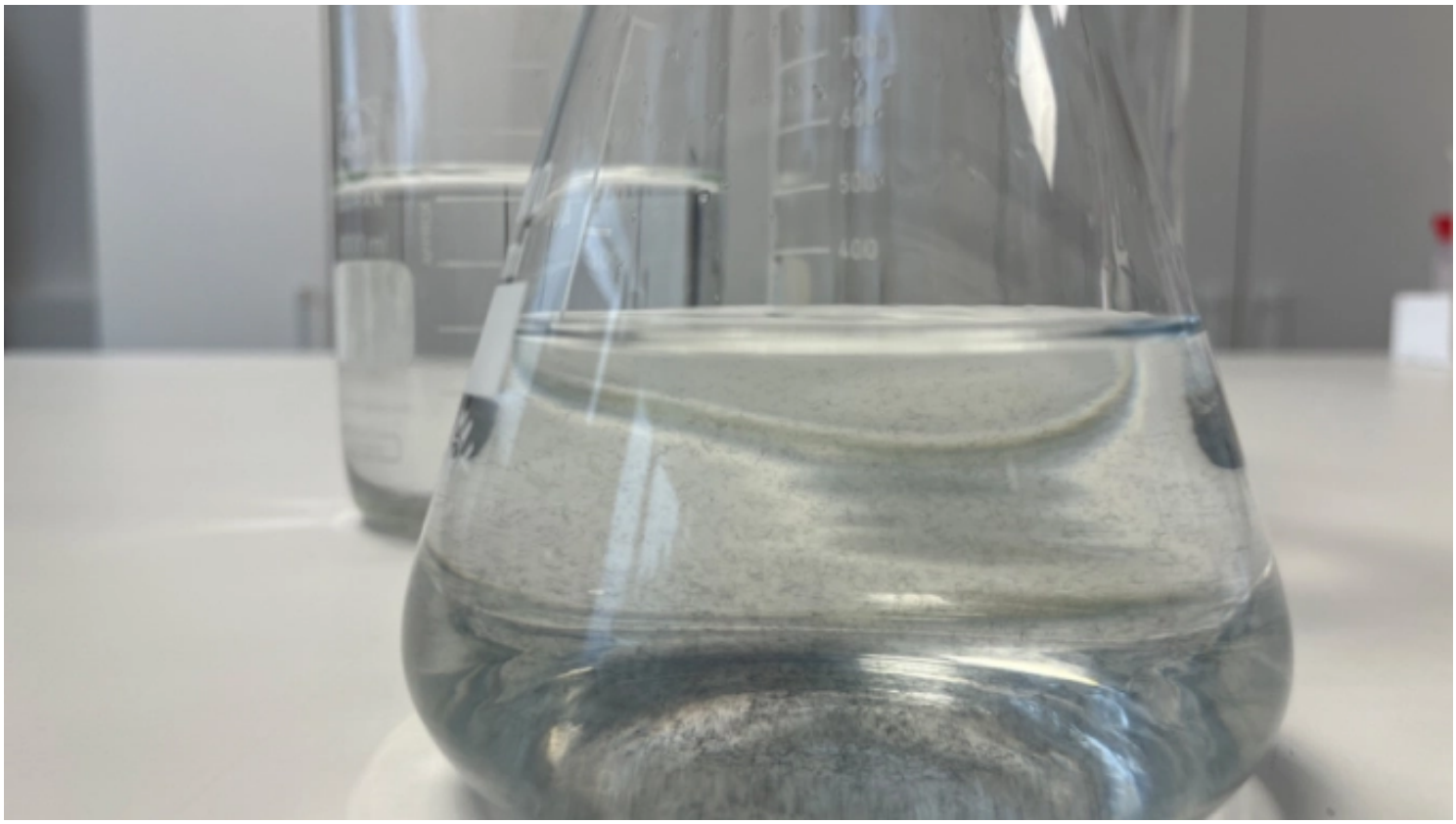

COURTESY

Microfibers—the tiny fibers that break loose from textiles—might be small, but they add up to a significant environmental concern. A University of Plymouth study found that up to 700,000 microfibers can be released in a single 13-pound load of laundry. Wastewater

treatment removes most but not all microfibers, and these small fibers enter bodies of water, where they are ingested by marine life and enter the food chain.

"Microplastics is a topic that plays a major role today when it comes to issues such as environmental pollution and health aspects [of] animals and humans," Dr. Timo Hammer, CEO of testing firm Hohenstein, told Sourcing Journal. "As the textile industry is one of the main sources of microplastics, the pressure on companies is growing."

Hohenstein has been focused on reducing microfiber release for years. The company is a research member of the Microfibre Consortium and a signatory of its Microfibre 2030 commitment. Hohenstein offers multiple testing services on microfibers released from textiles, including gravimetric tests that measure the mass of microfibers and its Dynamic Image Analysis, developed as part of a Ph.D. thesis, which is able to determine the number, lengths and structures of microfibers. Now, Hohenstein is expanding its test offering in this area with a new standardized method to measure not only how many microfibers textiles release during laundering, but the environmental impact of these fibers.

Called DIN SPEC 4872, the testing method includes three assessments. First, it studies the number of fibers released via laundering. "Compared to the existing gravimetric standards, this method only measures the portion of the fiber-based microfiber discharge that is actually caused by the textile," said Hammer. "This is a great advantage, as impurities, metal abrasions, foreign fibers, etc. do not falsify the result. Another advantage is that with the help of a chemical treatment, the ratio of cellulose-based to synthetic fibers can be determined."

> Next, Hohenstein evaluates how the fibers biodegrade, including verifying whether they do degrade in aqueous environments, and to what degree. Roughly 60 percent of clothing is now made with synthetics like polyester, which are considered microplastics and typically persist in the environment for longer than natural materials like cotton or wood-based fibers. Hammer noted that although cellulosic-based fibers are not deemed microplastics, they might still have "poor biodegradability."

Even if fibers biodegrade, what remains after this degradation can be harmful, according to Hohenstein project manager Juliane Alberts. "Biodegradability alone does not mean that pure natural fibers, for example, are completely harmless to the environment," she said. "They, too, remain in ecosystems until they completely degrade and can also have a negative impact. In addition, additives, auxiliaries or finishes used in textile production can further slow the degradation process and leach into the environment."

To determine the level of toxicity of fiber residues, Hohenstein has modified an existing standard for textile testing, in which duckweed is placed in wastewater to see whether growth is inhibited.

Following the testing procedures, which typically take approximately 10 weeks, Hohenstein gives the textiles a classification code based on the fiber discharge, rate of biodegradation and toxicity. "Based on this classification, textile manufacturers, retailers and customers can easily recognize to what extent the environment may be polluted and actively decide to contribute to an improvement," Hammer said. "The detailed results also offer the opportunity to scrutinize processes and improve them on this basis."

Hohenstein intends for this testing method to assist the industry in making sourcing and product development decisions. "Our reliable data can be used as a basis for more targeted product development," Alberts said. "This is a way to actively and consciously control further environmental pollution."

This standard can also help to scientifically verify product claims. "The term sustainability is not protected, and thus greenwashing is practiced," Hammer said. "Standardized and

recognized test procedures as well as definitions of terms can help. Therefore, the development of this DIN SPEC is a step in the right direction."

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