30 June 2025

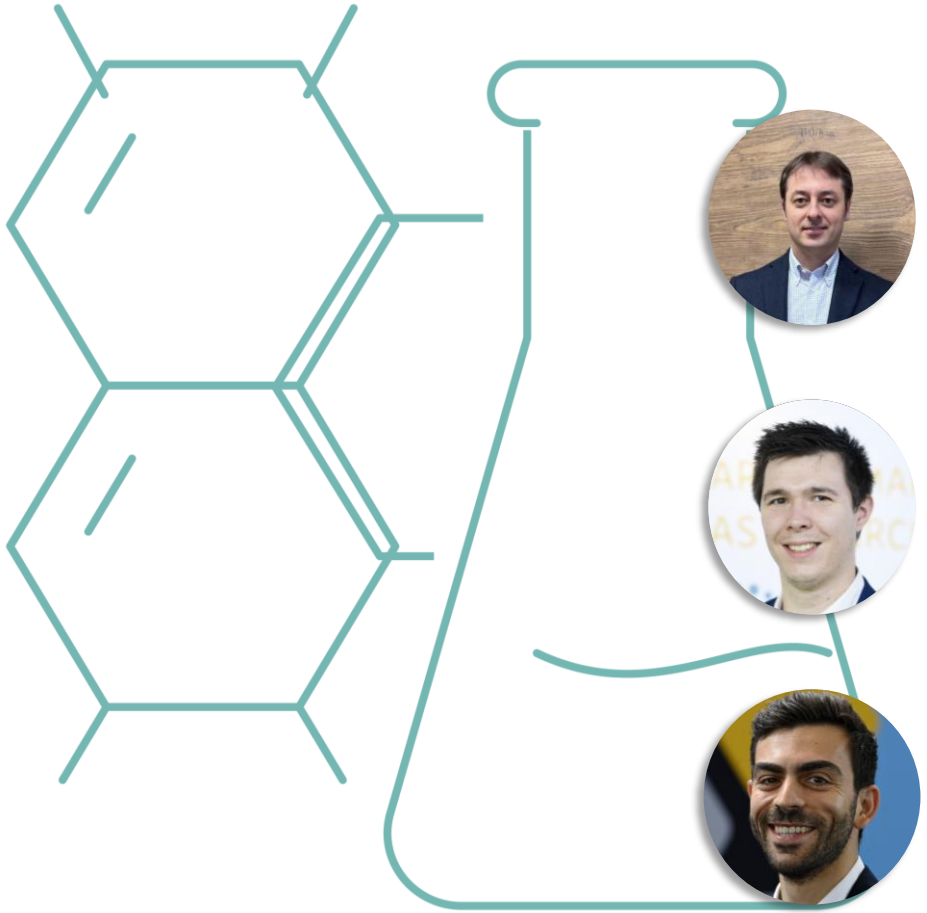
#EU GREEN WEEK

EU Green Week Partner Event

RecyClass Science behind Recyclability: Navigating PET Thermoforms Recycling

RecyClass

Meet our speakers



Simone Tirelli
Project Manager, Faerch

Jean-Emile Potaufeux
Technical Manager, Plastics Recyclers Europe

Francesco Gamardella,
Technical Advisor, Plastics Recyclers Europe

RecyClass

RecyClass Science behind Recyclability: Navigating PET Thermoforms Recycling

Food trays recycling: when plastic is really sustainable

Simone Tirelli

Group Project Manager Recycling Europe - Faerch

June 30, 2025

Faerch | *Packaging that cares*

We are a global leader in rigid food packaging and the world's first integrated tray recycler

Faerch at a glance

27,100,000
FOOD TRAYS PRODUCED FOR CIRCULARITY - EVERY DAY*

60,000
RECYCLING CAPACITY IN TONNES OF PET HOUSEHOLD WASTE

+22,800
PRODUCT DESIGNS AVAILABLE

+4,600
VALUED CUSTOMERS GLOBALLY

5,500
DEDICATED EMPLOYEES

+25
PRODUCTION SITES

+90
COUNTRIES WITH SALES PRESENCE

Status per June 2024

* The share of products designed for circularity means the weight of products, where the recycled material can feed a closed-loop scheme to be used in the same quality applications (e.g. tray-to-tray). Currently, it is only mono-PET products that are accepted as products designed for circularity. This is taken relatively to the total weight sold by Faerch.

We build on more than 50 years of heritage and experience in manufacturing and development of rigid food packaging

Faerch Heritage

1869
TOBACCO PRODUCTION
The Færch Family founded/established a tobacco factory that was later sold to Scandinavian Tobacco Group

CEO
JØRGEN FÆRCH
Founder and CEO 1969-1987

1972
1 FACTORY
25 EMPLOYEES

1986
HEAT STABLE TRAYS
CPET was introduced to the Ready Meals market, enabling trays to be heated in ovens up to 220°C

1991
UK COMPANY
Faerch Plast Ltd. was established, and a new sales office opened in London

2000
1 FACTORY
410 EMPLOYEES

2006
FIRST STEPS TOWARDS CIRCULARITY
The first rPET recipe was introduced, which started our circularity journey

CEO
LARS GADE HANSEN
CEO 2009-

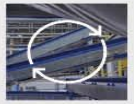
2009
2 FACTORIES
530 EMPLOYEES

2012
UK PRODUCTION
The first UK-based production site opened in Durham

2014
EQT
Private equity fund managed by EQT VI acquires Faerch

2016
6 FACTORIES
1,100 EMPLOYEES

2017
ADVENT INTERNATIONAL
Private equity fund managed by Advent International acquires Faerch



2018
LEADING CIRCULARITY
With the acquisition of the tray recycling line at Cirrec, Faerch becomes the world's first integrated food tray recycler

2018
11 FACTORIES
1,300 EMPLOYEES

2021
ACQUISITION
Faerch acquires Sirap food packaging business in Italy, Poland and Spain

2022
ACQUISITION
Faerch acquires dairy specialist PACCOR and later MCP USA to enter the US market

2022
28 FACTORIES
5,000 EMPLOYEES

1969
THE ENTREPRENEUR
Jørgen Færch founded Færch Plast and started the production of food trays

1973
NEW HEADQUARTERS IN HOLSTEBRO
Inauguration of the factory in Holstebro, which still serves as the headquarters today

CEO
HEINRICH KÜSCH
CEO 1987-2001

CEO
JENS BORNSTEIN
CEO 2001-2009

2008
EUROPEAN PRODUCTION
The first production site outside Denmark opened in Liberec, Czech Republic

2011
INNOVATIVE FRESH MEAT PACKAGING
MAPET® II is introduced - allowing modified atmosphere packaging in mono material PET

2013
MAXIMUM SHELF APPEAL
CPET Dual Colour and CPET Frozen are introduced, helping our customers increase sales

2015
ACQUISITIONS
Faerch acquires Anson Packaging Ltd. in the UK and later same year Sealed Air's European Food Tray Business

2018
ACQUISITIONS
Faerch acquires CGL Pack in France. Same year we acquire 4PET Group (today Cirrec)

2019
EVOLVE BY FAERCH
Launching Evolve by Faerch - a solution made from recycled content, fully recyclable, reliably detectable, and clearly indicating its circularity by naturally fluctuating colours

2021
FAMILY OWNERSHIP
A.P. Møller Holding acquired Faerch and the Færch family returned as a minority shareholder

2024
TRIPLING OUR RECYCLING CAPACITY
Faerch inaugurates the second tray recycling line at Cirrec and we triple our recycling capacity to manage 60,000 tonnes of input - marking the beginning of our scaling journey within the recycling division

We are committed to true circularity, driven by our experience and culture of cost leadership and innovation

Faerch Mission. Vision. Values.

VISION

Be the global **leader** in sustainable rigid packaging and recycling solutions for the most demanding direct contact applications in a **truly circular environment.**

MISSION

We **lead** the transition of critical packaging into a **truly circular economy.**

VALUES

Our **5 key values** guide the way we work, develop our products, deliver superior customer service, and collaborate with our customers and partners across the food packaging industry.

#1 Reliability

We are reliable
We want to be the most reliable and competent supplier of protective packaging for the food industry.

#2 Highest standards

We always pursue the highest standards
We strive to be known for our quality, innovation, product design and customer service, as well as for our honesty, credibility and accountability.

#3 Expertise

We meet our customers' needs through expertise
We want to be the industry leader in material, process and tooling technologies.

#4 Collaboration

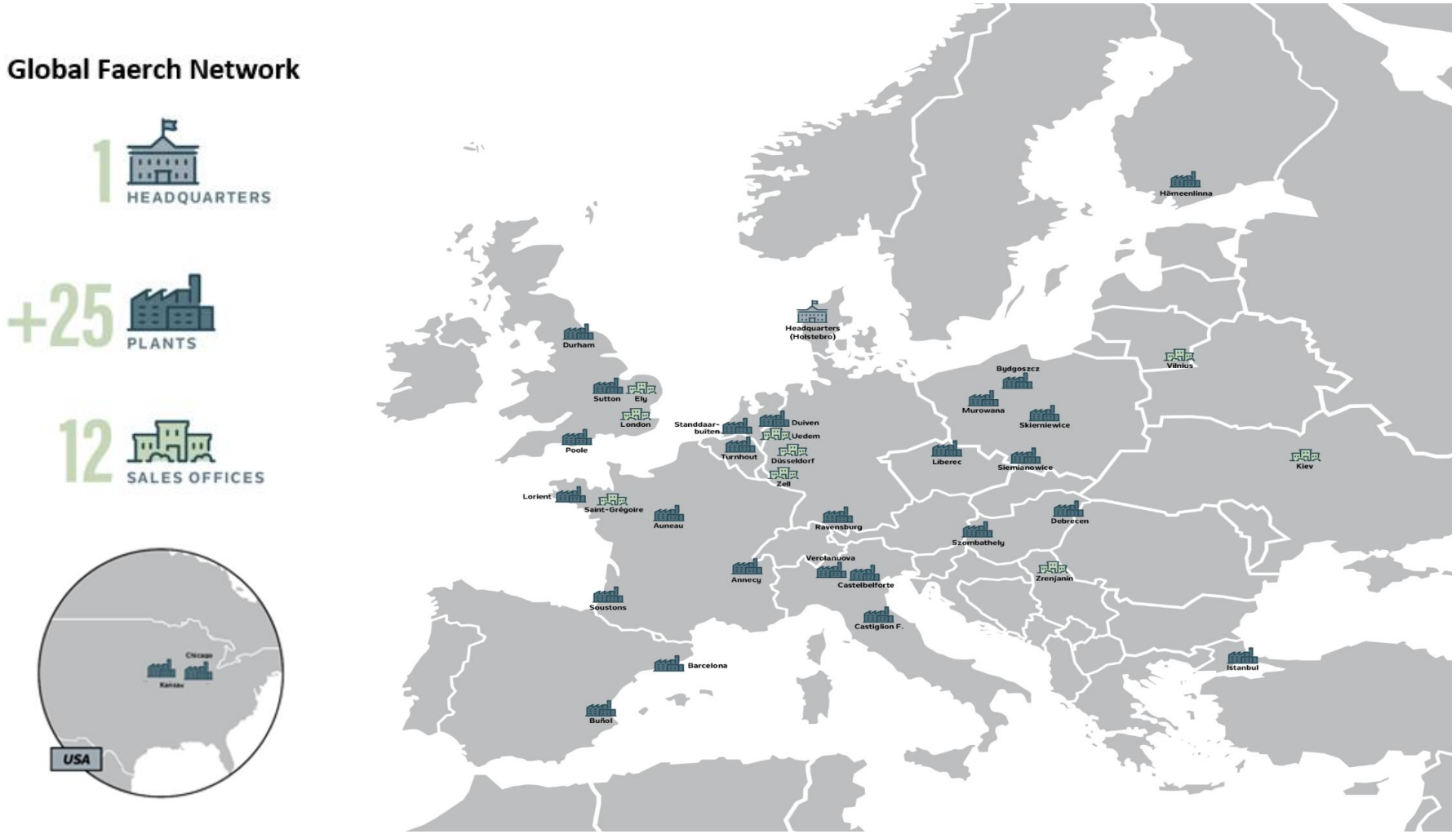
We foster a collaborative culture
We will invest in our people and foster collaboration, whilst providing attractive opportunities for individual growth.

#5 Integrity

We act with integrity
We have the ambition to lead the industry's efforts in making food packaging circular, offering fully recyclable products based on market-leading share of post-consumer content.

1: The mass balance of recycled post consumer PET in all our produced PET products across all segments – validated annually by third party audits

With a network of more than 25 manufacturing sites in Europe and the US we serve our customer locally – wherever they are

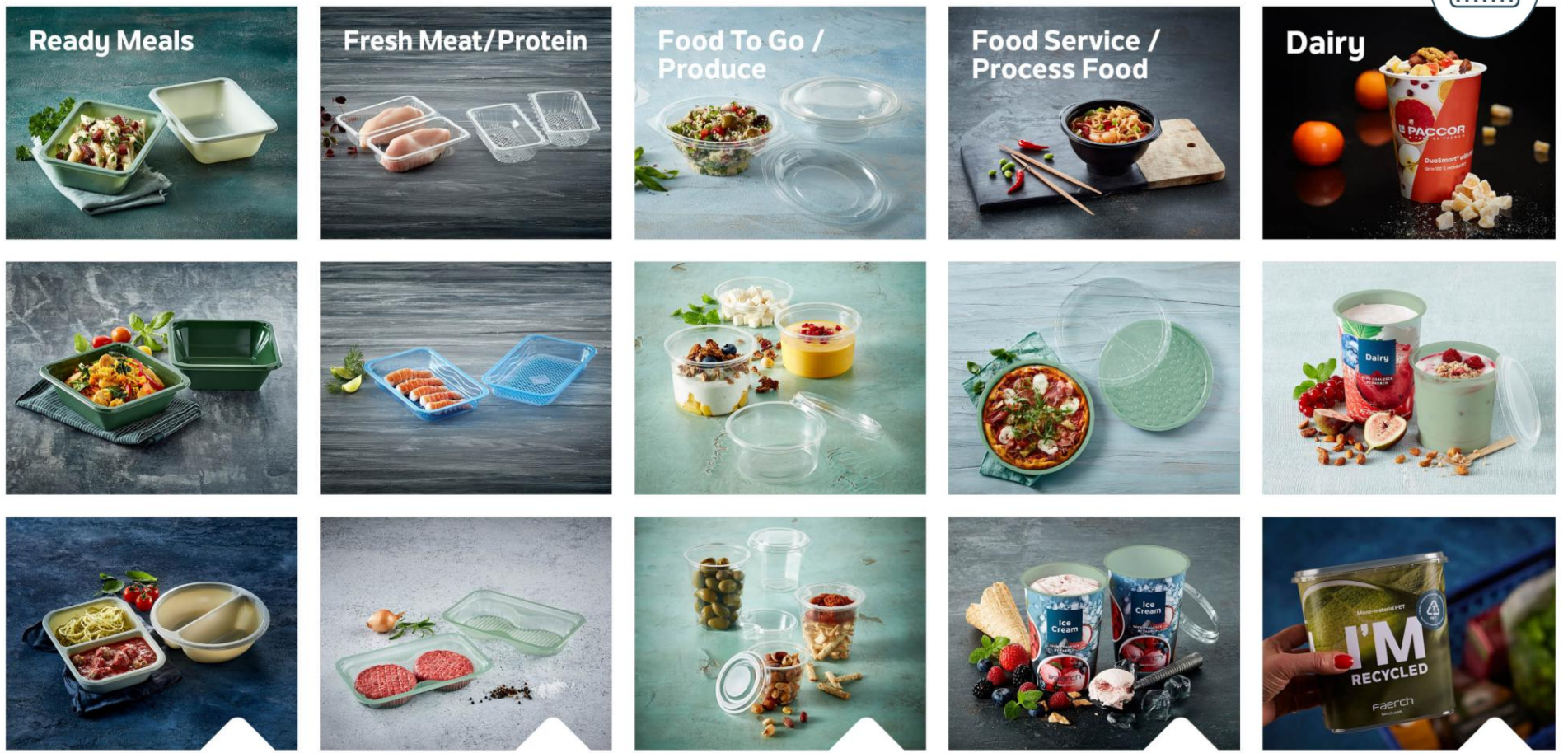


Status per May 2023

We supply innovative and sustainable packaging solutions to the food industry

More than **22.800** products available

Our Product Offering – Overview

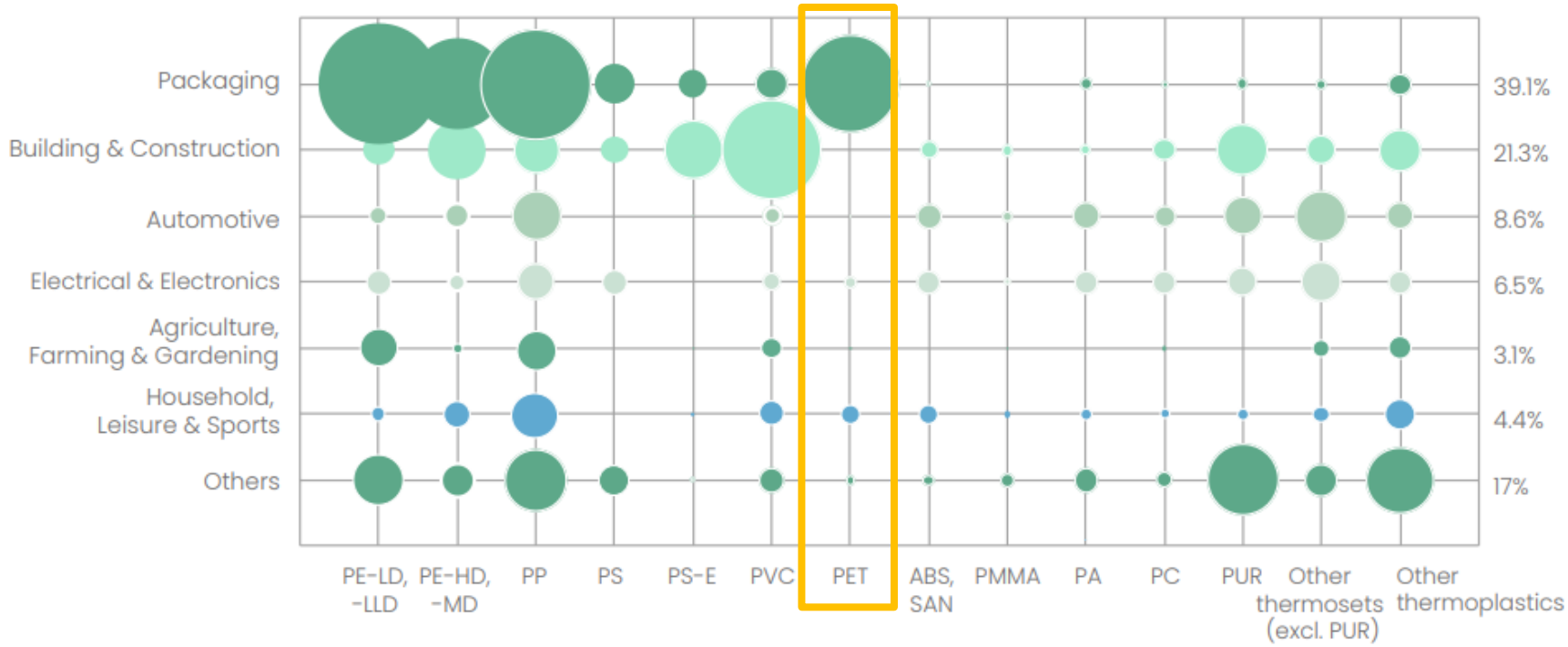


We are making food packaging truly circular

Circularity in Food Packaging

PET is becoming the standard in rigid food packaging; compliance with the PET “de facto standard” is key

Plastics Demand per Application and Polymer Type, EU28+NO/CG 2022



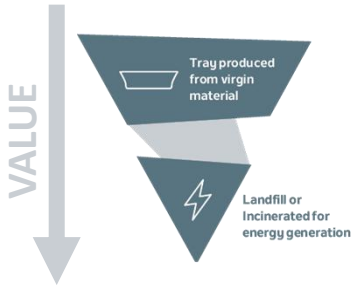
- **PET represents the standard in rigid food packaging, well-known and proven from bottles.**
- **PET can be recycled without loss of functional properties, i.e. food grade products can be recycled back into food grade products again and again.**
- **A “de facto standard” for PET exists, and compliance to it is a prerequisite for circularity. It ensures that material properties can be protected over a number of use cycles and contributes to the development of efficient markets for high-quality recycled PET.**
- **The PET food contact stream needs to be protected from contamination from non-food PET applications.**

Source: “Plastics – the facts 2022“

PET is the only material enabling true circularity: Recycling food packaging back into new food packaging

No recycling

Some materials are single use



Linear

Single use: Use → Lose

Downcycling / Spiral recycling

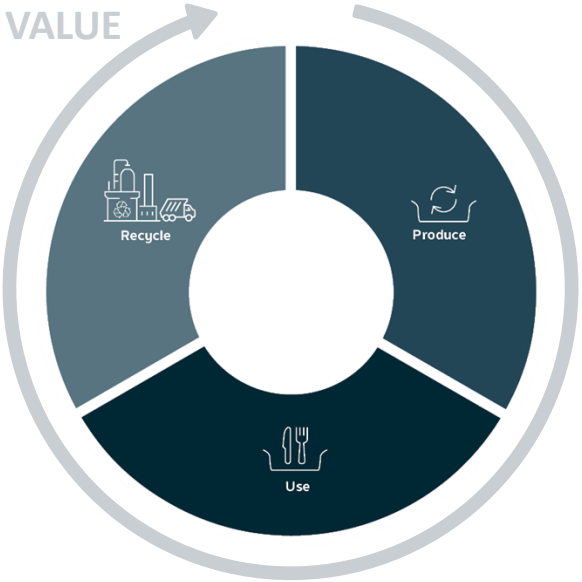
Others are recyclable, but not back into the same quality due to irreversible degradation

Linear

Multiple life: Use → Use → Lose
Always made from virgin in food-contact applications
Cannot be recycled back into food-contact applications

Circular Recycling

PET can be recycled back again and again without loss of functional properties

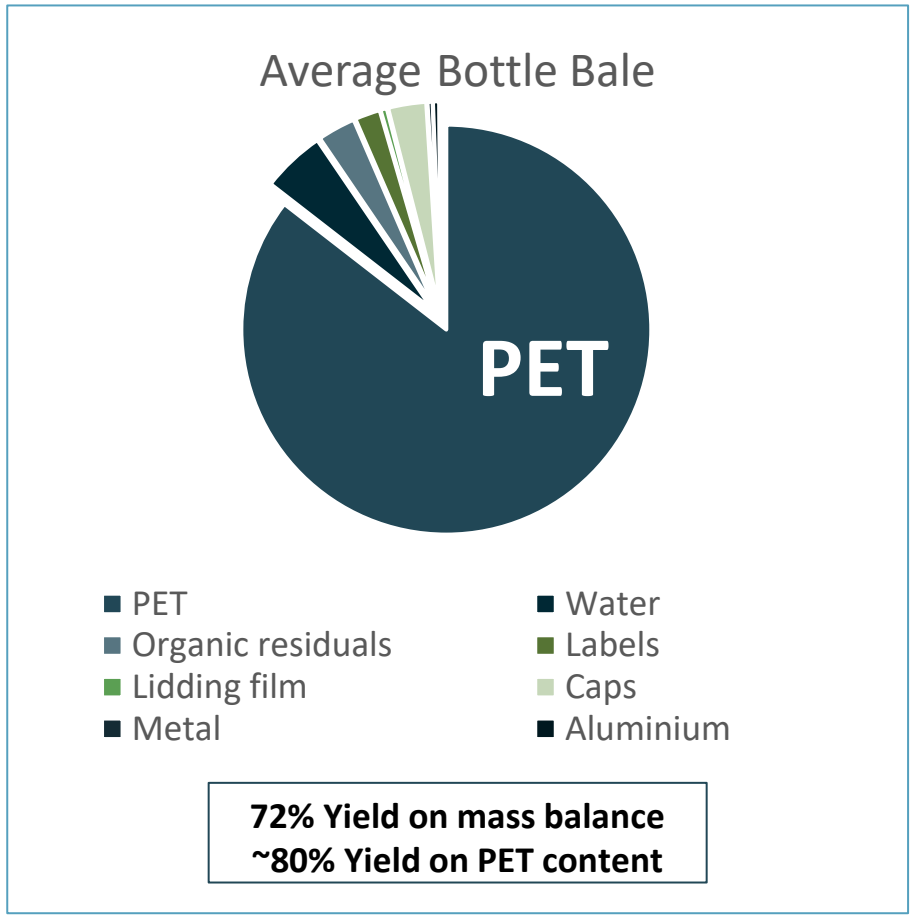


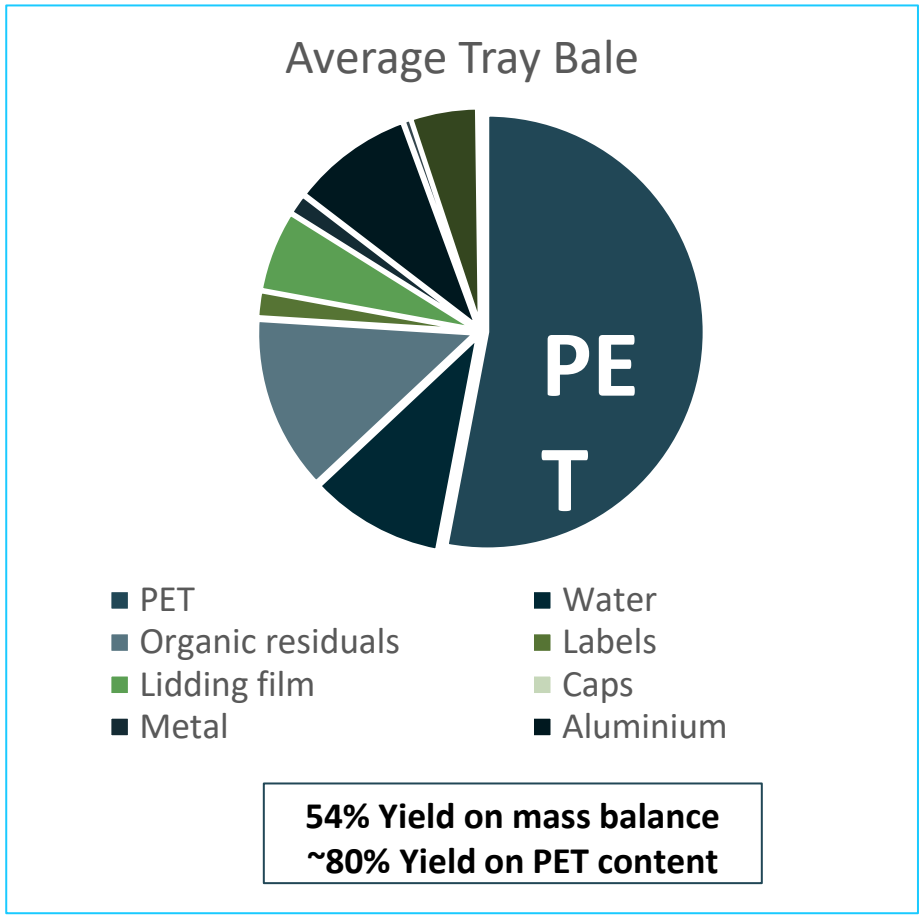
Circular

Made from recycled content and
recyclable back into products of the same quality
i.e. food packaging back into food packaging

PET Tray recycling is possible (even if more complex)

Approx. 70-80% PET in a bottle bale vs approx. 50-60% PET in a tray bale



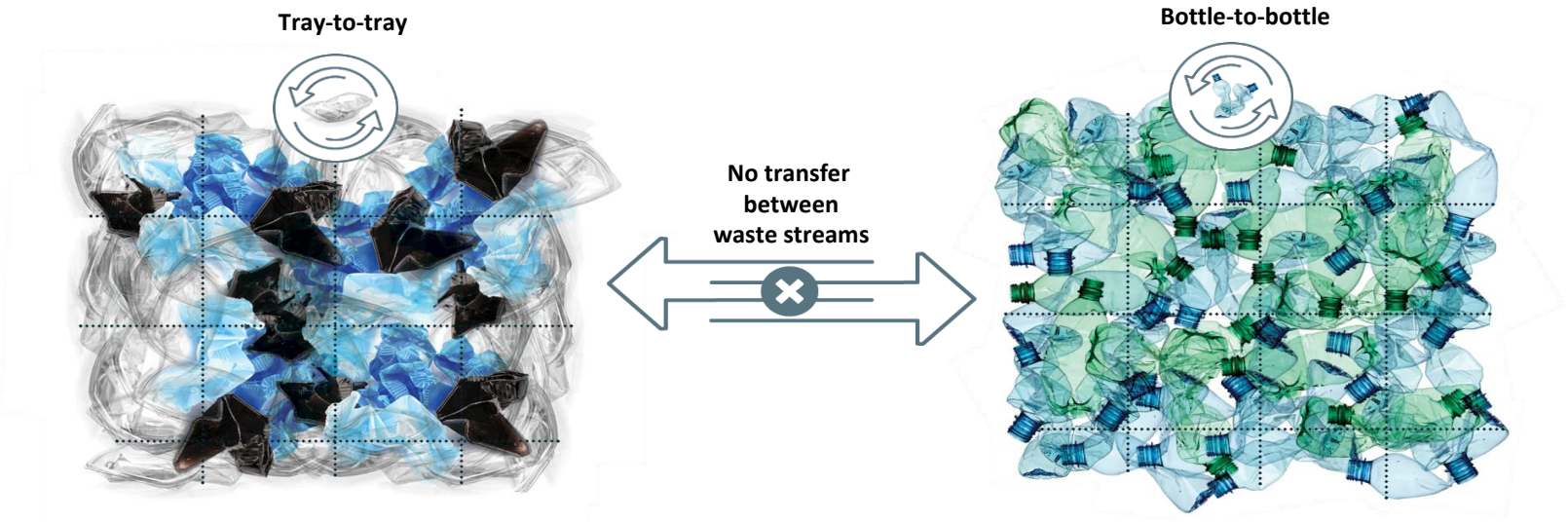


To achieve true circularity
we need a balanced waste stream and ”stop stealing”

rPET from trays becoming new global commodity not only replacing virgin but also rPET from bottles which is becoming increasingly scares:

- “**Stop stealing**” feedstock from other applications
- Each application to “**clean up” for itself**

rPET from trays increasingly supported by legislation, e.g. in France, and key driver for innovations that accelerate transition towards circularity, e.g. Evolve and Back of Store by Faerch



Food trays made of “tray-bales” and bottles made of “bottle-bales”

PCR content in rPET percentage

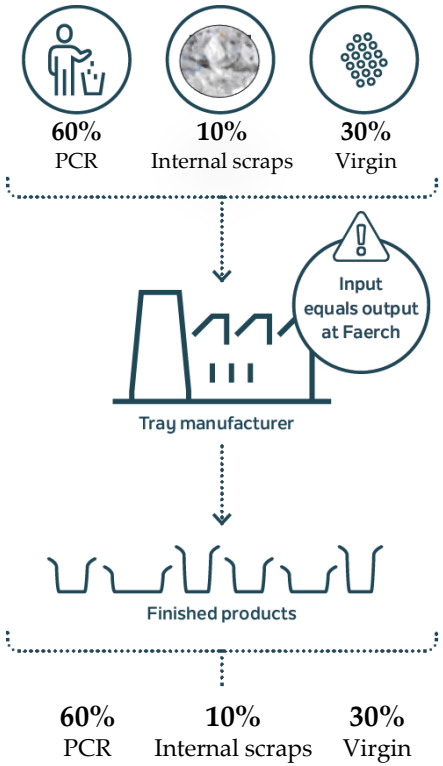
The share of post-consumer content in food packaging is a key indicator for its sustainability.

What is Post-Consumer Recycled Content (PCR)?

PET material is only called post-consumer if it has been in the hands of its end user, has reached the end of its use and is perceived as waste. Post-consumer PET is collected from deposit systems, kerbside collection and closed-loop systems. It is sorted and recycled back into food grade recycled PET for use in new food packaging.

PCR definition (ISO 14021:2016)

"Material generated by households or by commercial, industrial and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain"



- Using post-consumer recycled content means **using less virgin raw material**, thereby reducing raw material extraction and related CO2 emissions.
- In the consumer's perception and for good reason, the only material that should be called 'recycled' is **post-consumer content**, i.e. material that has fulfilled its original purpose and **has been in the hands of customers.**
- When companies include **post-industrial** material when calculating their share of recycled content, they often refer to industry by-products that have **never been in the hands of a consumer nor in the waste bin.**

We have developed and proven the technology to accelerate and scale circular recycling for food packaging

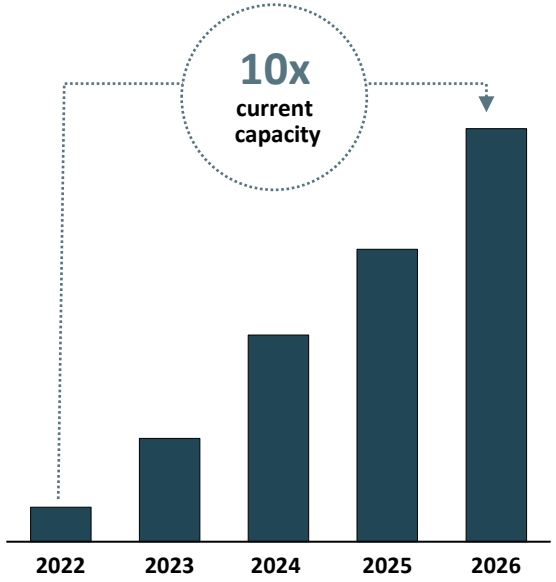
Circularity ambitions from recycling to thermoformed packaging

Innovative Technology developed, focus on scaling

Chemical recycling complementary
to mechanical recycling for PET packaging

Target to increase capacity across Europe

For internal Faerch products and to offer to the market
Recycling Tray input tonnage ambition
2022 = index 100



Lead food packaging market toward recyclable PET packaging with high level % PCR

Our technology is ready to expand geographically

Steadily increasing the amount of tray-to-tray material in all markets

Faerch‘s flagship plant expansion paves the way for circular PET trays:

Investment in a new trayline with increased capacity to scale-up Circular Recycling and improve the Circularity Ratio.

Our current recycling capacity fully ramped up can handle 60,000 tonnes of post-consumer waste, equivalent to achieving circularity of PET trays in the Benelux market.

We're investing heavily in establishing recycling infrastructure to ensure our PET packaging enters a circular loop, minimising virgin plastic production.

This is just the beginning; **our goal is to recycle at least as much as we introduce to the market**, with ongoing investments across Europe to achieve it.

Tray rPET is clear and mixed coloured plastic pellets made from food packaging consumer waste, and the material can be recycled again and again

From Post Consumer Waste to food safe Tray pellets

Bales supply	Input station	Tray sorting	Pre-washing	Grinding	Washing incl. flood sink and rinsing	Flake sorting	Vacuum reactor / Pelletizing	Flakes and Pellets
								
Input bales from waste companies available in different grades Sourced from different countries	Transportation to input station by truck Debaling Metal Sorting Film Separation	Pre-sorting of separated PET NIR Sorting Removal of non- PET trays / lidding	Soft pre-washing of input material	Grinding before washing	Material washing Flood sink separation High-temperature washing Removal of dirt and label adhesive	Optical sorting Colour and Polymer sorting Metal sorting	Mechanical filtration Removal of volatiles Decontamination Increase of IV	Storage of flakes and pellets in big bags or silos

At Faerch we produce tray rPET at scale

- The installation of Faerch's tray line has been a game changer for both Faerch and the entire industry.
- Faerch's innovative recycling process produces two circular food-grade PET streams — coloured and clear. This approach supports future-proof business models, strengthens brands, lowers emissions, and promotes a healthier environment.

Coloured products

Evolve by Faerch

Clear products

Coloured rPET Flakes

Clear rPET Flakes

Introducing Tray rPET by Faerch: A circular, low emission material, derived from post-consumer food packaging waste

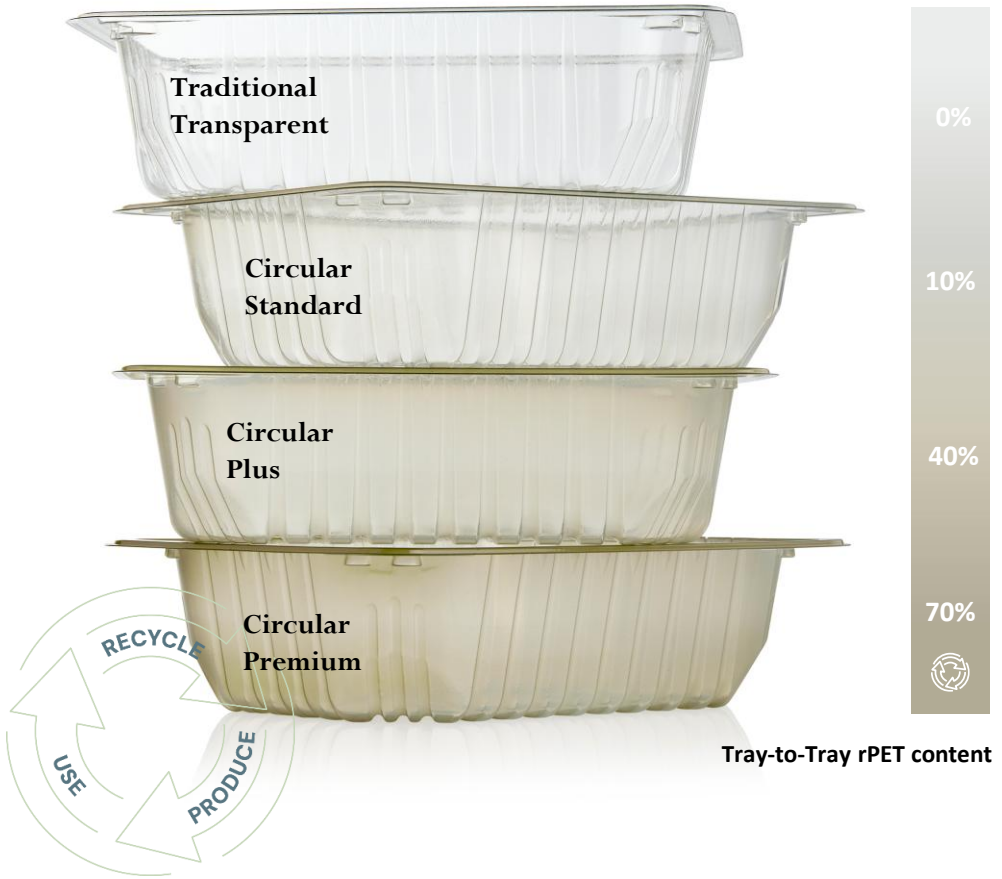
Reduce carbon emissions on the packaging raw material.

Truly circular material that can be recycled back into new food packaging, staying in its own tray-to-tray recycling loop.

Reduce packaging waste by diverting plastic waste from landfills or incineration and minimising the demand for virgin plastic production.

Faerch is committed to full transparency when communicating recycled content percentages and has commissioned annual third party auditing by PwC of recycled content, at recipe level

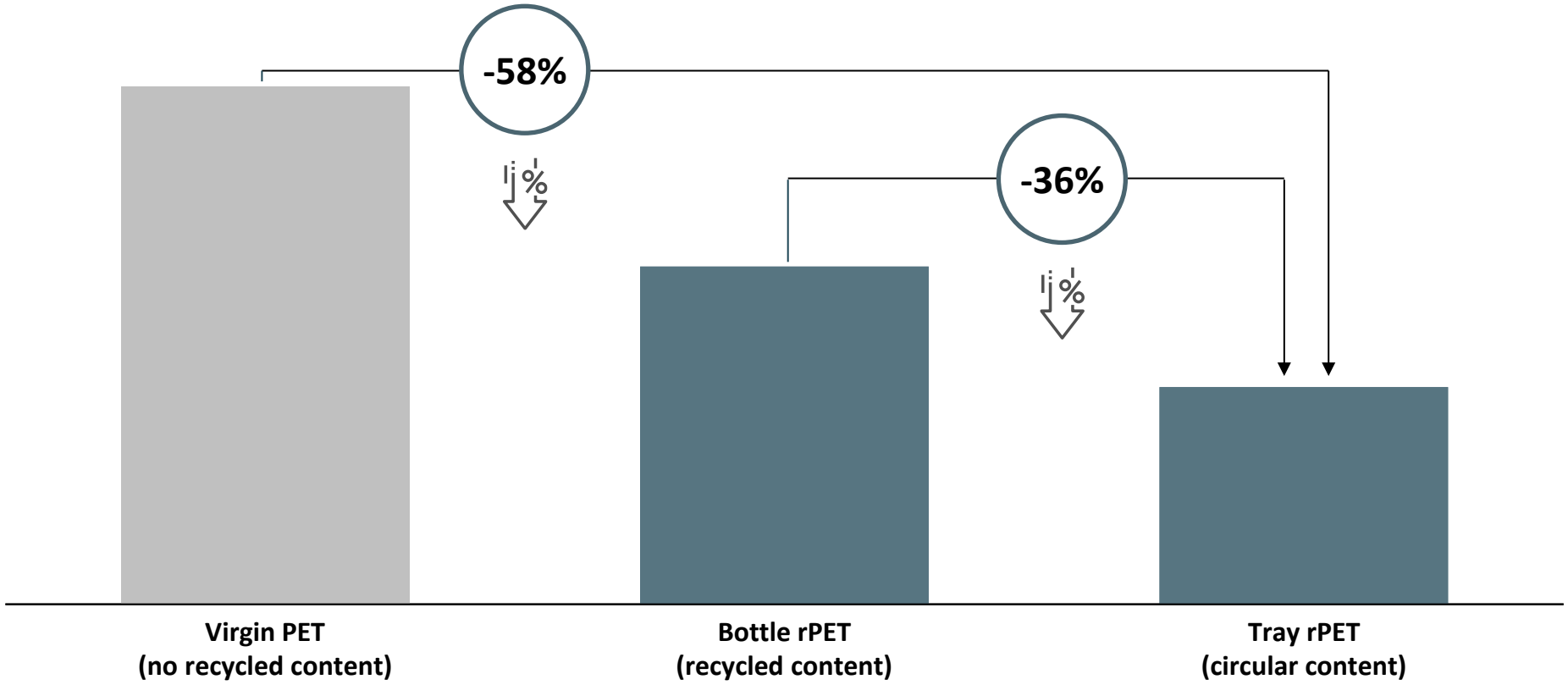
Higher Tray rPET content visually reflects the circular content they are made from



Tray-to-Tray rPET content

By using Tray rPET carbon emissions can be reduced by 58% compared to virgin PET and 36% compared to Bottle rPET

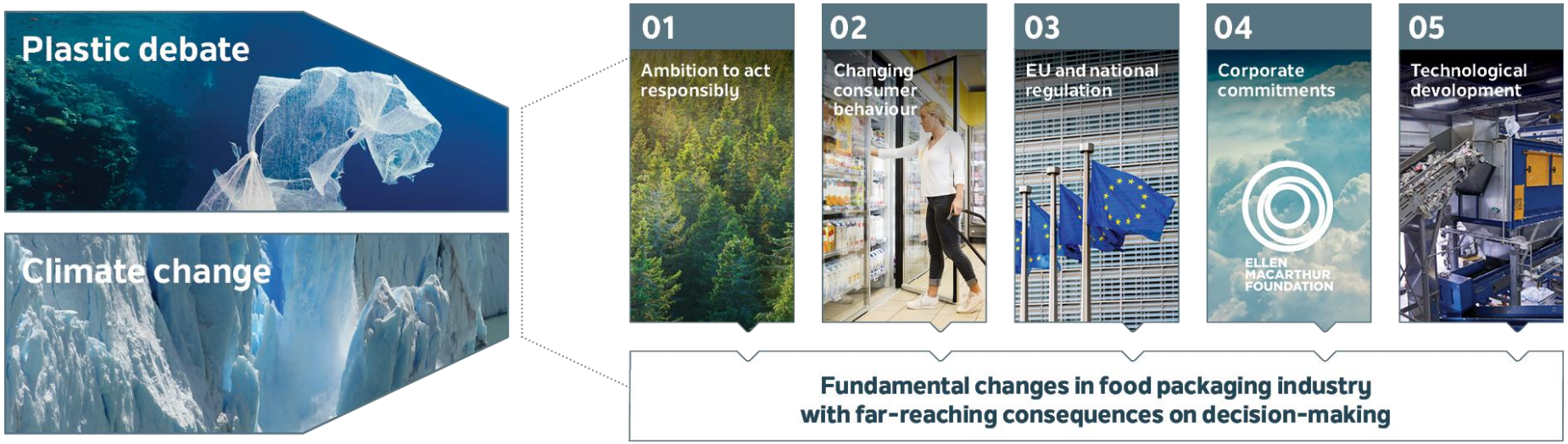
Reduction in kg CO2-eq per kg material (%)*



*This estimation is only based on the raw material input alone and not a full product carbon footprint. Data is from Ecoinvent version 3.10 for virgin PET and bottle rPET production. Emission data for "Tray rPET" is preliminary results from our recycling site Cirrec. The allocation procedure follows EU PEF methodology, accounting for the different market realities for bottle and tray rPET, which results in differences in the allocation factor "A" (Abottle=0.5, ATray=0.2) and thereby differences in the benefits attributed to the recycled material.

In a rapidly changing market environment, decisions on food packaging have become more complex

Main Catalysts for Change in the Food Packaging Market



Legislation – current and upcoming – is a game changer for the packaging industry

Circularity becomes a key principle from design to end-of-life

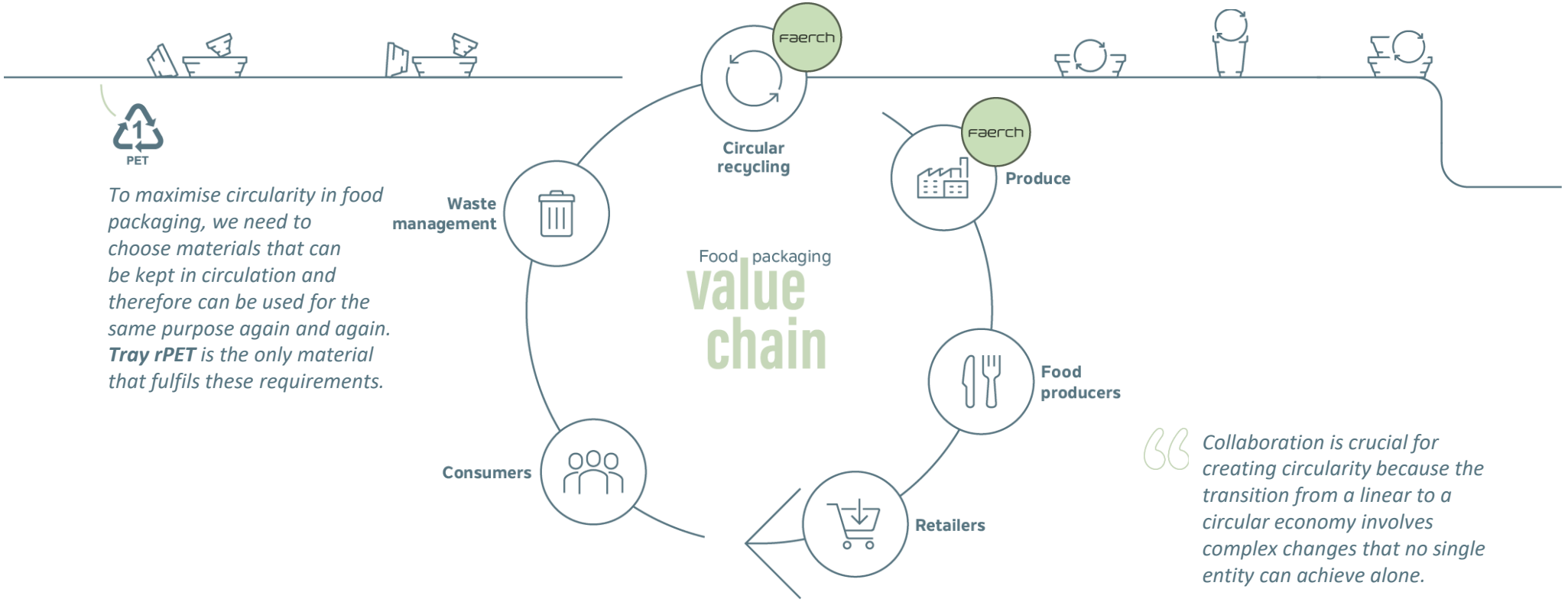
Packaging and Packaging Waste Regulation (PPWR) - A European Directive
Harmonises national law and promotes reuse, recycling and other forms of recovering of packaging waste. Regulations in different areas set clear targets for recycled content and more resource-efficient solutions.

Life Cycle Assessments (LCAs) - Green Claims
Requirements for stronger fact-based communication (eg. Life Cycle Assessments (LCAs) and third-party validation).

Extended Producer Responsibility (EPR) - Fees and Plastic Taxes
Implementing end of life responsibility as part of transition towards sustainable packaging.

Note that these are only selected topics in a bigger regulatory shift under EU's Green Deal and that the timeline for the different regulations differ

Circularity requires collaboration across the whole value chain



To maximise circularity in food packaging, we need to choose materials that can be kept in circulation and therefore can be used for the same purpose again and again. ***Tray rPET*** *is the only material that fulfils these requirements.*

Collaboration is crucial for creating circularity because the transition from a linear to a circular economy involves complex changes that no single entity can achieve alone.


« Using plastic doesn’t pollute,
Not using your head does! »
Thank you
faerch
Packaging that cares

RecyClass

RecyClass PET Thermoforms TF – 2024 achievements

RecyClass

LEGALLY BOUNDING EUROPEAN TARGETS FOR PLASTICS

2025

50% RECYCLING TARGET FOR PLASTIC PACKAGING
Packaging & Packaging Waste Regulation, Circular Economy Package

25% RECYCLED CONTENT IN PET BEVERAGE BOTTLES
Single Use Plastics Directive

77% SEPARATE COLLECTION TARGET FOR BEVERAGE BOTTLES
Single Use Plastics Directive

10 MLN TONNES/YEAR OF RECYCLATES IN NEW PLASTIC PRODUCTS
Circular Plastic Alliance

2029

90% SEPARATE COLLECTION, DRS TARGET FOR BEVERAGE BOTTLES
Single Use Plastics Directive, Packaging and Packaging Waste Regulation

2030

ALL PACKAGING TO BE RECYCLABLE (A, B, C) Packaging and Packaging Waste Regulation, Circular Economy Package

RECYCLED CONTENT IN CONTACT SENSITIVE PLASTIC PACKAGING **(10%)**
Packaging and Packaging Waste Regulation

RECYCLED CONTENT IN ALL OTHER PLASTIC PACKAGING **(30-35%)**
Packaging and Packaging Waste Regulation

30% RECYCLED CONTENT IN ALL BEVERAGE BOTTLES
Single Use Plastics Directive, Packaging and Packaging Waste Regulation

55% RECYCLING TARGET FOR PLASTIC PACKAGING
Packaging and Packaging Waste Regulation, Circular Economy Package

2035

RECYCLABILITY AT SCALE
Packaging and Packaging Waste Regulation

2038

ALL PACKAGING TO BE RECYCLABLE (A, B)
Packaging and Packaging Waste Regulation, Circular Economy Package

2040

RECYCLED CONTENT IN CONTACT SENSITIVE PLASTIC PACKAGING **(25%)**
Packaging and Packaging Waste Regulation

RECYCLED CONTENT IN ALL OTHER PLASTIC PACKAGING **(50-65%)**
Packaging and Packaging Waste Regulation

\+

UPCOMING RECYCLED CONTENT IN OTHER SECTORS

RecyClass | PET THERMOFORMS TF

- Focuses first on identifying the different features that could negatively affect the recyclability of a PET Thermoform
- Aims at developing specific **Recyclability Evaluation Protocols**
- Differentiates between **monolayer and multilayer PET Trays**
- Covers also **PET blisters and other thermoforms**
- **First test campaigns** related to labels & soaker pads as well as adhesives used for lids

Started in **February 2024** under the request to address Design for Recycling from the PET Trays value chain

Follows a **technical approach** with **fact-based** Design for Recycling Guidelines

RecyClass | PET THERMOFORMS DESIGN

Lidding system
Separation by density
Residual flakes on PET after washing

Laminating adhesives for multilayers
Chemistry (Acrylic, EMA, PU, ...)
Amount of adhesives & releasability during washing

Additives
Nature of the additive (UV stabilizer, Antiblocking, Oxygen scavengers)
Yellowing behavior of the additive

Adhesives (for labels/lids)
Nature of the adhesive (hotmelt, Acrylics)
Washability behavior
Residual adhesive - Yellowing

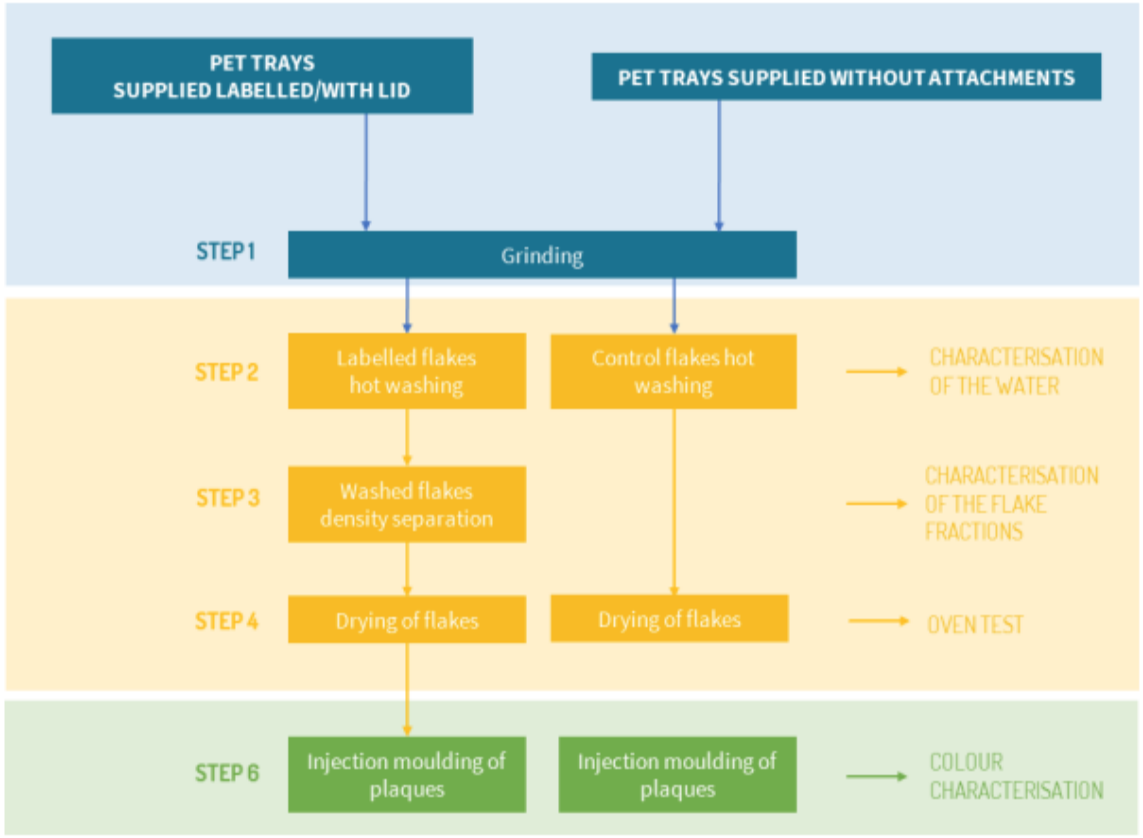
Barrier material
Chemistry (SiOx, EVOH, other)
Amount of barrier material & position of the barrier material

Inks & Varnishes
Behavior of the inks during washing (resistant, bleeding, washing)

Sorting behavior is crucial!
For materials: Depending on the size/weight of the labels, lids, pads, ...

RecyClass | DEVELOPMENT OF PROTOCOLS

First focus: Development of a protocol to evaluate the compatibility with recycling of lids & adhesives



Grinding: Allow already some lids or labels to partially detach due to friction

Hot washing : 70°C with 1.6 wt% NaOH and 0.3 wt% surfactant

Separation by density: Allow separation of separated polyolefin-based lids

Injection moulding & oven tests: Allow the identification of non-removed lids or adhesives traces

Figure 3: Pass/fail criteria for PET tray flakes coloration.

No colour variation OK | Homogeneous coloration of flakes OK | Located degradation NOK

RecyClass | PET THERMOFORMS DESIGN

IMPACT ON SORTING

Lids & soaker pads are often made of polyolefin or other non-PET material.

This can lead to a decrease of NIR sorting efficiency and a lost of PET trays into the mixed plastic fraction.

WHAT TO CONSIDER:

- Surface coverage
- Material
- Thickness

IMPACT ON RECYCLABILITY

- Adhesives are used to apply label on packaging.
- Adhesives are also often present to glue the soaker pad to the tray.

Adhesives must be releasable during the grinding/washing process.

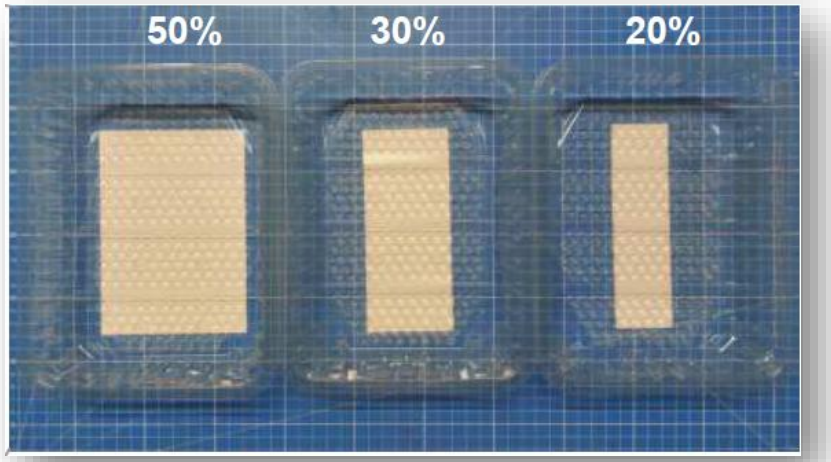
WHAT TO CONSIDER:

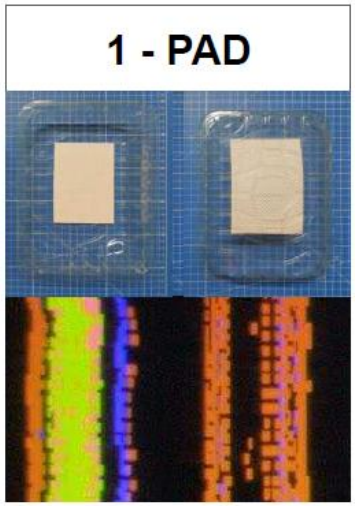
- Nature of the adhesive
- Quantity of adhesive
- Need for soaker pads

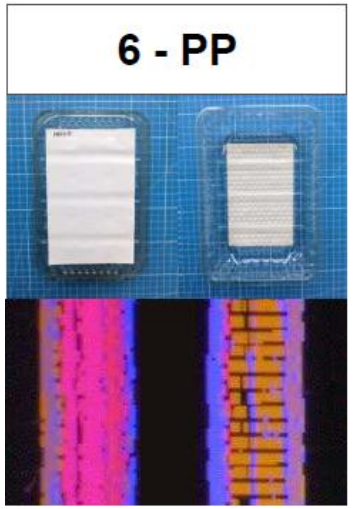
RecyClass | TESTS

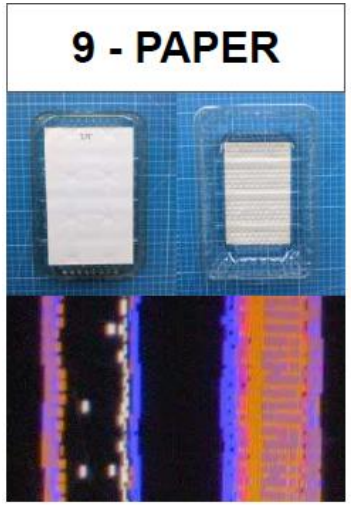
List of tested samples:

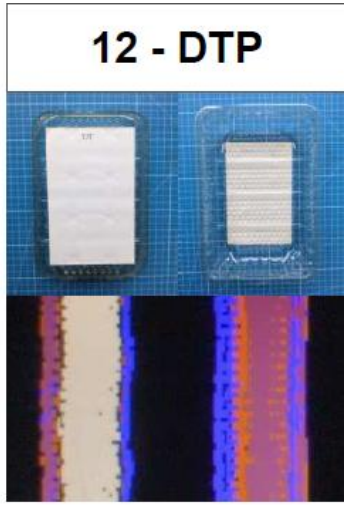
- PP, Direct thermal paper & paper labels with coverage from 20 to 50 %
- Glued soaker pads with coverage from 20 to 50%
- Combination of labels & pads

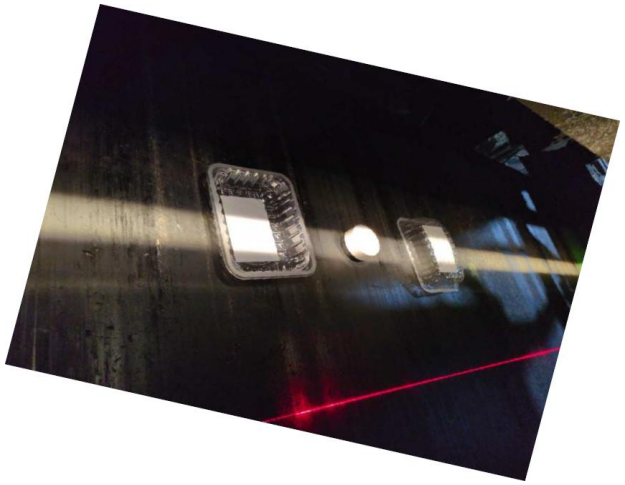










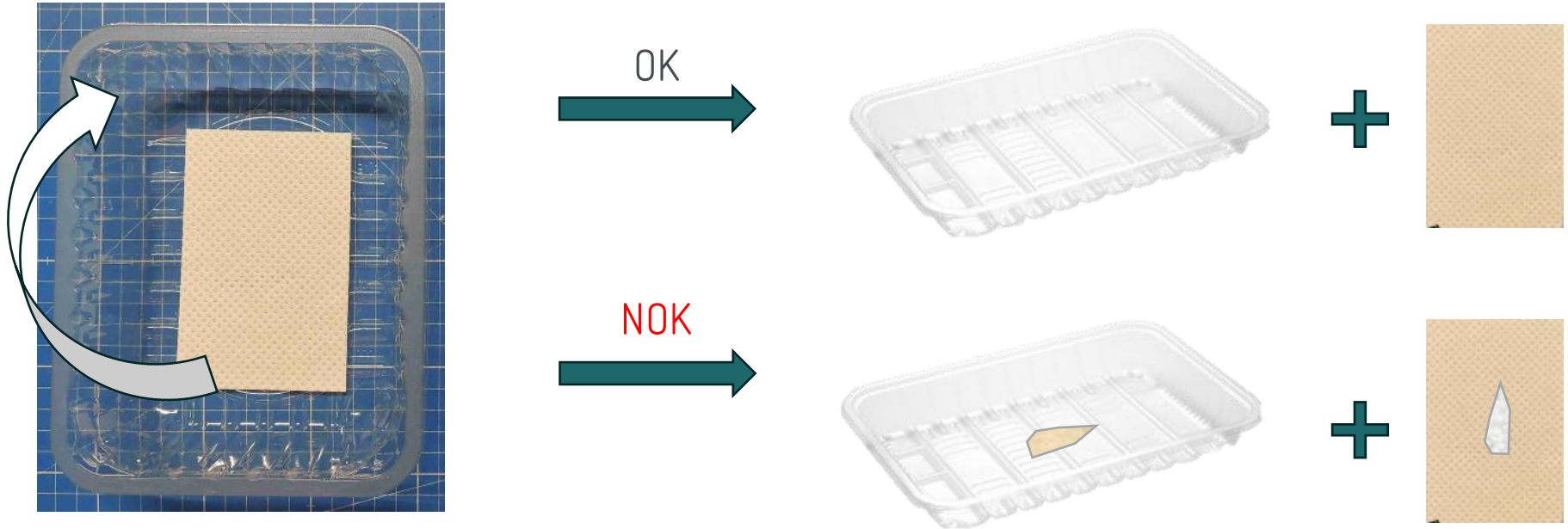


RecyClass | CONCLUSIONS

- Up to 50% coverage, labels and soaker pads do not seem to hamper the sorting of the PET Trays
- Soaker pads do not allow for the detection of the PET tray underneath
- Increasing the coverage of soaker pads continuously reduced the PET detection
- Real cases from the market could be well detected and sorted within the PET Trays stream
- Tested combination of labels and soaker pads did not lead to worse sorting results than when both components were separated
- Presence of PO-based lids 75% opened did not negatively affect the sorting of the PET tray

RecyClass | SOAKER PADS

- Most of the soaker pads are glued to PET Trays
- For some specific markets (France, Belgium, etc.), it is necessary to attach the pads because of how the trays are displayed in markets
- Existing options on the market with one dot of easy detachable glue
- Soaker pads are always composite materials and never 100% PO



PET Trays with porous enabling liquid retention	Soaker pads & bubble pads easily removable by hands; Soaker pads not hindering recognition of the underlying PET polymer by covering less than 50% of the back of the tray (sorting test mandatory above 50% coverage); Black soaker pads (sorting test)	PVC / PS / EPS / PU / PA; PC/PMMA; Thermoset plastics/metals; Soaker pads & bubble pads not easily removable by hands or leaving residue glue

RecyClass | MULTILAYERS PET TRAYS

In January 2025, RecyClass decided to consider PET Multilayer trays as potentially compatible with recycling, therefore opening several doors such as:

- ☐ Enabling companies to perform recyclability assessments with multi layers, and therefore boost innovation
- ☐ Give clear guidance on how to improve the design of multilayers (laminating adhesive, barrier systems, …)
- ☐ Promote monolayers when no barrier is necessary
- ☐ Enabling companies to test their multilayers with RecyClass, to prove that their systems are compatible with recycling with lab testing

This could be a first step in promoting the recycling of PET Trays and attempting to increase collection volumes in Europe.

Key Design recommendations for multilayers:

- Barrier material to be used within the PE layer
- No direct contact between PET and barrier layers
- Laminating adhesive to allow separation of the layers

RecyClass | PET THERMOFORMS

RecyClass — **Transparent Clear PET Thermoforms**

		YES - FULL COMPATIBILITY	CONDITIONAL - LIMITED COMPATIBILITY	NO - LOW COMPATIBILITY
	MATERIAL COMPOSITION (AMOUNT OF PET (EXCEPT LID) IN THE PACKAGING)	A >= 95%, B >= 90% and all packaging features are FULLY compatible with recycling	C >= 70% and all packaging features are FULLY compatible with recycling	D >= 50%, E >= 30% and all packaging features are FULLY compatible with recycling
	DESCRIPTION (TEST PROTOCOL)	Materials that passed the testing protocols with no negative impact OR materials that have not been tested (yet), but are known to be acceptable in PET recycling	Materials that passed the testing protocols if certain conditions are met OR materials that have not been tested (yet), but pose a low risk of interfering with PET recycling	Materials that failed the testing protocols OR materials that have not been tested (yet), but pose a high risk of interfering with PET recycling
	DESCRIPTION (METHODOLOGY)	In case of at least one limited compatibility one penalty is applied, lowering the recyclability class from A to B or from B to C	In case of at least one limited compatibility one penalty is applied, lowering the recyclability class from C to D	In case of at least one limited compatibility one penalty is applied, lowering the recyclability class from D to E or from E to F
MAIN BODY	MATERIAL *	PET Thickness > 180 µm	PET/PE multilayer with or without barrier not hindering NIR detection of the PET	Other PET multilayers; PLA; PVC; PS; PETG; C-PET; PET-GAG; Expanded PET Thickness < 180 µm (sorting test)
	COLOURS	Transparent clear;		Opaque; Other transparent colours; Metallic
	SIZE		Items compacted < 6 cm	Items compacted < than 2 cm
	PRODUCT RESIDUES (EASY TO EMPTY INDEX)	A if the index is < 5 %; B if the index is < 10 %	C if the index is < 15 %	D if the index is < 20 %; E < if the index is 25 %; F if the index is > 25 %
	BARRIER	PET based oxygen scavenger without yellowing effect; SiOx and AlOx plasma for barrier on lid; For multilayers: Barrier material within PE layer (i.e PE/EVOH/PE) or with barrier material blended in PE	PET based oxygen scavenger with limited yellowing effect	Barrier layers within the PET layer or in direct contact to PET layer; PA; any other barrier; any other oxygen scavenger
	ADDITIVES	Silicone surface coating; Antiblocking masterbatch <= 3 %	UV stabilizers; AA blockers; optical brighteners; Antiblocking masterbatch > 3%; Anti-stat agents; anti-fogging agents	Bio/Oxo/Photodegradable additives; Nanocomposites
	LAMINATING ADHESIVES FOR MULTILAYERS**	Water-based acrylics	EVA	Solvent-free laminating adhesives
DETACHABLES	CLOSURE SYSTEM (LIDDING FILMS)	Floating plastics with density < 1 g/cm³ and easily removal from the tray and without glue residuals;	Unprinted PET or BOPET films; Foamed PET	Any other film
	OTHER COMPONENTS	PET Trays with porous enabling liquid retention	Soaker pads & bubble pads easily removable by hands; Soaker pads not hindering recognition of the underlying PET polymer by covering less than 50% of the back of the tray (sorting test mandatory above 50% coverage); Black soaker pads (sorting test)	PVC / PS / EPS / PU / PA; PC/PMMA; Thermoset plastics/metals; Soaker pads & bubble pads not easily removable by hands or leaving residue glue
SYSTEM FILM	FACESTOCK LABEL MATERIAL	Labels in PE; PP; OPP (all with density <1 g/cm³), with a size that does not hinder* the recognition of the underlaying PET-polymer (<50% coverage)	BPA-free paper labels without fibreloss during recycling process Labels with a coverage >50% (sorting test)	Plastic labels with density > 1 g/cm³; Paper labels with fibreloss during recycling process; Paper labels containing BPA; Non floating paper labels
	ADHESIVES (FOR LIDS, LABELS, SOAKING PADS...)	Alkali/water soluble or alkali/water releasable adhesive at 70°C	Alkali/water soluble or alkali/water partially releasable adhesive at 70°C	Any other adhesive
	INKS	Retentive inks compliant with EuPIA Exclusion Policy applied on removable parts (lids & labels);	Production or expiry date directly applied on tray	Bleeding inks; Inks non-compliant with EuPIA Exclusion Policy; PVC co- and terpolymer binders; Any other chlorinated binders; Any direct printing on PET thermoform
	OTHER DECORATIVE TECHNOLOGIES	Laser marking for production or expiry date		Any other laser marking

RECYCLED CONTENT: No change in the recyclability assessment. A separate "Recycled Plastics Traceability Certification" based on a Chain of Custody approach is available with RecyClass
* Polymer resin can be either fossil- or bio-based, virgin or recycled.
** Test campaign to be performed in 2025

Last update: January 2025

Since January 2025, RecyClass considers **both mono and multilayer PET trays** as potentially recyclable

Ongoing investigations on:

- ❑ **Sealant solutions** for PET Trays
- ❑ **Adhesives used in PE/PET multilayer** Thermoforms
- ❑ Validation of a **recyclability evaluation protocol for PET Trays**
- ❑ Impact of **glue used for soaker pads**
- ❑ Sorting and recyclability behaviours of **PET blisters**

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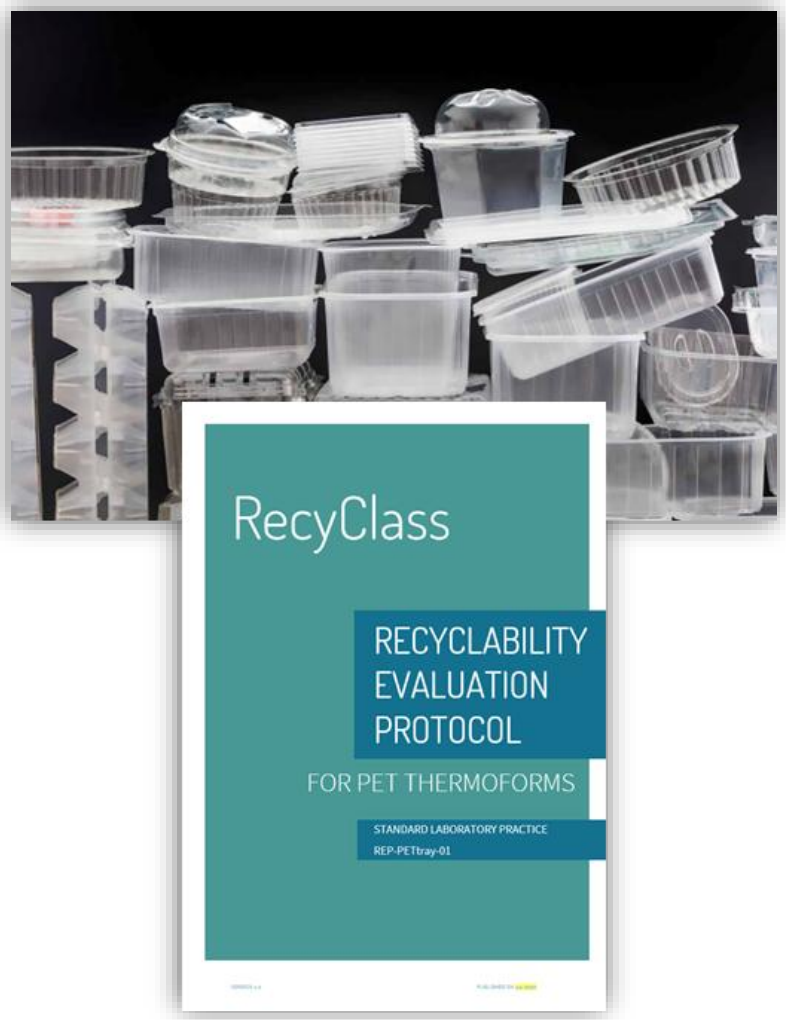
PET Thermoforms Recyclability Protocol developments

RecyClass | PROTOCOL LABELS & LIDS ON PET TRAY

- ❑ The Recyclability Evaluation Protocol for Labels and Lids on PET trays has been published on our website
- ❑ Tests can be conducted at our recognised testing facilities:
  - ✓ IKTR (Germany)
  - ✓ Norner (Norway).

Scan the QR code to access more information

RecyClass | PROTOCOL PET TRAY – PACKAGING



DEVELOPMENT FULL PROTOCOLS REP-PETtray-01

- ❑ **Validation Completed:** 2 PET Trays structures have been tested to confirm the validity of the procedure
- ❑ Testing completed at IKTR

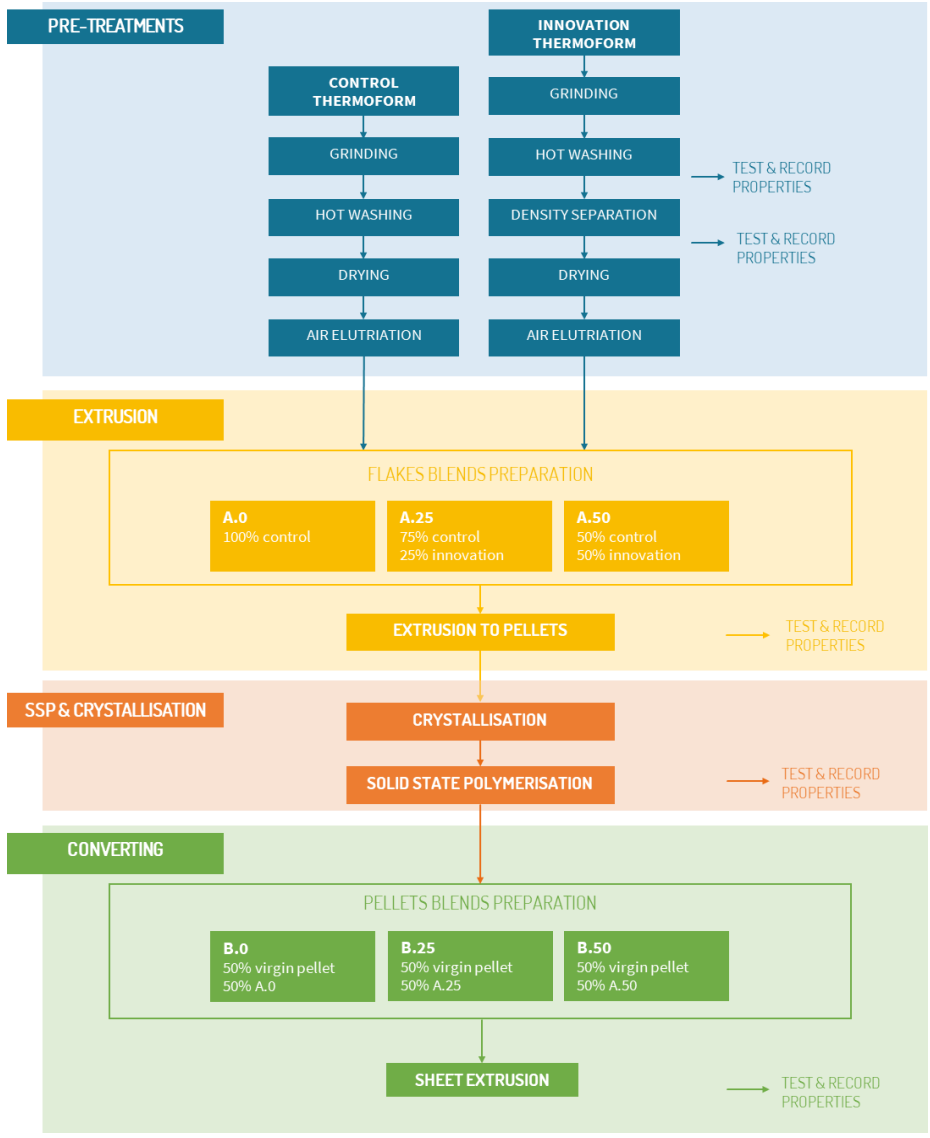
Publication of the Protocol expected by September

RecyClass | PETtray- SCOPE OF THE PROTOCOL

SCOPE OF THE PROTOCOL

Packaging solutions or Innovations covered:

1. PET resins
2. Barrier materials
3. Additives that do not affect the density of the PET packaging
4. PET and non-PET closure systems
5. PET and non-PET liners, seals, and valves
6. Decorations of PET thermoforms
7. Adhesives for lids, labels or soaking pads
8. Printing and inks



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Ongoing investigations on PET Thermoforms

RecyClass | SEALANT SOLUTIONS PREPARATION

Objective:

Gather data on the various sealant solutions used for sealing PET trays

Testing procedure:

Recyclability Evaluation Protocol for Labels and Lids on PET trays

CHEMISTRIES SELECTED FOR SEALANT SOLUTIONS:

- EVA
- Acrylic
- Co-polyester

Sealant solutions will be applied to a PO lid and then sealed on a monolayer tray.

A target thickness ratio of 10:1 (lid:sealing layer) will be used

RecyClass | LAMINATING ADHESIVES TEST CAMPAIGN

Objective:

Gather data on the type of lamination that is easy to delaminate and leaves the least residue on the flakes.

Structure under evaluation:

PET / Adhesive / PE

Testing procedure:

Hot washing and density separation to determine which solution delaminates easily, and testing more samples.

CHEMISTRIES USED FOR LAMINATING ADHESIVE SOLUTIONS:

- Acrylics
- Polyurethanes
- EVA

RecyClass | PET BLISTERS

RECYCLABILITY

OBJECTIVES

- ❑ Push for monomaterial solutions
- ❑ Investigations on the inks used on the lids
- ❑ Any barrier material or copolyester used must be assessed via REP-PETtray-01

SORTING

OBJECTIVES

- ❑ Gather data about sorting of PET blisters in order to guide the pharmaceutical industry on PET blisters design
- ❑ Potentially update the DfR guidelines based on the obtained results

CONSIDERATIONS

- ❑ Important to consider both size and NIR sorting
- ❑ Size of the blisters and composition of the blisters can strongly affect sorting

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KEY TAKEAWAYS

- Need to push for PET trays to be sorted into a monomaterial stream to enable development of PET Trays recycling plants.
- Objective is to allow rPET from trays to be used back in tray
- Monolayer PET Tray solutions should be preferred to multilayer, when possible.
- Multiple features, such as labels, soaker pads, adhesives, sealants and lids, can affect the sorting and recyclability of PET Thermoforms. RecyClass is working on generating more data to support fact-based Design for Recycling Guidelines for PET Trays.
- RecyClass can support you in the validation of new PET Thermoform designs.
- By leveraging expertise from the entire value chain, solutions can be developed to ensure the possibility of PET Thermoforms being recycled back into PET Thermoforms applications instead of bottle rPET.

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Questions & Answers

Use the Q&A box in the top-right corner of your screen

RecyClass

Thank you for participating!

Stay tuned for the upcoming session on Industrial and Pharmaceutical packaging!

October 2
3:00 – 4:00 PM CEST

RecyClass.eu/events