

# Methodology guidelines to check the quality of baled PET waste

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## 1 Introduction

These guidelines are made to guide PET recyclers to assess the quality of incoming bales against the purchasing requirements or specifications. Also, a separate fraction needs to be sorted to comply with the legal requirements on PET from non-food consumer applications threshold of 5%. Recyclers are welcome to follow this guideline and adapt it to their plants and processes as needed.

## 2 Definitions

Bale	Compacted bottles from sorting of waste.
PET	Polyethylene terephthalate
PE	Polyethylene
PP	Polypropylene
PS	Polystyrene
PVC	Polyvinyl chloride
Food Contact PET	PET produced according to Regulation 10/2011 and used in food contact applications.
Non-food Contact PET	PET produced or not according to Regulation 10/2011 and not used in food contact applications.
Bottles & Flasks	Shape of the items which represent the content of the bales.
Trays	Thermoformed packaging which clearly can be distinguished from bottles & flasks.
Colours	Main colour of the items to classified as clear, transparent colours or opaque colours.
Labels	Identification of the items which helps to clarify the former content of the item.

### 3 Operating procedure

#### 3.1 Bales & sample selection

There should be an internal practice to determine the bales to be randomly selected for analysis; the sample size and the frequency of sampling should be recorded. Identification of the samples must be possible at each part of the procedure to guarantee the traceability of material back to the supplier and its delivery date.

A guidance on the sampling frequencies and minimum samples size are specified by type of collection system in Table 1. Deviation from these guidelines must be documented and justified by a reasoned analysis.

Table 1 Guidelines on minimum sample size and sampling frequency

Type of collection	Sample size (kg)	Frequency (sample/tonnes treated)
Comingling	10 - 50 kg	Every 100 ton per supplier location
Separate collection	10 - 50 kg	Every 200 ton per supplier location
Deposit	10 - 50 kg	Every 400 ton per supplier location

#### 3.2 Measurement

The following steps should be taken to measure the different fractions of material included in the bale.

Step	Description
1	Take marked bale from delivery and move the picked bale in the dedicated site for bales splitting.
2	Cut with strapping pliers.
3	With gloves, randomly sample appropriate quantity in accordance with section 3.1 from the bale and place this into dedicated a dedicated container.
4	Take back the sample to a dedicated measurement area.
5	Sort the content of the sample according to the categories referred to in section 3.4 and the flow chart displayed in Figure 1. (Advice for differentiation of FCM PET from non-FCM PET can be found in section 0)
6	Weight separately each fraction obtained from step 5.
7	Report results in the designated calculation sheet according to section 3.4 and on the split bales analysis booklet and save.

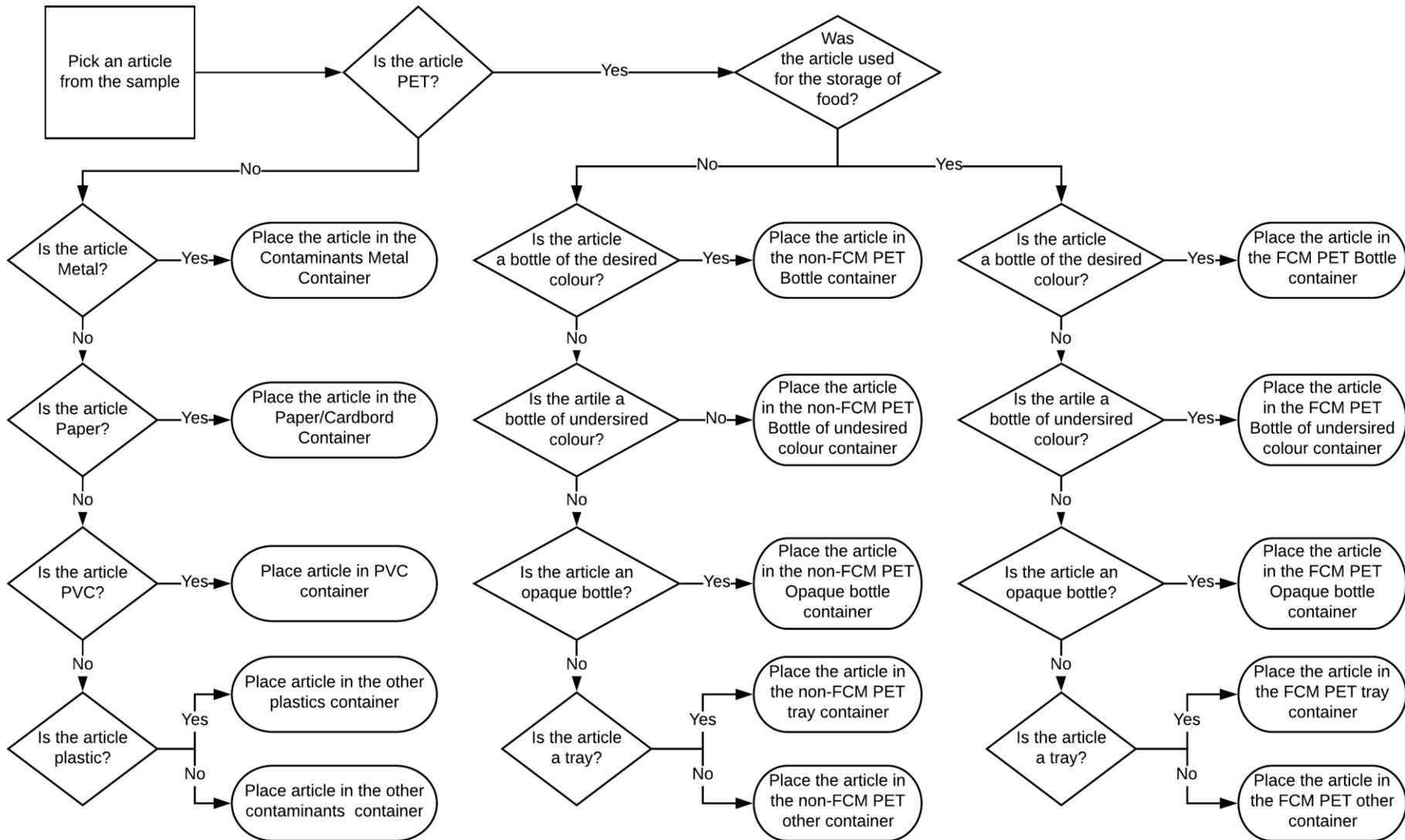


Figure 1 Flow chart for the sorting of bale samples

### 3.3 PET from food consumer applications screening

The operator must have a procedure to decide if an item is a PET from food consumer applications. Good indicators may include:

- Form of the item;
- Presence of the food contact material logo;
- Presence of food residues;
- Type of cap if present (e.g. dosing cups may indicate bottle for non-food consumer applications);
- Presence of full body sleeve may also indicate non-food consumer application item.

Any signs of misuse of a food contact article other than the intended by the producer will deem the article unsuitable for food contact recycling and shall be correctly reported.

Food contact PET example	Non-food contact PET examples
	
	
	

*Pictures courtesy of Circularis*

### 3.4 Reporting

The results of the measurement performed according to section 3.2 should be reported in the following format.

<b>Load reference</b>				
<b>Load/batch size</b>				
<b>Supplier</b>				
<b>Country of origin</b>				
<b>Targeted product/resin/colour</b>	<i>e.g. PET bottles light blue; PET transparent-</i>			
		<b>Total weight (Kg)</b>	<b>Percentage (%)</b>	<b>Specification values of the load (%)</b>
<b>Sample size</b>			100%	
<b>PET from food consumer applications</b>	<b>Bottles</b>			
	<b>Bottles other colours than targeted</b>			
	<b>Opaque PET bottles</b>			
	<b>Trays</b>			
	<b>Other</b>			
<b>PET from non-food consumer applications</b>	<b>Bottles</b>			
	<b>Bottles other colours than targeted</b>			
	<b>Opaque PET bottles</b>			
	<b>Trays</b>			
	<b>Others</b>			
<b>Contaminants</b>	<b>Metals</b>			
	<b>Carboard / Paper</b>			
	<b>PVC</b>			
	<b>Other plastics</b>			
	<b>Prohibited impurities*</b>			

\*Prohibited impurities: minerals, rubber, wood, sacks, hazardous waste, medical waste, glass, oxo-/bio-degradable material, food contamination, silicone, PETG, C-PET.

#### Summary table on the 5% non-food consumer applications

<b>Type of material</b>	<b>Total weight reported (kg)</b>	<b>Percentage (%)</b>
PET from food consumer applications		
PET from non-food consumer applications		

### 3.5 Interpretation and (corrective) action following measurement

When the concentration of non-FCM PET is greater than 5%, the operator must have a procedure in place according to *PRE Methodology guidelines to comply with the 5% PET from non-food consumer applications*, or equivalent in order to ensure the input to the recycling process does match the 5% limit.

If the measurement demonstrates a deviation of the bale from the specifications agreed with the supplier of the bale, corrective action should be undertaken. At the very least pictures should be collected of the fraction that is out of specification and submitted to the supplier to allow it to optimize its sorting equipment. Alternatively, another specification can be agreed with the supplier.

If a food contact container is discovered that has been misused to store chemical substances (e.g. gasoline), this should always be reported to the supplier.

### 3.6 Monitoring

The results of this quality assessment will provide a statistical database which may be the right system to monitor the development of the input quality over time. Depending on the data obtained, it can be used as a tool to monitor the quality of the different suppliers or its locations. This can contribute to further optimize the requirement for the downstream process and its quality requirements.

## 4 Safety

Appropriate risk management measures need to be taken to control for risk associated with the procedure and the location in which it takes place. Special attention should be paid to the possibility that misused containers may contain (residues of) substances of unknown toxicity.