Press Release

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Covestro explores additional fields of application for carbon dioxide

CO_2 on the way to becoming an all-around talent

- **Use in insulation boards conceivable**
- **New, broad-based research project**
- **Climate gas soon to be in flexible foams for mattresses**

The action radius of carbon dioxide as a chemical building block for plastics may soon be significantly expanded. Materials manufacturer Covestro is collaborating with partners in industry and research to explore how CO_2 can also be used as a component in insulating foam and other products of the plastics industry. The three-year “Dream Resource” research project was launched for this purpose, with funding from the German Federal Ministry of Education and Research (BMBF).

“We are now taking the next step on the way to establishing carbon dioxide as an alternative raw material in the chemical and plastics industry,” said project coordinator Dr. Christoph Gürtler, head of catalysis research at Covestro. “With CO_2 as a carbon source, we can increasingly dispense with traditional, fossil sources such as petroleum. After successfully incorporating it in a key precursor to flexible foam, we are now tackling the next challenge.”

At least 20 percent CO_2 content planned

In the new project, a process is to be developed for producing plastic components with a CO_2 content of at least 20 percent. The remainder would come from the petroleum derivative ethylene oxide (EO), which is very difficult to handle. Laboratory tests have already demonstrated that it is possible to react CO_2 with EO. “However, technical implementation still requires a lot of research,” explained Gürtler.

CO_2 and ethylene oxide could be used, for example, to make the building blocks (polyols) for rigid polyurethane foam, a common insulating material in buildings and refrigeration systems. Another possibility is molded foam for automobile seats. CO_2-EO compounds could also feasibly be used to produce additives.

Managed by Covestro, the project also has members from the academic community: RWTH Aachen University and Berlin University of Technology. The Dream Resource consortium further includes the companies PSS Polymer Standards Service, Puren and BYK Additives & Instruments.

In the Production Dreams project, which has been running for some time, Covestro and its partners have already developed the technology required to use CO_2 in elastomers. These are solid but moldable plastics used in articles such as hoses and seals.

Another process already is in the implementation stage: It is about producing polyols for flexible polyurethane foam based on CO_2 and the reactant propylene oxide. Covestro commissioned a new production plant for this technology at its Dormagen site, outside Cologne, Germany in June. The new foams are initially intended for use in mattresses and upholstered furniture. The first products are scheduled for market launch in the near future.

About Covestro:
With 2015 sales of EUR 12.1 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, electrical and electronics, construction and the sports and leisure industries. Covestro, formerly Bayer MaterialScience, has 30 production sites around the globe and as of the end of 2015 employed approximately 15,800 people (full-time equivalents).

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