



Bio-based Dyneema® fiber

The first ever bio-based
HMPE fiber



DSM is introducing the first ever bio-based ultra-high molecular weight polyethylene fiber. This innovation utilizes the mass balance approach and further reduces our reliance on fossil fuel based resources. Now bio-based Dyneema® fiber will enable our partners and downstream customers to reduce their carbon footprint while maintaining the same trusted performance.

DSM'S COMMITMENT TO A MORE SUSTAINABLE PLANET

As a purpose-led, performance-driven company, DSM is committed to creating brighter lives for all. In 2015, the members of the UN agreed on 17 Sustainable Development Goals (SDGs) in Paris. These are essential actions we need to take as a society to protect our planet.

As DSM Protective Materials, we specifically use the 4 Sustainable Development Goals shown below to drive our business strategy.



By 2030, our ambition is to protect 40 million people, transition to bio-based feedstock, and power more than 75% of our manufacturing with renewable electricity.

BIO-BASED DYNEEMA® FIBER, SAME PERFORMANCE, LOWER CARBON FOOTPRINT

As part of this commitment, DSM is taking the next major step in its sustainability journey by introducing the first ever bio-based ultra-high molecular weight polyethylene fiber (branded as Dyneema®) and further reducing our reliance on fossil fuel based resources. All bio-based Dyneema® fibers have the exact same characteristics and performance as conventional Dyneema® fiber. Ethylene is the primary raw material used to manufacture Dyneema® fibers, and is the feedstock that will be transitioned from conventional to a renewable source via mass balancing.

Mass balance approach explained



Carbon footprint comparison

Reduces	Compared to 1 tonne		Smartphones charged	Tree seedlings grown for 10 years
5 TONNES CO ₂	Conventional Dyneema®	=	637 K	83
6 TONNES CO ₂	Nylon	=	760 K	99
9 TONNES CO ₂	Aramid	=	1.1 M	149
29 TONNES CO ₂	Generic HMPE	=	3.7 M	480



To achieve a given performance in an application, Dyneema® needs less material than other fibers. This will result in an even lower carbon footprint compared to other materials.

Carbon footprint comparisons have been calculated with DSM internal Life Cycle Assessment using publicly available information about other materials.

FROM THE TREES TO THE STRONGEST FIBER – THE MASS BALANCE APPROACH

Mass balance accounting is a well-known approach that has been designed to trace the flow of materials through a complex value chain. The mass balance approach provides a set of rules for how to allocate the bio-based content to different products to be able to claim and market the content as 'bio'-based*.

All bio-based raw materials are coming from sustainable certified sources. For further information on our partners, please visit www.upmbiofuels.com and www.sabic.com

*Source: www.ellenmacarthurfoundation.org/assets/downloads/Mass-Balance-White-Paper.pdf

ABOUT INTERNATIONAL SUSTAINABILITY AND CARBON CERTIFICATION (ISCC)

By applying a mass balancing approach, bio-based Dyneema® fiber delivers the same consistent durability and performance with a reduced environmental impact. The fiber is certified according to ISCC, which guarantees good and sustainable practices while certifying that it originates from a transparent and traceable supply chain. It also guarantees that the amount of bio-based materials sold is not more than the amount which is sourced.

For more info regarding ISCC please visit www.iscc-system.org



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