

The LYCRA Company's Position on Biodegradable and Compostable Fibers for Apparel

As the global textile value chain responds to growing demand for more sustainable apparel, two terms continue to pop up in conversation: *biodegradable* and *compostable*.

Biodegradable materials break down or decompose through microbial action into basic elements found in nature, such as carbon dioxide and water^A. Many materials degrade over time from sunlight, heat, moisture and mechanical stress, but this alone is not biodegradation. A material has to return to its basic elements to be biodegradable.

Compostable materials break down quickly, generally within 90 days, into a nutrient-rich, soil-conditioning mixture^B. Compostable items give back to the soil and enhance its overall health, while biodegradable items return to the earth but do not necessarily add anything of value. Currently, only about five percent of the world's municipal waste – mainly food, and agricultural and garden waste – is composted^C.

Cellulose-based fibers like cotton and lyocell will biodegrade in the right conditions, but with varying degrees of nutrient value restored to the soil. Cotton, for example, has very low nitrogen, phosphorus, and potassium content^D.

Additionally, garments made with biodegradable fibers often include non-biodegradable items like stitching, labels, buttons, zippers and dyes that can harm the soil. Heavy metals, for example, can inhibit bacterial growth essential to the composting process, thereby reducing its nutritional value^E.

The Federal Trade Commission (FTC) and other regulatory bodies around the world are tightening rules around biodegradable and

compostable claims on product labeling and packaging^F. Brands must provide scientific evidence that all materials will completely and safely break down and return to nature within a short period of time.

The LYCRA Company's position is that composting/biodegradation is not a preferred end-of-life solution for unwearable apparel waste made with spandex and other synthetic fibers at this time.

Here's why:

- **At present, our research showed that industrial composting facilities in the U.S., Europe and China are not accepting textiles** due to the possible inclusion of toxic materials and challenges with sorting and separating biodegradable components from non-biodegradable components at scale^{G,H,M}. In addition, apparel can clog shredding machines which are not designed for textiles but for materials like leaves, wood, and food waste. In fact, in some key geographies, laws even prevent garments from being composted^G.
- As a result, **"biodegradable garments" tend to end up in landfills** where they will likely take many years, even decades, to decompose due to lack of sunlight, moisture and air^I. While there, they can emit methane, a significant contributor to global warming^J. In addition, when a garment is left to biodegrade, manufacturers must then start from scratch to produce new virgin fiber.
- **Biodegradable fibers can contribute to marine pollution.** Biodegradation in the ocean is challenging due to a lack of oxygen,

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sunlight and warmth. For example, some fibers collect near the ocean floor, where water temperatures are very cold and not conducive to bio-degradation^K. The misconception that biodegradable fibers are safe can distract focus from preventing fibers and microplastics from reaching the ocean in the first place.

For these reasons, The LYCRA Company is focusing its current sustainability efforts for apparel¹ on routes and technologies that support a circular economy, as we believe in the long-run these will be more impactful and scalable options. The platforms we are investing in include: **Recycled fibers (pre and post-consumer); Garment Recycling Technologies; Safe, Screened Chemistries; and Increasing Garment Durability/Wear Life.**

Today we offer products made from post-consumer waste in our COOLMAX[®], THERMOLITE[®] and T400[®] fibers, and a LYCRA[®] fiber containing pre-consumer waste, all certified to the GRS standard. Our LYCRA[®] fiber plants and apparel fiber products are Oeko-tex[®] STANDARD 100, Level 1, Appendix 6 certified, meaning they have been tested against over 350 substances and received the highest level of approval. We also have a variety of offerings aimed at increasing garment wear life, which can be referenced on our website: connect.lycra.com/sustainability.

These three platforms provide strong environmental benefits and support a circular economy, which aims to minimize waste and make the most of natural resources and raw materials. With synthetic fibers, supporting a

circular economy means designing garments using recycled materials and recovering raw materials to recycle and re-spin into more fiber, and extending wear life wherever possible^L. In other words, keeping the technical (synthetic) or biological (natural) inputs in their respective loops instead of creating a linear system that continues to extract products from the earth. Recycling conserves energy and resources, reducing manufacturing footprints and overall environmental impact.

¹ The LYCRA Company continues to explore biodegradable technologies for hygiene applications, where select composting facilities exist to handle this type of waste at end of life.

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SOURCES

^A <https://stats.oecd.org/glossary/detail.asp?ID=203>

^B <https://www.naturespath.com/en-us/blog/whats-difference-biodegradable-compostable/>

^B <https://www.european-bioplastics.org/faq-items/what-are-the-required-circumstances-for-a-compostable-product-to-compost/>

^C Kaza, Silpa; Yao, Lisa C.; Bhada-Tata, Perinaz; Van Woerden, Frank. 2018. What a Waste 2.0 : A Global Snapshot of Solid Waste Management to 2050. Urban Development; Washington, DC: World Bank. © World Bank.

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^D Ellen MacArthur Foundation, Towards the circular economy, Vol. 2 (2013), p.57

^E Ellen MacArthur Foundation, A New Textiles Economy: Redesigning Fashion's Future, page 51
<https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy-Full-Report.pdf>

^F FTC Green Guides, Section 260.7, pages 15-17, Section 260.8, pages 17-20

<https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguides.pdf>

^G The LYCRA Company Interviews with Industrial Composters and Composting Councils, conducted between x and x, 2020

^H <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/textiles-material-specific-data>

^I <https://bpiworld.org/resources/Documents/EPIC%20Position%20on%20Biodegradability%20and%20Landfills.pdf>

^J <https://www.newsweek.com/2016/09/09/old-clothes-fashion-waste-crisis-494824.html>

^K The imprint of microfibres in southern European deep seas **Anna Sanchez-Vidal¹, Richard C. Thompson, Miquel Canals, William P. de Haan**
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^M Introduction to Composting Standards in China and Foreign Countries, Yujun Shen, Rural Energy and Environmental Protection Institute, 2019 国内外堆肥标准介绍