

# How are recycled garments made? And why is recycling them further so hard?

June 22 2022, by Timo Rissanen

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Today we make more clothing than ever before. And the driver for this is primarily economic, rather than human need. Over the past decade, the term "circular economy" has entered the fashion industry lexicon, wherein materials are made to be reused and recycled by design.

Yet we haven't seen the same level of recycling in fashion as we have in other spaces—such as with [plastic recycling](#), for instance. And this is mainly because clothing-to-clothing recycling is much more difficult.

The use of recycled [polyester](#) and [cotton](#) by brands such as H&M and Cotton On are key aspects of these companies' sustainability initiatives—but the source of these recycled fibers usually isn't clothing. Recycled polyester tends to [come from plastic bottles](#), and recycled cotton is usually made from manufacturing waste.

The fact is most clothing is simply not designed to be recycled. Even when it is, the [fashion industry](#) lacks the kind of infrastructure needed to really embrace a [circular economy](#) model.

## Why is recycling clothes difficult?

Recycling clothing isn't like recycling paper, glass or metal. Clothes are endlessly variable and unpredictable. So they're not ideal for recycling technologies, which require a steady and consistent source material.

Even a seemingly simple garment may contain multiple materials, with fiber blends such as cotton/polyester and cotton/elastane being common.

Different fibers have different capacities for recycling. Natural fibers such as wool or cotton can be recycled mechanically. In this process the fabric is shredded and re-spun into yarn, from which new fabric can be woven or knitted.

However, the fibers become shorter through the shredding process, resulting in a lower quality yarn and cloth. Recycled cotton is often mixed with virgin cotton to ensure a better quality yarn.

Most fabrics are also dyed with chemicals, which can have implications for recycling. If the original fabric is a mixture of many colors, the new yarn or fabric will likely need bleaching to be dyed a new color.

A complex garment such as a lined jacket easily contains more than five different materials, as well as trims including buttons and zippers. If the goal of recycling is to arrive at a material as close to the original as possible, all the garment's components and fibers would first need to be separated.

This requires labor and can be expensive. It's often easier to shred the garment and turn it into a low-quality product, such as [shoddy](#) which is used for insulation.

## **Industry progress and challenges**

Companies such as [BlockTexx](#) and [Evrnu](#) have developed processes to recycle fibers from blended fabrics, though such recycled fibers aren't yet widely available.

Through a proprietary technology, BlockTexx separates cellulose

(present in both cotton and linen) and polyester from textile and clothing waste for new uses, including in new clothing. And Evrnu has developed [a type of viscose](#) made entirely from textile and clothing waste.

Spain-based company [Recover](#) meticulously sorts through different kinds of cotton textile waste to produce high quality, mechanically recycled, cotton fiber.

There's also biological recycling. Fiber waste from the [Rivcott cotton "gin"](#) (or cotton engine) is composted to become fertilizer for a new cotton crop. The same is possible with [natural fibers](#) from worn-out clothing, after potentially toxic dyes and chemicals have been eliminated.

Synthetic fibers such as polyester and polyamide (nylon) can also be recycled mechanically and chemically. Chemical [recycling](#) through re-polymerization (where the plastic fiber is melted) is an attractive option, since the quality of the original fiber can be maintained.

In theory it's possible to use polyester clothing as the source for this. But in practice the source is usually bottles. This is because clothing is usually "contaminated" with other materials such as buttons and zippers, and separating these is too labor intensive.

## The plastic problem

Almost all recycled polyester in clothing today comes from recycled [plastic bottles](#), rather than previous polyester clothing. This is significant when you consider polyester accounts for more than 60% of all fiber use.

Given the rapid increase in the production of [synthetic fibers](#), and the as-yet-unknown impact of microplastics (which were [documented in human](#)

[placentas](#) last year)—the question remains whether clothing should be made from biologically incompatible materials at all.

Polyester clothes, regardless of fiber sources, contribute to microplastic pollution by shedding fibers when worn and laundered.

A new generation of synthetic [fibers](#) from renewable sources (recyclable and also biodegradable) offers a path forward. For instance, the [Kintra](#) fiber is made from corn.

## **Reduce and reuse before you recycle**

There's plenty of evidence that reducing the consumption of clothing by wearing items longer and buying second-hand is preferable to purchasing recycled fiber clothes.

But even second-hand fashion isn't without problems when you consider the scale and pace of clothing production today.

Liz Ricketts of the U.S.-based OR Foundation, a charity focused on sustainable fashion, [paints a gruesome picture](#) of the Kantamanto market in Ghana, where much of the world's secondhand [clothing](#) ends up (including from Australia).

One path forward is for companies to take responsibility for products at their end of life. U.S. fashion brand Eileen Fisher is a pioneer on this front.

The company has purchased garments back from customers since 2009. These are cleaned and sorted, and mostly resold under the [Eileen Fisher Renew](#) brand.

Garments too damaged for resale are given to a dedicated design team,

which redesigns them to be sold under the [Eileen Fisher Resewn](#) collection. Off-cuts from this process are captured and turned into textiles for further use.

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