

Multi2Recycle

Evaluation of the recyclability of flexible food packaging materials in function of their composition and the resulting shelf-life of food products

Context

Plastic food packaging materials preserve and protect the quality of food products and extend their shelf-life. Seemingly 'simple' foils for the packaging of a broad range of food products (e.g. cheese, meat, etc.) often consist of multiple layers of different polymers, each contributing their own functionality to the overall packaging. Due to the strong physical attachment of these layers, separation to polymer level is not possible and thus the recycling is hindered. Therefore, the main valorisation route of these multilayer packages is through incineration with energy recovery. Both on European and Belgian level ambitious objectives for the recyclability of food packages have been stated. Based on the European Plastic Strategy, 55% of all plastic packaging needs to be recycled by 2030, while the Belgian Food Industry (FEVIA) states that 65% of plastic food packaging should be recycled by 2023. As a consequence, the search for recyclable alternatives with similar functionality has started.

Objectives

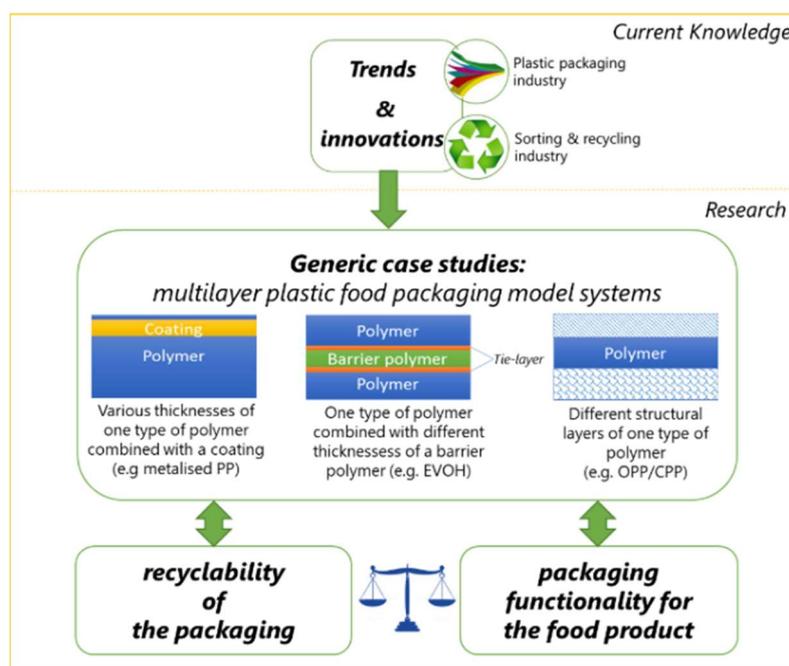
“How can a multilayer plastic food packaging be recyclable and at the same time have the optimal barrier properties to ensure the shelf-life of food products?”

The research approach itself consist of two important segments:

1. A knowledge segment: an overview will be given of the latest trends and innovations in the packaging industry and the sorting/recycling industry, relevant to enhance the circularity of food packages.

2. A research segment focussing on selected generic cases and tackling the following topics:

- evaluation of the impact of the packaging composition (e.g. type and thickness of barrier materials) on the mechanical recyclability of the packaging
- defining recycling limits i.e. tolerance level of barrier material for efficient recycling
- evaluation of the recycling limits in function of the packaging functionality for selected food products
- validation of the recycling limits in the sorting and recycling industry



Multi2Recycle Project Sheet

Finally, design guidelines for multilayer plastic food packaging materials will be established which ensure recyclability of the packaging as well as the optimal barrier properties for the packed food. The output of this project should facilitate decisions regarding the design of future packaging and other currently used multilayer plastic food packaging materials.

Project consortium

The project consortium combines unique and complementary competences in material characterisation, functionalisation, packaging properties, mechanical recycling of polymers and advanced processing techniques. The existing scientific knowledge of the partners will accelerate the step towards industrially relevant, industry-based case studies.

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