

**No strings attached:
Rayon fiber reinforced bio-based polyamides offer
high bio-content and a good reinforcement potential**

- High bio-content of between 67 and 100 percent
- CO₂ savings of 57 percent

Evonik Industries has developed and launched on the market a novel combination of bio-based high-performance polyamides and bio-based high-performance fibers.

Reinforcing fibers, particularly chopped fiberglass, are often mixed into a plastic to improve its mechanical properties. But in the case of bio-based polymers this means that the bio-content is lowered, reducing the ecological advantage. The use of natural fibers, on the other hand, has so far resulted in significant deterioration of reinforcing potential, and also an unpleasant odor in the end product. VESTAMID® *Terra* with rayon fibers retains the high bio-content—along with excellent reinforcing potential.

Two polyamide grades of the VESTAMID® *Terra* product family form the polymer matrix: *Terra* HS and *Terra* DS. These polyamides are fully or partially obtained from the castor oil plant. Commercially available chopped rayon fibers form the reinforcing fiber substrate. Rayon is also known as man-made cellulose or technically as viscose fibers. These fibers are obtained entirely from wood residues (dissolving pulp), and are therefore also based on renewable raw materials. The overall bio-content is thus high, lying between 67 and 100 percent.

Compared with fiberglass reinforced systems, the combination of viscose fibers and polymer matrix offers a significantly improved carbon balance. As an example, CO₂ savings for a viscose fiber system of PA1010 with a fiber content of 30% are 57 percent higher than for a 30% glass fiber reinforced PA66.

Additionally, viscose reinforcing fibers have a significantly lower density than mineral fibers: Depending on fiber content, bio-polyamides reinforced with viscose fibers offer a weight reduction of up to 10%, for the same reinforcing performance.

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"With this product development, we want to further support the unrestricted expansion of bio-based products in technically demanding applications for our customers," says Dr. Benjamin Brehmer, Business Manager Biopolymers at Evonik.

Evonik offers VESTAMID® *Terra* grades of varying fiber content, to satisfy a wide range of mechanical demands.



Image caption
High-performance and bio-based—
the VESTAMID® *Terra* product family

Company information

Evonik, the creative industrial group from Germany, is one of the world leaders in specialty chemicals. Profitable growth and a sustained increase in the value of the company form the heart of Evonik's corporate strategy. Its activities focus on the key megatrends health, nutrition, resource efficiency, and globalization. Evonik benefits specifically from its innovative prowess and integrated technology platforms.

Evonik is active in over 100 countries around the world. In fiscal 2011 more than 33,000 employees generated sales of around €14.5 billion and an operating profit (adjusted EBITDA) of about €2.8 billion.

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