

Introduction to more sustainable viscose



The Sustainable Clothing Action Plan (SCAP) is a collaborative agreement to improve the environmental impact of clothing. See wrap.org.uk/scap2020

When looking at the environmental impact of clothing across its lifecycle, the fibres and materials used within the garment account for a significant proportion of its overall impact.

Fibre selection is an area under a brand's control and therefore represents a key point in which it can shift to more sustainable alternatives.

The environmental issues related to viscose

Viscose is a man-made cellulosic fibre, produced mainly from wood pulp. To transform the wood pulp into a fibre, the pulp undergoes a series of energy, water and chemically intensive manufacturing process steps.

For brands looking to integrate more sustainable forms of viscose there are a number of options available. Three are explored here: TENCEL[®], Modal and Monocel.

Brands looking to source these alternatives should liaise with their suppliers or reach out directly to the fibre manufacturer. It is possible to communicate the usage of TENCEL[®], Modal and Monocel on the final product.

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TENCEL®

What is it? TENCEL® is produced by Austrian company, Lenzing, and was developed as a similar but alternative fibre to viscose, named lyocell. It is produced primarily from eucalyptus trees. These trees are grown to meet Forest Stewardship Council (FSC) or the Programme for the Endorsement of Forest Certification (PEFC) standards; which supports environmentally and socially beneficial forest management.

Once harvested, the wood from the trees is pulped and undergoes a series of chemical processes to produce the TENCEL® fibre. TENCEL® reduces its environmental impact, by using an energy and water efficient 'closed loop' process which recycles the non-toxic chemicals used to process the fibre.

TENCEL® is OEKO-TEX 100 and EU Eco label certified, which help to support TENCEL®'s environmental reduction claims.

Modal

What is it? Also produced by Lenzing, Modal differs from TENCEL® primarily in that it is produced from beech trees. Many of these trees are also grown to meet FSC or the PEFC standards.

Modal is manufactured using what Lenzing has termed 'Edelweiss technology' a resource efficient process which helps to reduce the fibres' energy and chemical footprints.

Unlike TENCEL®, Modal uses toxic chemicals similar to those used in conventional viscose production and is therefore not technically a lyocell fibre.

Find out more at [lenzing-fibers.com](https://www.lenzing-fibers.com)

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Monocel

What is it? Monocel, was developed by Norwegian firm Nånkåtån. Monocel was created as an alternative to cotton and viscose. It is produced from bamboo, which is grown under FSC standards, which supports responsible forestry management.

During the manufacturing process, Monocel uses an energy and water efficient closed loop system to recycle the non-toxic chemicals used to produce Monocel fibre, a process similar to that used by Lenzing to produce TENCEL®. This process contribute to reducing Monocel's carbon and water footprint.

Find out more at monocel.com

What are the environmental savings?

Using the SCAP Footprint Calculator, it is possible to calculate potential carbon savings that could arise should a brand switch its conventional viscose to lyocell (TENCEL® or Monocel).



5% *	0.6%
20%	2.3%
50%	5.7%
100%	11.4%

* Percentage of lyocell integrated

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MADE-BY's Environmental Fibre Benchmark

According to MADE-BY's Fibre Benchmark TENCEL® and Monocel are both Class B fibres. Modal is Class D and general viscose is Class E. The benchmark compares the environmental impact of the most commonly used fibres in the garment industry, supporting you to shift to more sustainable alternatives.

The benchmark ranks 28 fibres on six common parameters. The six parameters have been given different weights in terms of impact. Greenhouse gas emissions, human toxicity and ecotoxicity are weighted to 20% each, while energy, water and land use have been given a 13.33% weighting.

Based on these parameters, each fibre is scored and placed into one of five classifications: Class A (best) to Class E (less sustainable).

An additional category, 'Unclassified', is included. Fibres listed here are not (yet) part of the Benchmark due to a lack of available robust data.

MADE-BY ENVIRONMENTAL BENCHMARK FOR FIBRES



CLASS A	CLASS B	CLASS C	CLASS D	CLASS E	UNCLASSIFIED
Mechanically Recycled Nylon	Chemically Recycled Nylon	Conventional Flax (Linen)	Modal® (Lenzing Viscose Product)	Bamboo Viscose	Acetate
Mechanically Recycled Polyester	Chemically Recycled Polyester	Conventional Hemp	Poly-acrylic	Conventional Cotton	Alpaca Wool
Organic Flax (Linen)	CRAILAR® Flax	PLA	Virgin Polyester	Cuprammonium Rayon	Cashmere Wool
Organic Hemp	In Conversion Cotton	Ramie		Generic Viscose	Leather
Recycled Cotton	Monocel® (Bamboo Lyocell Product)			Rayon	Mohair Wool
Recycled Wool	Organic Cotton			Spandex (Elastane)	Natural Bamboo
	TENCEL® (Lenzing Lyocell Product)			Virgin Nylon	Organic Wool
				Wool	Silk

MADE-BY Benchmarks cannot be printed, circulated or copied without the accompanying MADE-BY logo and website.
bwe This Benchmark was made in cooperation with Brown and Wilmanns Environmental, LLC. For further information on this Benchmark see www.made-by.org/benchmarks

View MADE-BY's publicly available Environmental Fibre Benchmark at made-by.org/benchmarks

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WRAP's vision is a world where resources are used sustainably. It works in partnership with governments, businesses, trade bodies, local authorities, communities and individuals looking for practical advice to improve resource efficiency that delivers both economic and environmental benefits.

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Our mission is to accelerate the move to a sustainable resource-efficient economy through:

- **re-inventing** how we design, produce and sell products;
- **re-thinking** how we use and consume products; and
- **re-defining** what is possible through recycling and re-use.