



Press Release

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Covestro and Genomatica produce important chemical raw material using biotechnology

Breakthrough for HMDA, widely-used ingredient, paves the way for more sustainable coatings, apparel, adhesives and plastics

Material manufacturer [Covestro](#) and biotechnology pioneer [Genomatica](#) announced an important industry milestone to advance sustainability resulting from their partnership. The two companies have teamed to be the first to successfully produce significant volumes of a plant-based version of the chemical raw material HMDA (hexamethylene diamine).

HMDA, with a worldwide market of 2 million tons per year, is a key ingredient for a widely-used type of nylon (nylon-6,6), as well as an important component for raw materials for coatings and adhesives from Covestro. Up to now, HMDA has been manufactured from fossil feedstocks. Coatings and adhesives can be produced more sustainably thanks to bio-based HMDA, made from renewable feedstocks. Areas of application include automotive, construction, furniture, textiles and fibers.

Teams from Genomatica and Covestro have been working together to develop a commercial process technology for bio-based HMDA. The companies expect to produce ton quantities of high-quality material over the course of multiple production campaigns. Both partners are already processing and testing material from their initial production campaigns, and the resulting bio-HMDA is of high purity and quality. The companies plan to advance the program to full commercial scale, and Covestro has secured an option from Genomatica to license the resulting integrated GENO™ HMD process technology for commercial production.

Genomatica develops widely-used ingredients and materials using biotechnology and renewable, plant-based feedstocks rather than fossil

feedstocks and their associated extractive processing methods. These materials are used by brands and their suppliers in popular goods ranging from apparel to cosmetics. Covestro brings extensive know-how in the field of research, chemical process technology and application development. The cooperation for the development of alternative raw materials based on biotechnology advances Covestro's global program to achieve the circular economy.

Covestro established an R&D Competence Center for biotechnology to further strengthen its overall know-how in this field. Bio-based raw materials and biotechnology have also been identified as one of five focus areas at Covestro's Venture Capital (COVeC) approach.

"The increased use of alternative raw materials, including the utilization of biotechnology, is an important pillar of our approach to fully embrace the circular economy and help make it a global guiding principle," says Covestro CEO Dr. Markus Steilemann. "Our program with Genomatica, which complements our internal R&D, is one of our largest external funding of biotechnology R&D to date, and underscores both the field's importance to Covestro and the results it can deliver."

Replacing fossil-based raw materials

"This program is of great importance to us, because markets are increasingly asking for more environmentally compliant products based on renewable raw materials, which are just as powerful as their fossil-based alternatives," says Dr. Thorsten Dreier, global head of the Covestro business entity Coatings & Adhesives. "We can reduce this dependence on fossil feedstocks with innovative technology and our partnership. With a purely plant-based HMDA, we can significantly advance our corporate objective of CO₂-neutral production."

"Genomatica is committed to delivering a portfolio of sustainable materials that can help any brand reduce the carbon footprint of its products while maintaining the performance customers count on," said Christophe Schilling, Genomatica CEO. "Covestro is a valued partner that is playing a leading role in improving the environmental impact of many of today's most prevalent materials. Together, we are taking an important step to reduce greenhouse gas emissions for a broad range of products we use in daily life."

About HMDA:

- Hexamethylene diamine is a chemical raw material used to create materials ranging from nylon to coatings.
- The HMDA market was 2 million tons in 2021, nearly all of which is currently produced from fossil fuels. HMDA is a key ingredient in the USD 6.4 billion market for nylon-6,6.

- Each year, the automotive market uses 500,000 tons of polyurethane coating based on HMDA.

About Genomatica:

Genomatica is harnessing biology to remake everyday products and materials built by and for the planet. The company is developing and scaling sustainable materials derived from plant- or waste-based feedstocks instead of fossil fuels to help brands deliver on their climate goals and our planet's needs. Genomatica has already commercialized sustainable materials used in plastics, spandex and cosmetics, and is working on plant-based nylon, household cleaners and more. To learn more, visit [genomatica.com](https://www.genomatica.com).

About Covestro:

With 2020 sales of EUR 10.7 billion, Covestro is among the world's leading polymer companies. Business activities are focused on the manufacture of high-tech polymer materials and the development of innovative, sustainable solutions for products used in many areas of daily life. In doing so, Covestro is fully committed to the circular economy. The main industries served are the automotive and transportation industries, construction, furniture and wood processing, as well as electrical, electronics, and household appliances industries. Other sectors include sports and leisure, cosmetics, health and the chemical industry itself. At the end of 2020, Covestro has 33 production sites worldwide and employs approximately 16,500 people (calculated as full-time equivalents).

Forward-looking statements

This news release may contain forward-looking statements based on current assumptions and forecasts made by Covestro AG. Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Covestro's public reports which are available at www.covestro.com. The company assumes no liability whatsoever to update these forward-looking statements or to conform them to future events or developments.