

News Release



Leverkusen
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A versatile class of plastics celebrates its anniversary

80 years of polyurethane

Covestro AG
Communications
51365 Leverkusen

- **Covestro drives the success story forward**
- **Innovative and sustainable projects that make the world a brighter place**

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Polyurethanes have changed the world. We have them to thank for energy-efficient refrigerators, comfortable upholstered furniture, safe car seats, protective coatings and lightweight composites (see video at <https://youtu.be/Brwl9ASvSJs>). 80 years ago, Dr. Otto Bayer discovered polyurethane chemistry virtually by accident. His perseverance and creativity launched the sweeping success of one of the world's most versatile plastics – and the success story is far from over.

“With curiosity and courage Covestro is advancing the development of polyurethanes to make the world a brighter place,” says Daniel Meyer, Global Head of the Polyurethanes segment. “We don’t leave anything to chance but are specifically pushing existing boundaries to make more efficient insulating materials, even lighter materials, and even more resource-saving products possible.”

All new developments must meet Covestro’s sustainability targets. “We take a comprehensive approach to the entire product life cycle, including social, ecological and economic aspects,” says Daniel Meyer. “Our products are manufactured on the basis of carbon. Our goal is to draw the maximum benefit from the carbon we use.”

Even more efficient refrigerators

Polyurethanes make an important contribution to securing global food supplies: Some 95 percent of the world’s refrigerators are thermally insulated with rigid



polyurethane foam – and the Baytherm[®] Microcell polyurethane system can raise their insulating performance by another ten percent. That means greater energy and cost savings in households and reduced CO₂ emissions. A leading appliance manufacturer is already using this system in its production.

Carbon dioxide as a raw material

Covestro has developed a method for using the greenhouse gas CO₂ to synthesize polyurethane components. It markets these raw materials, known as polyols, under the brand name cardyon™ for the production of flexible polyurethane foam, and operates a new production plant for them at its Dormagen site. Up to 20 percent of the fossil raw materials previously used in these products have been replaced by carbon dioxide. A special catalyst gives the molecule the required level of reactivity.

New model for affordable housing

Providing fast, affordable and sustainable housing is a global challenge. Covestro is breaking new ground in its search for creative solutions. Together with industry partners, governments, government agencies and society, Covestro is developing models for affordable housing and running specific projects locally. One example is a multipurpose building in Bergisch Gladbach, Germany, that was planned and built by the local council, the French prefabricated building manufacturer Logelis and Covestro.

Next-generation rotor blades

In keeping with its sustainability strategy, Covestro develops materials and technologies for generating renewable energy – with a focus on wind power. The company has developed an innovative technology for manufacturing rotor blades for wind turbines. The rotors are fabricated in a special process from a polyurethane resin and a fiberglass fabric. For the resin Covestro recently received the vital DNV GL certification for China and can now supply its products to rotor blade manufacturers there.

Proud past, exciting future

Dr. Otto Bayer could only have dreamed of such developments. But even 80 years ago, he lived out Covestro's corporate values: curious, courageous, colorful. He stubbornly pursued his goal of enhancing the efficiency of plastics manufacturing and en route discovered polyurethane chemistry, which became his passion. He even stuck to his guns when his superiors shook their heads at the bubbly mass he produced in his experiments, saying it was at most a "substitute for Swiss cheese". Far from it! With incredible creativity he and his team discovered a whole string of potential applications.

Polyurethanes: Milestones of a success story

1937 – Otto Bayer invents polyurethane chemistry



1943 – New brands: Desmodur[®] (isocyanates) and Desmophen[®] (polyols)
1952 – First flexible foam made of TDI and polyester polyols
1958 – Premium coatings made of Desmodur[®] and Desmophen[®] (“DD coatings”)
1962 – Premiere of rigid polyurethane foam as an insulating material in refrigerators
1967 – First car with an all-plastic body at the K’67 trade show
1970 – Metal-faced sandwich panels for building envelopes
From 1970 onwards – Introduction of Baydur[®] polyurethane systems for rigid integral foams
1980 – Car seats with various foam hardness levels
1990 – Viscoelastic foams open up a new dimension in comfort
1995 – Blowing agents with no HCFCs
1998 – Introduction of the Baypreg[®] spray system for composites
2000 – Polyols for coatings and adhesives based on Impact[™] technology
2005 – Advances in polyurethane composites
2012 – Baytherm[®] Microcell for insulating refrigeration systems
- CO₂ technology
2016 – Market launch of cardyon[™]
- First rotor blade made of polyurethane resin in Asia
In the future – continuously pushing the boundaries of innovation

About Covestro:

With 2016 sales of EUR 11.9 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 15,600 people (calculated as full-time equivalents) at the end of 2016.

*This news release is available for download from the Covestro press server at www.covestro.com. You can find a **video** at <https://youtu.be/Brwl9ASvSJs>.*

For more information go to www.covestro.com.

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Forward-Looking Statements

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