OPEN INNOVATION ECOSYSTEM
FOR **SUSTAINABLE**
NANO-FUNCTIONALIZED
PLASTIC & **PAPER**
SURFACES & **MEMBRANE**

FLEX FUNCTION 2 SUSTAIN

Capri Sun Use Case

Recyclable drink pouches

Objective:

Development of a „Recycle Ready Pouch“ made from mono-material to facilitate recycling; introduce a recyclable polymer laminate with sufficient barrier and light blocking properties (thin film nanomaterials) for mono-material drink pouches.

Context

Currently, there are highly mechanical stable liquid pouch for fruit juice with very good water vapour and oxygen barrier properties for a shelf life of longer than 6 months. State of the art is the usage of 3 layer laminates (PET/ALU/PE) that are practically impermeable to water vapour and oxygen and therefore, highly protective for the fruit juice allowing storage and shelf life longer than 1 year. However, the materials are not recyclable because of the use of 3 different materials.

Our ambition

- Replace the drink pouches by fully recyclable mono-material laminate (using either polyolefin based polymers or biopolymers) in which the gas barrier performance is provided by thin film nanomaterials such as evaporated AlOx or PECVD deposited SiOx with a wet coated planarisation layer;
- Demonstrate WVTR < 1 g/(m²d) and OTR < 10 cm³/(m²d) (both at 23°C / 50% r.h.) on 100 m long rolls;
- Demonstrate assembly of drink pouches;
- Demonstrate food-safety compliance and 100% recyclability (< 5 mass.% impurities);
- Demonstrate potential cost competitiveness with state of the art solutions;

Intermediaries Results

- Barrier lacquer able to meet the OTR, WVTR and RecyClass requirements developed by Fraunhofer IVV;
- Sorting and recycling trials with different combinations (i.e. Al, lacquer, with adhesives, with inks, with juice drops, with paper straws, etc.) by IPC;
- 200ml and 330ml pouches prototypes produced by CAPRI and preparation for launching monomaterial pouches into the market (still waiting from RecyClass certification);

Capri-Sun Drink with Multi-layer Pouch vs Recyclable Mono-material Pouch

Recyclability trials

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