

Sustainable Materials explained

Denim is the core of our collection and is made of cotton. As a result, cotton represents 80% of the raw materials we use. That is why we focus on sustainable options of this crop - one that generally needs a lot of water and pesticides to grow. Our goal is to reduce our environmental footprint by using 100% sustainable cotton by 2020.

For all other materials we use in our collection, we aim to use 90% of sustainable materials by 2020. These materials range from natural fibers such as recycled wool, to polymers such as recycled nylon. G-Star is committed to ensure that all raw materials used in our products are grown and manufactured in a responsible way that preserves (natural) resources and respects human & animal rights.

G-Star considers the following materials sustainable, following the MADE-BY Fibre Benchmark:

Recycled Cotton	Organic Cotton	In Conversion Cotton	Organic Flax (Linen)	Conventional Flax (Linen)
Mechanically Recycled Nylon	Mechanically Recycled Polyester	Chemically Recycled Polyester	Recycled Wool	CRAILAR® Flax
Organic Hemp	Conventional Hemp	Tencel® (lyocell product from Lenzing)	Monocel® (bamboo lyocell product)	Ramie
Nettle	PLA			

Source: MADE-BY Fibre Benchmark

Please find an explanation about the characteristics of the different sustainable materials.

Organic cotton is cultivated without chemical pesticides and synthetic fertilisers, making it an environmentally friendly alternative to conventional cotton. In addition, organic crops are grown from non-genetically modified seeds and the majority of global production is rain fed as opposed to irrigated, consuming significantly less water.

Recycled cotton is produced from post-consumer or post-industrial waste material. The use of recycled cotton generates savings on raw materials, water, chemicals and energy.

Cotton in conversion is grown on land that has only recently been converted to organic cultivation (less than 2 to 3 years). Therefore, although no chemical pesticides and synthetic fertilisers are being used, residues may still be found in the soil and the cotton cannot be

certified as organic cotton yet. Cotton in conversion is sold to support organic farmers and to stimulate the development of organic cotton.

Tencel® (lyocell product from Lenzing); Lyocell is a manmade natural fibre of cellulose extracted from eucalyptus wood pulp. Eucalyptus trees grow rapidly and can thrive on poor quality land without the need for irrigated water or synthetic pesticides. The Eucalyptus trees harvested for Tencel, the Lyocell fibre from the fibre producing company Lenzing, come from FSC (Forest Stewardship Council) certified farms.

Hemp is in general a high yield, low maintenance crop that is ideal for rotation. Although it requires limited amounts of fertilisers, it does not require pesticides, herbicides or irrigation water. Organic certified hemp is grown without the use of synthetic fertilisers and retted to extract the fibre without the use of chemicals.

Flax (the plant from which linen fibres are extracted) is a fast growing, renewable crop which is ideal for rotation. It requires relatively low amounts of pesticides and fertilisers. Organic certified flax is grown without the use of synthetic fertilisers and retted to extract the fibre without the use of chemicals.

Polyester and Polyamide are manmade synthetic fibres made from crude oil, a non-renewable resource. The process of refining oil, creating a polymer, extruding and spinning the fibre is energy intensive and uses large amounts of water. **Recycled polyester and polyamide (nylon)** are produced from post-consumer or post-industrial waste materials such as PET plastic bottles, apparel or nylon fishing nets; material that would otherwise have been sent to landfill or for incineration. It prevents the further extraction of a non-renewable resource. Mechanical recycling utilises energy to re-melt the waste material. However, the resulting CO² emissions are much smaller than those produced from the manufacture of virgin fibre. Chemical recycling utilises chemical additives and involves more energy.

Recycled wool is made from post-consumer or post-industrial wool waste. As this process makes the wool fibres shorter, it is often blended with other fibres such as virgin wool or cotton to increase the average fibre length.

Nettle is a natural fibre derived from the nettle plant that is rainfed as opposed to irrigated and grows easily without pesticides. The process to extract the fibre does not need any additional chemicals, enzymes or other auxiliaries. It makes use of the natural enzymes existing in the nettle plants itself.

Ramie is a sustainable bast fibre, similar to flax. It is one of the strongest natural fibres and can be up to 8 times stronger than cotton. However, the processing of ramie requires the use of chemicals to de-gum the fibre.

PLA, short for polylactic acid, is a sustainable alternative to fibres made from non-renewable crude oil, since it can be produced with the use of renewable agricultural by-products such as corn starch, sugar or wheat. However, processing the fibre requires a relatively high amount of energy and pesticides and fertilisers are used in intensive agriculture of corn, sugar or wheat.

Monocel® is made from lyocell bamboo fibre. It is a great alternative to fibres such as cotton. Monocel® is strong, soft and responsibly produced. The production leaves no hazardous waste and only required a small amount of water. The raw material, bamboo, is organically grown.

CRAiLAR® is an all-natural fibre that is as soft, absorbent, and durable as cotton. The environmentally friendly production process uses significantly less water and fewer chemicals than cotton.