

Feasibility of pilot production for biobased coating in paper packaging

Publieke samenvatting / Public summary

Aanleiding

In the last two decades, most alternatives to single-use plastic have failed to be adopted massively because of one or more inherent challenges. Biobased polymers secrete microplastic when breaking down, are expensive, non-recyclable and cannot be used in hot applications. Fossil-based plastics also release microplastics and have limited recyclability. Paper packaging is currently the most feasible alternative to plastic packaging as its bio-based, renewable, economical and recycling infrastructure is excellent: 80% of paper is already being recycled in Europe. However, for applications such as liquid and oily foods and hot beverages, paper requires a coating to prevent leaking and loss of integrity and to provide barrier properties. Currently, available coatings render the paper non-recyclable and should be avoided. Sustanix developed a biobased, biodegradable and 100 % recyclable coating to achieve sustainable packaging for these demanding food applications. The coating is based on functionalized cellulose from agricultural residues. This material does not release any microplastic and is fully recyclable, compostable and free from persistent chemicals.

Doelstelling

This project's primary goal is to study a pilot project's technical and economic feasibility for 100 % biobased and recyclable coating. The insights will form the basis of a substantiated go/no go decision for a coating pilot project at the Brightlands Chemelot Campus (35 kg/day).

Projectinformatie / Project information

Projectnummer / Project number
TESN23-03620498

Subsidiebedrag / Grant amount
€ 122.290,00

Algemene informatie / General information

Penvoerder / Secretariat
Sustanix Materialtech B.V.

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Korte omschrijving

The developed bio-coating is currently at (TRL-5) and producing 500 grams per day at laboratory level where in this project, the studies are focused on the following feasibility aspects: 1) Literature studies on further reduction of energy consumption, pressure requirements, improvement of reaction kinetics of the developed polymer synthesis when produced on pilot scale 2) Understanding of water based formulation for long lasting stability for consistent coating performance 3) Market survey to ascertain relatively cheap raw material sources to decrease the overall cost of production 4) Competition analysis of alternative market products 5) Evaluate front end engineering design for industrial coating methods for suitability in scale-up 6) Toxicology and life-cycle analysis study for the developed polymer 7) Detailed characterization of the polymer prototypes 8) Patent research to understand the IP possibility, Freedom-to-operate, and various avenue of patents like patenting the process, application and or composition 9) Evaluative study to combine insights for the intended pilot's go/no-go decision.

Resultaat

The final result entails a substantiated conclusion about the technical and economic feasibility of the pilot project to further develop the biobased coating on a 35 kg/day scale by 2024.

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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