REUSE & RECYCLING FOR INDUSTRIAL PACKAGING

September 2025

Introduction

The purpose of this document is to provide a non-exhaustive illustration of how industrial packaging is currently managed in anticipation of the associated Extended Producer Responsibility (EPR) scheme planned in France by 2026.

The cases selected illustrate the following two areas :

1/ Reuse to provide a concrete and operational vision of what already works and to enable the proposal of appropriate accounting methodologies with a view to the objectives of the European Regulation on Packaging and Packaging Waste (PPWR).

2/ Recyclability to address the management of this packaging within the framework of established and future rules relating to PPWR.

Glossary

Definitions established based on the European Regulation on Packaging and Packaging Waste PPWR: (EU) 2025/40 of December 19, 2024 (Packaging and Packaging Waste Regulation)the French Environmental Code (links to articles).

Recycling

« Material recycling » : any recovery operation whereby waste is reprocessed into materials or substances, for their original purpose or for other purposes, except for biological treatment of waste, reprocessing of organic matter, energy recovery, and conversion for use as fuel or for backfilling operations (article 3 - PPWR & article L541-1-1).

Reuse

Means any operation by which reusable packaging is used again multiple times **for the same purpose** for which it was conceived (article 3 - PPWR).

**Reusable packaging (term used in the French version of the PPWR) is defined in Article 11 of the PPWR, and a minimum number of rotations must be defined by February 12, 2027, in association with this packaging.*

Industrial packaging

Any packaging for products consumed or used by professionals, including in France commercial or sales packaging. For the future French EPR, packaging for the Hotel, Restaurant and Catering sector is included too. To date, catering packaging is defined as such in the Environmental Code: any packaging for food products consumed or used specifically by professionals engaged in catering activities. (article R543-43 III-6°)

Household packaging

Any packaging of products consumed or used by households (article R543-43).

Extended Producer Responsibility (EPR)

This refers to the obligation for any natural or legal person who develops, manufactures, handles, processes, sells, or imports products that generate waste to provide for or contribute to the prevention and management of such waste, as well as to adopt an eco-design approach to products in order to limit the waste generated. Producers can fulfill their obligation by collectively setting up approved eco-organizations, which they govern and to which they transfer their obligation in exchange for a financial contribution. This governance principle may be waived by decree when no approved eco-organization has been set up by producers.
(full definition in article L541-10 of the Environmental Code, amended in France by law n°2020-105 of 10 february 2020 - art. 62 (V)).

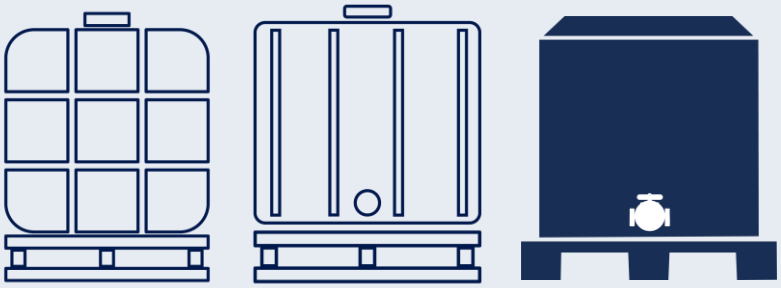
Standardized packaging

There is currently no regulatory definition of standardized packaging. Elipso interprets it as a set of specifications that single-use or reusable packaging must meet in order to ensure or optimize certain functions, particularly in the context of reuse as described in Article 11 of the PPWR (2025/40).

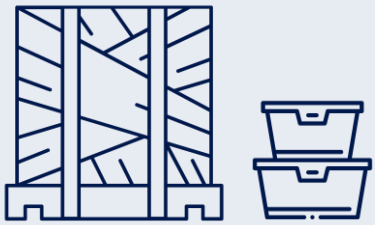
➔ **For all definitions related to packaging, please refer to those set out in Article 3 of the PPWR.** (regulation 2025/40) such as packaging unit, sales packaging, grouped, transport packaging, integrated component, separate component, etc.

Glossary

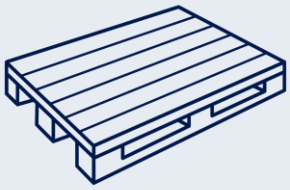
TYPES OF INDUSTRIAL PACKAGING AND PLAYERS IN THEIR VALUE CHAIN



IBCs (Intermediate Bulk Container)



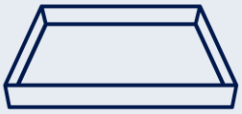
Intermediate containers, semi-bulk containers, pallet boxes, pallet crates



Paletts

Lockers, crates, injection-molded bins

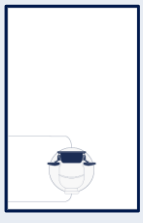
Dividers



Trays

Barrels, drums, jerrycans

Buckets, pots



BIBs (Bag-In-Box)

Participants in the Elipso working group and contributors to the development of this document

THE 3RS OF INDUSTRIAL PACKAGING: GENERAL PRINCIPLES OF CIRCULARITY

REUSE

Plastic packaging, by its very design, and many stakeholders already, ensure reuse while guaranteeing the reliability, safety and competitiveness of this packaging for businesses.

RECYCLING

Industrial packaging is subject in all cases to "décret 8 flux n° 2021-950 » from 16th july 2021 relating to the sorting of paper, metal, plastic, glass, textiles, wood, mineral fractions and plaster waste. Thus, their management with a view to waste treatment for recycling is already governed by sorting at source for the main materials.

WHAT ABOUT THE WEIGHT REDUCTION ?

Industrial packaging is central to companies' economic activity and is therefore inherently useful, even essential. Manufacturers have already optimised packaging to meet specific needs.

> *The best waste is the waste we do not produce.*

➔ As waste represents a cost for businesses (material loss, management costs, storage, treatment and associated regulations to be complied with), its management is an integral part of industrial processes and their optimization.

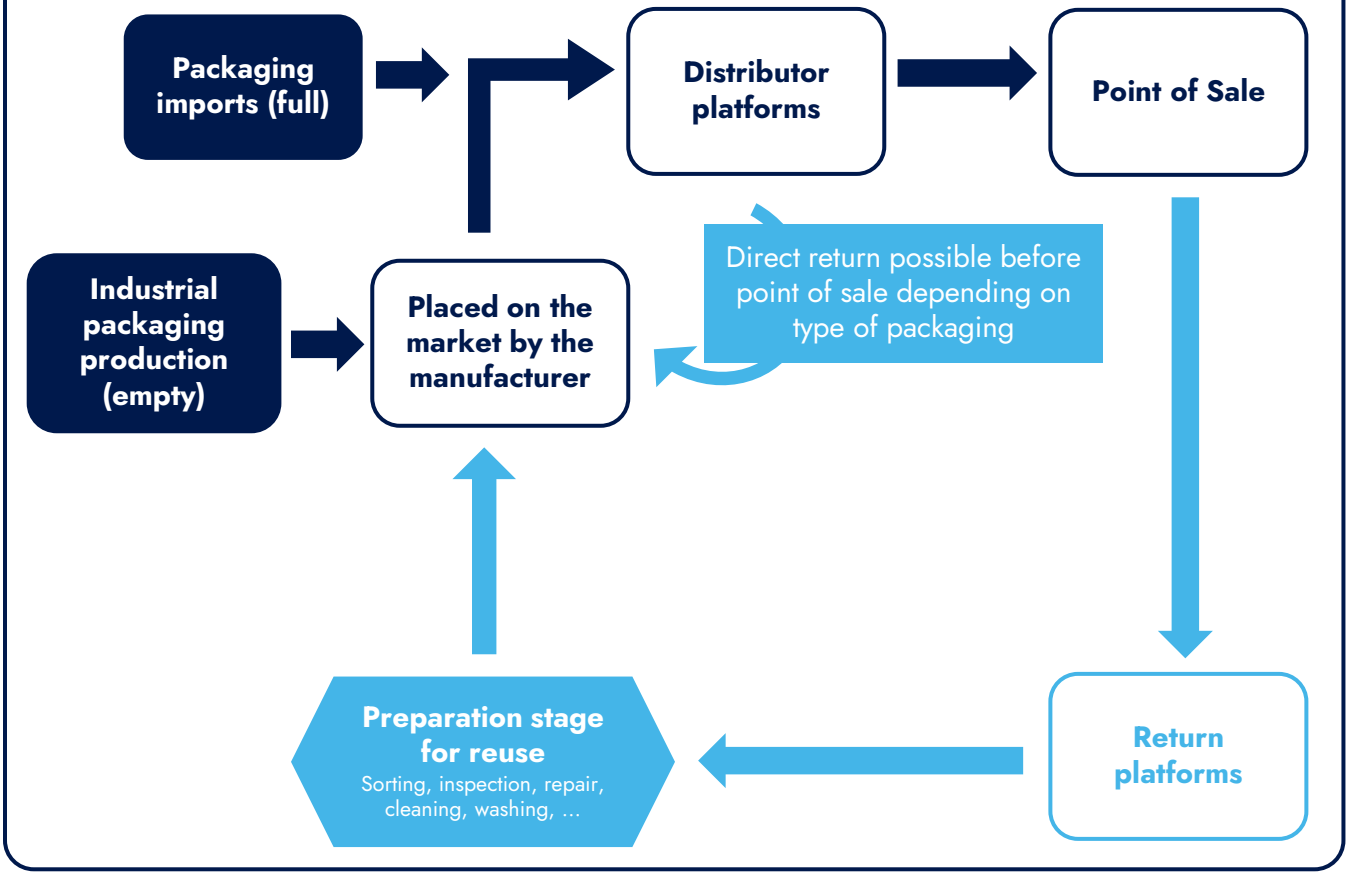
REUSE FOR INDUSTRIAL PACKAGING

Existing systems have demonstrated the merits of using reusable packaging, particularly because it can be seamlessly integrated into industrial systems by addressing several issues:

- **Logistical optimisation of formats:** standardised packaging* that already meets logistical optimisation requirements (e.g. 80 x 120 cm pallets, IBC heights adapted to trucks heights, quarter-pallet crates, etc.).
- **Identified logistical circuits:** beyond packaging, this includes all the steps taken to ensure the return loops for this packaging.
- **Safety:** responsibility of stakeholders to provide reusable packaging that meets safety standards (packaging refurbished for reuse must comply with the same best practices, rules, laws, etc. as new packaging).
- **Traceability:** to meet regulatory requirements and customer specifications.

In the case of long-distance exports (outside the EU), reuse is not necessarily relevant or even possible from an operational, economic or environmental point of view.

STANDARD FLOW CHART FOR REUSED PACKAGING **



**See glossary*

*** Will be different in terms of specific industrial packaging, i.e. tailored to particular products (shape adapted to the customer's product, specific logistics plan, etc.).*

INDUSTRIAL PACKAGING RECYCLING

METHODOLOGY FOR THE RECYCLABILITY OF INDUSTRIAL PACKAGING

All industrial packaging that is no longer usable must be recycled at the end of its life. It thus becomes waste, which may or may not be hazardous depending on the product it contained.

- ✓ The recyclability requirement set out in the PPWR does not apply to packaging used for the transport of dangerous goods in accordance with Directive 2008/68/EC (Articles 6.11 (f) of the PPWR).
- ✓ According to the expertise of the stakeholders, in accordance with the regulations in force, there are cases where packaging that has contained hazardous materials (e.g. certain IBC inner bottles) is recycled. Other packaging is sent to SRF (Solid Recovered Fuel), an alternative to fossil fuels.

The materials used (virgin plastic, recycled plastic, wood, steel, etc.) already have recycling channels in place. In order to assess the recyclability of commercial packaging, certain points must be checked to ensure that it can be recycled through these channels.

Unlike household packaging, which is processed in France through a selective collection (yellow bin) and sorting system, with sorting or oversorting centres, industrial packaging waste is processed on a case-by-case basis depending on the conditions of use and the various operators responsible for collection and preparation prior to regeneration (i.e. plastic recycling) in order to define the scope of the packaging to be assessed.

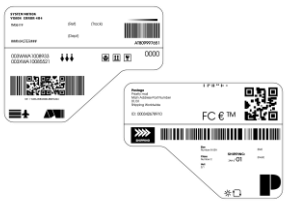
In particular, for each category, it is necessary to identify the associated elements that will or will not be separated from the main body of the packaging and that may have an impact on the recycling of the plastic material (examples below).

We have therefore illustrated in the following pages, for different categories of IBCs and other containers, the key steps carried out by the actors involved in ensuring the recycling of this packaging.

Examples of packaging-related items that must be managed for recycling:

Caps, plugs, valves, or other closure systems

Pallet strapping



Labels

Handles (plastic,metal,..)

ILLUSTRATED CASES

Among the different types of industrial packaging identified by ADEME (preliminary study, 2024), two will be explored in greater detail in this report to illustrate how industrial packaging is managed in terms of reuse and recycling:

- IBCs
- Drums

These examples will highlight the diversity of materials used, each with specific properties, as well as the appropriate treatment solutions at the end of their useful life (renovation for reuse, recycling, recovery, etc.).

Extract from page 19 by rapport ADEME (2024) : étude de préfiguration de la filière REP des EIC (emballages industriels et commerciaux)

Elipso's comment : 'EIC – Emballages Industriels et Commerciaux' are now called 'Industrial Packaging' (they are covered by an EPR system that is separate from that for household packaging (art. L541-10-1). In common practice, manufacturers distinguish between the packaging **sector** (industrial vs. household) and the **markets** in which they will be sold, such as food contact, cosmetics, pharmaceuticals, etc.

Characteristics of reusable industrial packaging detailed in the ADEME study :

Type of packaging	Materials	Markets	Organizational and economic model
IBC	Steel (cage) PEHD (inner bottle)	The chemical industry (pharmaceuticals, parapharmacy, cosmetics), agri-food (beverages, food products, agriculture), cleaning and detergents, petroleum	Closed-loop reuse without deposit
Drums	Steel	Chemical, oil, water treatment, construction, and cosmetics industries 200-liter drums mainly for chemical and oil products	'Shuttle' packaging
	Plastic PEHD	Packaging of liquid or viscous products in the food, cleaning and detergent, chemical, pharmaceutical, and agricultural sectors	

Elipso's comment : A pallet must be added, which can be made of steel, wood, or plastic, or even a combination of these materials.

Elipso's comment : IBC are used in all markets

Elipso's comment : Open-loop reuse is the main model. There are also a few closed loops with deposits.

IBC (INTERMEDIATE BULK CONTAINER)

IBC's markets :
Generally speaking, these types of packaging are found in all markets: chemicals, detergents, hygiene and cleaning products, petroleum products, food and beverages, pharmaceuticals, cosmetics, automotive products (brake fluid, coolant, engine fluid, etc.).

It refers to a specific family of large-capacity containers for industrial professionals, with capacities ranging **from 300 L to 1250 L,** which can be used to store liquid, paste, and even solid products.

SEVERAL TYPES OF IBC

Plastic box IBC

Foldable plastic box with flexible inner bottle and pallet

Model from IPL Schoeller

Cardboard IBC

Flexible inner bottle with cardboard structure and pallet

Model from Smurfit Westrock

Metal cage IBC

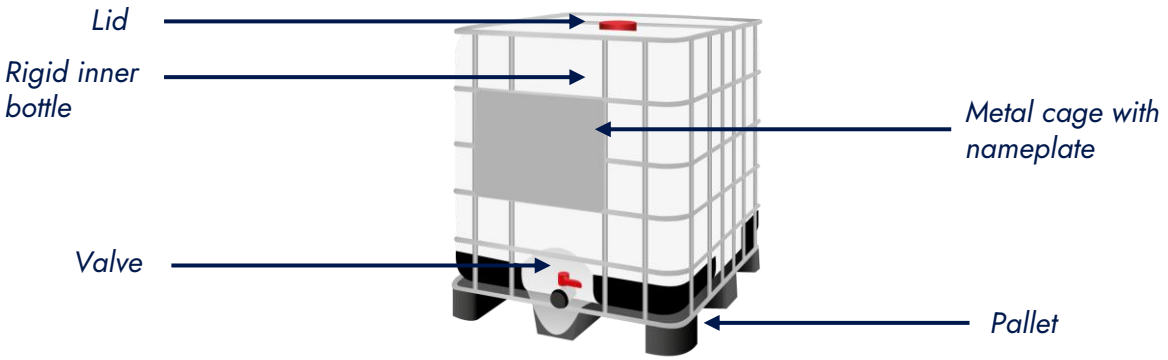
PEHD rigid inner bottle with metal cage and pallet

Model from Schütz

Model from Werit

Focus on this type of industrial packaging in the following pages.

METAL CAGE IBC: TECHNICAL DATA SHEET TYPE *



COMPONENT	MATERIAL(S)	MASS (KG)	% MASS RATIO OF THE IBC
Rigid inner bottle	**PEHD plastic with in option :** Barriers layers (EVOH, etc.), additives (UV stabilizers, antistatic agents, etc.) or pigments. They can be added to the resin to ensure the functionality of the inner bottle depending on the product it is intended to contain.	11 to18	20 to 35
Lid	**PEHD,** pigments (all colours accepted in recycling), sealing gasket (different materials)	0,2	< 1
Palett	**PEHD plastic** (virgin or recycled resin) and pigments (different colours)), **Metal** or **Wood**	15 to 25	25 to 50
Cage *Bars, nameplate, screws & clamps*	**Galvanised steel**	20 to 25	30 to 50
Valve	**Plastic elements** (PP, PEHD) and/or **metal**	0,5 to 1	< 1
Protection & Safety elements *in option*	**Plastic** corners angles **(PEHD)**, antistatic braids (**metal**), damping foam, labels, lids (to seal the valve), others identification elements (RFID)	0 to 1	< 1

** Based on the average data provided by contributors to this document*

METAL CAGE IBC: REUSE

Waste preparation and separation
Reception and then routing to the appropriate treatment channel

*Any residual content and wash water **treated in the appropriate channels***

2 POSSIBLE WAYS TO REUSE

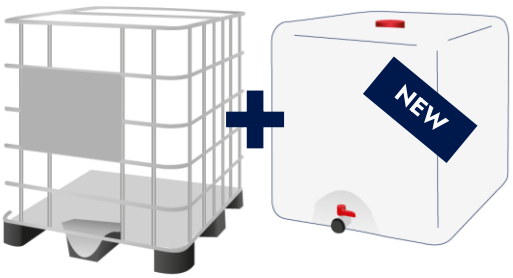
IBC WASHING

IBC fully reusable by washing the inner bottle

> 50 %
recovered IBCs are washed

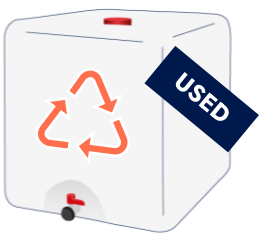
OR

REPLACEMENT OF THE RIGID INNER CONTAINER



Reusable Cage + Pallet
with a new inner bottle

Used inner bottle sent to recycling process



< 50 %
recovered IBCs replace the inner bottle for reuse

Why can't the rigid inner bottle always be washed ?
Various criteria determine whether the inner bottle should be destroyed for recycling:

- Inner bottle cannot be washed due to its contents
- Inner bottle is punctured or too damaged
- Regulatory requirements: ADR standards (European Agreement concerning the International Carriage of Dangerous Goods by Road), responsibility to be assumed by the marketer, etc.
- Customer requirements

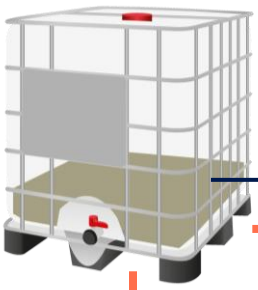
IBC WASHING

Washing lance

The lance is inserted through the top of the IBC, allowing its interior to be washed in addition to the exterior. The wash water from the industrial process is reprocessed to minimise water consumption, and the circuits are optimised according to the type of cleaning required.

METAL CAGE IBC: RECYCLING

Waste preparation and separation
Reception and then routing to the appropriate treatment channel

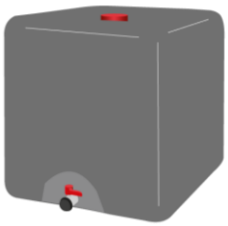


*Any residual content and wash water **treated in the appropriate channels***

PEHD RIGID INNER BOTTLE
(natural or coloured in the mass)

Lid and associated seal, separated from the inner bottle

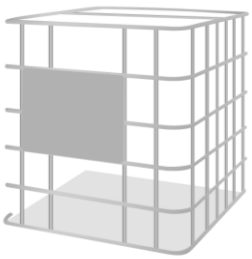
PEHD stream
Reference stream within which the recyclability of the inner bottle must be assessed



If the inner bottle is mass-coloured : **PEHD mechanical recycling natural or coloured** ➔ shipping to compounder or packaging

METAL CAGE

If the pallet is in metal, it remains with the metal cage.



Separeted elements

Waste fossil fuel with metal recuperation

Metal stream

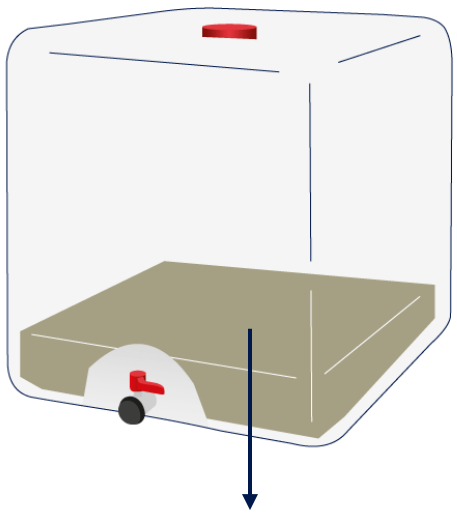
PALLET

IF IN PLASTIC :
➔ Plastic stream
Any additional components (e.g. metal) will be removed before recycling.

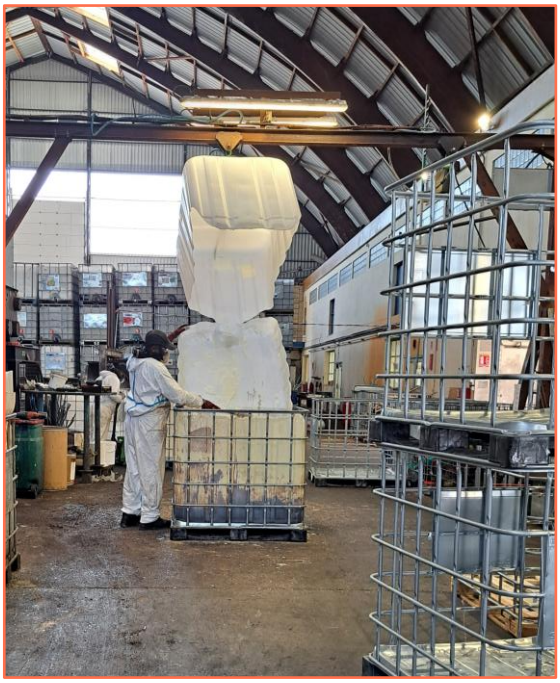
IF IN WOOD:
➔ Wood stream
Energy or material recovery: boiler room or particle board

PREPARATION FOR IBC RECYCLING

PEHD RIGID INNER CONTAINER
(natural or coloured mass)



Any residual products treated in the appropriate channels



The inner bottle can be opened to scrape and empty the bottom of the pouch.

Once the inner bottle has been emptied, it is sent for shredding to obtain flakes that can then be reprocessed for recycling.

IBC RECYCLING

After crushing the inner bottle, the 5 stages of recovery :

1. **Manual sorting**
2. **Laceration (rough cut)**
3. **Washing (first step)**
4. **Fine grinding**
5. **Final washing**

Then, the material is send to :

- Plastic industry
- Packaging Manufacturers
- Others recycling streams

METAL CAGE IBC: 2024 DATAS

Reuse & Recycling

Focus on the 874,907 metal cage IBCs arriving at the main refurbishers (Elipso 2024 survey). To our knowledge, the players surveyed represent more than 90% of French players organising the collection of IBCs after use for refurbishment.

REUSE

87 %

Collected IBCs are reused

13 %

are sent to the end-of-life devices

A little more than

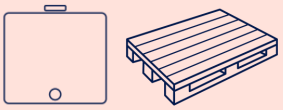
1 rigid inner bottle out of 2

is washed to be reused with the pallet and the cage

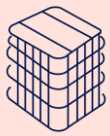
- Inner bottles that are replaced for safety, logistical or customer requirements reasons are added to the tonnes of plastic that are recycled or used for energy recovery, depending on the hazardousness of the product they contained.
- ADEME rules for accounting for reuse: up to 40% change in mass permitted for reusable industrial packaging.

RECYCLING

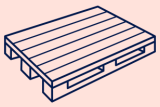
systematic separation of the pallet, cage and rigid inner bottle



7,2 kt of recycled plastic — 34 %



10,6 kt of metal recycling — 50 %



2,2 kt of wood recycling — 11 %

% tonnes sent to end-of-life facilities

ENERGY RECOVERY

1,2 kt recovered for energy, when the products contained cannot be recycled — 5 %

OTHER TYPES OF IBCS: FLEXIBLE-RIGID COMBINATIONS

DETAILS OF ASSOCIATED ELEMENTS AND MATERIALS

CARDBOARD STRUCTURE with plastic inner liner and pallet

Model from Smurfit Westrock

COMPONENT	MATERIAL(S)	MASS (KG)	% MASS RATIO OF THE IBC
Flexible inner bottle 1000 L (standard market)*	**PEBD in majority**, transparent or coloured (clear) EVOH barrier < 5 % total mass of the inner bottle	2,7 to 3,5* (closure system included)	6 to 16
Filling system (higher) **and draining** (lower) integrated to the inner bottle	**PEHD, PEBD or PP** (depending on the model) **+ seals (different materials)** inserted or over moulded		< 1
IBC rigid cardboard	**Corrugated cardboard**	16*	30 to 45
Plastic or wood pallet linked to the box	**PEHD, wood**	15 to 25	30 to 70
Safety & protection element	Corner protectors (**cardboard**) Strapping (**metal or plastic**)	< 1 0,2	< 1
Marking	Labels & adhesives	0,01	

FOLDABLE PLASTIC BOX With flexible inner bottle and pallet

Model from IPL Schoeller

COMPONENT	MATERIAL(S)	MASS (KG)	% MASS RATIO OF THE IBC
Flexible inner bottle 1000 L (standard market)*	**PEBD in majority**, transparent or colored (clear) EVOH barrier < 5 % total mass of the inner bottle	2,7 to 3,5* (closure system included)	3 to 4
Filling system (higher) **and draining** (lower) integrated to the inner bottle	**PEHD, PEBD or PP** (depending on the model) **+ seals (different materials)** inserted or overmoulded	< 1	< 1
IBC rigid plastic and pallet	**PEHD or ABS**	≈ 100	≈ 95
Safety & protection element	damping foam in the headroom	1	< 1
Marking	Labels & adhesives	< 0,1	< 1

(*) based on a 1000 L IBC – other sizes are available, such as 250 L or 500 L – and average data provided by contributors to this document

CARDBOARD STRUCTURE WITH FLEXIBLE INNER LINER AND PALLET

Model from Smurfit Westrock

REUSE

CARDBOARD BOX

Why can't cardboard boxes always be reused for liquids (1000 L) ?

This type of packaging is often stacked during transport (2 levels) and storage (up to 3 levels). Therefore, as a safety measure, the recommendation is not to reuse them on site. Currently in France, according to ADEME, reuse on the same site is not counted towards regulatory reuse targets.

VALVE

HDPE or stainless steel valve, which must be unscrewed to remove the inner bottle and is therefore separate from the inner bottle.
The valves are cleaned and reused.

PALLET

REUSED

RECYCLING FOR ITEMS THAT CANNOT BE REUSED

CARDBOARD BOX

➔ Cardboard stream

PLASTIC INNER BOTTLE

Model from Bernhardt

PE
sometimes with EVOH (< 5 %) or metallization (PET-met)
➔ PE flexible stream

PALLET

Model from Werit

IF IN PLASTIC :
➔ Rigid plastic stream

IF IN WOOD :
➔ Wood stream

FOLDABLE PLASTIC BOX WITH FLEXIBLE INNER LINER AND PALLET

Model from IPL Schoeller

REUSE

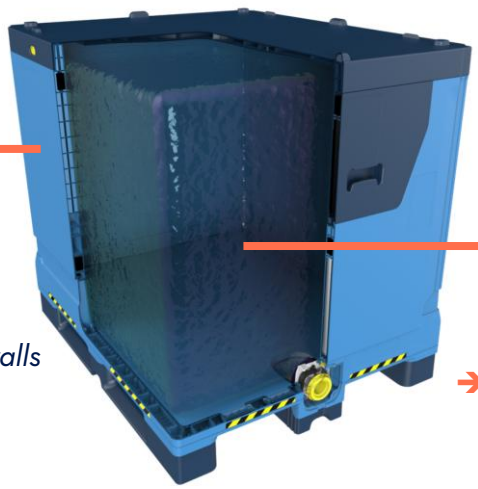
RIGID BOX AND PALLET

Washed and reused

VALVE

HDPE or stainless steel valve, which must be unscrewed to remove the inner bottle and is therefore separate from the inner bottle.
The valves are cleaned and reused.

RECYCLING FOR ITEMS THAT CANNOT BE REUSED



BOX
Parts that cannot be reused *as the walls are removable, they can be easily repaired or replaced.*

➔ **Rigid plastic stream**

INNER BOTTLE
➔ **Flexible plastic stream**

FOLDABLE PLASTIC BOX: REUSE

Washing for the reuse

Different washing steps at Eternity Systems

OTHER TYPES OF INDUSTRIAL PACKAGING: SMALL FORMATS SUITABLE FOR CATERINF OR HOUSEHOLD USE

Known as BIB® or flexitanks, these packages combine a flexible part with a rigid container and are used in the catering and household sectors. Those covered by the REP CHR (extended producer responsibility scheme for the hotel and food service industry), currently defined by the decree « arrêté du 20 juillet 2023 » , will be included in the REP for Industrial Packaging when it is implemented in January 2026.

Fabricant : Smurfit Westrock

One of the main challenges is ensuring that professionals properly separate the different components of this packaging (cardboard boxes, flexible inner bottles, or other pump systems) in order to optimise the recycling of the various materials that already have recycling streams in place.

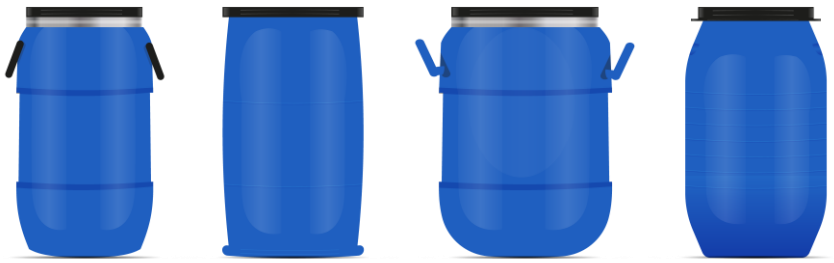
OTHERS INDUSTRIAL AND COMMERCIAL RIGID PACKAGING: BARRELS, DRUMS, JERRYCANS, BUCKETS, ETC...

In the family of large rigid containers, packaging such as drums, cans, jerrycans, buckets, etc. also serve many markets with capacities specifically tailored to different uses.

In this document, we present two categories to illustrate reuse and recycling:

DRUMS : Wide range **from 6 L to 250 L** with different types of openings

These containers feature a rigid body, obtained by extrusion blow moulding, with a large opening, and sealed with a lid or caps.

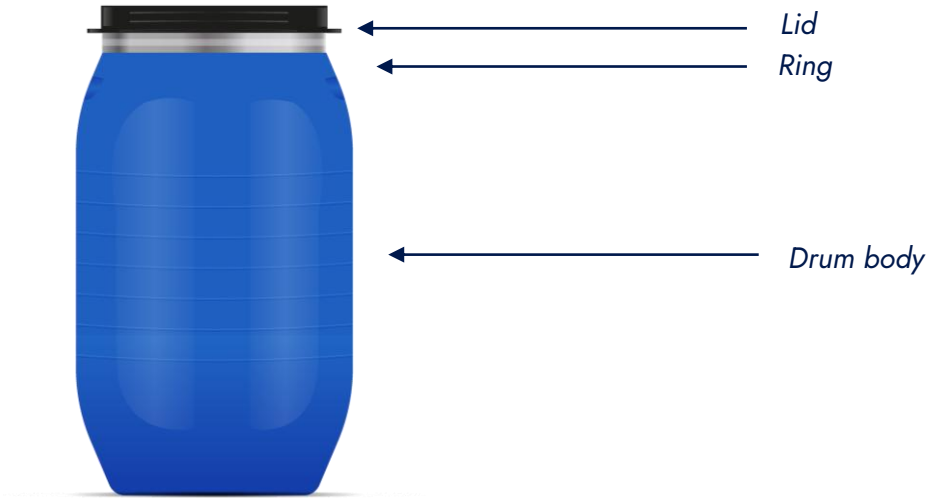


CANS & JERRYCANS : Wide range from **0,5 L to 30 L**

BUCKETS (variable capacity) : can be reused or recycled based on the same principles

Description :
- Body in PEHD ou PP in majority (natural or coloured in mass)
- Closures (metal, plastics,...)
- Labels (IML, adhesives...)

FOCUS ON DRUMS



DETAILS OF ASSOCIATED ELEMENTS AND MATERIALS

COMPONENT	MATERIAL(S)	MASS (KG)	% MASS RATIO OF THE DRUM
Body (main component)	**PEHD** And possibly: colourants, various additives, such as UV stabilisers, antistatic conductivity, barrier layer (EVOH), etc.	8,2	≈ 30
Lid for full opening or **closing elements** **Bunged lid**	**PEHD** Seal (various materials): inserted or overmoulded. Optional PP cap **Metal** closure band (collar) or **metal or plastic** capsule	< 1	< 1
Marking	Labels & adhesives (**paper, metallization, silicone,**...)	0,01	< 1
Transport components	Pallet (**wood or plastic**) Locking ring (**metal or plastic**) Film (**plastic**)	20 to 30 < 1 < 1	≈ 70

Based on an average data provided by contributors to this document

DRUMS & CANS: REUSE

Washing drums for reuse

Washing cans for reuse

DRUMS, CANS & OTHERS RIGIDS: RECYCLING

DRUM

DRUM AND LID
➔ **PEHD STREAM**

METAL RING
➔ **METAL STREAM**

CAN

CONTAINER AND HIS CAP
➔ **PEHD STEAM**

BUCKET

PLASTIC BUCKET, HANDLE AND LID
➔ **PP STREAM**

As presented in the case of IBCs, **the various components can be separated to ensure effective recycling of the different recyclable materials**, in accordance with the principles of eco-design for recycling plastic packaging. The resins mainly used for these types of packaging are HDPE and PP, which already have well-established recycling channels in France and can be used to manufacture new materials for the circularity of plastic resins.

Conclusion

Through this guide, Elipso and its members wish to highlight the following points:

Industrial packaging (including catering) is specific and has very different channels from those that exist for household packaging, with dedicated collection systems organized by manufacturers for decades. For example, it does not go through sorting centres.

This packaging are **already designed for reuse** (including imported packaging) for standard market packaging.

Regarding recycling, **processing channels for this packaging are already organized and in place** by manufacturers for the materials it is made of: metal, paper/cardboard, plastic resins (HDPE, LDPE, PP), wood, etc.

Notes

The illustrations in this document are not exhaustive; there are other operational circuits for specific professional packaging.

Flexible packaging cannot be managed in the same way as rigid packaging, particularly regarding reuse, and therefore has not been illustrated in this document.

Notes

Notes

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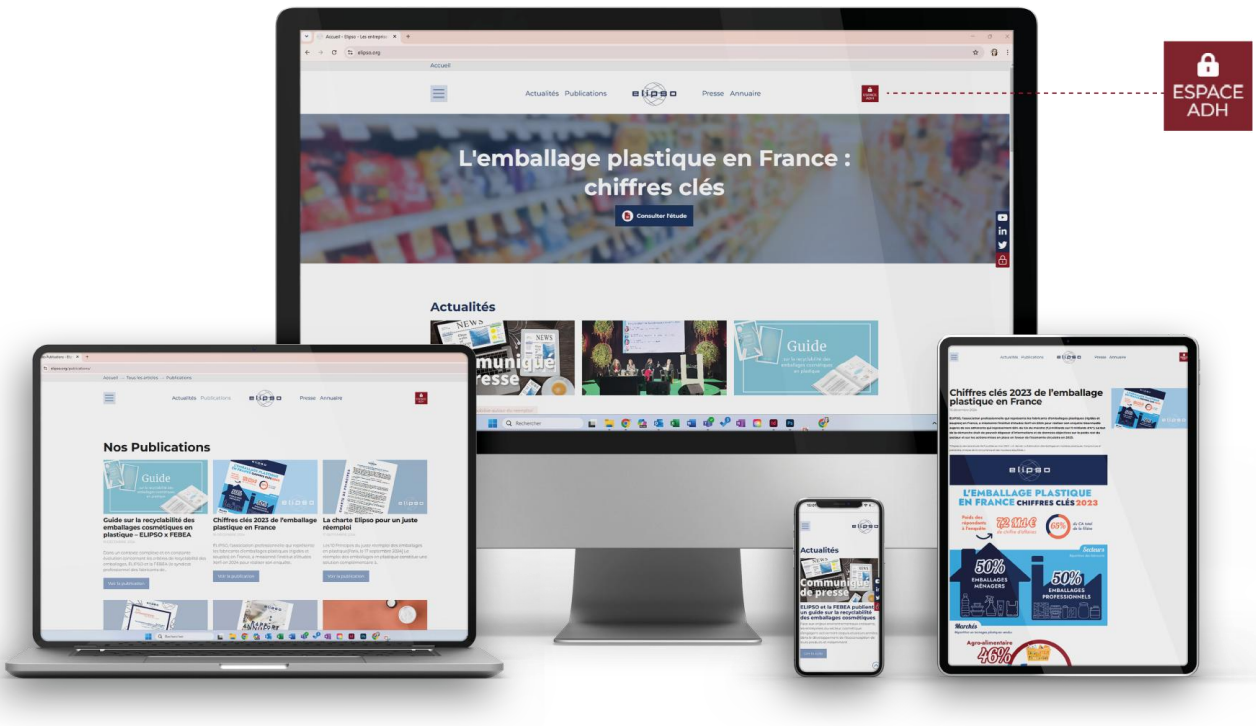

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