

Status of thermoform recycling in Europe

Petcore Thermoform
Working Group

Plastic Recycling Show – PET WG
29 March 2017 - Amsterdam



Plastics Recyclers Europe's Mission



- ✓ creation of conditions which enable profitable and sustainable business
- ✓ development by initiating recycling projects
- ✓ promotion of recycled plastics
- ✓ offering service platform



Thermoform Characteristics

➔ ca. 800-900 kMT

Monomaterial PET



100% PET

Middle gas-barrier PET



Multilayer lid

PET + seal layer

High gas-barrier Multilayer PET



Multilayer lid

Multilayer barrier

PET



Collection and sorting of thermoforms

Household plastic sorting instructions
No standard across Europe



Collection

- Kerbside or deposit system
- Depends on locals organization

Sorting

- Specific programs for multilayer
- Manual sorting needed

→ 200 kT ?

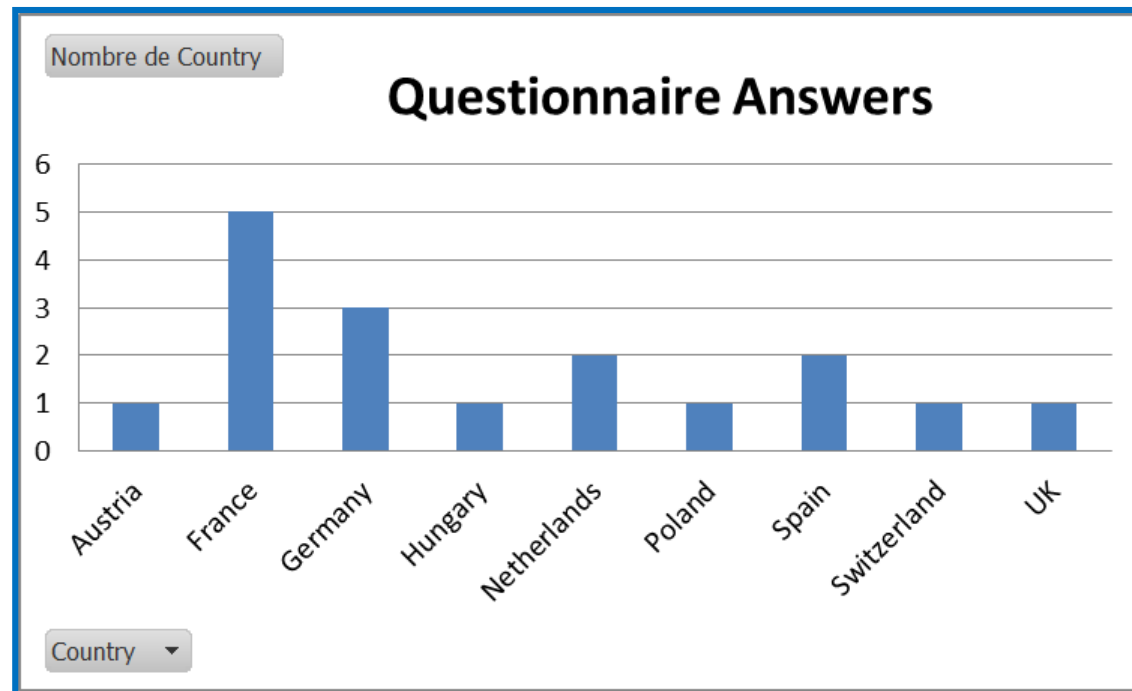
Few official data

But collected does not mean RECYCLED



Recycling situation

- Investigation among PRE members
 - ➔ Characteristics of the incoming material
 - ➔ Processing situation
 - ➔ Main issues raised
- Answers from 17 PET recyclers in Europe



Feedstock Characteristics

Mainly mixed bales



0 to 20% thermoforms
Average < 10%

Bottles

Thermoforms in bales

25%
multilayer

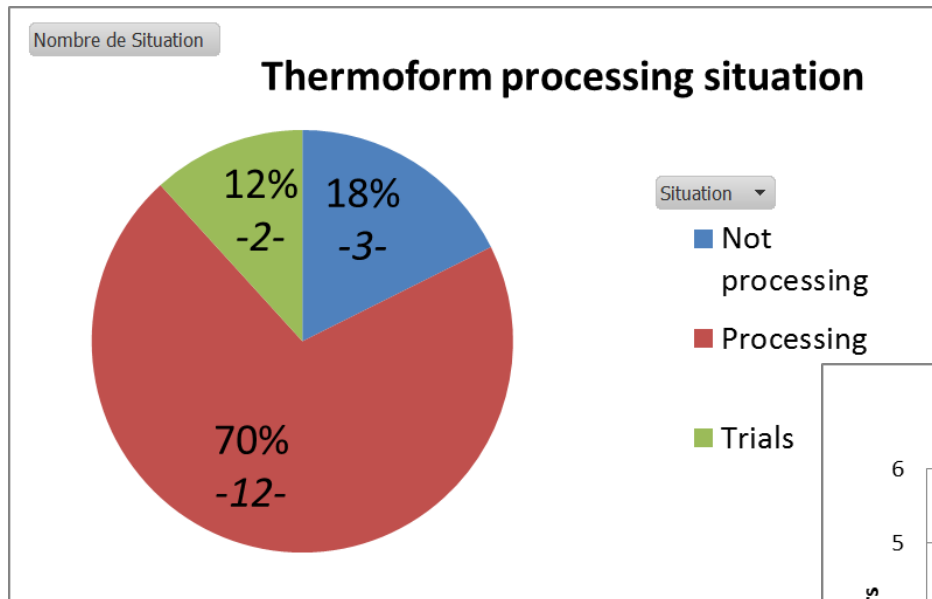


75%
monomaterial
PET

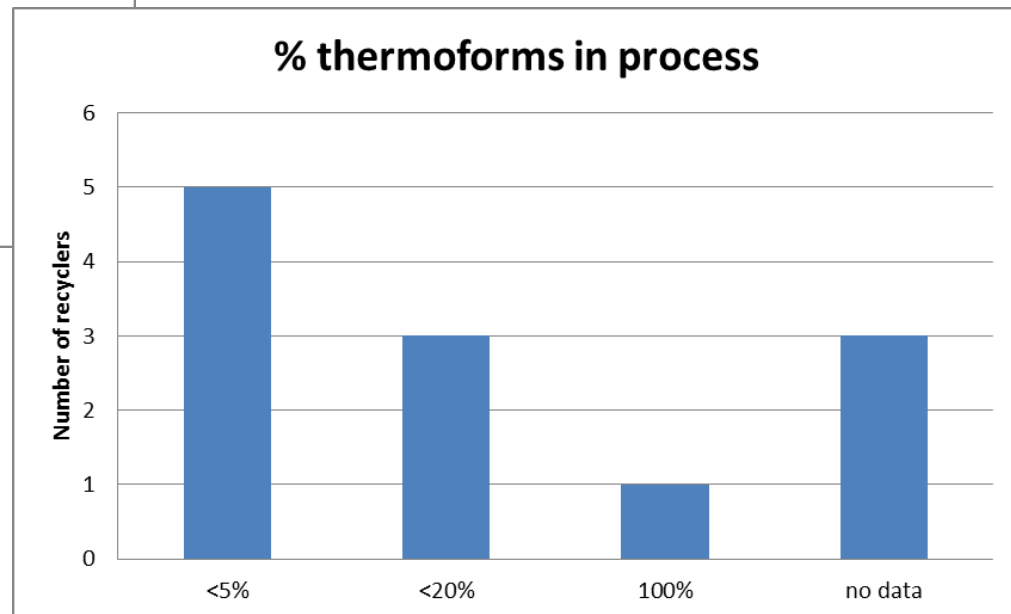


Are recyclers processing thermoforms?

- Yes but heterogeneous situation across EU: from no processing at all to 100% thermoform processing
- Processing at high dilution rates

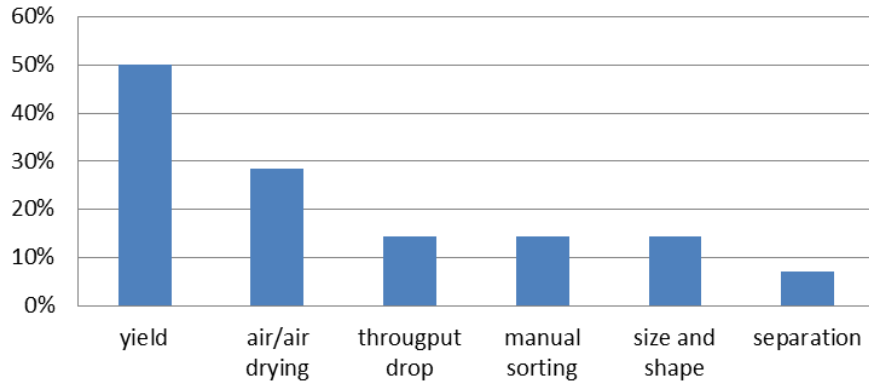


Processing capacity
→ < 100 000 T ?

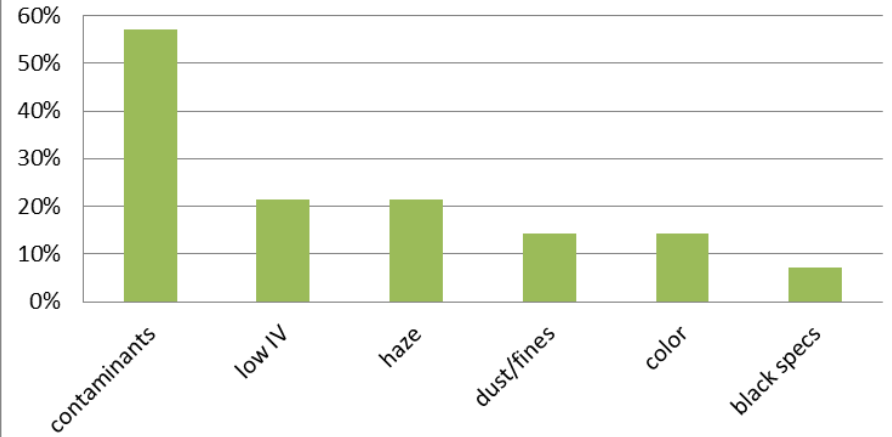


Recycling process

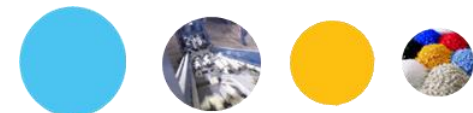
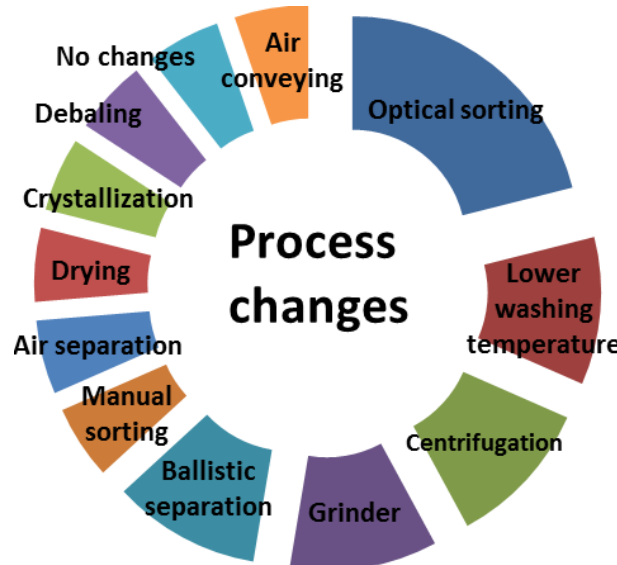
Main production problems when recycling thermoforms



Main quality issues



- Main process changes



Potential Applications

- **Existing applications**
 - High quality BTB recycling difficult to achieve
 - Other markets?
 - Opaque bottles, Fibres
 - Pipes and hoses
 - Foam , Pallets
- ➔ Technical difficulties to increase the recycling of thermoforms: shape, multimaterial, brittleness
- ➔ Main recycling process available designed to process bottles
- **Ongoing projects/trials**
 - Belgium: Fost-plus pilot project
 - France: mixed bales projects financed by Ecoemballages
 - Italy: 100% thermoform recycling stream
 - UK: WRAP study



Conclusions

- Heterogenous situation
- Thermoforms partially collected, not all recycled
- Technical challenges → cost for the recycling industry
- Regulatory challenge → 5% non food contact
- Challenge for the Thermoform industry → standardization and design for recycling



PETCORE EUROPE - PET TRAYS

Working Group

STRATEGY

- Involve all the parties in the value chain
- Combine national initiatives
- Share results
- Share best practices
- Develop communication plan
- Increase momentum

ORGANIZATION

- Task force 1: Market analysis (input and collection)
- Task force 2: Packaging technology (to support design for recycling in a circular economy approach)
- Task force 3: Sorting and recycling technologies
- Task force 4: Applications of rPET from thermoforms or mixed PET
- Task force 5: Projects/Best Practices
- Task force 6: Communications





Plastics Recyclers Europe represent National Associations and Individual Member Companies covering 80% of the European market.

We focus on the promotion of plastics recycling and the creation of conditions which enable profitable and sustainable business.

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21/02/2017

