

USABLE PACKAGING Project

An overview for USABLE Stakeholders

02.07.20-Webinar

The Usable Packaging project receives funding from the Bio-Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 836884.

About Usable Packaging

- Part of the **EU Horizon 2020** research and innovation programme, funded by EU body the Bio-Based Joint Undertaking (BBI-JU) under **Grant Agreement No. 836884.**
- **Three-year project** which opened on 1 June 2019 and will close on 31 May 2022.
- Brings together **a consortium of 25 partners** from all over Europe Co-ordinated by Prof. Jose M. Lagaron from the Consejo Superior de Investigaciones Cientificas (CSIC) of Spain.
- The key objective of Usable Packaging is to develop **bio-based packaging products that are biodegradable, compostable and/or organic recyclable.**





Goal & objectives of project USABLE

Goal

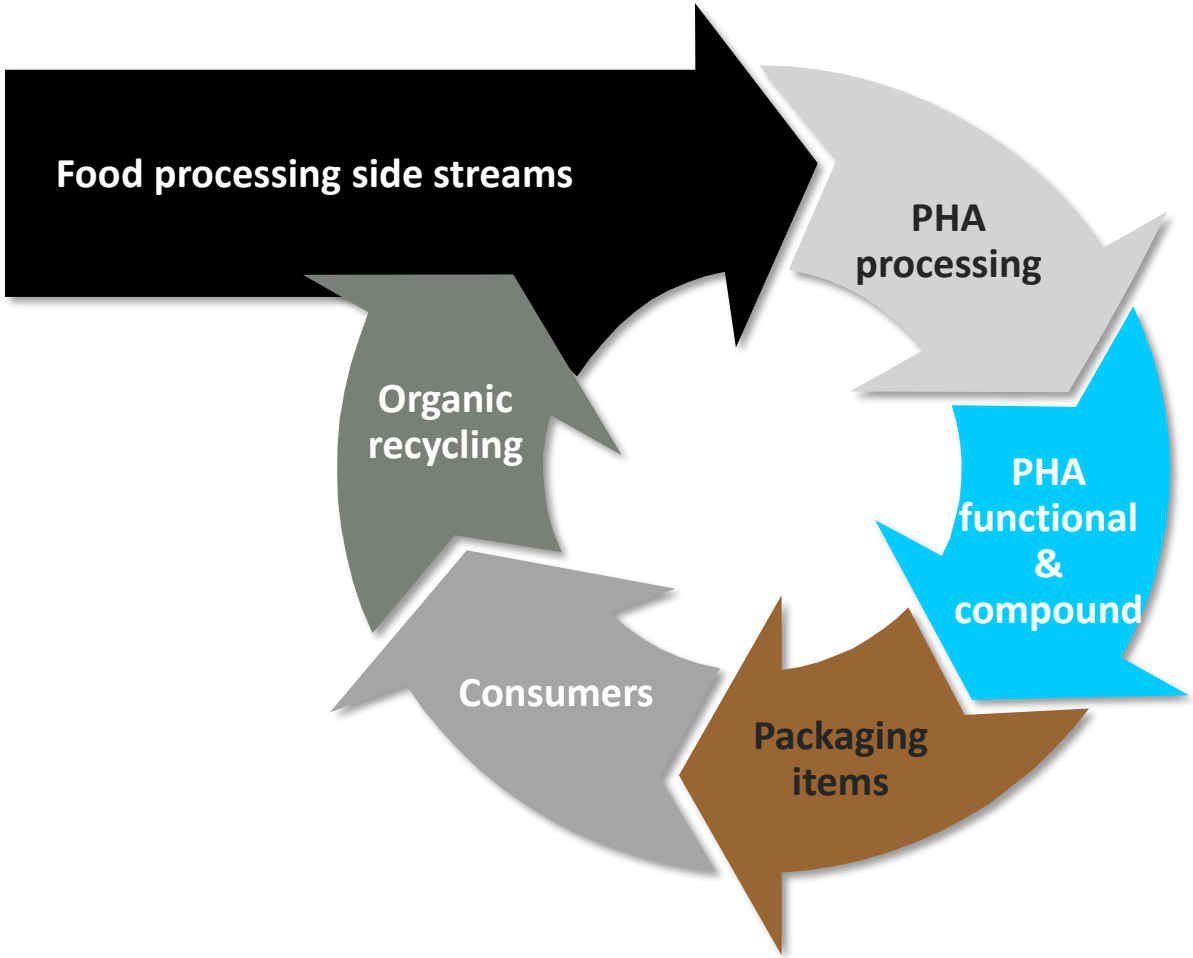
USABLE Packaging aims to remove the barriers to market uptake by providing a ***favorable technical and economic framework to bio-based polymers*** *and related end-products derived from food-processing by-products streams, not considered waste according to current legislation*

To reach its goal, the project will ***involve a multi-stakeholder consortium of 25 partners*** *(among them 15 industries) working over a three-year time frame*

Objectives

- The creation of a **portfolio of bio-packaging solutions** for food, drinks, pharma and clothing;
- To develop biopackaging solutions with **clear end of life scenario options**, such as **organic recycling**;
- The definition of **new vertically integrated** and **circular value chains**:
- The optimization of **PHA functionalization to match requirements for end use in packaging;**
- The optimization of the **processes for transformation** of functional PHA **into packaging;**
- **Bio adhesive layers** to replace petrochemical peers, by on-line functionalisation;
- The **reduction of the environmental foot print** of the plastic packaging sector;
- Keeping **low CO_2 emissions**, through local feedstocks supply network.

USABLE PACKAGING builds upon the entire model circular value chain



USABLE Packaging Concept

- **USABLE Packaging project will build up a complete new value chain where a low cost and widely available feedstock, such as by-products and side-streams of the food processing industry and the correlated biogenic CO_2, are converted into poly-hydroxy-alkanoates (PHA) by advanced processes using both mixed and pure microbial cultures.**

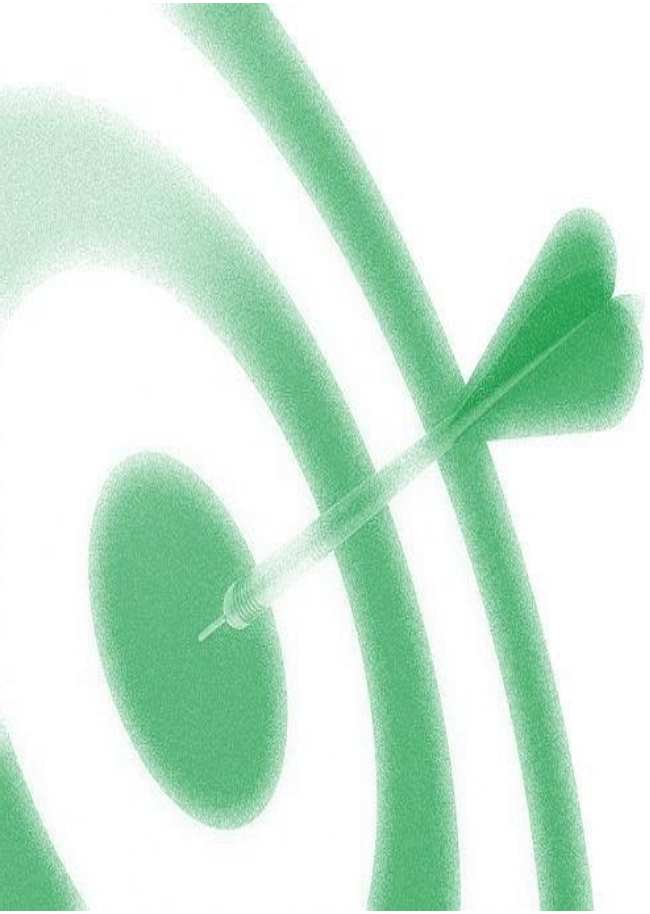
- **Base materials will be mostly produced through USABLE fermentation technology; ranges of target properties are tuned by the functionality of PHA during the production or with post reactive compounding.**

- **8 packaging items with market relevant properties will be realized though state of the art processing technologies, such as compounding, blown film processing, electrospinning, roll-to- roll lamination, flexographic lacking coating technology, multilayer coextrusion.**

- **Functionalisation will be varied to achieve target physico-mechanical and chemical properties (e.g. flexibility, tear strength, barrier to liquids and gases, adhesion strength), so that all components of complex packaging structures will be produced with the same technology and base chemistry, with the great advantage of a common sustainable end-of-life destination, such as either recovering the polymers for renewed compounding or composting. In this way a portfolio of bioplastics with defined and targeted performances will be designed to cover a wide range of packaging.**

- **Application technologies include: Hot tack film; Medium Barrier Food packaging; High Barrier Food packaging bags; Pharma liquid sachets; Low SIT food packaging deep freeze packaging; High Absorption food packaging; Transparent design packaging.**

Main Objectives



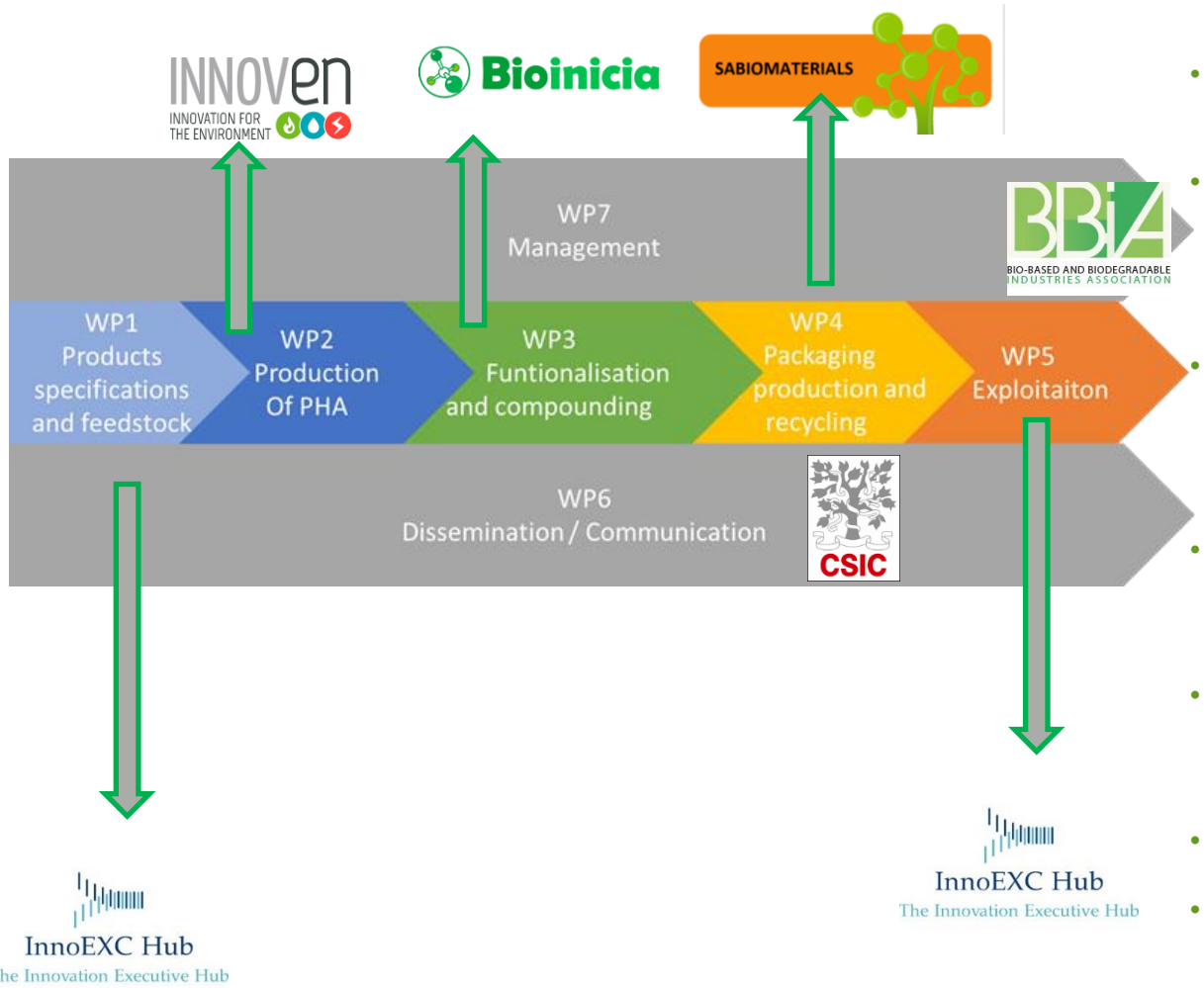
- The **reduction of the environmental footprint** of the plastic packaging sector.
- The creation of a **portfolio of bio-degradable plastic packaging solutions** to cover packaging needs for food, drinks, pharmaceuticals and clothing.
- The development of a complete **new value chain**, where a low cost and widely available feedstock, such as by-products of the food processing industry, is converted into poly-hydroxy-alkanoates (PHA).
- The **optimisation of PHA functionalisation** to match requirements for end-use in packaging.
- The development of bio-packaging solutions with **clear end-of-life scenario options**, such as organic recycling through anaerobic digestion or composting or re-digestion to produce new virgin PHA in a closed cycle.

Consortium members

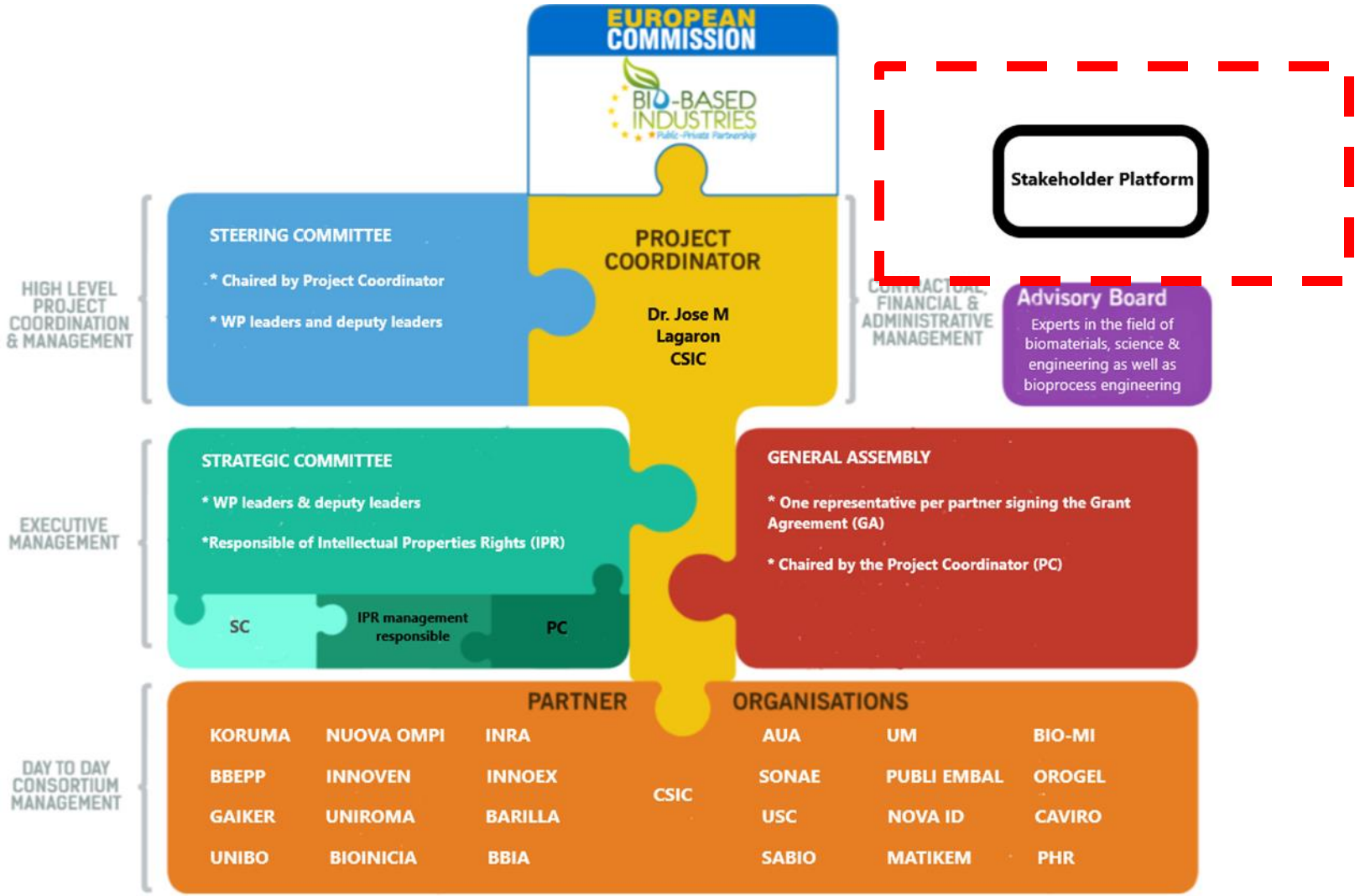
Country	Partners
Italy	Barilla ; Caviro ; Innoven ; Ompi ; Orogel ; Sabiomaterials ; Università di Bologna ; Sapienza Università di Roma
France	Euramaterials ; INRA ; Sphere Distribution ; Université de Montpellier
Spain	Bioinicia ; CSIC ; Gaiker ; Universidade de Santiago de Compostella
Portugal	Nova ID FCT ; Sonae
Belgium	Bio Base Europe Pilot Plant
Croatia	Bio-Mi
Greece	Agricultural University of Athens
Poland	PHR
Switzerland	InnoExc
Turkey	Koruma Klor Alkali
United Kingdom	Bio-based and Biodegradable Industries Association



Work Programmes



- **WP1 will collect all the requested information and data to guide specific functionalisation of the produced PHAs and their compounds**
- **WP2 is dedicated to process applications in which the different by-products originated from the food processing industry and the CO2 coming from the same processes or from the anaerobic digestion of residual streams will be converted into volatile fatty acids and then PHAs.**
- **WP3 will be dedicated to the functionalisation of produced PHAs and their blending with other bio-polymers to obtain a portfolio of bio-based molecules for different purposes. The most suitable bio-based polymers identified in WP3 will be used as building blocks for packaging target in WP4.**
- **WP4 is in fact the core WP in which the potential for USABLE is demonstrated. The biodegradability and recyclability of studied materials will be assessed against internationally accepted standards.**
- **WP5 will be dedicated to the exploitation: a multi-actor stake-holders platform, including firms, public agency, policy makers, will be created, also considering the platforms already operating in other EU funded projects.**
- **WP6 will be dedicated to dissemination and communication**
- **WP7 will be dedicated to the coordination and management**


EUROPEAN COMMISSION
BIO-BASED INDUSTRIES
Public-Private Partnership
Stakeholder Platform
HIGH LEVEL PROJECT COORDINATION & MANAGEMENT
STEERING COMMITTEE
* Chaired by Project Coordinator
* WP leaders and deputy leaders
PROJECT COORDINATOR
Dr. Jose M Lagaron
CSIC
CONTRACTUAL, FINANCIAL & ADMINISTRATIVE MANAGEMENT
Advisory Board
Experts in the field of biomaterials, science & engineering as well as bioprocess engineering
EXECUTIVE MANAGEMENT
STRATEGIC COMMITTEE
* WP leaders & deputy leaders
*Responsible of Intellectual Properties Rights (IPR)
SC
IPR management responsible
PC
GENERAL ASSEMBLY
* One representative per partner signing the Grant Agreement (GA)
* Chaired by the Project Coordinator (PC)
DAY TO DAY CONSORTIUM MANAGEMENT
PARTNER ORGANISATIONS
KORUMA
NUOVA OMPI
INRA
BBEPP
INNOVEN
INNOEX
GAIKER
UNIROMA
BARILLA
UNIBO
BIOINICIA
BBIA
CSIC
AUA
UM
BIO-MI
SONAE
PUBLI EMBAL
OROGEL
USC
NOVA ID
CAVIRO
SABIO
MATIKEM
PHR

First Results: Development of PHA Based Straws by CSIC, produced by Ocenic Resins S.L.







First Results: Development of PHA Based Cutlery by CSIC, produced by Ocenic Resins S.L.





First Results: Development of Reusable PHA Plates by CSIC, Gaiker and Ocenic Resins S.L.



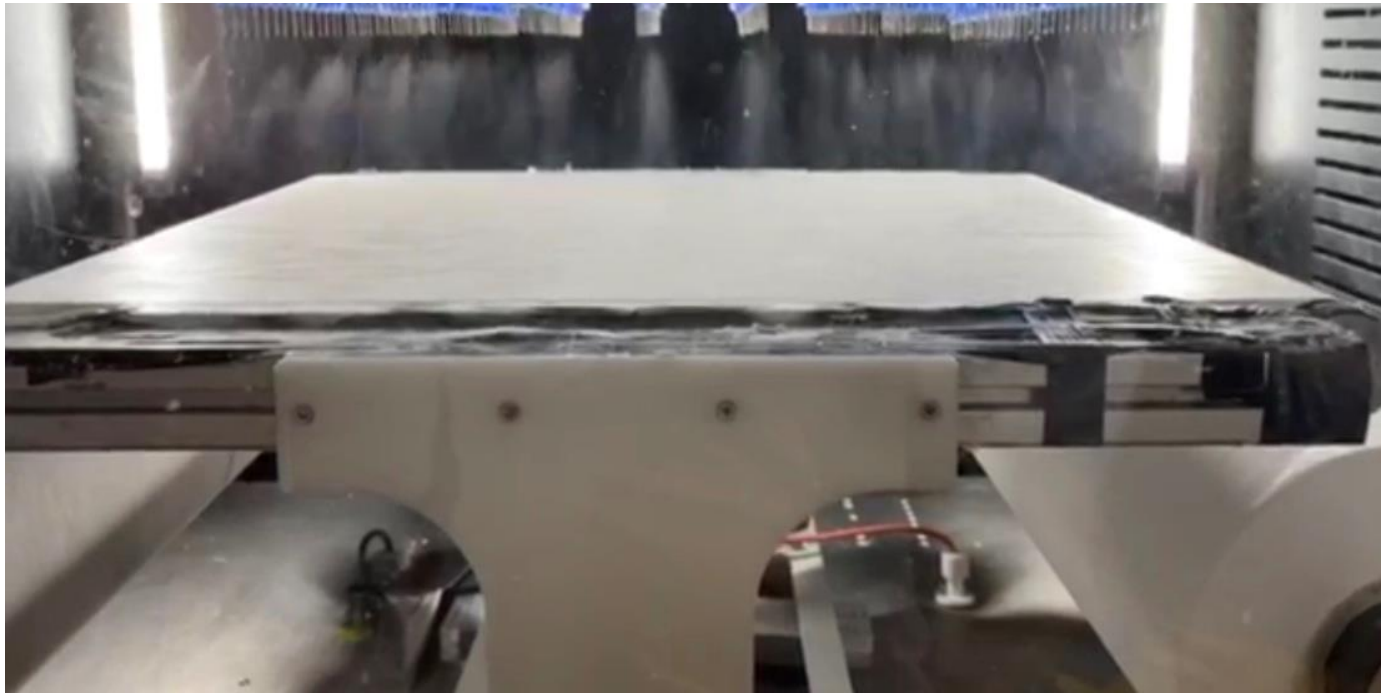


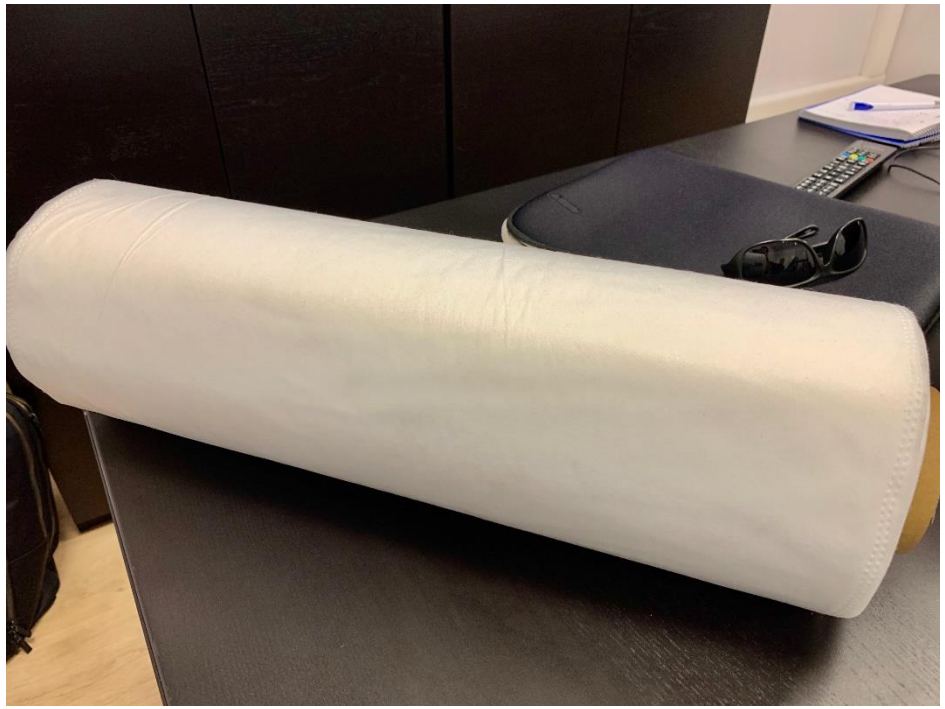
First Results: Development of Blown and Cast Films by CSIC and Ocenic Resins, processed by Bio-Mi





First Results: Development of PHA functional coatings by CSIC and Bioinicia S.L.







THANK YOU

www.usable-packaging.eu