



# **PETcore Annual Conference2021**

Session 1 "2019 PET Market, Collection & Recycling Rates" **Recycling PET thermoforms working group.** 

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# Why PET thermoforms recycling is a business opportunity

It's more than regulations and policies

There is an **increasing demand** of PCR from bottle industry after **SUP implementation** 

**Thermoforms**, that have been one of the major consumers of rPET bottle flakes, are now looking for **alternative sources of PCR** with the aim of a true close loop

Recycling thermoforms is the final step in closing the already successful PET recycling loop.





### Landscape of PTTs recycling

Out of 1MTons PET sheet consumed inEurope just 15% is collected

PET products collected & sorted (1)







Greater transparency of EPRs reporting is required in order to further improve the level of data confidence

Sources: (1) EPR schemes reporting CITEO, COREPLA, RECOUP, FOSTPLUS and others (2) PET Market in Europe. State of play. Eunomia



### **PETcore Recycling PET thermoforms WG**

**Demonstrate recyclability** of PET thermoforms.

Maintain and possibly **increase the market share** of PET thermoforms in the European market.

Improve the image of **PET thermoforms as best-in-class** by promoting a valuechain approach by end users (retailers, brand owners, consumers).

Provide sustainable and reliable end of life options for PET thermoforms.

**TF1.Sorting & Recycling**: reports about the status of the art in collection, sorting and recycling technologies of PET thermoforms

**TF2.Recyclability** technical committee of the platform (SC and TC)

**TF3.Demonstrate food contact compliance** of rPET from trays: Both Direct contact and functional barrier technologies.

**TF4.Other end applications** 





/ersion: Jan 202 ESIGN FOR RECYCLING GUIDELINES FO All packaging sh be tested according o the Petcore Eur Guidelines and PE trays Recycling rotocol, evaluate by RECYCLASS. and color material; VOH; PA; any other ba EPBP oven test mess effects after EPB was offer to after \$75 s other isldities (17) urbatch; None of them teners; antibicsking; an muld affect clarity t agents; anti-fogging (on ating area]) With Limited any other sinking film with 7. OR Floating camb darties with density < 0.9 ensity > 1 g/cm3 (to be pro IP sink/float test. with sink/Roat best) 3 ; NO glue residuals; H **EP BP** glue removal best T, no lebding film residual FBP oven test tree SiDs AluDa planet Sales 2 NO due tesido PDP sink/ficat test EPEP glue removal test EPEP oven test oved (# 90°C ; if no PC SiOs and AluOs plasm 1707 sink/fixet test LABEL PREFERED PA-Tree Paper labels not Fastic labels where label density >1g/cm3 in the mo osing fibers (pulping) and ensity <1 glcm3 in the mon neavily printed and adhesize avity printed and adhesis area - Paper labels loosing Ibers (pulping) - Paper skning BPA - non f hes with 100% ran dhesives with 100% remov all other adhesive atio and no adhesive reside on flakes @ 85°C testing to and no adhesive resid fakes @ 70°C testing any other adhesive ter tr alkali upluble in t CP DP alue removal to trair follow DUPA inks that blend; toxic or rdous inits other direct prin PVC/PS/EPS/PU/PA in HOPE / LOPE / PI paker pads, bubble pads and (Nylon): PC / PMMA Ther uper & carboard - all inserts tics / metals; non co hould be completely

Design for sorting and recycling



**Design for sorting and recycling** is the major tool for boosting trays circularity.

Design for recycling **guidelines** developed given existing recycling technologies but continuously updated by TASK FORCE 1 experts.

**Different organizations** publishing guidelines have to be **aligned**.

Full pack elements have to be taken in count.

Don't stifling innovation.

	Q4 2020	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022
Clear mono-PET trays Design f	or Recyclability protocol	Platform operational	>			
Color PET trays			Design for recycling	Recyclability protocol	Platform operational	
				1		
Multilayer PET Trays			Design for recycling	Recyclability protocol	Platform operational	$\geq$
	1 1					

https://www.petcore-europe.org/images/pet/Design\_for\_Recycling\_Guidelines\_PET\_Trays\_Clear\_Transparent\_Jan\_2020.pdf



Establish a robust recycling stream

Design alone not enough to enhance quality.

Bales specifications must facilitate PTTs recycling.

Sorting must be improved.

Separate collection or post-selection. Food/non-food Mono/multi Colors

Watermarks or other identification alternatives have to be implemented.

**Final consumer** has to understand the value of waste and **collaborate**.

Major challenge lies in the ability for collection and sorting systems to capture enough pc PET trays of consistent quality going forward

Pro	duct Specification 06/2018 Fraction-No. 328-5			
Sorting fraction:	PET - Trays			
A Specification/Description				
Jsed, residue-drained, system-c	ompatible trays made of polyethyler	e terephthalate (PET),		
1. Trays, e.g. for meat, fruit and v 2. Transparent PET bottles incl. s The supplement is part of this spe B Purity	egetables, salads, etc econdary components such as lids, l scificationt Kennisinstitu	abels, etc.		
At least 75% by mass PET - Tri Maximum 20% by mass transpo	Prod	erpakken		
C Impurities				
Metallic or mineral impurities wi	Sorting fraction:	PET trays		
Opaque PET- bottles Other plastic items Paper/board/cardboard, PBC of Other residues Examples of impurities: - Aluminised p - Foreign mati - Composable	terephthalate (PET), volume s 5 litre 1. trays, e.g. meat trays, fuit trays as bottles Transparent, clear, coloured, opaque inlay materials etc. 2. Transparent PET bottles System-compatible implies that the j source separation or post-consumer	s in the following composition: nd other dimensionally stable PET pac p, including ancillary constituents such	ckages, e.g. mugs, bo n as labels, lids, foils,	wis,
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Innovate to overcome quality and technical challenges





#### **PET Recycling process must be adapted**





Innovate to overcome quality and technical challenges





Adapted delabelling

#### **PET Recycling process must be adapted**





Innovate to overcome quality and technical challenges





#### **PET Recycling process must be adapted**





#### **PET Recycling process must be adapted**





#### **PET Recycling process must be adapted**







recycled, trays need to be sorted from PET bot separate reprocessing in dedicated lines.



Innovate to overcome quality and technical challenges



Hot washing using high pressure and friction.

**Chemically assisted delamination**: use of reactants to degrade, dissolve or minimize bonding capabilities to make possible the separation of the different layers.

Thermolaminated, coextruded and laminated with specific adhesives structures can be recycled with these processes.

Delamination allows recyclers to work in a PET mechanical recycling process without pre-sorting (mono/multi) needs.

#### **PET Recycling process must be adapted**

To ensure that most PET trays sorted for recycling are, in fact, recycled, trays need to be sorted from PET bottles for separate reprocessing in dedicated lines.



More tan 10.000 Tons of

trays recycled

using those

technologies



**EPTP Protocol** 

#### The roadmap to success



**PET trays recyclability evaluation protocol** 

**Evaluation of the impact** on recyclability of any **existing product**, **new design** or **innovation**.

#### To ensure:

Thermoform **is compatible** with collection, sorting and recycling capabilities installed.

Properties of the new product.

Aligned with recycling guidelines.

Several labs will be homologated across Europe.

Application form and Modus Operandi already available.

#### Send your applications!



**Demonstrate Food** contact compliance

FOOD

SAFETY

#### materials into new food contact materials **EFSA opinions** :

"The input of all the processes is hot caustic washed and dried PET flakes originating from collected post-consumer PET containers, mainly bottles and trays, containing no more than 5% of PET from non-food consumer applications".\*

**Regulation 282/2008** and **EFSA Criteria** for Safety Evaluation do not distinguish

between bottles, trays, sheets, etc. Rather it applies to recycling of food contact

#### DG Santé clarified:

Materials and articles that have been manufactured in accordance with the European Union legislation on food contact materials could theoretically consist of 100% material originating from food trays

**Functional barrier** contribute to reduce potential risk

Dedicated **NIAS** risk assessment to manage uncertainty



\*RECYC031, RECYC032, RECYC045, RECYC046, RECYC048, RECYC049, RECYC059, RECYC077, RECYC100, RECYC103 among others



Generate demand of rPET tray flake



Different **tax** and **legislative** initiatives are coming into force to increase recycled content.

#### EPRs support is basic for boosting demand.

**Ecomodulation** offering **cost incentives** for products meeting recyclability criteria and incorporating recycled material.

**Packers & Retailers** have to ask for **closing the loop** by using PCR from thermoforms.

**Converters** have to set **targets** around.

CITEO Recyclage PB PET Wellman, Valorplast, Klockner Pentaplast, Paccor, Guillin, Indorama Ventures, Ioniqa

Several projects across Europe looking for incorporation of recycled content from PTTs in food packaging and other products



PET Trays Recycling Klöckner Pentaplast, Sulayr, other converters & recyclers

(**i(**)

RePETitio Erweiterung der PET Circular

Econor





target is to reach 30% Tray2Tray by 2025

Generate demand of rPET tray flake



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Several projects across Europe looking for incorporation of recycled content from PTTs in food packaging and other products



PET Trays Recycling Klöckner Pentaplast, Sulayr, other converters & recyclers Kindommeningung Kunsttöfferpackungen e.K. PET Trays Working Group of the German Plastic Packaging Industry

Association

RePETitio Erweiterung der PET Circular

Econor





### Call to action!! We need your contribution. Join TGW!

## **Petcore Europe**

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