

IMPROVING RECYCLED POLYPROPYLENE QUALITY TOWARDS FOOD-CONTACT APPLICATIONS



PROBLEM ENCOUNTERED AND OBJECTIVE

Polypropylene food packaging is widely used for rigid containers, caps and trays, but recycling it back into food-contact applications remains difficult. Post-consumer PP waste often contains mixed plastics, films, labels, inks, adhesives and unknown contaminants that can reduce recycle quality and safety. The objective is to identify how improved sorting, washing, contaminant control and design-from-recycling principles can help transform collected PP food packaging into higher-quality recycled material suitable for demanding circular packaging applications.

MAIN RESULTS / OUTCOMES

STOPP demonstrated that post-consumer PP food packaging can be processed through sorting, washing, wind-shifting, super-cleaning and extrusion to improve recycle quality. Advanced analysis showed that each step contributes to reducing volatile organic compounds and non-intentionally added substances. Wind-shifting was especially relevant for removing light fractions such as films, paper and dust. The results confirm that recycling performance depends not only on technology, but also on cleaner feedstock and packaging designs that avoid problematic inks, labels and adhesives.

PRACTICAL RECOMMENDATIONS

Packaging producers should design rigid PP packaging as clean mono-material streams, with limited decoration and recycling-compatible labels, inks and adhesives. Waste managers should separate rigid PP food packaging from films and non-plastic residues as early as possible, using sorting and air-based removal steps where appropriate. Recyclers should combine mechanical processing with contaminant monitoring and quality checks. Collaboration between designers, collectors, sorters and recyclers is essential to produce safer, higher-value recycled PP for future packaging applications.

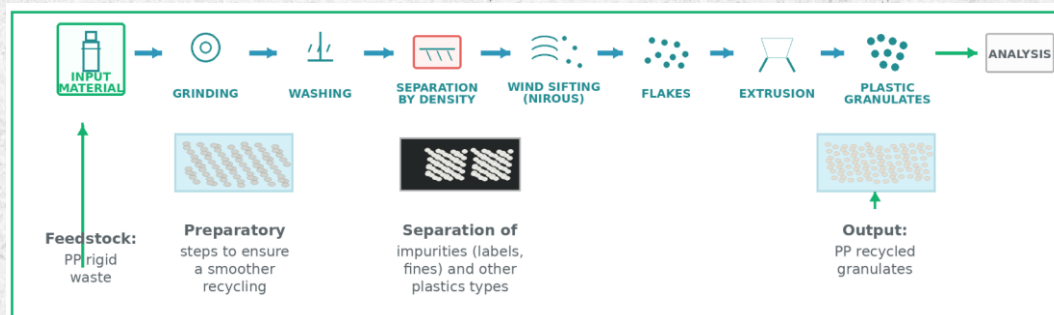


Figure 1. Overview of feedstock pretreatment and mechanical recycling steps.

Further information

This information has been extracted from D5.2 and can be found here: [STOPP REPORTS](#)

About this abstract

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STOPP is a Horizon Europe project aiming to transform food plastic packaging through the “5 Rs”: Refuse, Reduce, Redesign, Reuse, and Recycle. Aligned with the EU’s Packaging Directive, it develops training materials and strategies to promote circular economy solutions. Engaging stakeholders, STOPP advances recycling, reusable packaging, and consumer awareness for sustainable food packaging.



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