Household packaging recyclability assessment methodology

This paper seeks to provide a definition of the concept of "recyclable household packaging". It also seeks to provide a method for calculating the "recyclability rate" for packaging.

All information included in this paper has been compiled by Citeo after consulting the main industry stakeholders (marketers, material sectors, technical committees, ADEME, NGOs, CNE), based on studies, findings, and technical and scientific observations. It refers to the latest technologies and technical knowledge as at its publication date.

This paper does not constitute a regulation or standard. It reflects Citeo's opinion and stance as at its publication date following discussions with the above-mentioned stakeholders.

Moreover, this paper contains opinions that are general in their scope. In some cases, there may also be special provisions applicable to specific packaging or situations.

As such, Citeo makes no guarantees as to the comprehensiveness of information provided in this paper or the applicability of such information.

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Sommaire

[1] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

A. Background and challenges

Many businesses (packaging manufacturers, FMCG producers and distributors) have undertaken strong commitments to continue increasing the percentage of recyclable packaging and ensuring that 100% of packaging is recyclable by 2025, and the Anti-Waste Law for a Circular Economy (AGEC Law) reaffirms the need to "work towards the target of 100% recycled plastic by 1 January 2025". A coordinated and harmonised method enabling accurate recyclability assessments of various packaging types is therefore needed. Discussions are also under way at European level to harmonise eco-design recommendations and facilitate the transition to recyclable packaging in various countries.

We have therefore decided to provide a definition of **recyclable household packaging within the scope of the French collection, sorting and recycling system, and a method for calculating the recyclability rate of packaging.**

The purpose of this rate is to assess the recycling potential of packaging.

In other words, it represents the potential percentage of packaging that is recycled if packaging is placed in the appropriate sorting bin and reaches the recycling stream for which it was intended.

This calculation method:

- provides a common, coordinated method for assessing recyclability for all types of marketed household packaging, taking into account collection, sorting and recycling streams that are available at scale and in practice,
- helps businesses with their eco-design projects, and in particular with improving the recyclability of their packaging marketed in France, with a view towards achieving a recyclability rate of 100%,
- provides the basis of communication with various stakeholders (distributors, public authorities, consumers, etc.),
  lLays the foundations for a harmonised methodology across Europe.

The recyclability rate and level defined in steps 4 and 5 of this paper are not intended to be used in communication for consumers (on or off-pack) to avoid any confusion over sorting.

This methodology does not detract from existing definitions such as those of the Ellen MacArthur Foundation in connection with its “New Plastics Economy” for example; rather it clarifies them to ensure optimum operability.

B. Relationship with the Packaging Directive and Standard NF EN 13430

Directive 94/62/EC on packaging and packaging waste provides a list of essential requirements that packaging must meet and, in particular, specifies that: *"Packaging shall be designed, produced and commercialised in such a way as to permit its reuse or recovery, including recycling [...]".*

Standard NF EN 13430: "Requirements for packaging that is recoverable by material recycling" includes this requirement and provides methodology to guide recyclability assessments. These are general guidelines to *"ensure that packaging is designed using materials or combinations of materials that are compatible with known, appropriate and industrially available recycling technologies [...]*". The standard also states that "*Suppliers must declare the percentage of functional packaging units suitable for recycling by weight and identify the foreseen material recycling stream(s)*". Technical report CEN/TR 13688 supplements standard NF EN 13430 by providing several examples of substances, materials and components that may hamper recycling activities in the long term.

Although standard EN 13430 provides a clear framework for assessing recyclability, it is nevertheless very general and thus provides no operational response to the question: "Is this household packaging item marketed in France recyclable?".

In this document, we provide a list of criteria and a method for calculating the recyclability rate by packaging family.

C. Proposed clarification of these definitions

In response to the question: "Is this household packaging item marketed in France recyclable?", we recommend following the steps set out below:

Step 0 / Prerequisites:
Clarify the packaging level at which the recyclability assessment is performed. This preliminary step is essential and will be addressed in detail in Sheet 1: Defining the packaging level at which the recyclability assessment should be performed.

The following steps should then be performed for each "packaging item[2]" as defined in the preliminary step.

- **Step 1**: Identify the material family to which the packaging item[2] belongs.
- **Step 2**: Check whether an industrial collection, sorting and recycling scheme is available for this packaging item[2].
- **Step 3**: Determine whether the packaging item[2] can be directed at sorting centres (or other preparation facilities) to a recycling stream and included in it.
- **Step 4**: Calculate the recyclability rate for the packaging item[2].
- **Step 5:** Collate this information to determine the "recyclability level" of the packaging item[2] to help guide measures aimed at improving recyclability.

We will outline these steps:

1) firstly in a general sense: Sheet 2: General definition of recyclable packaging,
2) and secondly in detail for each household packaging family:
    - Sheet 3: Definition of recyclable glass packaging.
    - Sheet 4: Definition of recyclable steel packaging.
    - Sheet 5: Definition of recyclable aluminium packaging.
    - Sheet 6: Definition of recyclable paper/cardboard packaging (including food and beverage cartons).
    - Sheet 7: Definition of recyclable plastic packaging.

[2] *The definition of a "packaging item" to which we refer is provided in Sheet 1.*

SHEET 1 :

Defining the packaging level at which the recyclability assessment should be performed

- Household packaging :

Before defining whether a household packaging item is recyclable, we must first identify the "packaging item" to which we are referring. Firstly, this paper only concerns household packaging, and therefore excludes industrial and commercial packaging such as secondary packaging (cardboard boxes, multipack boxes, transport boxes, trays, etc.) and tertiary packaging (pallets, cling film, etc.).

- Packaging as sorted by consumers :

In order to perform an appropriate, realistic assessment, packaging should be examined as configured on entering sorting centres (or other preparation facilities) and recycling sites.

Consequantly recyclability should be assessed with respect to "packaging as sorted by consumers", which consists of **all household packaging elements potentially remaining attached during sorting** after the product has been consumed. The assessment is therefore conducted on a "packaging item" consisting of a main element specifically sorted by the consumer and any associated elements. A definition of main and associated elements, and an illustrative list of elements generally considered as main or associated elements are provided in Appendix 1.

Link to the definition of primary, secondary and tertiary packaging provided in the Packaging Directive[3]:

Packaging "as sorted by consumers" is:

- Household packaging.
- The phrase generally relates to (all or part of) the primary packaging, sometimes described as Consumer Unit packaging.
- It may also refer to secondary packaging in the case of household multipack packaging. This covers multipack packaging used for packs, etc. (film for packs of mineral water, promotional packs, etc.).

[3] Directive No 94/62/EC of 20/12/94 on packaging and packaging waste

Packaging item = 1 main element + any associated elements

Associated elements are packaging elements connected to the main element and not automatically separated from the main element when the product is consumed and/or sorted by consumers. The Top 100 Sorting Practices Study[4] and assessments of characteristics at sorting centres have shown that consumers do not automatically separate elements, so these may remain attached when sorted. Therefore, interaction between the various materials used to make the packaging elements should be considered when assessing recyclability.

Reminder: A definition of main and associated elements, and an illustrative list of elements generally considered as main or associated elements are provided in Appendix 1.

Here are some examples of "packaging as sorted by consumers", which is the level at which the recyclability assessment should be performed:

- A **bottle** (main element) with its associated elements (a cap and one or two labels).
- A **tray** (main element) with its associated elements (a seal and a label).
- A **dispenser bottle** (main element) with its associated elements (a pump, two labels and a promotional sticker).
- A **cardboard box** (main element).
- A **sleeve** (main element).
- A **film** for a mineral water pack (main element) with an associated element (the handle).
- A **glass pot** (main element) with its associated elements (2 labels and a lid).

A CSU (or pack) may therefore consist of several "packaging items[5]" as defined in this document, thus requiring several recyclability assessments. For example, a 6-pack of yoghurt (CSU) comprises 7 "packaging items[5]", which are separately sorted by consumers:

- 6 **yoghurt pots** (main element) with a label and seal (associated elements)
- 1 **sleeve** (main element).

In the case of the 6-pack of yoghurt, two recyclability assessments must therefore be performed on 2 separate packaging items[7]:

1. The **yoghurt pot** and its associated elements (the label and seal)
2. The **sleeve**.

[4] *Source: Top 100 Sorting Practices Study – Ipsos on behalf of Citeo – 2017*
[5] *A "packaging item" consists of a main element and any associated elements.*

Examples:

Below are some other examples showing how to define the packaging level at which the recyclability assessment should be performed:

6-pack of mineral water bottles:

Pack containing several bottles in multipack packaging	Main packaging items and associated elements accounted for in the method	Packaging elements
	 1) **The bottle** (main element) and 2 associated elements (label and cap)  **2) The multipack film** (main element) with 1 associated element (the handle)	
Recyclability of bottles cannot be assessed at pack level with sufficient accuracy, since the plastic film and bottles are automatically separated by consumers and their end-of-life treatment is therefore different.	"Packaging as sorted by consumers" is the most appropriate level at which to assess recyclability. It enables packaging items to be assessed as is on arrival at sorting centres and recycling sites. Interactions between elements that remain connected can therefore be taken into account.	If recyclability is assessed at packaging element/component level, it is not possible to take account of interactions between associated elements. Consumers do not automatically separate components[6].

In the case of the 6-pack of bottles, the recyclability assessment must therefore be performed separately on 2 packaging items[7]:

1. The bottle and its associated elements (the label and cap)
2. The multipack film and its associated element (the handle).

[6] *Source: Top 100 Sorting Practices Study – Ipsos on behalf of Citeo – 2017*
[7] *A "packaging item" consists of a main element and any associated elements.*

6-pack of milk cartons:

Pack of several cartons in multipack packaging	Main packaging items and associated elements accounted for in the method		Packaging elements
	 1) **The carton** (main element) and 1 associated element (the cap)	 **2) The multipack film** (main element) with 1 associated element (the handle)	
Recyclability of cartons cannot be assessed at pack level with sufficient accuracy, since the plastic film and cartons are automatically separated by consumers and their end-of-life treatment is therefore different.	"Packaging as sorted by consumers" is the most appropriate level at which to assess recyclability. It enables packaging items to be assessed as is on arrival at sorting centres and recycling sites. Interactions between elements that remain connected can therefore be taken into account.		If recyclability is assessed at packaging element/component level, it is not possible to take account of interactions between associated elements. Consumers do not automatically separate these components[6].

In the case of the 6-pack of cartons, the recyclability assessment must therefore be performed separately on 2 packaging items[8]:

1. The carton and its associated element (the cap).
2. The multipack film and its associated element (the handle).

[8] *A "packaging item" consists of a main element and any associated elements.*

Electrical appliance packaging:

CSU packaging	Main packaging items and associated elements accounted for in the method	Packaging elements
	   **1) The cardboard box** (main element) and 1 associated element (the label) **2) The polystyrene insert** (main element) **3) Le sachet plastique** (élément principal) avec 1 élément associé (l'étiquette)	 **1) The cardboard box** (main element) and 1 associated element (the label)
Recyclability cannot be assessed with sufficient accuracy at CSU packaging level: the cardboard box, inserts and bags are separated by consumers and their end-of-life treatment is therefore different.	"Packaging as sorted by consumers" is the most appropriate level at which to assess recyclability. It enables packaging items to be assessed as is on arrival at sorting centres and recycling sites. Interactions between elements that remain connected can therefore be taken into account.	If recyclability is assessed at packaging element/component level, it is not possible to take account of interactions between associated elements. Consumers do not automatically separate these components[9].

In the case of electrical appliance packaging, the recyclability assessment must therefore be performed separately on 3 packaging items[8]:

1. **The cardboard box** (main element) and 1 associated element (the label)
2. **The polystyrene insert** (main element)
3. **The plastic bag** (main element) with 1 associated element (the label)

[9] *Source: Top 100 Sorting Practices Study – Ipsos on behalf of Citeo – 2017*

Biscuit packaging:

<table>
<tr><th>CSU packaging</th><th>Main packaging items and associated elements accounted for in the method</th><td rowspan="3">Please note: The flow pack bag is not considered to be associated with the tray as the two elements are not mechanically connected (not glued, welded together, etc.) and must be separated when the product is consumed – see Appendix 1</td></tr>
<tr><td>  </td><td> 
1) The cardboard box (main element)
2) The flow pack bag (main element)
1) The cardboard box (main element)</td></tr>
<tr><td>Recyclability cannot be assessed at CSU packaging level with sufficient accuracy, since the cardboard box, tray and bag are automatically separated by consumers and their end-of-life treatment is therefore different.</td><td>"Packaging as sorted by consumers" is the most appropriate level at which to assess recyclability. It enables packaging items to be assessed as is on arrival at sorting centres and recycling sites. Interactions between elements that remain connected can therefore be taken into account.</td></tr>
</table>

In the case of the pack of biscuits, the recyclability assessment must therefore be performed separately on 3 packaging items[8]:

1. **The cardboard box** (main element)
2. **The plastic bag** (main element)
3. **The plastic tray** (main element)

Reminder:

A definition of main and associated elements, and an illustrative list of elements generally considered as main or associated elements are provided in Appendix 1.

SHEET 2 :

Genral definition of recyclable packaging

Firstly, the packaging level at which the recyclability assessment is performed must be clarified. This key preliminary step is addressed in detail in Sheet 1: Defining the packaging level at which the recyclability assessment should be performed. **The following steps should then be performed for each "packaging item"** as defined in the preliminary step.

Step 1: to which material family does the packaging item[10] belong?

The packaging item belongs to family "X" if it consists of over 50% of material "X" by weight.

The packaging item[10] is treated as:

- a glass packaging item if it is at least 50% glass by weight.
- a steel packaging item if it is at least 50% steel by weight.
- an aluminium packaging item if it is at least 50% aluminium by weight.
- a paper/cardboard packaging item (including food and beverage cartons) if it is at least 50% paper/cardboard by weight.
- a plastic packaging item if it is at least 50% plastic by weight (no distinction drawn between resins at this stage).

Inks, glues and varnishes are not included in the calculation of material weight.

The 50% threshold was set by Citeo. We believe that this threshold is appropriate for identifying the majority material to be prioritised for recycling. Based on this majority material, we are able to identify the appropriate recycling stream for the packaging item.

The 50% threshold for the plastic family was set for this assessment methodology and is not intending to replace the other definitions of plastic packaging, e.g. the SUP Directive or the French law 'AGEC' definition of plastic product.

Other cases:

- A packaging item[10] is classified as packaging: "other" if it is mainly composed of another material (textile, ceramics, earthenware, porcelain, etc.)
- A packaging item[10] is classified as "multi-material packaging with no majority material" if none of the materials included in its composition account for over 50% of the packaging's total weight.

Please note: The weight of all associated packaging elements is taken into account for this calculation. Therefore, the packaging item[10] must meet the following condition in order to be included in family X:

$$\frac{Mass\ of\ material\ X\ included\ in\ the\ composition\ of\ the\ packaging\ item\ (i.e.\ main + associated\ elements)}{Total\ mass\ of\ the\ packaging\ item\ (i.e.\ main + associated\ elements)} > 50\%$$

[10] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

Step 2: Check whether an industrial collection, sorting and recycling scheme is available

A check is then required to establish whether packaging marketed in France is covered by a recognised industrial collection, sorting and recycling scheme. This check is essential for providing an opinion on the recyclability of packaging. If no scheme is available, the packaging may "theoretically" or "technically" be recyclable, but in reality no infrastructure is available for it, and therefore it is not actually recyclable.

The following collection, sorting and recycling schemes are available "at scale" and "in practice" for household packaging marketed in France:

- ✓ Soda-lime glass packaging.
- ✓ Steel packaging.
- ✓ Aluminium packaging.
- ✓ Paper/cardboard packaging (food and beverage cartons included).

The following streams are available for plastic packaging:

- ✓ Bottles, pots, trays and other unsealed rigid PET packaging (clear, coloured and opaque).
- ✓ Bottles, pots, trays and other rigid HDPE packaging.
- ✓ Bottles, pots, trays and other rigid PP packaging.
- ✓ Flexible PE packaging.

No other packaging (composed of another material, another plastic resin, or multi-material packaging with no majority material) marketed in France **is currently covered by a recognised industrial collection, sorting and recycling scheme.**

However, new recycling streams will be set up in 2025 and 2026 for certain plastic materials. These are considered temporarily non-recyclable until the new streams are operational.
This is addressed in step 5 when assessing the level of packaging recyclability. A detailed list of industrial collection, sorting and recycling schemes currently recognised and under development is provided in Appendix 2.

Definition of a recognised industrial collection, sorting and recycling scheme

The definition of a "recognised industrial collection, sorting and recycling scheme" does not relate solely to schemes set up in connection with EPR.

A list of sustainable, recognised industrial collection, sorting and recycling schemes for household packaging has been drawn up in consultation with the material sectors and other stakeholders.

An industrial collection, sorting and recycling scheme is recognised if the following conditions are met:

- **The scheme is based on an effective collection system at national level**.

This condition is met if at least 90% of the population is covered by an effective collection scheme, i.e. the population:

For glass packaging:

- Is covered by kerbside collection or
- Has access to at least one collection point per 350 inhabitants in rural municipalities or
- Has access to one collection point per 600 inhabitants in urban areas

For other packaging (excluding glass):

- Is covered by kerbside collection or
- Has access to at least one collection point per 200 inhabitants in rural municipalities or
- Has access to one collection point per 500 inhabitants in urban areas
- Has access to a return point in the case of dedicated collection per 1,000 inhabitants

More precise recommendations can be provided to local authorities depending on housing types. The availability of the collection points is a minimum level of service, not an optimum.

Where the percentage of the population covered is between 50% and 90%, this criterion is met if a joint action plan shows that the target of 90% will be achieved within five years of achieving 50% (except in special cases where evidence shows that this is inappropriate on environmental, economic or regional grounds).

The 90% threshold was set by Citeo. We believe that this threshold is appropriate for encouraging the development of large-scale schemes assuring consumers that such collection schemes are genuine.

- **The collection, sorting and recycling scheme can prove that it is sufficiently effective**:
  - The majority of tonnage collected throughout the year is actually sorted/separated at sorting centres (secondary sorting or processing centres) with a view to being recycled.
  - The majority of target material tonnage present in packaging tonnage sorted/separated at sorting centres (secondary sorting or processing centres) throughout the year is actually recycled[11].

- **The recycling stream involved in this scheme must meet the following conditions:**
  - **Guaranteed transparency** with respect to outlets, the number of tonnes recycled per year (recycling certificate to be presented), and storage time prior to recycling [11].
  - **The quality of recycled material[11] produced is sufficient to ensure sustainable outlets**. Below is a non-exhaustive list of instances in which this condition is met:
    - Where recycling operators[11] do not need to be paid to accept the material (except in periods in which new streams are set up or in exceptional situations related to market tensions).
    - Where the recycled material is capable of substituting the same virgin material without affecting usage of products containing the recycled material.
    - Where the required quality is defined in specifications and proof has been provided that production of a material in accordance with these specifications is economically realistic.
    - A 30% recycling rate is achieved within 5 years after the recycling stream is set up.

Definition of a collection, sorting and industrial recycling system under development

For a recycling stream to be considered "under development", it must have been the subject of a call for tenders aimed at allocating the packaging collected to one or more recyclers. As these systems are not yet operational because the industrial facilities have yet to be set up, they are considered to be "under development" until they are fully ready (in 2025 or 2026, depending on the material). After that date, these systems will meet the same collection, sorting and recycling criteria as recognised industrial collection, sorting and recycling systems.

For the time being, therefore, packaging in these recycling streams is "Non-recyclable", with a score of "D" in TREE, until the stream becomes operational. Following that date, the packaging will be recyclable if it meets the Cotrep criteria.

Step 3: Determine whether the packaging item can be directed at sorting centres (or other preparation facilities) to a recycling stream and included in it.

Two scenarios are possible after Step 2:

[11] *The terms "regeneration"/"regenerated"/"regeneration plants" are applied to plastic packaging (as opposed to "recycling"/"recycled"/"recycling sites").*

- Scenario 1: If the packaging item marketed in France is not covered by a recognised industrial collection, sorting and recycling scheme, it is considered non-recyclable. **The assessment does not need to be continued.**

- Scenario 2: If the packaging item is covered by a recognised industrial collection, sorting and recycling scheme, a check should be performed to determine whether the packaging item can be directed to the recycling stream in sorting centres (or other preparation facilities) and included in the stream based on its composition.

The following 2 criteria should therefore be checked:

- **Sorting (1)**: After the packaging item has been collected in France, it is possible to direct it to an appropriate recycling stream using technologies currently available in sorting centres (or other preparation facilities).
- **Recycling (2)**: The packaging item can be included in the recycling stream, i.e. based on the composition of the packaging item**Erreur ! Signet non défini.**, material can be recovered without disrupting processes or the quality of recycled material. The criteria used to check this are drawn from tests and knowledge identified through COTREP (Technical Committee for the Recycling of Plastic Packaging), CEREC (Committee to Assess the Recyclability of Paper and Cardboard Packaging) and with existing organisations and the various streams as regards management of issues relating to steel, aluminium and glass recycling in France. These lists may change to reflect developments in sorting and recycling technologies.

(1) Further details regarding the condition on sorting:

Some characteristics of the packaging item (shape, composition, colour, etc.) may affect the ability of the sorting centre (or other preparation facility) to direct the packaging item to the target recycling stream. Indeed, sorting centres (or preparation facilities) need to be able to direct the packaging item to one or more recycling streams in which it is not considered an unwanted item under optimal conditions given the current state of sorting technologies and manual quality control methods applied.

Most packaging items meet this condition, with the exception of the following packaging items:

- Dark rigid plastic packaging that is undetectable by optical sorting.
- Packaging items that are not predominantly sent to the target recycling stream (e.g. bottles with PVC sleeve, "multi-material packaging with no majority material", etc.).

These criteria may be adjusted and clarified in future once the modernisation of sorting centres has been completed for the extension of the sorting guidelines and if the suitability of packaging items for sorting can be assessed using standardised potential testing at sorting centres (or other preparation facilities) e.g. through the Committee for Packaging Potential at Sorting Centres.

Please note:

It is not clear whether the size of packaging items should be included in the recyclability assessment.

- On one hand, sorting centres are designed to purify streams at the start of the process, the aim being to remove unwanted small items (stones, debris, syringes, dust, food residues, etc.) and subsequently facilitate sorting. To achieve this, waste is sorted by size with a view to these unwanted small items and small elements (<3-6 cm) being processed as rejects (known as "fines").
- On the other hand, care should be taken not to encourage companies to seek to improve the recyclability of their packaging by increasing the size and therefore weight of packaging for the same product quantities.
- Moreover, it is important to note that packaging goods in small portions may be associated with non-negligible benefits unrelated to packaging end-of-life:
  - Responding to public health issues: limiting food portion sizes helps reduce the risk of e.g. childhood overweight and obesity (source: WHO).
  - Limiting the risk of product wastage and loss: since products generally have a much greater impact on the environment than packaging, increasing portion sizes may result in a higher overall impact on the environment (source: Fost Plus Study).

We do not yet have detailed knowledge of characteristics (size, shape, deformation resistance, etc.) that result in the majority of a packaging item[12] being sent to fines. Consequently, **packaging size is not currently included** in the recyclability assessment and recyclability rate calculation.

(2) Further details regarding the condition on recycling:

Materials, additives, colorants, glues, inks, etc. included in the composition of a packaging item[12] may cause problems during recycling processes[14]. These are classified into 3 categories:

- **Green Category**: This includes materials, additives, colorants, glues, inks, etc. that do not currently cause problems during recycling stages[14].
- **Orange Category**: This includes materials, additives, colorants, glues, inks, etc. that do not prevent sorting or recycling[14], but affect at least one of these steps (impact on recycled material quality, recycling efficiency, processes, etc.). These are managed in recycling streams but are "to be avoided".
- **Red Category:** This includes materials, additives, colorants, glues, inks, etc. that either:
    - Prevent a packaging item[12] from being recycled
    - Or have a very significant impact on at least one of these steps (impact on recycled material quality, recycling efficiency, processes, etc.). They are inappropriate for recycling streams.

  They should therefore be "prohibited" so that the packaging item can currently be considered as recyclable.

Categorisation is based on tests, knowledge and technical notices developed in connection with COTREP (Technical Committee for the Recycling of Plastic Packaging), CEREC (Committee to Assess the Recyclability of Paper and Cardboard Packaging), and existing organisations for processing glass, steel and aluminium. These lists may change to reflect developments in sorting and recycling technologies.

Disruptive components vary depending on the family of the packaging item[12]. They will therefore be set out in detail for each family in subsequent sheets.

Step 4: Calculate the recyclability rate of a packaging item[12]

Please note:

1. This rate depends on the composition of the packaging item[12] and its suitability for coverage by the current French collection, sorting and recycling system.
2. The "mass of material that can be recycled in the appropriate stream" is the maximum mass of material produced at the end of the recycling process[14]**. As such, the masses of inks, glues, varnishes and any other additional treatments or elements eliminated during the recycling process are not taken into account.**
3. The denominator "total mass of the packaging item" is the total mass of the packaging item when dry, empty and unsoiled. It is calculated by totalling the masses of all packaging elements (i.e. the main and associated elements).
4. Consumer sorting performance is not taken into account (the recyclability rate of a PET bottle may be almost 100%, while only 58%[13] of PET bottles are disposed of in sorting bins).
5. Similarly, the efficiency of recycling processes is not taken into account. Since the recyclability rate for a packaging item[12] is defined as the maximum percentage of the packaging item[12] by weight that can

[12] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*
[13] *Source: Citeo Annual Report 2018*

actually be recycled[14], we assume that the efficiency of the recycling process is 100%. For example, the recyclability rate of a paper/cardboard packaging item[12] consisting of 75% paper/cardboard is 75%: we assume that the efficiency of the recycling process is 100% for the paper/cardboard part (since all the materials, additives, colorants, glue, inks, etc. included in the composition of the packaging item[12] are classified green or orange – see Step 3).

6. Some "supplementary collection, sorting and recycling schemes" are taken into account for the recyclability rate:
    - The recycling stream for rigid PE/PP elements associated with rigid PET packaging items,
    - The recycling stream for metal elements associated with glass packaging items.

   Other schemes may also be taken into account if they also meet collection, sorting and recycling criteria required for a recognised industrial collection, sorting and recycling scheme. Examples include: PolyAl (PE + aluminium) produced from recycling food and beverage cartons, corks collected by some wine merchants, plastic caps collected by charities, partnerships such as Terracycle, etc.

Step 5: Determine the "recyclability level" for the packaging item[12]

In order to make the recyclability assessment more operational and visual, this document provides methodology for determining a "recyclability level" that will be displayed in Citeo's TREE tool. This level converts to a score (from A to E) the combination of the packaging's recyclability rate and the green/orange/red category of the associated elements by technical committees.

Important:

The environmental impacts of a packaging item are not solely dependent on its recyclability. They are also dependent on the weight of the packaging item, the origin of the material used, distances travelled for supply, potential littering, etc. The "recyclability level" of a packaging item is therefore not sufficient to assess its eco-design level. It must be combined with other indicators to ensure an accurate assessment (packaging weight per 100g of product, fill rate, % recycled material, % biobased and/or sustainably managed material, etc.).

We focus here on defining the "recyclability level", a score relating to the degree of recyclability defined for the packaging item[15].

The recyclability level of a packaging item[15] is dependent on several parameters defined in previous steps:

- Availability of a recognised industrial collection, sorting and recycling scheme (see Step 2).
- The composition of the packaging item[15] and classification of the impact of various materials, additives, colorants, inks, glues, etc. on the sorting and recycling process (see Step 3).
- The recyclability rate of the packaging item[15] (see Step 4).

The recyclability level as outlined in this document is divided into 5 categories that may be labelled using the letters **A** to **E**. Recyclable packaging items[12] are included in the first 3 categories (e.g. **A**-**C**).

[14] *The term "regenerated" is more appropriate for plastic packaging. This special case will be addressed in the sheet on plastic packaging recyclability.*

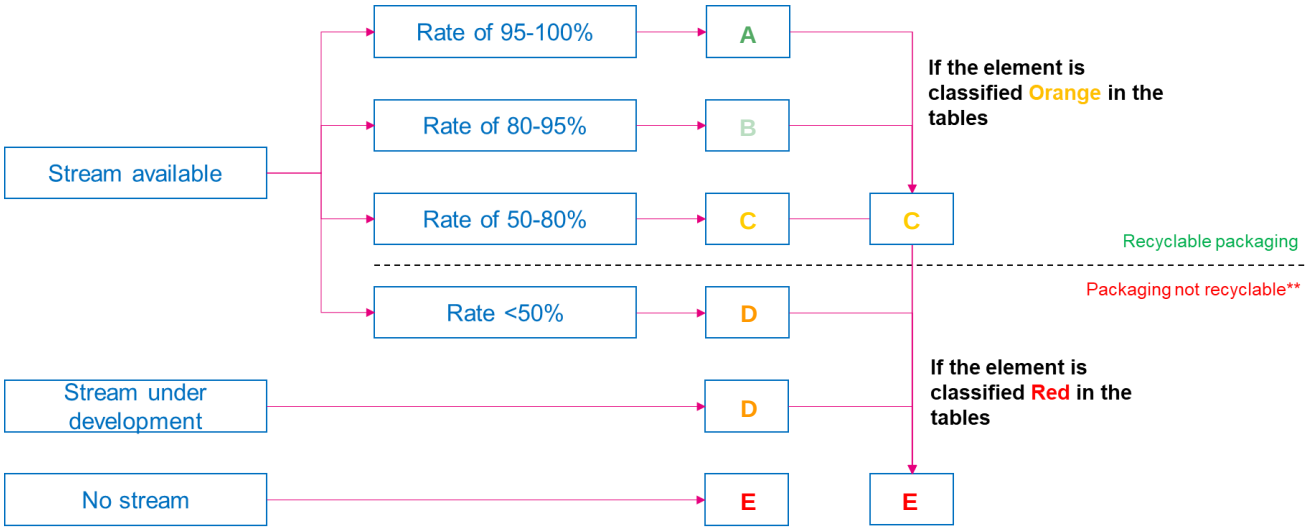
[15] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

The table below can be used to define the recyclability level of packaging items[15]:

Step 2: Collection, sorting and recycling scheme	**Step 3:** Allocation and inclusion in a recycling stream	**Step 4:** Recyclability rate	**Recyclability**	**Suggested recyclability level**
✓ The packaging item is covered by a recognised industrial collection, sorting and recycling scheme.	The packaging item[15] only consists of materials, additives, colorants, inks, glues, etc. classified in the **Green Category**	The recyclability rate is 95% or above 95% ≤Recyclability rate≤ 100%	✓ Packaging item[15] recyclable	**A**
		The recyclability rate is 80% and above but must be lower than 95% 80% ≤Recyclability rate< 95%	✓ Packaging item[15] recyclable	**B**
		The recyclability rate is 50% and above but must be lower than 80% 50% ≤Recyclability rate< 80%	✓ Packaging item[15] recyclable	**C**
		The recyclability rate must be lower than 50%	X Packaging item[15] not recyclable	**D**
	The packaging item[15] includes at least one material, additive, colorant, ink, glue, etc. classified in the **Orange Category.**	The recyclability rate is 50% or above	✓ Packaging item[15] recyclable	**C**
		The recyclability rate must be lower than 50%	X Packaging item[15] not recyclable	**D**
	The packaging item[15] includes at least one material, additive, colorant, ink, glue, etc. classified in the **Red Category.**	Recyclability rate therefore = 0%	X Packaging item[15] not recyclable	**E**
? The packaging item is not currently covered by a large-scale collection, sorting and recycling scheme, although a recycling stream is under development – see Appendix 2).	The packaging item[15] consists of elements classified in the **Green** or **Orange Category** only.	Recyclability rate therefore = 0%	X Packaging item[15] not recyclable[16], stream under development	**D**
	The packaging item[15] includes at least one material, additive, colorant, ink, glue, etc. classified in the **Red Category.**	Recyclability rate therefore = 0%	X Packaging item[15] not recyclable	**E**
X The packaging item is not covered by a recognised industrial collection, sorting and recycling scheme.	Regardless of its composition	Recyclability rate therefore = 0%	X Packaging item[16] not recyclable	**E**

[16] *Citeo considers that for some packaging items, outlets are insufficiently sustainable to ensure that the majority of tonnage will be sorted and recycled following the extension of sorting guidelines. The quantities actually recycled are too low for these packaging items to be considered recyclable.*

This table can also be represented by the following flowchart:



Description of the CSU (or pack)	Step 0: Define the level at which to assess and describe each packaging item[16] examined		Steps 4 and 5: Recyclability rate and recyclability level of the various packaging items[15]
	 x6	PET bottle: 24g (main element) With 2 associated elements: - **PP** cap: 2g - **LDPE** label (washable glue and non-washable inks included): 1g	Recyclability rate = (24+2)/(24+2+1)=96% Recyclability level = **A**
	 x1	Flexible printed LDPE film (main element): 15g (inks included) without a handle	Recyclability rate = 15/15 =100% Recyclability level = **A**
	 x1	Cardboard box (main element): 99g (inks included). **Glues**: 1g	Recyclability rate =99/100=99% Recyclability level = **A**
	 x6	Glass bottle: 230g (main element) With 2 associated elements: - LDPE **label**: 3g (inks and glues included) - **Metal** cap: 5g	Recyclability rate =235/238=98% Recyclability level = **A**
	 x3	Steel can (main element): 48g +2g of **varnish**. With 1 associated element: - **Paper** label: 10g (inks and glues included)	Recyclability rate = 48/60 = 80% Recyclability level = **B**
	 x1	LDPE film: 10g (main element) With 1 associated element: - **Paper** label with washable glue: 2g (inks and glues included)	Recyclability rate = 10/12 = 83% Recyclability level = **C**
	 x1	Main element: Cardboard box: 29.5 g (inks included) and **glue**: 0.5g	Recyclability rate = 29.5/30 = 98% Recyclability level = **A**
	x1	Main element: **Flexible PP** film: 2g	Recyclability rate = 0% Recyclability level = **D**

Description of the CSU (or pack)	Step 0: Define the level at which to assess and describe each packaging item[16] examined		Steps 4 and 5: Recyclability rate and recyclability level of the various packaging items[15]
	 x1	Main element: 8g tray: **black – undetectable by optical sorting**	Recyclability rate = 0% Recyclability level = **E**
	 x1	Main element: Cardboard box: 197g (inks included) With 1 associated element: - **Paper** labels: 1g (inks included) and 2g of **glue**.	Recyclability rate = 198/200 = 99% Recyclability level = **A**
	 x2	Main elements: **EPS** inserts: 10g	Recyclability rate = 0% Recyclability level = **E**
	 x5	LDPE plastic film: 3g (main element) With 1 associated element: - **Paper** label with non-washable glue (inks and glues included): 1g	Recyclability rate = 3/(3+1) =75% Recyclability level = **C**

SHEET 3:

Definition of recyclable glass household packaging

Firstly, the packaging level at which the recyclability assessment is performed must be clarified. This key preliminary step is addressed in detail in Sheet 1: Defining the packaging level at which the recyclability assessment should be performed. **The following steps should then be performed for each "packaging item" with reference to the relevant sheets.**

Step 1: Check that the packaging item[17] belongs to the glass packaging family

A household packaging item is treated as a glass packaging item[17] if it is at least 50% glass by weight with all packaging elements taken into account (main and associated elements).

Step 2: Check that an industrial collection, sorting and recycling scheme is available

All soda-lime glass household packaging meets this condition.

If the glass used is not soda-lime glass, the packaging item[17] is not covered by a recognised industrial collection, sorting and recycling scheme and is therefore considered non-recyclable.

Step 3: Check that the packaging item[17] can be directed at preparation centres to the appropriate recycling stream and included in it without any disruption

Some materials, additives, colorants, glues, inks, etc. included in the composition of a packaging item[17] may cause problems during glass packaging recycling processes. These are classified into 3 categories. **This classification relies on tests and knowledge developed through consulting committees with existing organisations to manage issues regarding glass recycling in France.**

This classification includes such materials as ceramics, earthenware, porcelain, other infusible materials and non-magnetic metals (excluding aluminium), and specifies the impact of non-translucent glass packaging on glass preparation steps.

Step 4: Calculate the recyclability rate

- **Scenario 1: If the packaging item[17] is not recyclable (see Step 3): Recyclability rate = 0%**

- **Scenario 2: If the packaging item[17] is recyclable** (see Step 3) the following calculation method is used to express the recyclability of the packaging item as a percentage:

$$\text{Glass pkg recyclability rate} = \frac{Glass\ mass + Magnetic\ steel\ mass + Aluminium\ mass}{Total\ mass\ of\ the\ packaging\ item}$$

Please note:

- The numerator "glass mass + magnetic steel mass + aluminium mass" does not include the weight of inks, glues, varnishes and other elements eliminated during the recycling process.
- The denominator "total mass of the packaging item" relates to the total mass, i.e. the sum of all packaging elements' masses (main and associated elements).

[17] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

- Aluminium and steel elements associated with glass packaging items are separated and recycled. The mass of aluminium and steel included in these elements is taken into account for the recyclability rate, provided that they meet criteria required for a recognised industrial collection, sorting and recycling scheme, particularly with regard to transparency and traceability of recycled tonnage.
- Some wine merchants collect corks. However, insufficient information regarding this situation is currently available. In order to be taken into account for the packaging item recyclability rate, a supplementary collection, sorting and recycling scheme should meet the same collection and sorting criteria required for a recognised industrial collection, sorting and recycling scheme.
- Other elements associated with glass packaging are not recycled and are therefore not taken into account when calculating the recyclability rate for a glass packaging item[17].

Step 5: Determine the "recyclability level" for the packaging item[18]

There are no special requirements for glass packaging. Methodology for defining the recyclability level should be applied as set out above.

Examples:

Important:

- The examples below include unverified hypothetical weights provided merely as an illustration.

Step 0: Description of the packaging item[18] considered		Step 1	Steps 2 and 3	Steps 4 and 5
	Soda-lime glass pot: 300g (main element) With 3 associated elements: - Paper seal: 1g - Paper label (inks and glues included): 1g - Plastic lid: 10g	The packaging item[18] is over 50% glass > it belongs to the glass packaging family.	Since soda-lime glass is used, the packaging item[18] is covered by a collection, sorting and recycling scheme. All the materials[19] are classified in the "**Green Category**"	Packaging item[18] recyclable[20] Recyclability rate = 300 / (300+2+10) = 96% Recyclability level = **A**
	Glass bottle: 450g (main element) With 3 associated elements: - Paper label (inks and glues included) = 10g - Aluminium cap = 5g - Cork: 10g	The packaging item[18] is over 50% glass > it belongs to the glass packaging family.	Since soda-lime glass is used, the packaging item[18] is covered by a collection, sorting and recycling scheme. All the materials[19] are classified in the "**Green Category**"	Packaging item[18] recyclable[20] Recyclability rate = (450+5)/(450+5+10+10) = 96% Recyclability level = **A**
	Glass bottle: 230g (main element) With 2 associated elements: - LDPE label: 3g (inks and glues included) - Metal cap: 5g	The packaging item[18] is over 50% glass > it belongs to the glass packaging family.	Since soda-lime glass is used, the packaging item[18] is covered by a collection, sorting and recycling scheme. All the materials[19] are classified in the "**Green Category**"	Packaging item[18] recyclable[20] Recyclability rate =235/238=98% Recyclability level = **A**

[18] The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.
[19] Materials, additives, colorants, glues, inks, etc.
[20] Assumption: marketed in France.

	Soda-lime glass bottle: 300g (main element) With 2 associated elements: - Steel and ceramic mechanical cap: 50g - Paper label, inks and glues: 5g	The packaging item[18] is over 50% glass > it belongs to the glass packaging family.	Since soda-lime glass is used, the packaging item[18] is covered by a collection, sorting and recycling scheme. The ceramics associated with the glass are classified in the "**Red Category**"	Packaging item[18] not recyclable[20] Recyclability rate = 0% Recyclability level = **E**
	Soda-lime glass jar and lid: 300g (main element) With 2 associated elements: - Non-magnetic steel closure: 30g - Plastic washer: 10g	The packaging item[18] is over 50% glass > it belongs to the glass packaging family.	Since soda-lime glass is used, the packaging item[18] is covered by a collection, sorting and recycling scheme. The non-magnetic steel associated with the glass is classified in the "**Red Category**"	Packaging item[18] not recyclable[20] Recyclability rate = 0% Recyclability level = **E**

SHEET 4:

Definition of recyclable steel household packaging

Firstly, the packaging level at which the recyclability assessment is performed must be clarified. This key preliminary step is addressed in detail in Sheet 1: Defining the packaging level at which the recyclability assessment should be performed. **The following steps should then be performed for each "packaging item" with reference to the relevant sheets.**

Step 1: Check that the household packaging item[21] belongs to the steel packaging family

A household packaging item[21] is treated as a steel packaging item if it is at least 50% steel by weight with all elements of the packaging item[21] taken into account (main and associated elements).

Step 2: Check that an industrial collection, sorting and recycling scheme is available

All steel household packaging meets this condition.

Step 3: Check that the packaging item[21] can be directed at sorting centres to the appropriate recycling stream and included in it without any disruption

Some materials, additives, colorants, glues, inks, etc. included in the composition of a packaging item[21] may cause problems during steel packaging recycling processes. These are classified into 3 categories. **This classification relies on tests and knowledge developed through consulting committeeswith existing organisations to manage issues regarding steel recycling in France.**

This classification specifies, for instance, the impact of non-magnetic steel on the sorting and recycling process.

Step 4: Calculate the recyclability rate

- **Scenario 1: If the packaging item[21] is not recyclable (see Step 3): Recyclability rate = 0%**
- **Scenario 2: If the packaging item[21] is recyclable** (see Step 2) the following calculation method is used to express the recyclability of the packaging item[21] as a percentage:

$$\text{Steel pkg recyclability rate} = \frac{Magnetic\ steel\ mass}{Total\ mass\ of\ the\ packaging\ item}$$

Please note:

- The numerator "magnetic steel mass" does not include the weight of inks, glues, varnishes and other elements eliminated during the recycling process.

[21] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

- The denominator "total mass of the packaging item" relates to the total mass, i.e. the sum of all packaging elements' masses (main and associated elements).

Step 5: Determine the "recyclability level" for the packaging item[21]

There are no special requirements for steel packaging items[21]. Methodology for defining the recyclability level should be applied as set out above.

Examples:

Important:

- The examples below include unverified hypothetical weights provided merely as an illustration.

Step 0: Description of the packaging item[22] considered		Step 1	Steps 2 and 3	Steps 4 and 5
	Steel can: 95g +2g of varnish (main element) With 1 associated element: - Paper label (inks and glues included): 3g	The packaging item[22] belongs to the steel packaging family (over 50% steel).	The packaging item[22] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**"	Packaging item[22] recyclable[23] Recyclability rate = 95 / (95+2+3) = 95% Recyclability level = **A**
	Steel can: 98g + 2g of varnish (main element) With 2 associated elements: - Steel lid: 40g - Plastic seal (inks and glues included): 10g	The packaging item[22] belongs to the steel packaging family (over 50% steel).	The packaging item[22] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**"	Packaging item[22] recyclable[23] Recyclability rate = (98 + 40) / (98+2+40+10) = 92% Recyclability level = **B**

[22] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

[23] *Assumption: marketed in France.*

SHEET 5:

Definition of recyclable aluminium household packaging

Firstly, the packaging level at which the recyclability assessment is performed must be clarified. This key preliminary step is addressed in detail in Sheet 1: Defining the packaging level at which the recyclability assessment should be performed. **The following steps should then be performed for each "packaging item" with reference to the relevant sheets.**

Step 1: Check that the household packaging item[24] belongs to the aluminium packaging family

A household packaging item[24] is treated as an aluminium packaging item if it is at least 50% aluminium by weight with all elements of the packaging item[24] taken into account (main and associated elements).

Step 2: Check that an industrial collection, sorting and recycling scheme is available

All aluminium household packaging[24] meets this condition.

Please note: A collection, sorting and recycling scheme for small aluminium packaging items (with diameters under 5cm) is well on the way to being developed and will be fully operational by 2022-2025.

Step 3: Check that the packaging item[24] can be directed at sorting centres to the appropriate recycling stream and included in it without any disruption

Some materials, additives, colorants, glues, inks, etc. included in the composition of a packaging item[24] may cause problems during recycling processes for aluminium packaging items[24]. These are classified into 3 categories. **This classification relies on tests and knowledge developed through consulting committeeswith existing organisations to manage issues regarding aluminium recycling in France.**

Step 4: Calculate the recyclability rate

- **Scenario 1: If the packaging item[24] is not recyclable (see Step 3): Recyclability rate = 0%**
- **Scenario 2: If the packaging item[24] is recyclable** (see Step 3) the following calculation method is used to express the recyclability of the packaging item[24] as a percentage:

$$\text{Aluminium pkg recyclability rate} = \frac{Aluminium\ mass}{Total\ mass\ of\ the\ packaging\ item}$$

Please note:

- The numerator "aluminium mass" does not include the weight of inks, glues, varnishes and other elements eliminated during the recycling process.
- The denominator "total mass of the packaging item[24]" relates to the total mass, i.e. the sum of all packaging elements' masses (main and associated elements).

[24] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

Step 5: Determine the "recyclability level" for the packaging item[24]

There are no special requirements for aluminium packaging items[24]. Methodology for defining the recyclability level should be applied as set out above.

Examples:

Important:

- **The examples below include unverified hypothetical weights provided merely as an illustration.**

Step 0: Description of the packaging item[25] considered		Step 1	Steps 2 and 3	Steps 4 and 5
	Main element: Aluminium can = 48g + 2g of varnish and inks	The packaging item[24] belongs to the aluminium packaging family (over 50% aluminium).	The packaging item[24] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**"	Packaging item[24] recyclable[26] Recyclability rate = 48 / (48 + 2) = 96% Recyclability level = **A**
	Aluminium film: 5g (main element) With 1 associated element: - Paper label (inks and glues included): 3g	The packaging item[24] belongs to the aluminium packaging family (over 50% aluminium).	The packaging item[24] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**"	Packaging item[24] recyclable[26] Recyclability rate = 5/(5+3) = 63% Recyclability level = **C**
	Aluminium aerosol: 29g + 2g of inks and varnishes (main element) With 1 associated element: - Plastic nozzle and cap: 9g	The packaging item[24] belongs to the aluminium packaging family (over 50% aluminium).	The packaging item[24] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**"	Packaging item[24] recyclable[26] Recyclability rate = 29/(29+2+9) = 72% Recyclability level = **C**
	Main element: Multi-material sheet with 4g of aluminium, 3g of paper and 3g of plastic (inks and glues included)	The packaging item[24] does not belong to the aluminium packaging family (less than 50% aluminium). It is a "multi-material packaging item with no majority material".	"Multi-material packaging items[24] with no majority material" are not recyclable[26].	Packaging item[24] not recyclable[26] Recyclability rate = 0% Recyclability level = **E**
	Main element: Multi-material sheet with 3g of PVC and 2g of aluminium (inks and glues included)	The packaging item[24] does not belong to the aluminium packaging family (less than 50% aluminium). It is a plastic packaging item.	See "Sheet 7: Definition of recyclable plastic packaging."	

[25] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

[26] *Assumption: marketed in France.*

SHEET 6:

Definition of recyclable paper/cardboard household packaging (including food and beverage cartons)

Firstly, the packaging level at which the recyclability assessment is performed must be clarified. This key preliminary step is addressed in detail in Sheet 1: Defining the packaging level at which the recyclability assessment should be performed. The following steps should then be performed for each "packaging item" with reference to the relevant sheets.

Step 1: Check that the household packaging item[27] belongs to the paper/cardboard packaging family (including food and beverage cartons)

A household packaging item[27] is treated as a paper/cardboard packaging item (including food and beverage cartons) if it is at least 50% paper/cardboard by weight with all elements of the packaging item[27] taken into account (main and associated elements).

Step 2: Check that an industrial collection, sorting and recycling scheme is available

All paper/cardboard household packaging[27] (including food and beverage cartons) meets this condition.

Step 3: Check that the packaging item[27] can be directed at sorting centres to the appropriate recycling stream and included in it without any disruption

Some materials, additives, colorants, glues, inks, etc. included in the composition of a packaging item[27] may cause problems during recycling processes for paper/cardboard packaging items[27] (including food and beverage cartons). These are classified into 3 categories. **This classification relies on tests and knowledge developed through** CEREC (Committee to Assess the Recyclability of Paper and Cardboard Packaging).

This classification covers instances such as:

- Inclusion of reinforcement or structures designed to strengthen packaging items[27].
- Inclusion of associated elements composed of glass (any type), ceramics, wax, paraffin, crystal, porcelain, etc.
- Inclusion of materials or elements disrupting sorting of packaging items[27] at sorting centres.

These criteria are based on tests and knowledge developed through CEREC (Committee to Assess the Recyclability of Paper/Cardboard Packaging) and may change to take account of developments in sorting and recycling technologies.

Step 4: Calculate the recyclability rate

- **Scenario 1: If the packaging item[27] is not recyclable (see Step 3): Recyclability rate = 0%**

- **Scenario 2: If the packaging item[27] is recyclable**, the following calculation method is used to express the recyclability of the packaging item as a percentage:

[27]The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.

$$\text{Paper/cardboard pkg recyclability rate (excluding cartons)} = \frac{Paper/cardboard\ mass}{Total\ mass\ of\ the\ packaging\ item}$$

$$\text{Carton pkg recyclability rate} = \frac{Paper/cardboard\ mass}{Total\ mass\ of\ the\ packaging\ item}$$

Please note:

- The numerator "paper/cardboard mass" includes:
  - The mass of cellulose fibres and mineral fillers.
  - The mass of inks used in the paper/cardboard elements as these elements are transferred to the recycled paper/cardboard in the vast majority of cases.

  In contrast, the numerator "paper/cardboard mass" does not include the weight of glues and additional treatments (coatings, finishes, lamination, varnishes, etc.) eliminated during the recycling process[28].
- The denominator "total mass of the packaging item[27]" relates to the total mass, i.e. the sum of all packaging elements' masses (main and associated elements).

A certain tonnage of "plastic + aluminium" (commonly referred to as "PolyAl") included in food and beverage cartons is recycled. However, only limited information is currently available on this subject. In order to be taken into account for the packaging item[29] recyclability rate, a supplementary collection, sorting and recycling scheme should meet the same collection and sorting criteria required for a recognised industrial collection, sorting and recycling scheme.

Step 5: Determine the "recyclability level" for the packaging item[29]

There are no special requirements for paper/cardboard packaging items[29] (including food and beverage cartons). Methodology for defining the recyclability level should be applied as set out above.

Examples:

Important:

- The examples below include unverified hypothetical weights provided merely as an illustration.

[28] *Some varnishes and glues may be transferred to recycled paper/cardboard (i.e. they are not eliminated during the recycling process). However, knowledge of characteristics enabling a distinction to be drawn between those transferred to recycled cardboard versus those that are eliminated remains limited. The score will be updated if additional information is provided to us.*

[29] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

Step 0: Description of the packaging item[29] considered		Step 1	Steps 2 and 3	Steps 4 and 5
	Moulded cellulose box: 15g (main element) With 1 associated element: - Paper label: 3g (inks included) + 0.5g of glue	The packaging item[29] belongs to the paper/cardboard packaging family.	The packaging item[29] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**".	Packaging item[29] recyclable[30] Recyclability rate = (15+3)/(15+3+0.5) = 97% Recyclability level = **A**
	Main element: Food and beverage carton = 20g of paper (inks included) +5g of plastic +1g of aluminium With 1 associated element: - Plastic cap: 2g and glue: 0.5g	The packaging item[29] belongs to the paper/cardboard packaging family (including food and beverage cartons).	The packaging item[29] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**".	Packaging item[29] recyclable[30] Recyclability rate = 20/(20+5+1+2+0.5) = 70% Recyclability level = **C**
	Card = 15g inks included (main element) With 1 associated element: - Plastic blister pack: 4g and glue: 0.5g	The packaging item[29] belongs to the paper/cardboard packaging family.	The packaging item[29] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**".	Packaging item[29] recyclable[30] Recyclability rate = 15/(15+4+0.5) = 77% Recyclability level = **C**
	Main element: Cardboard box: 100g (inks included) and 1g of glue	The packaging item[29] belongs to the paper/cardboard packaging family.	The packaging item[29] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**".	Packaging item[29] recyclable[30] Recyclability rate = (100)/(100+1) = 99% Recyclability level = **A**
	Cardboard box: 150g inks included (main element) + 1g of glue With 1 associated element: - Plastic bag and tap: 24g (associated elements[31])	The packaging item[29] belongs to the paper/cardboard packaging family.	The packaging item[29] is covered by a collection, sorting and recycling scheme. All the materials, etc. are classified in the "**Green Category**".	Packaging item[29] recyclable[30] Recyclability rate = 150 / (150 + 1 + 25) = 85% Recyclability level = **B**

[30] *Assumption: marketed in France.*
[31] *The plastic bag is treated as an associated element for the cardboard box. See Appendix 1*

SHEET 7:

Definition of recyclable plastic household packaging

Firstly, the packaging level at which the recyclability assessment is performed must be clarified. This key preliminary step is addressed in detail in Sheet 1: Defining the packaging level at which the recyclability assessment should be performed. The following steps should then be performed for each "packaging item" with reference to the relevant sheets.

Step 1: Check that the household packaging item[32] belongs to the plastic packaging family

A household packaging item[32] is treated as a plastic packaging item if it is at least 50% plastic (no distinction drawn between resins at this stage) by weight with all elements of the packaging item[32] taken into account (main and associated elements).

Step 2: Check that an industrial collection, sorting and recycling scheme is available

The packaging item[32] is covered by a recognised industrial collection, sorting and recycling scheme if a large majority of it consists of any of the following plastic resins.

- Rigid plastic packaging item[33]: PET or PE or PP.
- Flexible plastic packaging item: PE

If other resins and materials are included in the composition of the packaging item, their impact on recyclability is assessed in Step 3.

Please note: one of the criteria required for a collection, sorting and recycling scheme is the existence of an effective collection system at national level. This condition is met if at least 50% of the population is covered by a collection scheme. From late 2020, this condition regarding collection will be met for all plastic packaging, since 50% of the French population will be covered by extended sorting guidelines and therefore have access to an appropriate collection system for all household packaging.

Step 3: Check that the packaging item[32] can be directed at sorting centres to the appropriate regeneration/recycling stream and included in it without any disruption

Some materials, additives, colorants, glues, inks, etc. included in the composition of a packaging item[32] may cause problems during plastic packaging recycling processes. These are classified into 3 categories. This classification relies on tests and knowledge developed through COTREP (Technical Committee for the Recycling of Plastic Packaging).

A separate classification is performed for each recycling stream. These classifications covers instances such as:

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[32] The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.

[33] The recycling stream for rigid PS packaging is under development.

- Dark rigid plastic packaging items[32] that are undetectable by optical sorting.
- Packaging items[32] that are not predominantly sent to the target recycling stream (e.g. bottles with PVC sleeve, "multi-material packaging items[32] with no majority material", etc.).
- The density of the resin used has been modified resulting in a density different from those specified below:
  - PET: the density of the main element of the packaging item[32] should be >1,
  - PE, PP, LDPE: the density of the main element of the packaging item[32] should be <1.
- The main element contains additives, colorants, barriers, etc. affecting regeneration and/or recycling.
  - PET: none of the non-compatible components in the recyclability tables
  - PE, PP, LDPE: none of the non-compatible components in the recyclability tables
- The associated elements consist of materials affecting regeneration and/or recycling:
  - PET: none of the non-compatible components in the recyclability tables
  - PE, PP, LDPE: none of the non-compatible components in the recyclability tables

Step 4: Calculate the recyclability rate

- **Scenario 1: If the packaging item[34] is not recyclable (see Step 3): Recyclability rate = 0%**

- **Scenario 2: If the packaging item[34] is recyclable**, the following calculation method is used to express the recyclability of the packaging item[34] as a percentage:

Rigid[34] PET packaging:

$$\text{Rigid PET pkg recyclability rate} = \frac{Rigid\ PET\ mass\ +\ Rigid\ PE\ associated\ elements'mass\ +\ Rigid\ PP\ associated\ elements'mass}{Total\ mass\ of\ the\ packaging\ item}$$

The weight of colorants, additives and barriers associated with the PET and rigid PE or PP associated elements are included in the numerator.

Rigid PE or PP packaging items[34]:

$$\text{Rigid PE or PP pkg recyclability rate} = \frac{Rigid\ PE\ mass + Rigid\ PP\ mass}{Total\ mass\ of\ the\ packaging\ item}$$

The weight of colorants, additives and barriers combined with rigid PE or PP associated elements are included in the numerator.

Flexible LDPE packaging items[34] :

$$\text{Flexible LDPE pkg recyclability rate} = \frac{Flexible\ LDPE\ mass}{Total\ mass\ of\ the\ packaging\ item}$$

The weight of colorants, additives and barriers associated with flexible LDPE elements are included in the numerator.

Please note:

- The definitions of rigid packaging, flexible packaging, rigid associated elements and flexible associated elements are provided in Appendix 1.
- The masses in the numerator:
  - Do not include the masses of inks, glues, varnishes and other elements eliminated during the regeneration process;

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[34] The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.

- However, they do include the weight of colorants, additives and barriers, which are not eliminated during the regeneration process.

- Rigid PE and PP elements associated with rigid PET packaging items[34] are separated during the regeneration process and recycled. Their masses are taken into account for the recyclability rate, provided that they meet criteria required for a recognised industrial collection, sorting and recycling scheme, particularly with regard to transparency and traceability of recycled tonnage.

- The denominator "total mass of the packaging item[34]" relates to the total mass, i.e. the sum of all packaging elements'[34] masses (main and associated elements).

Step 5: Determine the "recyclability level" for the packaging item[34]

There are no special requirements for plastic packaging items[34]. Methodology for defining the recyclability level should be applied as set out above.

Examples:

Important:

- The examples below include unverified hypothetical weights provided merely as an illustration.

Step 0: Description of the packaging item[35] considered		Step 1	Steps 2 and 3	Steps 4 and 5
	PET bottle: 24g (main element) With 2 associated elements: - PP cap: 2g - LDPE label (non-washable inks and water-soluble glues included): 2g	The packaging item[35] belongs to the plastic packaging family.	The packaging item[35] is covered by a collection, sorting and recycling scheme. (Stream: Rigid PET). All the materials, etc. are classified in the "**Green Category**".	Packaging item[35] recyclable [36] Recyclability rate = (24+2)/(24+2+1)=96% Recyclability level = **A**
	PP dispenser bottle: 20g (main element) With 2 associated elements: - PP Pump (4g) + steel spring (4g) - LDPE label (non-washable inks and water-soluble glues included): 2g	The packaging item[35] belongs to the plastic packaging family.	The packaging item[35] is covered by a collection, sorting and recycling scheme. (Stream: Rigid PP). The steel associated with the PP is classified in the "**Orange Category**".	Packaging item[35] recyclable[36] Recyclability rate = (20+4)/(20+8+2) = 80% Recyclability level = **C**
	LDPE box: 50g (main element) With 3 associated elements: - PP lid: 10g - Flexible PP seal: 2g - Paper label (non-washable inks and water-soluble glues included): 3g	The packaging item[35] belongs to the plastic packaging family.	The packaging item[35] is covered by a collection, sorting and recycling scheme. (Stream: Rigid PE). All the materials, etc. are classified in the "**Green Category**".	Packaging item[35] recyclable[36] Recyclability rate = (50+10)/(50+10+2+3) = 92% Recyclability level = **B**

[35] The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.

[36] Assumption: marketed in France.

	PP pot with IML: 30g (main element) With 2 associated elements: - PP lid: 8g - Flexible PP seal (non-washable inks, seal and water-soluble glue included): 2g	The packaging item[35] belongs to the plastic packaging family.	The packaging item[35] is covered by a collection, sorting and recycling scheme. (Stream: Rigid PE). All the materials, etc. are classified in the "**Green Category**".	Packaging item[35] recyclable[36] Recyclability rate = (30+8)/(30+8+2) = 95% Recyclability level = **A**
	Undetectable dark PP tray: 15g (main element) With 1 associated element: - Seal (non-washable inks and water-soluble glues included): 3g	The packaging item[35] belongs to the plastic packaging family.	The packaging item[35] is covered by a collection, sorting and recycling scheme. (Stream: Rigid PP). The dark colorant used is undetectable by optical sorting and therefore classified in the "**Red Category**".	Packaging item[35] not recyclable[36] Recyclability rate = 0% Recyclability level = **E**
	- Main element: Multi-material sheet with 3g of PVC and 2g of aluminium	The packaging item[35] belongs to the plastic packaging family.	The packaging item[35] is not covered by a recognised industrial collection, sorting and recycling scheme.	Packaging item[35] not recyclable[36] Recyclability rate = 0% Recyclability level = **E**
	- Main element: Printed flexible LDPE bag: 15g (non-washable inks included)	The packaging item[35] belongs to the plastic packaging family.	The packaging item[35] is covered by a collection, sorting and recycling scheme. (Stream: Flexible PE). All the materials, etc. are classified in the "**Green Category**".	Packaging item[35] recyclable[36] Recyclability rate = 15/15 =100% Recyclability level = **A**

APPENDIX 1:

Explanations regarding the concepts of main versus associated elements and rigid versus flexible plastic elements

Main versus associated element

- **Main element:**
  A main element is an element specifically sorted by consumers (e.g.: a bottle or box). It is possible to have several main elements per CSU (or per pack). For example, in a CSU containing several yoghurt pots surrounded by a cardboard sleeve, the yoghurt pot and cardboard sleeve should be considered as main elements, as consumers sort these two elements separately.

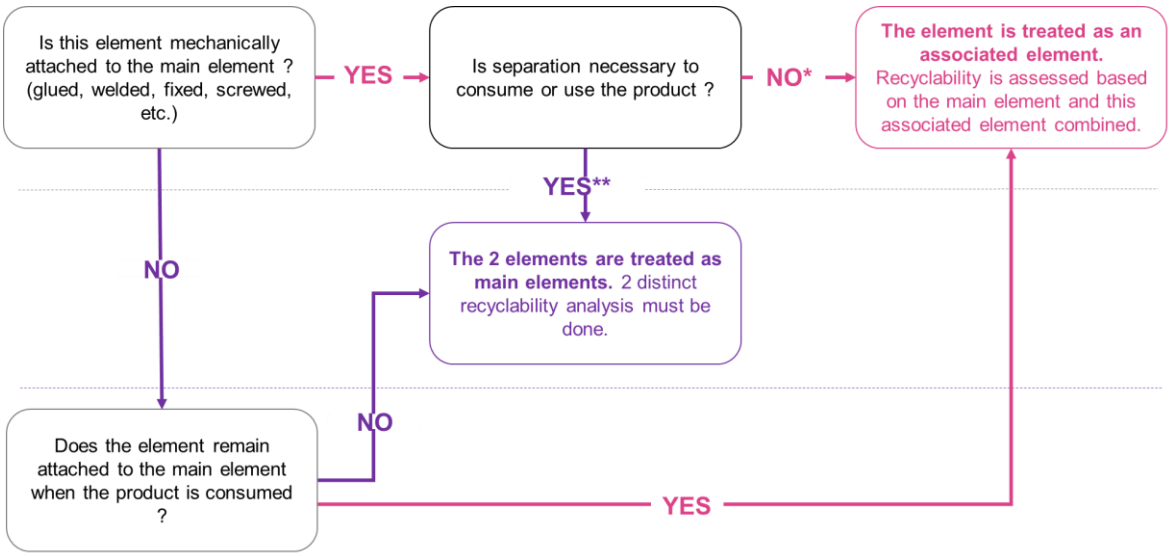
- **Associated elements:**
  Associated elements are packaging elements connected to the main element and not automatically separated from the main element during consumption of the product and/or sorting by consumers.

  The Top 100 Sorting Practices Study[37] has shown that consumers do not automatically separate these elements, so they may remain attached when sorted. Around forty packaging items with associated elements were included in this study. On average, just 45% of consumers state that they separate elements when sorting. This percentage of consumers stating that they separate elements varies between 20 and 80% depending on the packaging type, and therefore separation is not performed automatically. Consequently, interaction between the various materials used to make the packaging elements should be considered when assessing recyclability.

  Elements considered by default as associated are:
  - Elements connected mechanically to the main element, namely elements that are glued, thermo-welded, laminated, screwed, fixed, etc. to the main element.
  - On the basis of the above-mentioned study, if elements are not mechanically connected to each other, i.e. they are not glued, fixed, screwed, etc., they are considered to remain attached if they do not need to be separated to consume the product:

An illustrative list of elements generally considered as associated is provided overleaf. This list is provided for information purposes only. It is used in instances where the main or associated nature of an element is disputed or cannot easily be determined. A study is in progress to examine consumer separation habits during sorting in greater depth, which will enable the accuracy of this list to be improved.

[37] *Source: Top 100 Sorting Practices Study – Ipsos on behalf of Citeo – 2017*



Rigid versus flexible plastic element

Important: no standardised definition of rigid and flexible packaging exists. The proposed definition is based on anticipated ballistic and aeraulic behaviour during sorting and recycling processes or that actually demonstrated in standardised tests at sorting centres (or other preparation facilities). This definition may differ from that used by packers and packaging manufacturers.

An illustrative list of elements generally considered as rigid or flexible is provided overleaf. This list is provided for information purposes only. It is used in instances where the rigid or flexible nature of an element is disputed or cannot be easily determined.

- **Rigid plastic packaging**: bottles, dispenser bottles, boxes, pots and trays are treated as rigid packaging items[38]. Rigid packaging items[38] are defined as offering a certain degree of deformation resistance and stability when stacked on shelves. The main element of rigid packaging items[38] is generally over 250 micrometres thick.

- **Flexible plastic packaging:** films, sachets, bags, etc. are treated as flexible plastic packaging items[38]. Flexible packaging items[38] are characterised by low deformation resistance and a tendency to flatten easily when empty. The main element of flexible packaging items[38] is generally under 100 micrometres thick.

Thickness of the main element	**< 100 microns**	**100-250 microns**	**> 250 microns**
Plastic packaging item[38] type	Generally flexible plastic packaging items[38]	Depends on behaviour at sorting centres and during recycling (anticipated or actually demonstrated in standardised tests)	Generally rigid plastic packaging items[38]

- **Rigid plastic associated elements**: caps, sprays, lids, etc. are treated as rigid associated elements. These associated elements are generally composed of injection-moulded plastic and are generally over 250 microns thick.

[38] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

- **Flexible plastic associated elements:** labels, sleeves, seals, etc. are treated as flexible associated elements. These associated elements generally consist of extruded film and are generally under 100 microns thick.

	Packaging element description	Associated or main element?	Rigid or flexible
A	Aerosol	MAIN	RIGID
	Angle moulding	MAIN	RIGID
	Applicator	MAIN	RIGID
	Applicator bottle	MAIN	RIGID
B	Backing	MAIN	RIGID
	Bag (bag-in-box)	ASSOCIA	FLEXIBLE
	Bag with handles	MAIN	FLEXIBLE
	Bag-in-box	ASSOCIA	FLEXIBLE
	Barrel, carrier pack	MAIN	RIGID
	Base	ASSOCIA	RIGID
	Basket	MAIN	RIGID
	Blister pack closure	MAIN	FLEXIBLE
	Blister pack with thermoformed shell	MAIN	RIGID
	Bottle	MAIN	RIGID
	Bowl	MAIN	RIGID
	Box	MAIN	RIGID
	Box, case	MAIN	RIGID
	Bubble wrap	MAIN	FLEXIBLE
	Bucket	MAIN	RIGID
C	Can	MAIN	RIGID
	Canister	MAIN	RIGID
	Cap	ASSOCIA	RIGID
	Cap (closure system)	ASSOCIATED	RIGID
	Carrier bag	MAIN	FLEXIBLE
	Carry case	MAIN	RIGID
	Cartridge	MAIN	RIGID
	Case	MAIN	RIGID
	Casing	MAIN	RIGID
	Clamping ring, packing ribbon	ASSOCIATED	FLEXIBLE
	Cone	MAIN	RIGID
	Container	MAIN	RIGID
	Corner piece	MAIN	RIGID
	Cover	MAIN	FLEXIBLE
	Crate	MAIN	RIGID
	Cubitainer	MAIN	RIGID
	Cup	MAIN	RIGID
D	Dimpled box	MAIN	RIGID
	Dispenser bottle	MAIN	RIGID
	Display pack, base	ASSOCIA	RIGID
	Divider	MAIN	FLEXIBLE
	Doypack	MAIN	FLEXIBLE
	Drum, keg	MAIN	RIGID
E	Elastic band	ASSOCIA	FLEXIBLE
	Element to keep products in shape and hold in position	ASSOCIATED	RIGID
	Envelope	MAIN	FLEXIBLE
F	Fibreboard	MAIN	RIGID
	Film	MAIN	FLEXIBLE
	Flat	MAIN	RIGID
	Flexible sheath	MAIN	FLEXIBLE
	Food or beverage carton	MAIN	RIGID
	Food tray	MAIN	RIGID
	Fruit/veg crate, tray	MAIN	RIGID

	Packaging element description	Associated or main element?	Rigid or flexible
H	Hanger	MAIN	RIGID
	Hygiene wings	MAIN	FLEXIBLE
I	Indented tray	MAIN	RIGID
	Intermediate compartment	MAIN	RIGID
J	Jar	MAIN	RIGID
	Jewellery case	MAIN	RIGID
L	Label	ASSOCIA	FLEXIBLE
	Lid	ASSOCIA	RIGID
M	Micro-cellular expanded film	MAIN	FLEXIBLE
N	Net	MAIN	FLEXIBLE
O	Outer open-end box	MAIN	RIGID
P	Packaging sheet	MAIN	FLEXIBLE
	Packing element	ASSOCIATED	RIGID
	Pick up	MAIN	RIGID
	Pillow	MAIN	FLEXIBLE
	Pot	MAIN	RIGID
	Pouch, stand-up	MAIN	FLEXIBLE
	Pre-filled syringe	MAIN	RIGID
	Preformed food tray	MAIN	RIGID
	Preformed,	MAIN	RIGID
R	Reel, roll, mandrel	MAIN	RIGID
	Rigid sheath	MAIN	RIGID
S	Sachet and flat-bottomed sachet	MAIN	FLEXIBLE
	Sack	MAIN	FLEXIBLE
	Seal	ASSOCIA	FLEXIBLE
	Separator	ASSOCIA	RIGID
	Skin pack	ASSOCIA	FLEXIBLE
	Sleeve	MAIN	RIGID
	Sleeve wrap	ASSOCIATED	FLEXIBLE
	Small carafe	MAIN	RIGID
	Spouted pouch	MAIN	RIGID
	Stand-up pouch	MAIN	FLEXIBLE
	Stick	MAIN	RIGID
	String, ribbon,	ASSOCIA	FLEXIBLE
T	Tab	MAIN	FLEXIBLE
	Tear-off bag	MAIN	FLEXIBLE
	Terrine	MAIN	RIGID
	Tie	ASSOCIA	FLEXIBLE
	Tobacco pouch	MAIN	FLEXIBLE
	Top cap	ASSOCIA	FLEXIBLE
	Transport box	MAIN	RIGID
	Tray	MAIN	RIGID
	Tray closure	ASSOCIA	FLEXIBLE
	Tube	MAIN	RIGID
	Tumbler	MAIN	RIGID
V	Vial	MAIN	RIGID
W	Wedge	MAIN	RIGID
	Wire cage	MAIN	FLEXIBLE
	Wrap-around neck	ASSOCIA	FLEXIBLE
	Wrapping sheet	ASSOCIATED	FLEXIBLE
	Wrapping	MAIN	FLEXIBLE

APPENDIX 2:

List of recognised industrial collection, sorting and recycling schemes for household packaging items[39] marketed in France

One of the first steps in assessing the recyclability of a household packaging item marketed in France is to check whether a recognised industrial collection, sorting and recycling scheme is available for the packaging item[1]. The purpose of the list below is simply to facilitate this step. The list is not related to standards, support or calculations of recycling rates.

Key:

- **YES** = Discussions with stakeholders have confirmed the existence of a recognised industrial collection, sorting and recycling scheme(1) for this type of household packaging item[1] marketed in France.
- **From 2025/2026 =** Following the Recycling Call for Tender, new recycling streams will be set up from 2025 or 2026, depending on the materials. This means that the materials concerned are not recyclable for the moment but may be once the channels are operational and if the packaging meets the criteria defined by Cotrep.
- **NO** = The various criteria required for a recognised industrial collection, sorting and recycling scheme have not been met or demonstrated.

[39] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

Household packaging marketed in France	2025
Clear PET bottles and containers	YES
Other clear rigid PET packaging (excluding sealed packaging)	YES
Dark or opaque rigid PET packaging (excluding sealed packaging)	YES
Other rigid packaging including sealed clear mono-PET pots and trays	From 2025
Other rigid packaging including sealed dark or opaque mono-PET pots and trays	From 2026
Other rigid packaging including clear PET/PE pots and trays	From 2026
Rigid Mono-PE or mono-PP packaging	YES
Rigid PS packaging (d>1)	From 2025
Rigid XPS, EPS packaging (d<1)	Ongoing projects – refer to the Cotrep tables
Rigid PVC packaging	NO
Rigid packaging – other resins & composites	NO
Mono-PE(2) film and flexible packaging	YES
PP and PP/PE film and flexible packaging	From 2025
Film and flexible packaging - other resins and composites	NO
Soda-lime glass packaging	YES
Steel packaging	YES
Aluminium packaging (large, e.g. cans)	YES
Small aluminium packaging(3)	YES
Non-laminated paper and cardboard packaging	YES
Cartons/laminated paper and cardboard packaging	YES
Graphic paper	YES
Wooden packaging	Non-applicable(4)
Other	NO

(2) Excluding barriers and compatible resins
(3) Roughly 20 million residents concerned by sorting of small aluminium packaging items at the end of 2019
(4) The intrinsic qualities of wood (local supply chain, renewable material, very low environmental impact) make it an important material for the ecological transition. However, household packaging made of wood does not benefit from an existing recycling stream, mainly because so little of it is put on the market. A study co-piloted by Citeo, the wood packaging industry (SIEL) and ADEME in 2022 shows that setting up a dedicated recycling stream would pose substantial economic problems, and would not offer any environmental advantages compared to end-of-life energy recovery.

APPENDIX 3:

Acronyms and abbreviations used in the document

- **CSU:** Consumer Sales Unit.
- **EPR:** Extended Producer Responsibility. Visit the ADEME website for further information.
- **ESG**: The extension of sorting guidelines to all household packaging.
- **Glue**: In this document, the word "glue" refers both to glues used to assemble associated elements (labels, absorbent pads, etc.) and glues used to e.g. attach a seal to a preformed tray.
- **Pkg**: Packaging items. The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.

APPENDIX 4:

Additional definitions

- **Definition of recyclable packaging taken from the specifications:**

  A packaging item is considered recyclable if the following are in place: technology enabling its material to be reused, guidelines and a scheme for collection and sorting, and industrial recycling facilities.

  Source: Specifications for the household packaging EPR system appended to the order of 29 November 2016 concerning the approval procedure and laying down specifications for eco-organisations involved in the household packaging sector amended by the order of 13 April 2017.

- **Household packaging:**
  household packaging, according to article R. 543-55 of the French Environmental Code, is any packaging:
  - from a product sold or given free of charge to a household;
  - that is marketed for the consumption or use of the product it contains, by a household.

  Household packaging becomes waste if the household discards it or intends to discard it, regardless of where it is discarded.

  Source: 2018 Declaration Guide – page 11 – Citeo

- **Packaging:**

  Excerpts from Article 3 of Directive No 94/62/EC of 20/12/94 on packaging and packaging waste (Directive No 2004/12/EC of 11 February 2004, Article 1, Directive (EU) No 2015/720 of 29 April 2015, Article 1 and Directive No 2018/852 of 30 May 2018, Article 1(2)(a) to (d)

  For the purposes of this Directive: "packaging" shall mean all products made of any materials of any nature to be used for the containment, protection, handling, delivery from the producer to the user or the consumer and presentation of goods, from raw materials to processed goods. "Non-returnable" items used for the same purposes shall also be considered to constitute packaging.

  "Packaging" consists only of:

  a) sales packaging or primary packaging, i.e. packaging conceived so as to constitute a sales unit to the final user or consumer at the point of purchase;

  b) grouped packaging or secondary packaging, i.e. packaging conceived so as to constitute at the point of purchase a grouping of a certain number of sales units whether the latter is sold as such to the final user or consumer or whether it serves only as a means to replenish the shelves at the point of sale; it can be removed from the product without affecting its characteristics;

  c) transport packaging or tertiary packaging, i.e. packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packagings in order to prevent physical handling and transport damage. Transport packaging does not include road, rail, ship and air containers.

- **Consumer Sales Unit:**
  a Consumer Sales Unit (CSU) is a packaged product unit available for separate purchase by a consumer. As regards beverages sold in separable packs, the CSU is the bottle, can or carton,

whether this is purchased by the unit or pack. Bundling packaging and in-store packaging are both treated as independent units equivalent to a CSU. CSUs may consist of different elements made of different materials.

Source: 2019 Declaration Guide – Citeo

- **Consumer Unit (CU):**

  the smallest packaged unit that consumers can consume.

  Source: 2019 Declaration Guide – Citeo

- **Recycling:**
  any recovery operation by which waste, including organic waste, is reprocessed as substances, materials or products intended to serve their original purpose or other purposes. Operations involving energy recovery of waste, conversion of waste into fuel, and backfilling cannot be classified as recycling operations.

  Source: French Environmental Code Art. L541-1-1.

- **Regeneration:**
  any process enabling used substances, materials or products to exhibit a level of performance equivalent to that of the original substances, materials or products in light of the intended use.

  Source: Definition taken from the " Glossary of common terms of recycling and recovery for use by industrial businesses and their regulatory contacts" - 2ACR - 2nd edition.

- **Recycling rate (approved):**
  the material recycling rate is **the ratio of household packaging waste tonnage recycled** and **supported under contracts signed by the approval holder** (or approval holders if there are several approval holders) with local authorities or other stakeholders (gross supported tonnage leaving sorting centres or recovered post-processing) to contributing packaging tonnage. A consolidated material recycling rate is calculated for all approval holders in the household packaging EPR system.

$$\text{Material recycling rate} = \frac{\text{Gross tonnage accepted by the recycling operator and supported on leaving sorting centres or recovered post} - \text{processing}}{\text{Contributing packaging tonnage}}$$

  Source: Specifications for the household packaging EPR system appended to the order of 29 November 2016 concerning the approval procedure and laying down specifications for eco-organisations involved in the household packaging sector amended by the order of 13 April 2017.

  Please note: Efforts are being made to harmonise the method for calculating the approved recycling rate at European level. This may result in an adjustment to this definition in the coming months.

- **Disruptive to recycling:**
  elements and packaging waste whose inclusion in recyclable packaging waste streams disrupts collection and/or sorting and/or recycling are considered to be disruptive to recycling.

  Source: Specifications for the household packaging EPR system appended to the order of 29 November 2016 concerning the approval procedure and laying down specifications for eco-organisations involved in the household packaging sector amended by the order of 13 April 2017.

- **Packaging material:**
  Citeo defines 7 packaging materials: steel, aluminium, paper/cardboard, plastic, glass, food and beverage cartons, and "other".

  Source: 2018 Declaration Guide – Citeo

  Please note:
  - All plastic resins are classified as the same material (for the purposes of the Citeo declaration).

- The material "other" covers all other packaging materials: ceramics, earthenware, porcelain, textile, etc.
- Manufacturers of raw materials for packaging and our marketer and distributor customers use a broader definition of the term "packaging material", which *covers any substance/material used to manufacture packaging*. Inks, glues, additives and barriers may therefore also be considered as constituent materials of packaging.

Please note that this definition differs slightly from the definition of "Material" provided in the specifications:

"Material": elements included in the list set out in Article 6 "Recovery and recycling" of European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, as amended, which are: metals (steel, aluminium), wood, paper/cardboard, plastic and glass.

Source: Specifications for the household packaging EPR system appended to the order of 29 November 2016 concerning the approval procedure and laying down specifications for eco-organisations involved in the household packaging sector amended by the order of 13 April 2017.

- **Single-material packaging item:**
  a packaging item[40] consisting solely of a single material from the following list: steel, aluminium, paper/cardboard, plastic, glass.

  Source: Internal Citeo definition provided for defining plastic bonuses for "Other rigid packaging items that can be included in an existing recycling stream".

  Please note:
  - Our definition of single-material packaging does not include the materials: "food and beverage cartons" and "other":
    - Food and beverages cartons: because this is an inherently multi-material declaratory category (paper/cardboard + aluminium + plastic) and therefore treating a packaging item that consists solely of a food and beverage carton as a single-material packaging item would be tantamount to contradicting our own definition.
    - Other: because this declaratory material category includes various types of materials.
  - A PET/PA/PET bottle with a PE cap and an LDPE label is therefore treated as a single-material packaging item: 100% plastic (although multi-resin).

- **"Multi-material packaging item":**
  a packaging item[40] consisting of a combination of at least two of the following materials: plastic, paper/cardboard, cartons, glass, steel, aluminium.

  Source: Internal Citeo definition.

- **Single-resin plastic packaging item:**
  there is no standardised definition of a single-resin plastic packaging item[40]. The difficulty lies in the wide variety of components used in plastic packaging items[40] (blend barriers, multi-layer barriers, additives and colorant solutions) and in determining what can and cannot be accepted in addition to the main resin.

  Proposed definition: a 100% plastic packaging item[40] with just one plastic resin in its composition (and therefore free of blend or multi-layer barriers). If additives and/or colorant solutions are included in the composition of the packaging item, the carrier used must be the same as the main resin.

  For example: a packaging item[40] is mono-PET if the main element and any associated elements consist of a single material and a single plastic resin (PET), there are no barrier

[40] *The definition of a "packaging item" to which we refer is provided in Sheet 1. A "packaging item" consists of a main element and any associated elements.*

materials (blend or multi-layer), and all additives and colorant solutions are composed of a PET carrier. This therefore excludes multi-resin PET/PE, PET/PP packaging items[40] containing barriers such as EVOH, etc.

Packaging items[40] consisting solely of resins that are compatible for recycling are sometimes inaccurately referred to as "single-resin packaging" e.g.: HDPE packaging with EVOH.

Source: Internal Citeo definition provided for defining plastic bonuses for "Other rigid packaging items that can be included in an existing recycling stream".

- **"Multi-resin" packaging item:**
  there is no standardised definition of a multi-resin plastic packaging item[40]. Proposed definition: a multi-resin packaging item[40] is a single-material plastic packaging item (100% plastic) composed of several plastic resins.

  Source: Internal Citeo definition.

- **Plastic packaging:**
  we consider any packaging item[40] that is over 50% plastic by weight to be a "plastic packaging item[40]". This differs from a notion introduced in the EU Single-Use Plastics Directive whereby the definition may be applied to any product containing plastic.

  Source: Internal Citeo definition.

- **Bottle:**
  rigid packaging used to contain liquids. Generally, its diameter decreases towards its opening, it includes a closure system, and it may be equipped with a handle. Dispenser bottles, containers, canisters, jerricans and cubitainers are treated as bottles. Packaging items exhibiting the same characteristics but containing powders or any other contents intended for pouring may also be classified as bottles.

  Source: 2018 Declaration Guide – Citeo

- **Packaging Unit (PU):**
  a packaging component that can be separated from the other components when it is consumed or used by the household. All stopper or closure elements (removable caps, seals, lids, parts of non-perforated blister packs, etc.) are considered to be packaging in their own right. Trays with non-peelable film or inseparable blister packs only constitute one unit. Similarly, packaging elements do not need to be declared separately if:
  - they do not require assembly during manufacturing (milk cartons with no closure elements) and/or
  - they include a perforated line (tamper-proof rings for certain types of packaging, closures of single-use packs, blister packs with perforated lines, etc.).

  Source: 2018 Declaration Guide – Citeo