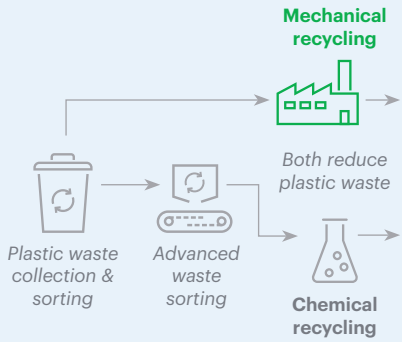
Recycling technology

Mechanical recycling

For rigid plastic waste (PP and HDPE)

What is it?	Re-processing plastic waste into new products without changing the chemical structure
Applications	Recycled plastic for everyday applications

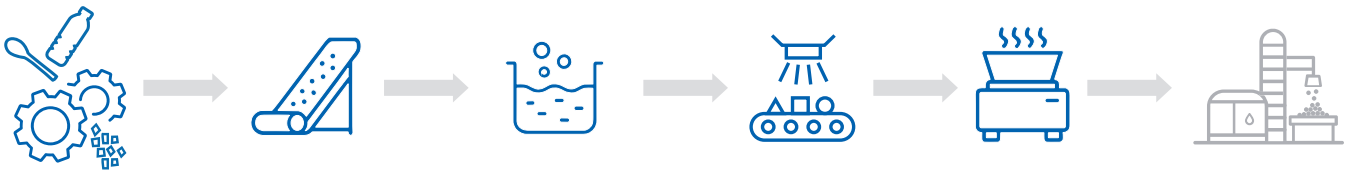


Ever imagined your yogurt cup could become a suitcase?

At LyondellBasell, mechanical recycling transforms everyday plastic waste like shampoo and yogurt cups into high-quality polymers. These recycled materials are then used to create a range of products – from everyday packaging like cosmetic and detergent containers to durable, stylish travel gear and toys.

How it works

Empty containers, like shampoo bottles and butter tubs, are first shredded, followed by a separation process and intensive washing. High-tech cameras then sort the shredded material – called flakes – by color. Various advanced sorting techniques are used to further purify the material. Finally, the cleaned flakes are heated and processed into pellets. These pellets are ready for a new life as raw materials for high-quality products.



Benefits

- Integrating advanced sorting techniques, optical sorting and optimized washing processes enhances the quality and versatility of recycled plastics.
- At our innovation facility in Frankfurt, designed to simulate industrial conditions, we are pushing the boundaries of purification – driven by significant investments in research and development across plastic sorting, decontamination, compounding and analysis.

Facts

- Our mechanically recycled materials are sold under the *Circulen*Recover brand.
- LyondellBasell has mechanical recycling facilities in China, Belgium, the Netherlands, Germany, Italy, Poland and the United States.
- *Circulen*Recover grades produced at Geleen site, the Netherlands, have a product carbon footprint (PCF) that is at least 45% lower than comparable virgin polymers on a cradle-to-gate basis.[1]
- At our Geleen site, we process around 35,000 tons of rigid plastic waste per year, transforming it into high-quality recycled polymers.

[1] The cradle-to-gate PCF reduction is based on a comparison of life cycle assessment (LCA) results that exclude emissions from activities downstream of the LYB factory gate, including emissions associated with transport, distribution, use and end of life waste management.

Quotes/ Outlook

Gerben Meier
Vice President, Global Product Development and Circular Design

"Our R&D teams across the globe are researching advanced sorting, decontamination and trace analysis, which provide valuable insights that directly benefit our sites by identifying opportunities for process improvement."

Eelko Bos
Site Manager, Geleen

"At our well-established Geleen site in the Netherlands, we operate advanced technology for mechanical recycling, which serves as the blueprint for scaling operations at our new Jurupa Valley site in California."