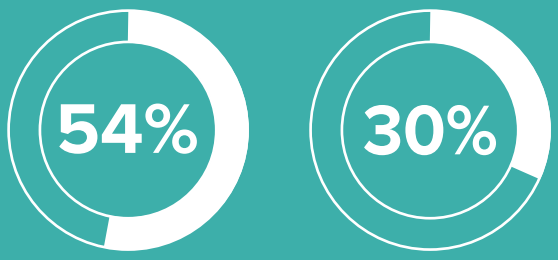
Advanced mechanical recycling *at a glance*

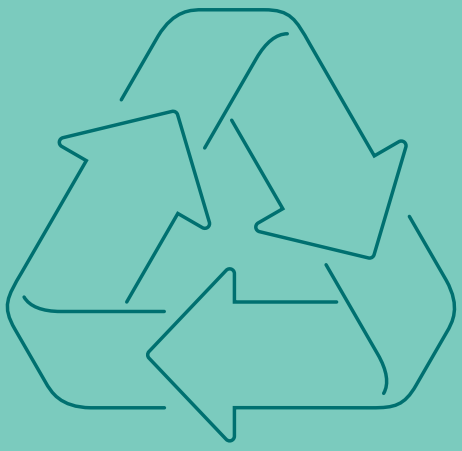
The amount of plastic waste burned or buried in landfills in the EU*:



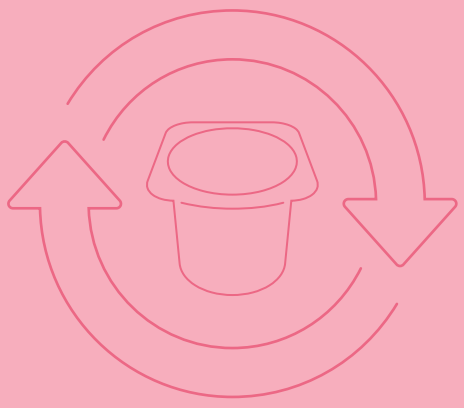
burned landfilled

*Plastics Europe, 2021, "Plastics – the Facts 2021. An Analysis of European Plastics Production, Demand and Waste Data."

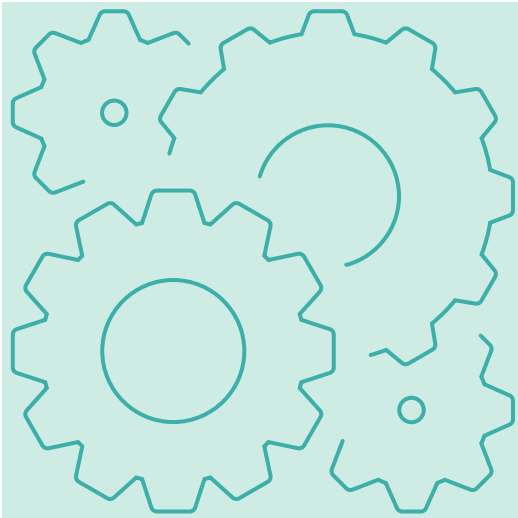
Advanced mechanical recycling (AMR) has the potential to **close the gap** between the amount of valuable plastic waste that is lost and the ever-growing demand for high-quality recycled content to meet mandatory recycling and recycled content targets.



AMR helped create the **world's first closed-loop system for post-consumer polystyrene** (HIPS) by identifying, sorting, and removing impurities from HIPS found in mixed plastic waste.



AMR can help **achieve circularity for polymers beyond PET beverage containers**, including: **PE, PP, PS, PET, and other polymers**, both rigid and flexible



The AMR process

The production of high-quality recyclates derived from mixed waste generally requires the following steps:

Dedicated **pre-sorting**, where plastics are sorted based on type and colors

Shredding, where plastics are cut into the shapes and sizes needed for washing

Hot washing to remove impurities

Drying through a mechanical and thermal drying process

Enhanced flake sorting to improve purity levels even more

Deodorization to reduce odors

Enhanced extrusion, another step to improve the quality of pellets

Super-clean technology, a final purification step – if needed - before pellets go into production.

Standard mechanical recycling process

Advanced mechanical recycling process

How do mechanical and chemical recycling processes differ?

Mechanical recycling

Mechanical recycling shreds plastic waste into flakes, removes impurities, and extrudes, or 'remelts' it into pellets that can be used to make new products.

While the molecular structure of the polymer is preserved, each new reprocessing cycle degrades the material (depending on material type), eventually leading to product loss.

The upgraded mechanical recycling process, which we call advanced mechanical recycling, includes hot washing, enhanced extrusion, and super-cleaning. With these enhanced steps, we can transform post-consumer plastic from different material streams (including mixed waste) into high-quality recycled plastic content to meet demand and achieve targets.

Chemical recycling

Chemical recycling technologies can break plastic down into its chemical building blocks (monomers, or raw materials such as oil).

The various chemical recycling technologies (including depolymerization, pyrolysis, gasification, and solvolysis) differ widely in their feedstock specifications as well as in the type of output they create (e.g., plastic-to-plastic and plastic-to-fuel).

Plastic-to-plastic: Chemical recycling technologies with the potential to recycle complex plastic waste streams and reprocess recycled materials into new plastic products.

Plastic-to-fuel: Chemical recycling technologies that produce fuel from plastics. These processes fall under the category of 'energy recovery', not 'material recycling'.

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