



# BOPET lidding positive impact on recyclability

PETCORE Annual meeting – 01st February, 2023

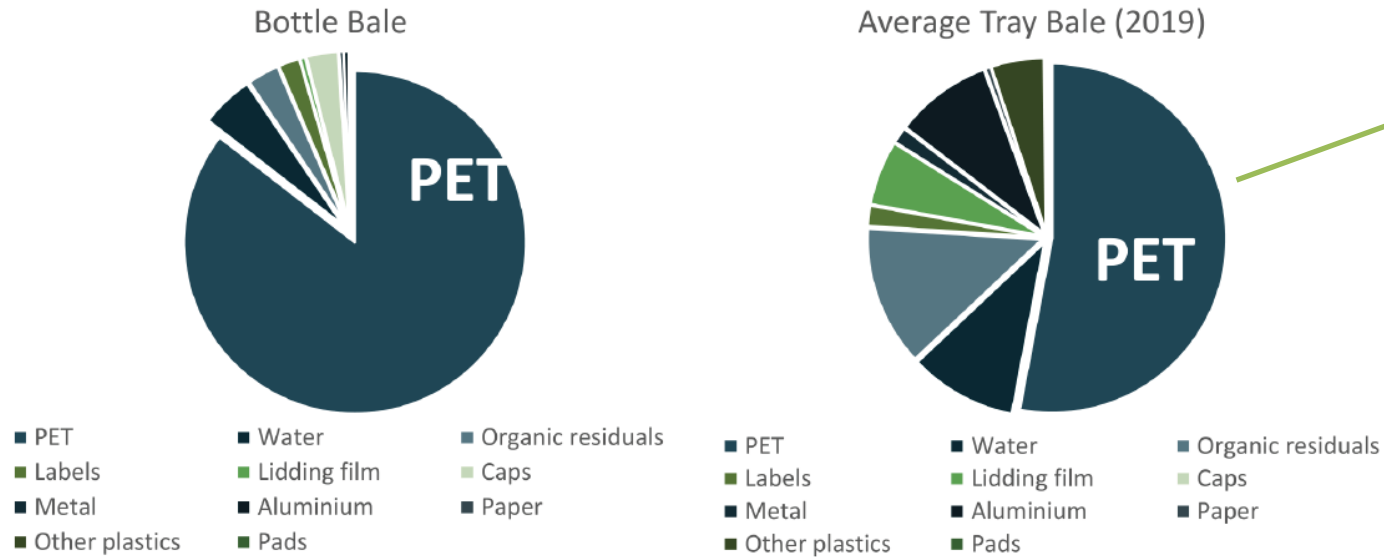


# PET tray recycling stream

Reducing the contamination level of the whole PET trays stream for improving the quality of recyclate

- Circa 1 million tons of PET trays in the market within 50% mono
- Only 3% are collected in separate stream

## Contaminants in bales



Only 65% PET in Tray bale (2019)



# multi-polymeric liddings

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- Multilayer structures containing PO are contaminant for PET trays stream
- Multilayer trays are less likely to be recycled and have a negative impacts on the PET recycling streams by increasing losses, reprocessing costs and reducing the quality of rPET.
- Multilayers are not collected for recycling
  - Likely to be mis-sorted by NIR
  - Other polymers than PET cannot be cost effectively separated
  - Other polymer can affect rPET quality and hinder reprocessing



# BOPET circularity as a lidding

## **Mono PET lids and trays is advisable as they allow:**

- Mono material lidding with high PCR content (up to 100%)
- Mono-material heat seal chemistry (Viewed as recyclable in polymer simplification strategies)
- High stiffness allowing thickness reduction of the lidding (up 40% weight reduction for the lidding compared to PET/PE structures)
- Lower GHG and energy consumption.
- Perfect substrate for recyclable barrier coatings
- Optimal runnability on tray sealers, high temperature sealability
- High clarity, Mechanical strength, Stiffness and lay flat



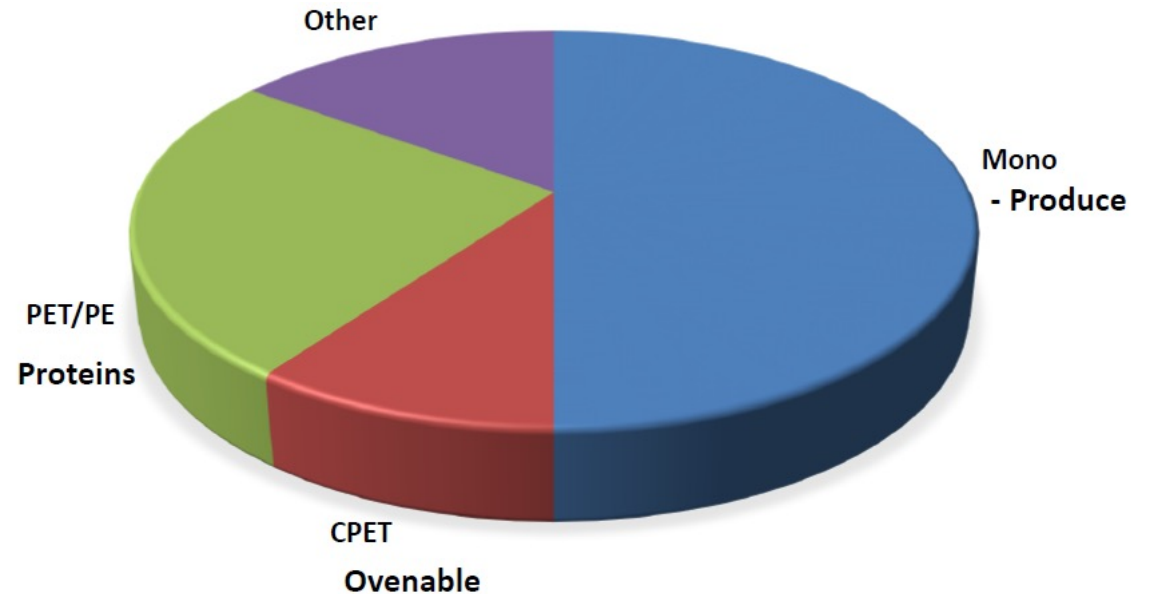
## **About PET Sealant :**

- New high-performance sealants for good sealing at low temperature even in contaminated areas
- No additional sealant layer required on Mono PET trays



# PET trays market segments

- Mono PET :
  - easy target / validation of recyclability
- Multilayer PET :
  - Sealability in harsh environment
- Multilayer barrier PET :
  - barrier need / shelf life





## Application : Produce

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- BOPET is the material of choice for clarity and machinability
- Participate to weight reduction
- Today taken for granted as the logical solution
- Sealing through contamination – juice, mayonnaise, olive oil
- Becomes Pack format of choice across Europe



## Application : Ready meals

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- PET film is the only viable material that can withstand the extremes of cooking and be fully food contact compliant, covering temperatures up to 230°C (conventional oven)
- Retort options for shelf-life extension
- Sealing through sauce contamination



## Application : proteins

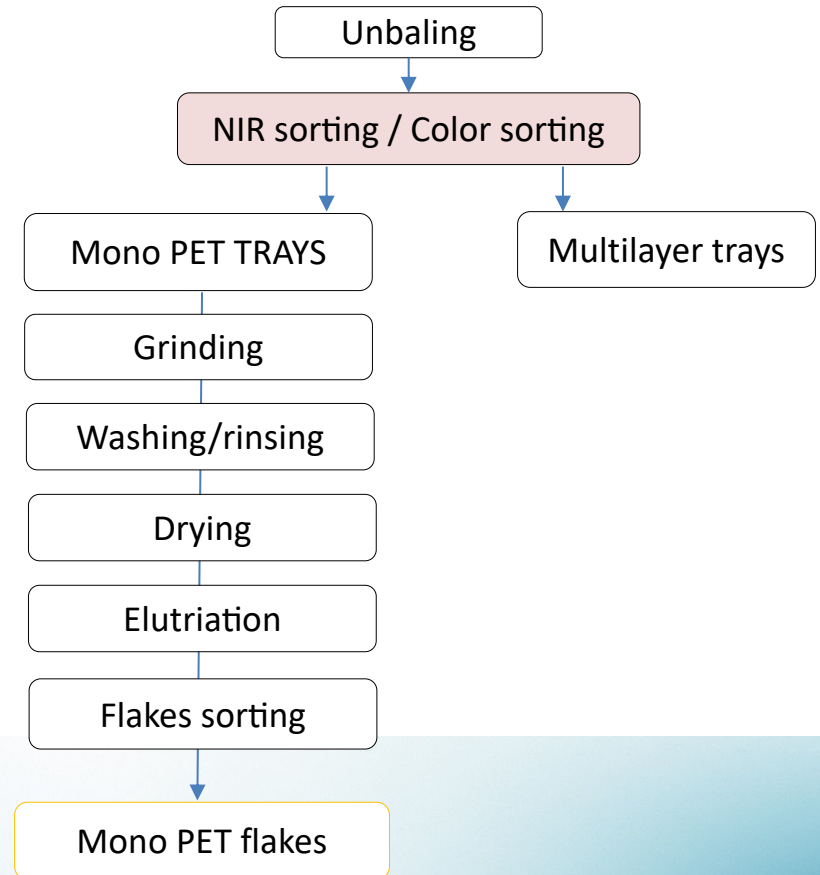
- Most demanding lidding application for mono-PET films
- Seal through contamination (Bloods, fats and soluble proteins)
- Using pure APET trays raises issue of heat seal and puts more demands on lid heat seal chemistry (Hard to move mind set of PE to PET sealants).
- Flange cleanliness / contamination becomes more important but simple filling solutions exist where there is the willingness to change
- Consideration of barrier in conjunction with MAP
- Removal of PE layer improves chances of recycling as well as reducing cost. Market conversion well underway (Fish, Pork, Sausages, Mince, chicken). Vast majority can be transitioned today





# Recyclability : Mono PET lidding reduce mis-sorting

- High proportion of lidding is not detached from the tray when disposed. Mono PET lidding reduces the risk of mis-sorting at NIR detection.
- Unprinted sealable and Peelable BOPET can be mechanically recycled with the tray (TCEP evaluation to be made on various formulation)
- Printed PET lidding are efficiently separated by air elutriation. (confirmed by Test performed with Gaiker)





# BOPET films sealing layer to match market needs

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## Essential conditions:

- Heat seal through contaminants in harsh environments.
- Melting point/adhesion must be significantly lower than the outer layer to ensure a good seal. Sealant layer must prevent "channel leakage".
- Be transparent for product visibility, have a suitable COF for machinability and be approved for direct food contact.

## Process Technologies commonly used on BOPET films:

- Coextrusion, coating, Lamination, hot melt coatings.

## Recyclability

- To maintain excellent tray recyclability, the impact on color, haze, clumping or process issues must be carefully evaluated through the TCEP protocol.
- The most commonly used sealants on PET, such as APET heat seal resins and saturated polyesters, have very little detrimental influence on recyclability.



# **BOPET positive impact on PET trays recyclability**

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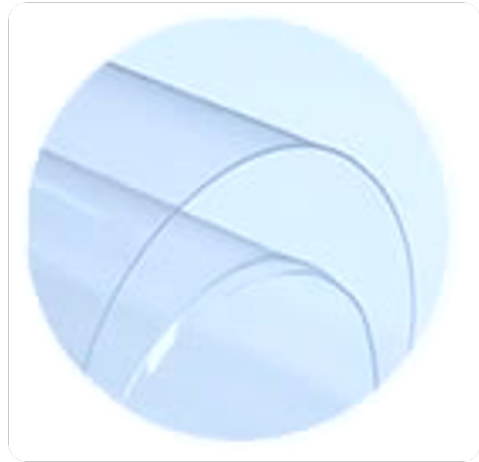
## **Evaluation of the positive recyclability impact :**

- Ongoing First evaluation through TCEP protocol and industrial scale trials to showcase the impact
- Validation with the value chain within the Working group
- Evaluation of the impact on the market needs in term of :
  - Barrier / shelf life
  - Sealability / peelability / resealability
  - Market segments where the switch to mono PET packaging is easier.



# mono-PET tray and lid solutions

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- Mono PET has existed for several decades
- Majority of applications can be converted immediately
- Does require whole value chain to buy into concept
- Many conflicting interests along the way

We as an industry are sitting on a unique polymer that enables mono-material tray and lid solutions with high percentages of recycled content in direct food contact applications. This is a leading position, and we must make greater emphasis of this value proposition.



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