Press Release

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Successful completion of the PUReSmart project

On the way to a closed loop for PU mattresses

- **Chemical recycling of both flexible foam raw materials is now proven**
- **Recticel coordinated four-years EU-funded research project**
- **Covestro drives further development through to industrial use**
- **Evocycle® CQ Mattress is Covestro's first chemical recycling initiative**

Now that the Europe-wide research project "PUReSmart" has come to an end, Covestro and the leading company Recticel are pleased with the positive outcome. They were able to demonstrate that the two main raw materials originally used in flexible polyurethane (PU) foam from mattresses can be recovered by chemical means to a high level of quality and purity. For the first time, a flexible foam sample has now been produced from fully recycled polyol and toluene diisocyanate (TDI), respectively. Both raw materials were obtained in Covestro's pilot plant in Leverkusen.

"With this we have fully achieved the goal of developing a technology to chemically recycle these products and convert polyurethane into a high-quality recycled material," says Bart Haelterman, R&D Director at Recticel. "For the first time in history polyurethane is truly fitting into a circular economy." The European Union funded the PUReSmart project with six million euros over a four-year period under its Horizon 2020 research and innovation program (agreement No. 814543).

Building on the PUReSmart project, Covestro is working with partners from the waste management industry to drive the further development of flexible foam recycling through to industrial use. "Our goal is to turn waste into valuable raw materials and to anchor the principle of the circular economy in our company and along the value chain with our partners to achieve this," says Christine Mendoza-Frohn, Head of Performance Materials Sales EMEA & LATAM of Covestro. "That's why we make innovative recycling a priority. We call this ongoing Evolution of Recycling: Evocycle® CQ. The first initiative of this kind is dedicated to the chemolysis of PU mattress foam and is called 'Evocycle® CQ Mattress'. This underlines our willingness to further invest in this technology," says Mendoza-Frohn.

Raw materials in high yield and purity

Unlike other chemical processes for recycling PU flexible foam, the process does not use fossil-based polyol. It requires only the pre-sorted foam from mattress waste, a glycol and an additive. During chemolysis, the polyol and toluene diamine (TDA), the precursor to TDI, are recovered in high purity and yield. After reprocessing, they can be used again as often as required for the production of

new PU flexible foams. This ensures a sustainable circular economy for PU flexible foam with a reduced CO_2 footprint.

The goal: an industrial value cycle

Covestro's first initiative, Evocycle® CQ Mattress, transforms end-of-life mattress foam directly back into its main building blocks, giving old foam a new life within an optimized circular system. The company aims to close the loop in the PU mattress industry by converting waste into valuable resources, reducing the use of fossil fuels and significantly lowering CO_2 emissions. However, there are still many steps to be taken before this vision becomes reality, especially with regard to upscaling the process.

The journey began for Covestro in 2019, leading to the start of a pilot plant at its Leverkusen site as early as 2021 to verify the positive laboratory results achieved to date. If the trials continue to be successful, the company plans to build a larger recycling plant to validate the technology in an industrial simulation environment.

However, an effective and cost-efficient supply of used PU mattresses is also crucial to building a circular economy. To achieve this, large quantities must be collected, broken down into individual components such as springs, textiles and foam parts, and the foam components pre-sorted according to purity and density. This can only succeed in close cooperation with partners – in this case in the recycling industry. Covestro is already cooperating on this with companies such as Interzero and Ecomaison (formerly Eco-mobilier).

About Recticel:

Recticel is a Belgian industrial group with a strong European dimension. It offers an extensive range of industry-leading solutions for industrial and domestic applications, providing sustainable answers to societal challenges, including climate protection and conservation of resources. Recticel has committed to the SBTi to become a net-zero emission company on Scopes 1 and 2 by 2030 and to reach net-zero on Scope 3 by 2050 at the latest.
Find out more at www.recticel.com

Its Engineered Foams division, operating on 4 continents, offers a comprehensive portfolio of polyurethane foams and systems – spanning industrial, mobility, consumer & medical care, living & care applications. Many everyday consumer goods would be unimaginable without their unique benefits, which include silencing, sealing, filtering, carrying, protecting, supporting and comforting attributes. Find out more at www.recticelengineeredfoams.com

About Covestro:

Covestro is one of the world's leading manufacturers of high-quality polymer materials and their components. With its innovative products, processes and methods, the company helps enhance sustainability and the quality of life in many areas. Covestro supplies customers around the world in key industries such as mobility, building and living, as well as the electrical and electronics sector. In addition, polymers from Covestro are also used in sectors such as sports and leisure, cosmetics and health, as well as in the chemical industry itself.

The company is committed to becoming fully circular and is striving to become climate neutral by 2035 (scope 1 and 2). Covestro generated sales of EUR 18 billion in fiscal 2022. At the end of 2022, the company had 50 production sites worldwide and employed approximately 18,000 people (calculated as full-time equivalents).

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