

Press Release



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First thermoplastic polyurethane based on CO₂ technology

Covestro AG
Communications
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- **New polyols reduce carbon footprint**
- **Further TPU developments for textile application and surface design**

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Under the name cardyon™, Covestro is developing and marketing new polyether carbonate polyols that are produced with the aid of carbon dioxide (CO₂). With Desmopan® 37385A the company now offers the first representative of a new series of thermoplastic polyurethanes (TPU) containing polyether carbonate polyols based on CO₂ technology.

Compared to conventional TPU materials, the new TPU products leave a lower carbon footprint and help close the carbon cycle. They also conserve fossil resources and, unlike many bio-based materials, do not compete with food production.

“With the new TPU, our customers can reduce the carbon footprint of their products and as a result play a pioneering role in sustainability vis-à-vis their competitors,” explains Georg Fuchte, TPU expert at Covestro. “This is especially true for companies in the consumer goods industry, which often manufacture products with a short lifespan.”

Excellent mechanical properties

Desmopan® 37385A has a hardness of 85 Shore A. Its mechanical properties are at least at the level of conventional TPU grades of similar hardness, and even exceed some of them. For example, it has a tensile strength of 36 megapascals. The elongation at break reaches 660 percent (DIN 53504). The plastic is designed for extrusion, but is also suitable for injection molding. “The application spectrum covers typical applications of conventional TPU grades



with comparable hardness and ranges from soles and upper shoe components to sportswear, handles and knobs to packaging for sensitive electronics,” says Fuchte.

Different product variants

Covestro plans to expand the new TPU series with variants of different hardness. A product with a hardness of 95 Shore A, for example, whose melt cures rapidly during processing, is well advanced in development. “We are thus targeting applications in which economic production in short cycle times is particularly important,” explains Fuchte.

Covestro cooperates closely with companies and research institutions to use CO₂ technology as a synthesis platform for other large-scale chemical raw materials. For example, work is underway on new CO₂-based polyols for rigid polyurethane foams that could be used, for example, in the thermal insulation of buildings, in automobiles and in sports equipment. At the Dormagen plant, Covestro already operates a production plant that produces CO₂-based polyols for flexible polyurethane foams. The latter are used in the commercial production of upholstered furniture and mattresses.

More TPU highlights at Fakuma

Yarn: Covestro is also showing innovative TPU developments on a petrochemical basis. These include uniform and glossy TPU and polyamide fibers for knitted fabrics. The fibers have a unique feel and are mainly used in sports shoes, where the use of knitted uppers is very fashionable. There are many possible decorative variations. The fabrics can be produced economically in a single knitting process, including automated production.

Surface structure: The outstanding imaging accuracy of TPU products of the Desmopan[®] series has been established for decades. Unique surface structures can be created by using different technologies. Covestro is currently working together with its partner J. & F. Krüth in Solingen to open up almost unlimited possibilities for surface design with the help of innovative and fully digital 3D laser engraving.

About Covestro:

With 2017 sales of EUR 14.1 billion, Covestro is among the world’s largest polymer companies. Business activities are focused on the manufacture of high-tech polymer materials and the development of innovative solutions for products used in many areas of daily life. The main segments served are the automotive, construction, wood processing and furniture, and electrical and electronics industries. Other sectors include sports and leisure, cosmetics, health and the chemical industry itself. Covestro has 30 production sites worldwide and



employs approximately 16,200 people (calculated as full-time equivalents) at the end of 2017.

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