

# Method for highly efficient depolymerisation of polyurethane

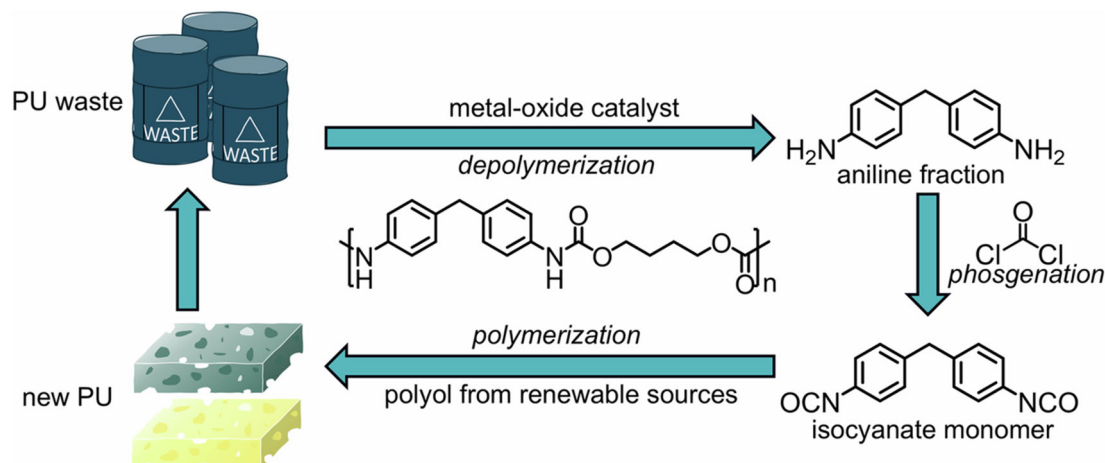


Figure summarising the process relying on the use of a metal-oxide catalyst to convert polyurethane waste into aniline, which is the precursor for synthesizing new polymers.

Ref. Nr

6.2636

Keywords

Polyurethane, recycling, plastic, carbamate, amine

Intellectual Property

PCT/EP2025/088858

Publications

Nature Communications volume 16, Article number: 4322 (2025)

Date

13/04/2026

## Description

Polyurethanes (PUs) are versatile polymers finding applications across diverse sectors ranging from construction to household products. Current recycling strategies rely on homogenous catalyst making separation of the catalyst and products challenging.

The technology is a process using a metal oxide heterogeneous catalysts that efficiently depolymerises PUs by cleaving the carbamate bond to yield anilines. The process is applicable to other carbamate compounds to obtain amine products.

## Advantages

- Near quantitative conversion of PUs and excellent yield of amine (monomer) product.
- Highly stable and reusable catalyst.
- Scalable.

## Applications

- Polyurethane recycling.
- Manufacture of amines from PUs for the synthesis of virgin PUs or other uses.