RePliCa

Publieke samenvatting / Public summary

Aanleiding

As of now, no recycling technology for post-consumer polyolefins is likely to gain a positive opinion from the European Food Safety Authority (EFSA). Still, starting in 2030, all plastic packaging—including food packaging— must meet minimum recycled content requirements under the newly adopted (2025) Packaging and Packaging Waste Regulation (PPWR). The RePliCa project aims to develop food-grade recycling for the most common polyolefin-based packaging found in Dutch lightweight packaging waste: single-layer HDPE cans used for pasteurised milk, which are designed for recycling. A recent study by project partner WUR on these cans identified several contamination routes, including migration from other packages during sorting, migration from the cap and label and degradation from the HDPE resin. Conventional mechanical recycling methods typically fail to remove such contaminants effectively. Without feasible technical solutions to produce safe, food-grade recycled polyolefins, the industry will face serious challenges and may need to switch to alternative raw materials, disrupting established, optimised packaging systems.

Doelstelling

Over the 4.25-year project period, Morssinkhof-Rymoplast, SABIC, Farm Dairy, WUR, and KSI aim to build a costeffective value chain for food-grade recycled HDPE (rHDPE) focused on natural HDPE waste from milk cans. Advanced sorting methods (AI, watermarking) along with post-treatment decontamination will be explored to identify the best route to meet food-grade standards. A demo-

Projectinformatie / Project information

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Algemene informatie / General information

Penvoerder / Secretariat
Morssinkhof Plastics Heerenveen B.V.

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line will be installed in Heerenveen for mechanical recycling of HDPE sourced from separately collected PMD waste. This demo line, with a 10,000-ton annual capacity, will include additional sorting steps and serve as the basis for seeking a positive EFSA opinion on the new technology. Through this project, the partners demonstrate their commitment to sustainable, circular material use and readiness for the PPWR, mandating recycled PE content in food packaging by 2030. Following the project, the approach will be expanded to other PE waste streams, the technology will be licensed within and beyond the Netherlands, and, where feasible, new plants will be established in the EU. Additionally, the applicability of the developed approach and technology to other polyolefin packaging types will be assessed.

Korte omschrijving

The 1st phase consists of experimental development focused on food-safety, the processability of the recycled material and the preparation for the demo-line (basic design, ordering long-lead items). The food-safety approach is driven by WUR and includes identification of critical contaminants, odour-active compounds and NIAS. The efficiency of AI-assisted sorting will be assessed in the context of food-standards, aiming for >99% separation of food and non-food material. Pilot-scale trials will explore various physical and thermal decontamination techniques. The findings will be validated in semi-industrial trials, incl. migration tests. Processability (driven by SABIC and Morssinkhof) will identify bottlenecks, incl. preventing aging in repeated recyclization and reaching a consistent product quality. The 2nd phase concerns the construction of the demo-line, incl. additional sorting (AI and/or watermark) and adjustment of moulds and demonstration of its operation. The material produced will be validated on industrial scale at Farm Dairy in blow-moulding cans. A dossier will be filed at EFSA and the production will be monitored.

Resultaat

Contaminant profile of rHDPE established with

respect to food-grade quality - Trials establishing efficiency of AI-sorting and/or watermarktechnology - Optimal recycling approach selected for food-grade HDPE recycling - Adapted process steps, incl. additivation, mould adjustments, repeated recyclization behaviour - Recipe for compounding HDPE with at least 30% recycled content, suitable for blow moulding dairy cans - Business model insight, stakeholder alignment, optimized value chain - Installation and validation of demo-line for food-grade HDPE recycling (10,000 ton/year) - An application file for an EFSA assessment has been submitted - PPWR requirements can be met in 2030 for dairy cans in the Netherlands - New knowledge about food-grade recycling of plastics, scale-up potential

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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