



Sustainable Recycling Solutions for PU Mattresses

PROJECT DESCRIPTION

Evonik has used its expertise in polyurethane (PU) chemistry to develop an efficient chemical recycling process for converting flexible PU foams back to the original raw material polyol and the TDI precursor TDA. Evonik's new hydrolysis recycling process has the potential to achieve circularity in the flexible PU foam industry.

With huge amounts of polyurethane (PU) waste being generated from the millions of mattresses that are discarded globally each year, it is imperative that a sustainable and economically viable solution is found, thus, enabling a circular economy. Presently, only a small percentage of post-consumer foam is recycled and used in applications such as carpet underlay. Due to high volumes of PU waste materials, chemical recycling is the most promising route to recovering individual monomers, which could then be reused to produce new foams.

One significant drawback of already commercially established chemical recycling processes is that in most cases, only 30 pphp (parts per hundred parts of polyol) of the resulting recycled polyols can be used in new foam formulations. Whereas with Evonik's new hydrolysis process, up to 100 pphp can be used, whilst producing foams of a comparable quality and performance level to that produced with virgin raw material.

PROJECT IMPACT

With the Evonik polyurethane recycling program we support the transition of the flexible foam industry towards an even higher level of sustainability.

Sustainability Without Compromise

The use of our recycled polyol in the production of PU foams will enable foam producers to meet their own sustainability targets, while continuing to deliver high-quality PU products.

Reducing Carbon Footprint

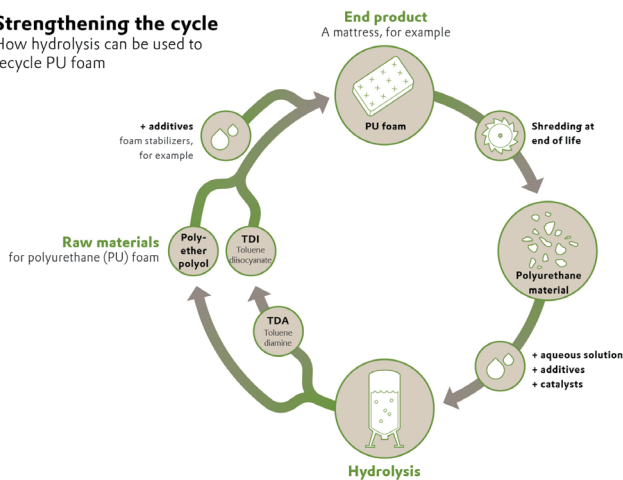
Life Cycle Analysis of our technology has examined the ecological footprint of the new recycling process in detail. The review shows that the process reduces the carbon footprint significantly in comparison to mattress production using fossil raw materials.

Closing the Loop

By converting PU mattress at the end of their useful life into high quality raw material - instead of landfilling or incinerating them - we aim to keep the carbon from fossil resources in the loop, thus conserving scarce resources.

Strengthening the cycle

How hydrolysis can be used to recycle PU foam



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ABOUT EVONIK

Evonik is one of the world leaders in specialty chemicals. The company is active in more than 100 countries around the world and generated sales of €18.5 billion in 2022. Evonik goes far beyond chemistry to create innovative, profitable, and sustainable solutions for customers. About 34,000 employees work together for a common purpose: We want to improve life today and tomorrow.

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