



polyester. Estimates suggest that as much as 20% to 35% of all primary source microplastics in the marine environment are fibers from use of synthetic clothing.

So, acrylic production and use is harmful to the health of humans, the environment, and animals. What more convincing do you need to avoid buying it?

### 3) Cotton

Cotton is one of the most common fabrics used in clothing. It's super breathable and probably makes up most of the blue jeans and t-shirts in your closet.

Conventional cotton production poses many problems for people and the environment.

It takes 1,931 liters of irrigation water and 6,003 liters of rainwater to produce enough cotton for a t-shirt and pair of jeans.

The excess water is then polluted with chemicals and dyes. These hazardous materials are expensive to dispose of properly, so many companies end up polluting the riverways instead so their products can remain cheap.

Conventional cotton consumes 16.1% of the world's insecticide sales and 5.7% of global pesticides.

These chemicals increase global warming impact and harm our soil health, water supplies, and the health of farmers.

An example of the "true cost" of cotton production can be seen in the Aral Sea basin, which was sucked dry in 2014 due to the amount of water needed in the cotton production process.

Commenting on the incident, environmental activist Vandana Shiva stated that "the fashion

industry is one of the most polluting industries in the world, causing human misery, enormous cost of life and gigantic environmental devastation."

### 4) Rayon

When it comes to fabrics, the primary culprit of greenwashing is this material which is made from plants but is actually terrible for the environment. Rayon has been classified as a more sustainable alternative to polyester or cotton; let's challenge that theory.

Rayon is made by dissolving cellulose (the main constituent of plant cell walls) into a chemical solution and then spinning it into threads. The fiber itself is biodegradable and non-toxic, but the way that it is manufactured can cause harm to factory workers as well as the environment.

The fast-fashion industry often uses rayon to produce cheap clothing using large amounts of water and energy as well as highly intensive chemical processes.

These processes release dangerous chemicals into the surrounding air and waterways, which can lead to health problems in both workers and local communities.

Also, the demand for this plant-based material obviously increases the demand for, you guessed it, plants! Many areas are suffering from deforestation due to the collection of trees to produce rayon, including endangered and protected forests. Animals that depend on these trees for their homes are facing habitat loss, which is threatening both endangered and non-endangered species.

Some of the animals that have been

placed on the endangered species list specifically due to the fast fashion industry are orangutans, tigers, rhinoceroses, and elephants of Sumatra; the last place in the world where all of these animals co-exist.

### 5) Synthetic Fabric: Nylon

Typically used in clothing items such as tights and stockings nylon is a material derived from crude oil. It's also used to make tight clothing such as swim or active-wear.

No form of nylon is biodegradable and in effect, nylon may sit in the landfill for 20 to 200 years. Unsurprisingly, it is partially derived from petroleum, one of the dirtiest industries and forms of energy.

The production of nylon creates nitrous oxide, a greenhouse gas, and it uses large amounts of water and energy. .

### Sustainable Fabrics

#### 1) Recycled Cotton Fabric

A more sustainable alternative to conventional cotton is the organic version of the material.

Organic cotton is grown without all the harmful pesticides and produced without the dangerous chemicals that normal cotton uses.

The most sustainable way to wear cotton is in its recycled form.

This fabric is made with post-industrial and post-consumer waste and uses far less water and energy to produce in comparison with conventional and organic cotton.

#### 2) Hemp Fabric

Hemp is often used in clothing, rope, and boat sails because of its excellent durability.

It is also naturally insulating and cooling as well as protective from



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# Sustainable Fabrics

Part 1



Ever think about the material that makes up the clothes you're wearing?

Maybe you don't like how certain fabrics feel. Perhaps these fabrics pill and snag easily, or are difficult to wash. Maybe you don't think about it at all.

Regardless, here's an important question to consider: how do these fabrics affect the environment?

Clothing is responsible for 3% to 6.7% of global human-caused carbon emissions.

This is not only from the production of the fabric, but also the care that follows your purchase.

Washing our clothes makes up most of the environmental impact caused by clothing, and this impact varies depending on the fabric. So, if you can skip a wash, do it!

There is no such thing as a 100% sustainable fabric, but some are much better than others.

A couple of the major determining factors when labelling sustainable materials are the amount of resources used to produce the material and the life cycle analysis of the product.

A life cycle analysis is a review of the product from "birth" to "death" and its impact through each step along the way. First, let's take a look at some of the least sustainable fabrics.

## The Least Sustainable Fabrics

### 1) Fabrics to Avoid: Polyester

A variety of products can be made from forms of polyester: t-shirts, blankets, rope, conveyor belts, and bottles. It is widely used in clothing items, which you may notice by looking at the tags in your closet. However, this isn't a particularly good thing.

Most polyesters are non-biodegradable, meaning that it may take anywhere from 20 and 200 years to break down if it's put into the landfill.

Polyester is partially derived from oil, which is a major source of pollution. In the United States alone, the oil and gas industry emits about 8 million metric tons of methane (a greenhouse gas) into the air per year. Large amounts of water are used for cooling in the energy-intensive process used to produce polyester.

This can be dangerous in areas of water scarcity, resulting in reduced access to clean drinking water.

Not to mention, the excess water from production is full of chemical dyes that can cause harm to plants, animals, and humans.

If all of this wasn't enough, polyester also releases microplastics through use and especially during washing. Each washing cycle may release over 700,000 mini plastic fibers into the environment.

Microplastics add to pollution and are harmful to marine life when ingested.

### 2) Unsustainable Fabrics: Acrylic

Some of the most common uses for acrylic fabric are sweaters, hats, gloves, and area rugs. It's known for its warmth, hence its use in winter clothing.

The environmental and health impacts may not give you as warm of a feeling.

Acrylic production involves highly toxic chemicals that can be dangerous to the health of factory workers.

The key ingredient, acrylonitrile, can enter the wearer's body through skin contact or inhalation.

Imagine that, wearing a certain fabric could be harmful to your health!

Additionally, acrylic is not easily recycled and can lay in a landfill for up to 200 years before biodegrading, similar to its synthetic sibling,



UV rays. An added bonus: it's environmentally friendly.

The plant itself is extremely resilient and requires little water to grow.

It also returns 60-70% of nutrients to the soil that it lives in!

Plus, when it is spun into a fabric, the process requires no chemicals whatsoever. Note that some manufacturers do choose to use a more chemical-intensive process to speed the production, which is not so great for the environment.

As long as hemp is manufactured organically, without added chemicals, it is considered a very sustainable fabric choice. It even gets softer through washing, which adds to its level of comfort.

Hemp plants also produce a nutritious seed which you may have noticed at your local grocery store. If hemp is safe enough to consume, you should have no problem wearing it!

### 3) Organic Linen Fabric

Known for its light and summery feel in clothing, linen is also produced from a plant: flax. Like hemp, it requires little water and little-to-no pesticides.

It is completely biodegradable when left undyed!

The process for manufacturing linen is more mechanically intensive than water intensive, so both the natural plant and the fabric that is derived from it require minimal water.

The mechanically intensive process does produce some emissions, but the overall process produces far fewer carbon emissions than most other fabrics, according to Green Story's Green Fabric Guide.

The flax plant is highly available, and the process to make linen from it is

high yielding.

It's an excellent option for local production and is very sustainable when untreated.

Like hemp seeds, you may also have heard of flax seeds as a common topper for salads or smoothie bowls. Fun fact: when mixed with water, flax seeds produce a vegan substitute for eggs.

### 4) Tencel Lyocell Fabric

A relatively new fabric, Tencel is made from wood pulp, and its properties are similar to those of rayon.

Since it's derived from plant material, it is biodegradable.

According to Green Story's Green Fabric Guide, the process for creating Tencel fiber was designed specifically to reduce environmental impact.

The production of Tencel uses only one-third of the water that is needed to produce rayon, and over 99% of the water and solvents used are able to be recycled!

That means there is no need for new solvents.

This greatly reduces the release of dangerous chemicals into the surrounding environment. Plus, the solvents used in Tencel production are non-toxic, unlike those of viscose. Tencel is on the more expensive side of things, but it's very durable and will last a long time.

You get what you pay for! While it is not widely available for production yet, the industry is growing fast.

### 5) Recycled Polyester (rPET) Fabric

This material is often made from plastic bottles that would have gone to the landfill.

This is a fantastic solution to the plastic pollution issue, and it reduces the need for raw materials.

The recycled version of polyester is a much more sustainable option since it skips the energy-intensive oil extraction process, reducing emissions.

According to Green Story, the production process for recycled polyester uses 35% less water than the regular material.

The part that requires the most water is the dyeing process. Plus, a t-shirt made from 100% polyester can be recycled several times before the fabric becomes unusable.

An issue with recycled polyester is that like virgin polyester, it also releases microplastics during washing.

One thing you can do to help with this problem is wash your clothes less often and use this washing bag which prevents microplastics from entering the waterways.

### 6) Econyl Fabric

If after reading about nylon you are looking for a better alternative, try Econyl.

This fabric is made from waste materials such as industrial plastic and fishing nets.

The process is closed-loop, which seems to be a trend in all of the future fabrics.

Note that since this material is made from plastic, small particles may be released when a clothing item is washed.

Econyl is most sustainable in the form of items that do not need to be washed often, such as sneakers or backpacks.

For items that do need to be washed try using a washing bag which helps prevent microplastics from entering the waterways.

**To be continued...**