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## Viscose vs rayon bamboo sheets

Not all bamboo clothes are what it seems. Conscientious clothiers work to distinguish themselves from those who use materials, primarily viscous rayon substance that requires toxic production methods. Here's an explanation of the market and what to look for. The Haniya Rae Bamboo drug, made from a fast-growing grass that can grow around the world, is often mislabeled rayon, which requires toxic chemicals in its production. Photo by Kenneth Hagemeyer/FlickrIn December 2015, the Federal Trade Commission (FTC) fined four major retailers - Nordstrom, Bed Bath & Beyond, Backcountry and J.C. Penney - a total of \$1.3 million for mislabelling textile products made from viscose rayon as bamboo under the Textile Identification Act. Some of the largest U.S. retailers in the country, including Amazon, Macy's, Kmart and Sears have paid hefty fines for not updating their labels after the agency first began cracking down on fake bamboo fabrics in 2009. Clothing made of bamboo has been marketed as more environmentally friendly than clothes made from other fabrics because bamboo is a tree-like plant - technically a grass - that grows rapidly and thrives across the planet without irrigation or irrigation. But most of this clothing has historically been made from viscous rayon, which is created from bamboo or wood pulp processed into a toxic soup of chemicals that generates significant pollution. Today, a lot of experts believe that the bamboo label on rayon clothing is fundamentally a misrepresentation. The average consumer who buys clothing relies on the brand to provide information that is accurate and trustworthy, says Shamini Dhana, founder and CEO of Dhana, a fair-trade, Certified B Corporation children's clothing line. Bamboo used to be in a gray area because rayon can actually contain bamboo pulp. But even this is a subjective component today, Dhana says. Consumers need to know how a substance was manufactured before they can decide whether a product represents their values. We all have different baseline value systems - each consumer has separate ideas about what is ethical or good for the planet. Of the 4.9 million tons of global viscose rayon market, more than 65 percent are produced in China. By 2021, global production of viscose rayon is expected to be worth about \$16 billion a year. The largest producer of bamboo? Also China, which exports more than a third of the world's total. The Viscose Rayon Fabric Chemical Riddle: Sodium Hydroxide and carbon disulfide are the two toxic chemicals combined with wood pulp to form viscose rayon bamboo fabric. Many companies, such as the major retailers that the FTC has imposed over the years, choose to remain unaware of the process behind the production of viscose and instead rely on the manufacturer to provide accurate information. The FTC, on the other hand, has issued new guidelines for labelling to make the distinction clearer. Paul D. Blanc, who in occupational and environmental medicine on The University of California, San Francisco, describes how viscose rayon is made: Bamboo or wood chips are dipped in carbon disulfide, and then syrupy substance is pumped through a tube and forced through a screen into a container of sulfuric acid. The fabric coagulates as it comes out and can be formed in thread. Blanc published a 2016 book on the subject of Fake Silk: The Lethal History of Viscose Rayon. He says you can't even buy U.S.-made rayon because the manufacturing process is too harmful to the environment through wastewater discharges - the Environmental Protection Agency's rules caused the last of the rayon factories to close more than a decade ago. Although carbon-disulfide-based viscose is no longer made in the United States, through most of the 20th century, it's not the first time that the U.S. has been able to get a lot of fun. Regular exposure to high levels of carbon disulfide has been shown to damage the nervous system. Blanc wrote that for workers in viscous rayon factories, poisoning caused insanity, nerve damage, and increased risk of heart disease and stroke. Clothes made of fabric containing nothing but pure bamboo linen are required to use the term rayon or Rayon made of bamboo on the label. Photo courtesy Au Naturel Origins. If you buy something that has even 50 percent viscose rayon, don't kid yourself [that you're] buying a 'green' product, says Blanc, which means that any percentage of viscose guarantees that a harmful human and environmental process arose when making the garment. Less harmful is Tencel, a branded version of lyocell, which is rayon formed through another process that contaminates little and is usually made of wood pulp, not bamboo. Patagonia, another B Corporation clothier with a history of environmental sensitivity, says Tencel in its clothing is made of wood pulp from eucalyptus trees, and that pulp is certified by the Forest Stewardship Council. Bamboo Clothing: Certified safe and healthy? If a brand says they give 25 percent of the net profit to an NGO, or if they say they use organic cotton, a consumer can say, Oh, that sounds good to me. That's what's going to end up too many consumers, Dhana says. Brands should be forced to disclose their supply chain. For worried shoppers, the eco-label index is a useful resource for researching certifications that companies use to qualify their clothes as ethical and sustainable. Instead of carbon-disulfide-based alternatives to viscose rayon, Blanc believes consumers should look at buying real silk that is ecologically friendly. Some companies that make fair-trade silks, such as Mehera Shaw, sell their wares to brands like The Ethical Silk Company. Blanc says that Bemberg cellulose, yet another form of rayon, is supposedly benign as it doesn't use the same harsh chemicals that viscose rayon does, and it meets the Japan Environment standards for an environmentally useful product. But because the process of producing Bemberg cellulose is much more time consuming, it also costs more and is not as widely available. For cheaper alternatives, Dhana recommends Tencel or modal, which is extracted from beech wood grown on nonarable soil. The National Resources Defense Council argues that a truly environmentally sound, bamboo-only fabric must be spun directly from tree fiber. Often called bamboo linen, the fibers are mechanically combed out and spun into yarn, instead of chemically processed with carbon disulfide and other toxic chemicals. Blanc says workers in bamboo production plants sometimes incur health problems from retting bamboo fibers, or soaking them to breaking down the outer shells. Retting, the same process used for most flax and hemp fiber production, can promote microbial growth, which can affect workers' health with continued exposure. Why Brands Do Bamboo Fabric Right: B Corporation fashion brand Eileen Fisher's director of social awareness, Amy Hall, admits that the company's previous top-selling viscose-based products were a problem. Eileen Fisher reduced its rayon use by 12 percent between 2014 and 2015, and Hall says the company intends to eliminate it entirely by 2020. Eileen Fisher's goals and roadmap are documented on her website under the Vision 2020 tab. Improving fashion's environmental and social impacts will require widespread educational programs and changes in consumer behavior, Dhana says. We are so visually stimulated and seduced by the style or color or brand. All these things come into play when people buy clothes and they have to learn to reflect on their value system before making a purchase. Dhana says that even when brands are aware of their values, sometimes they have trouble knowing whether their suppliers are honestly reporting environmental and working conditions. I have been personally involved in companies that say they are in total compliance and then they will say they are 'pending' when I ask for a certification, Dhana says. They could tell the truth, but it's impossible to know. Patagonia's Kamala convertible skirt is made of organic cotton and Tencel lyocell, which is a less toxic form of rayon made from eucalyptus wood pulp. Photo courtesy Patagonia. This is especially the case if a brand deals with suppliers abroad who have their own compliance standards and certifications. With the current certification for brands varying widely, Dhana notes that finding ethical fabric can be just as confusing for a clothing brand as it is for a consumer. All this is not to suggest that there is no way for a consumer to make a difference, Blanc says. Just because there isn't perfect clarity doesn't mean buying doesn't matter. This means that consumers must identify who has produced the product they want to buy and decide whether they can on the brand. When you buy a piece of clothing, clothing, should think of viscose and wonder about the person who did it and what kind of place they did it in, says Blanc. Consumers should be wary of products made with toxic substances and should be aware of the human suffering that goes into making these goods. Is it worth having this piece of clothing at the expense of a human life? A Fake Bamboo Glossary: Bamboo: According to the Federal Trade Commission, a textile can be labeled bamboo if it is made entirely of bamboo fibers - not chemically processed into rayon. Bemberg cellulose: Only made in Japan, Bemberg silk, also known as cupro, is a reclaimed rayon fiber made of cotton lints, not wood pulp. It is made from a process that is more expensive than the production of viscose rayon, and is often used for luxury suit linings. Carbon disulfide: Wood pulp is dipped in this chemical to make viscose rayon. Carbon disulfide can cause cardiovascular and nervous system damage for workers. Cellulose acetate: This rayon fiber is made of wood pulp or cotton lints treated with acetic acid, which is used to form film. The fabric is often sought out for bridal attire because of its brilliance. Modal: Wood from beech trees, which can grow in a wide range of soil types, forms this less toxic rayon fiber. Lenzing claims that its modal product is made with sustainably grown and harvested beech. Sodium hydroxide: Also known as lye, this chemical is used when making viscous rayon, and it can cause corrosion and chemical burns to workers who handle it frequently and without protection. Lyocell: Another form of rayon fiber, which is made of wood pulp, processed with a nontoxic spinning solvent in a closed circuit. Tencel, a branded version of lyocell, is made of eucalyptus trees. Viscose rayon: Labels that state clothing is made of viscose, rayon or viscose rayon are the same thing: chemically processed cellulose fibers. If a product is not directly made of bamboo fiber, but is a manufactured fiber, as bamboo was the plant source, it should be labeled using the generic rayon or rayon made of bamboo. This article was originally published in the spring 2017 issue of B Magazine. B Change brings together and shares the voices of the movement of people who use business as a force for good and the community of certified B Corporations. The opinions expressed do not necessarily reflect those of the nonprofit B Lab. Lab.