

Guide to

ECO-MODULATION

Technical and
economic model for the
eco-modulation of prices





Guide to ECO-MODULATION

ECOEMBES is the non-profit environmental organization that promotes sustainability through the recycling and ecodesign of household packaging in Spain. We make it possible for plastic packaging, metal packaging, cartons and cardboard, paper and wood packaging to have a second life. Since its creation, the ECOEMBES model has provided an example of public-private cooperation whose function is simply to guarantee the effective and efficient management of light packaging waste in Spain, in cooperation with all the agents involved in the process: Companies, Citizens and Public Administrations.



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Executive Summary

In an **effort to promote the ecodesign of packaging**, the new Royal Decree 1055/2022 on Packaging and Packaging Waste lays out guidelines for modulating the financial contribution made by companies to SCRAPS based on new criteria, **applicable from January 2024**.

This is what is known as **eco-modulation**, which Ecoembes had been applying to the price depending on the packaging material, weight and the units placed on the market. With this new regulation, the system goes a step further by incorporating into this modulation a series of **attributes that facilitate the process of sorting and recycling packaging**, and of reintroducing that material back into the market, as part of an ever-evolving eco-modulation process.

Annex VIII of Royal Decree 1055/2022 lays out the guidelines for eco-modulation. For the time being, they are not binding, although within 4 years, the Ministry for the Ecological Transition and Demographic Challenge will analyse their effects.

Ecoembes has prepared this guide to inform its member companies of what the new financial contribution model will be like from 2024, when these new criteria are incorporated into the eco-modulation, and which will imply a series of discounts and penalties.

WHAT IS ECODESIGN?

According to Annex V of Law 7/2022, ecodesign is defined as “the systematic integration of environmental aspects into the design of the product in order to improve its environmental performance throughout its life cycle, and in particular its duration and ease of repair”.

WHAT IS ECO-MODULATION?

As part of the Collective Extended Producer Responsibility Systems (SCRAP in Spanish), eco-modulation seeks to regulate the financial contribution made by companies to these systems based on the impact that their packaging has on the sorting and recycling process, and to promote circularity by incorporating recycled material.

The new eco-modulation guidelines laid out in Royal Decree 1055/2022 are aimed at **promoting lighter packaging, a higher degree of recyclability and the incorporation of post-consumer secondary raw materials.**

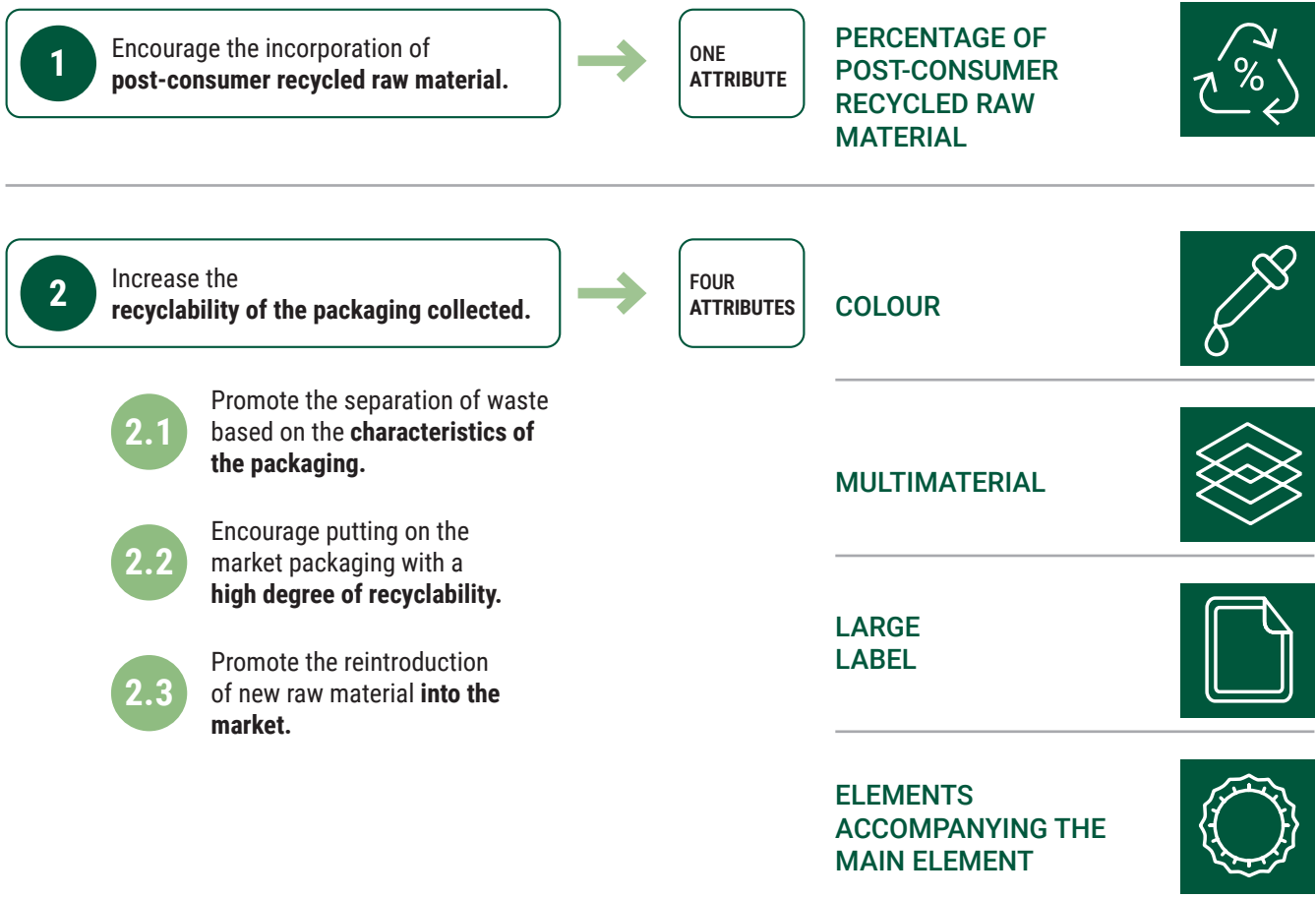
Based on this, **a series of technical attributes have been defined** that can be used to quantify how easy it is to select and recycle packaging, as well as the incorporation of recycled raw material. **These attributes have been selected based on objective technical criteria that facilitate the proper sorting and/or subsequent recycling of packaging.**

These attributes form the basis of this first technical eco-modulation model, which will evolve over time.

New attributes

GOALS OF ECO-MODULATION

ATTRIBUTES OF THE TECHNICAL MODEL



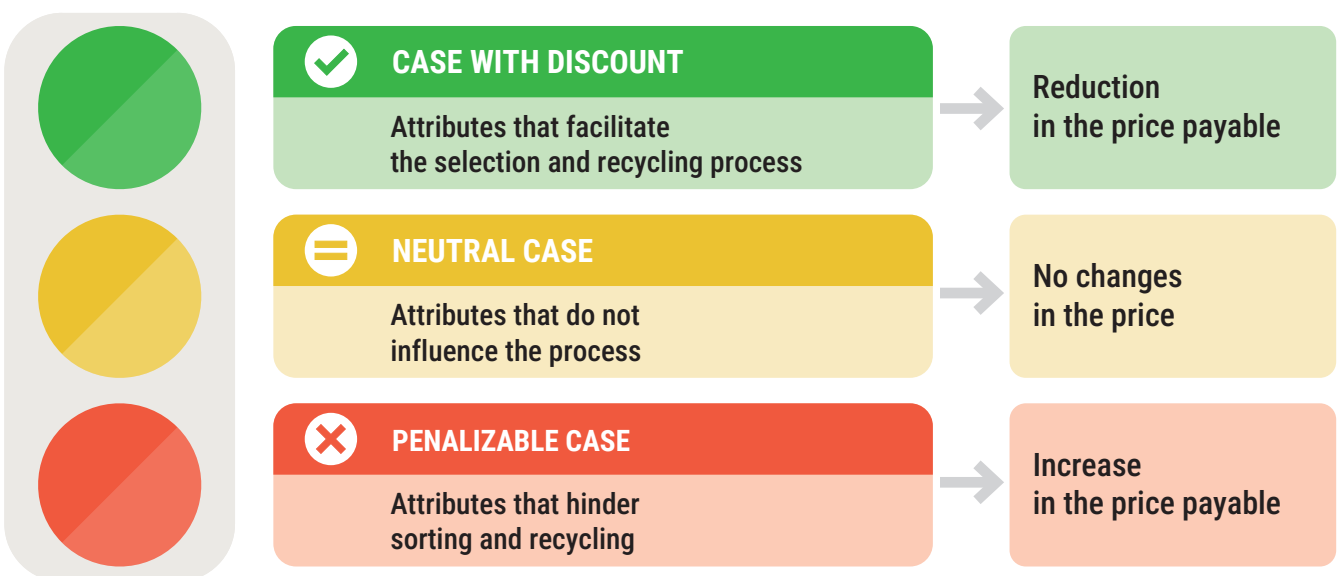
For each technical attribute established, packaging can have different characteristics that promote or hinder its sorting and recycling. Depending on this behaviour, the technical attributes will count as discounts or penalties, using a traffic light model.

For each attribute, **properties have been identified that represent a step towards ecodesign** by facilitating the sorting and recycling process and/or incorporating secondary raw materials for reintroduction to the market. These properties are rewarded. By contrast, those properties that hinder the sorting and recycling of packaging are penalized. Likewise, for each attribute, there is a series of properties considered neutral, since they do not have positive or negative impacts on the process; thus, they do not imply a change in the contribution payable.

The classification of each of these attributes has been studied **for each material fraction managed by Ecoembes**. Material fractions in which the attributes are not differentiating have been identified, so for the time being, only cases in which the main element is plastic or paper/cardboard will be ecomodulated in this first model.

The **main element** is the hollow body (bottle, can, jar, etc.) in the packaging solution with the highest weight. If the packaging solution does not have a hollow body, the main element will be the household packaging with the highest weight.

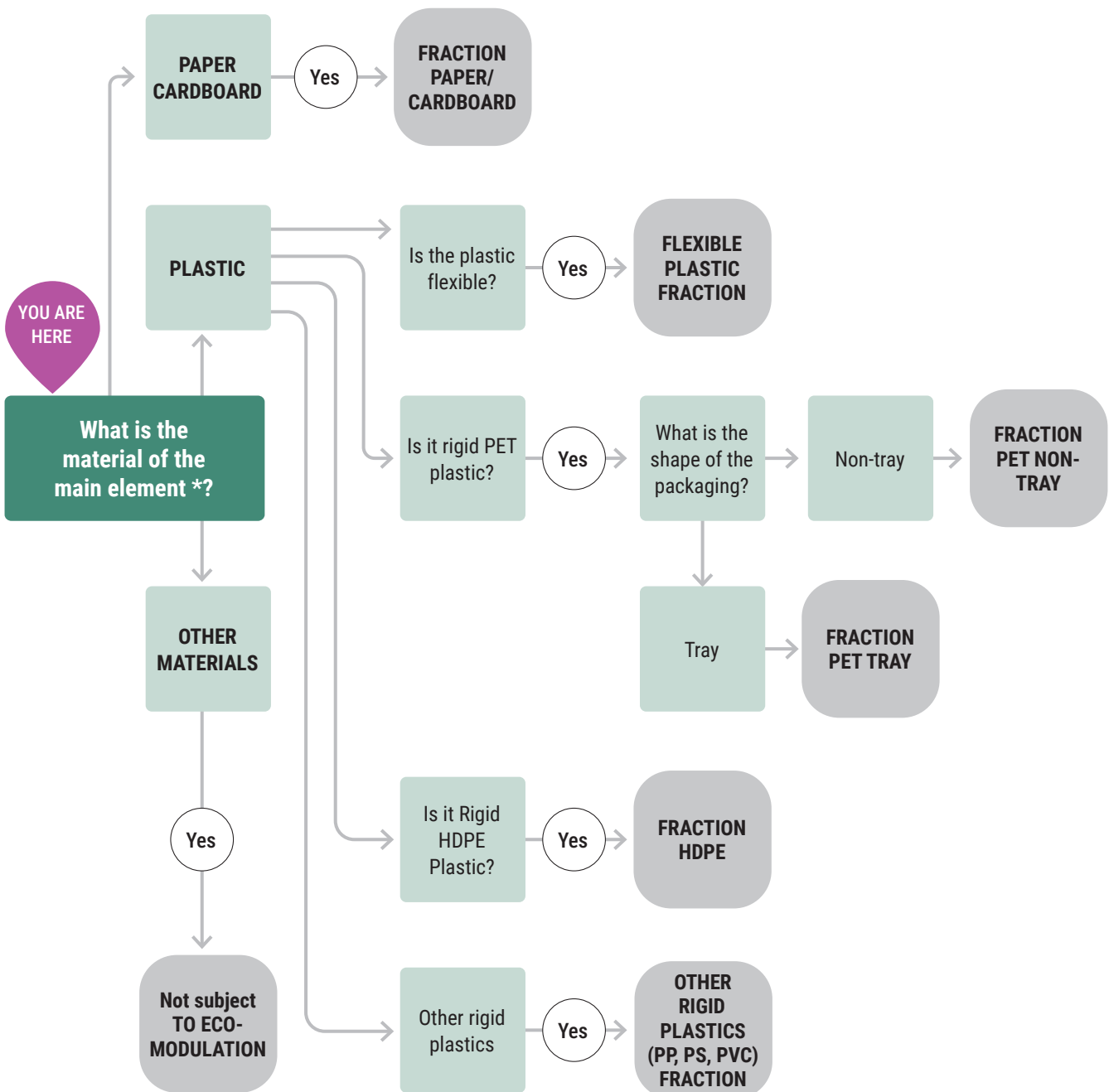
How does the model work?



What fraction does my packaging belong to?

Chapter 6 of this guide presents the case studies for each material fraction subject to eco-modulation.

DETERMINING WHAT FRACTION PACKAGING BELONGS TO



* Main element: hollow body (bottle, can, jar, etc.) in the packaging solution with the highest weight. If the packaging solution does not have a hollow body, the main element will be the household packaging with the highest weight.

Regulatory framework

Currently, ecodesign and eco-modulation are part of **Europe's regulatory framework for a Circular Economy**.

In 2020, the European Commission approved the new **Circular Economy Action Plan** that seeks to continue the transition towards a more sustainable production model within the European Union. Against this backdrop, Directive 2008/98/EC on waste and Directive 94/62/ EC on packaging and packaging waste have been revised and updated. New legislation has also been introduced to tackle and minimize the environmental impact resulting from the massive use of plastics.

Directive (EU) 2018/851

It was approved on 30 May 2018 and amends the previous Directive 2008/98/EC on waste. Article 8 therein refers to the **need to harmonize the operation of SCRAPs in member countries** through a series of generic minimum requirements for these systems (laid out in Article 8.a), and promotes the exchange of information between countries on SCRAPs and on the practical application of the various aspects, which include the **modulation of the financial contribution**.

The transposition of the new European directives to the Spanish legal system has culminated in **Law 7/2022 on contaminated waste and soil, and Royal Decree 1055/2022 on packaging and packaging waste**.

Royal Decree 1055/2022 on packaging and packaging waste

Approved on 27 December 2022, it amends the previous law 11/1997 on packaging and packaging waste. Among the different changes made, the text **expands the obligations associated with Extended Producer Responsibility (EPR)** to include the **need to modulate the financial contribution made by producers to collective systems based on a series of circular economy criteria**, such as durability, repairability, reuse and recycling, and the presence of dangerous substances. Furthermore, in Annex VIII, the text defines a series of criteria intended to provide a basis for defining the first eco-modulation models. These directives set out which properties of packaging should be penalized and which should be rewarded.

Law 7/2022

Approved on 8 April 2022, it amends the previous Law 22/2011 on waste and contaminated soils. It notes the importance of **supporting waste prevention measures**, such as the promotion of ecodesign.

WHAT IS ECODESIGN?



According to **Annex V of Law 7/2022**, ecodesign is defined as **“the systematic integration of environmental aspects into the design of the product in order to improve its environmental performance throughout its life cycle, and in particular its duration and ease of repair”**.

The incorporation of environmental criteria in the design phase is key to understanding and optimizing the environmental profile of the products. The goal of ecodesign is to reduce the use of raw materials, minimize the consumption of resources, extend the useful life of products, increase recyclability and promote the recovery of the final waste.

WHAT IS ECO-MODULATION?



As part of the Collective Extended Producer Responsibility Systems (SCRAP), eco-modulation **seeks to regulate the financial contribution made by companies to these systems** based on the degree to which their packaging impacts the sorting and recycling process, and on the incorporation of recycled materials, which supports the circular economy.

Through the implementation of eco-modulation models, the European Union seeks to encourage the ecodesign of packaging that is put on the market in all its member countries.

Application of eco-modulation

Eco-modulation is structured as a discount granted by the collective system to the producer when the packaging meets certain ecodesign criteria, or a penalty if these criteria are not met.

The discounts and penalties are established by collective systems in a transparent and non-discriminatory manner, ensuring the participation of all stakeholders.

Eco-modulation may take into account the criteria set out in Annex VIII of Royal Decree 1055/2022, or similar, that may apply to packaging that belongs to these collective systems.

Within four years from the entry into force of the Royal Decree, the Ministry for the Ecological Transition and Demographic Challenge will analyse the effects of the modulation adopted by the collective systems and revise Annex VIII, which will then become binding.

Goals of eco-modulation

1 Encourage the incorporation of **post-consumer recycled raw material**.

2 Increase the **recyclability of the packaging collected**.

2.1 Promote the separation of waste based on the **characteristics of the packaging**.

2.2 Encourage putting on the market packaging with a **high degree of recyclability**.

2.3 Promote the reintroduction of new raw material **into the market**.

2

Technical model

The model that will be followed to modulate the financial contribution that companies make to Ecoembes **promotes and encourages the ecodesign of packaging** that is easier to sort and recycle, lighter, more recyclable and that incorporates post-consumer secondary raw materials.

Until now, a **lower weight already had a direct impact on the prices** and the total payment that companies make, since these prices are determined by the kilos of packaging put on the market, based on the material. In other words, **the prices are already eco-modulated**, so consequently, a reduction in per-unit weight translates into a reduction in the amount payable.

From now on, the prices should also reflect companies' efforts to make their **packaging more recyclable and incorporate post-consumer recycled raw material**. To this end, Ecoembes has set up an eco-modulation model based on a series of objective technical criteria.

Likewise, the decision has been made to **assign the model based on the main element**, this being the hollow body (bottle, can, jar, etc.) in the packaging solution with the highest weight. If the packaging solution does not have a hollow body, the main element will be the household packaging with the highest weight.

The technical criteria used to develop the first eco-modulation model are as follows:

- 1 Consistency between the eco-modulation criteria and those used in other European countries.
- 2 Objective technical criteria.
- 3 The economic criteria should incentivize change and encourage ecodesign.
- 4 Minimize complexity to show what the requirements are to receive the discounts.
- 5 Each attribute subject to a discount is independent of other such attributes. They also have the same weighting and are cumulative.
- 6 The presence of attributes with negative performance in the process categorizes the packaging as penalizable. Penalties are not cumulative and the presence of one penalizable element voids all the discounts.
- 7 Minimize the impact on the administrative complexity of the declarations. Consequently, in the initial model, all the eco-modulated fractions will have the same penalty.
- 8 Eco-modulation will be applied independently to the fractions currently in the system. It is a criterion per material fraction.
- 9 Minimize the resulting balance for each fraction (Balance: Discount = Penalty).

In order to achieve the goals of eco-modulation, a series of technical attributes have been defined in order to **objectively** identify whether or not they contribute to those goals. To this end, the regulatory situations in both Spain and Europe have been analysed in depth, as have reports produced by leading environmental organizations in the field of eco-modulation. These attributes can be used to create an initial model that will continue to evolve in the future.

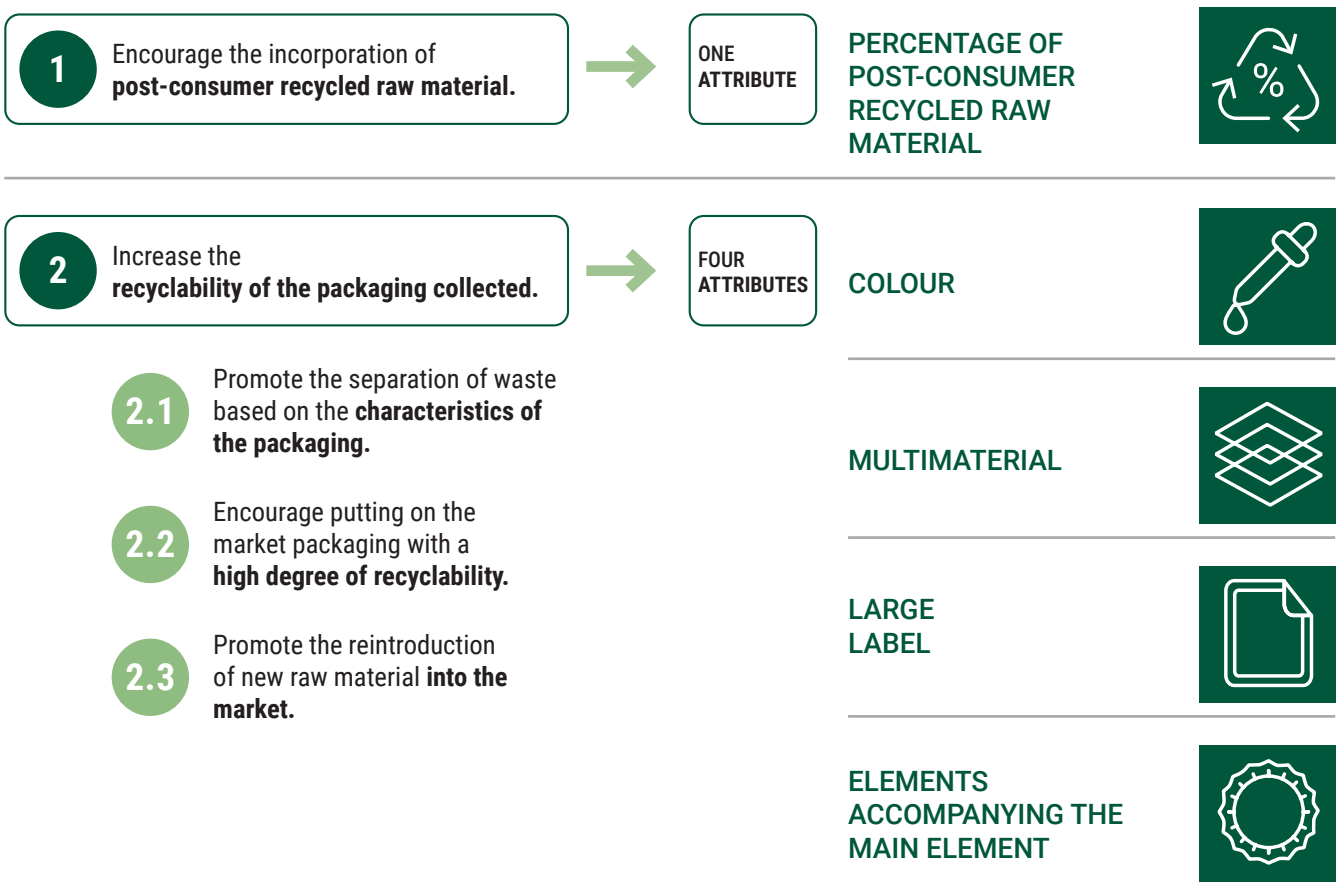
In particular, to encourage the **incorporation of post-consumer recycled raw material**, an attribute is set for the **percentage** of this raw material in the main element of the packaging. As for the promotion of recyclability, four attributes have been established: **colour**, **if the main packaging element is multimaterial**, **a large label** ($\geq 2/3$ parts of the body of the package), and the **material compatibility between the main element and the accompanying elements**.

Each of these attributes was subsequently studied for each material fraction independently. That is, the analysis of the properties subject to discount, penalty or neutral was done separately for each fraction managed by Ecoembes (PET, HDPE, other rigid plastics, flexible plastics, paper/cardboard, steel, aluminium, cartons and wood).

The technical criteria on which this first model is based are solid. **However, it is important to remember that eco-modulation is a constantly evolving project** and will continue to advance until it is aligned with all other European countries. In addition, **additional attributes that can influence recyclability both positively and negatively are expected to be included in the future.**

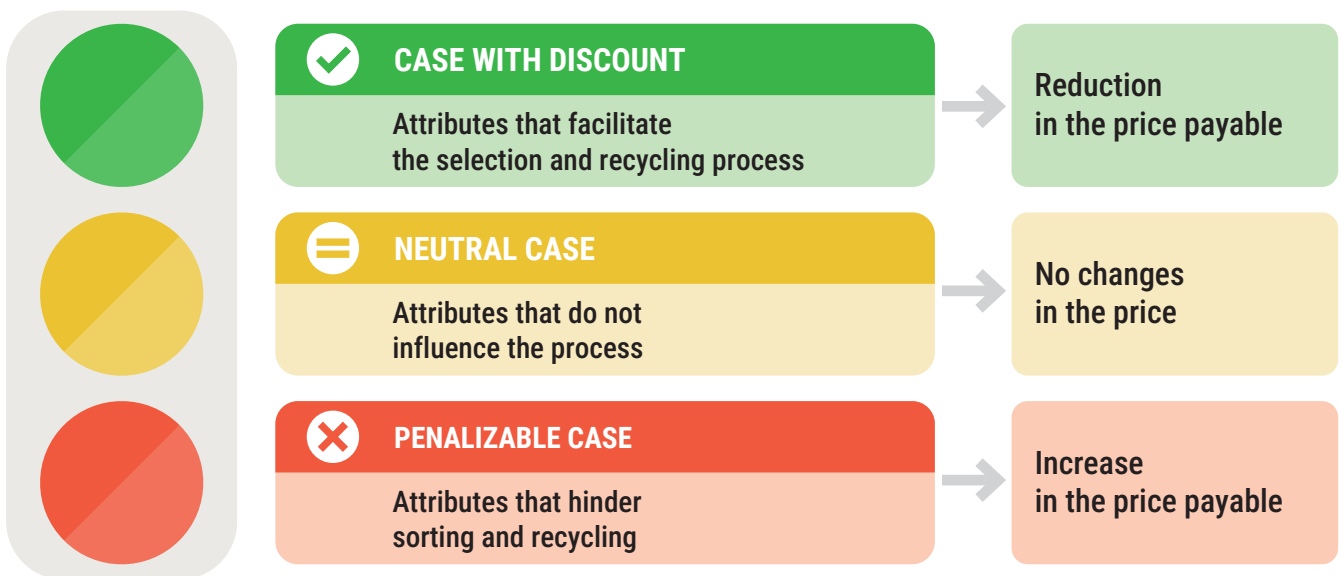
GOALS OF ECO-MODULATION

ATTRIBUTES OF THE TECHNICAL MODEL



For each of the technical attributes in place, the packaging can have different characteristics or properties that influence the sorting and recycling process. Depending on whether these characteristics aid or hinder these processes, they may count as a discount or penalty, following a traffic light model.

Traffic light model



Regarding their final impact on the price:

- ✓ Attributes subject to a discount are complementary, i.e., discounts are cumulative.
- ⊞ Neutral attributes do not affect the price.
- ✗ Penalizable attributes are not cumulative, meaning the presence of one attribute that hinders the sorting or recycling process automatically categorizes the packaging as penalizable, even if it has positive attributes. In that case, a penalty is applied and no discount.

Eco-modulation of materials

As mentioned in the OECD article entitled “Modulated prices for Extended Producer Responsibility schemes”, the improper application of eco-modulation systems can lead to problems, such as increased packaging production costs in excess of the benefits obtained from the eco-modulation discount. Likewise, **eco-modulation prices must be designed in such a way that they do not affect the financial stability of the SCRAPS that apply it** (Modulated prices for extended producer responsibility schemes, OECD, 2021.).

As will be explained in the next chapter, from an economic point of view, the model that we have developed strives to have the balance or resulting balance be zero or tend to zero, meaning that **the penalties will finance the discounts**. Therefore, when the proportion of packaging subject to a discount is much higher than that of penalized packages, the cost of the penalties should be very high for the zero-balance premise to be met. Consequently, the financial stability of the SCRAP would be affected. Because of this, in the case of metals, it was not feasible to apply this initial eco-modulation model developed based on the technical attributes defined.

In the case of wood and cartons, because of the highly specific characteristics of this type of packaging, applying the general model developed is not possible. Concrete models will have to be developed for each of these fractions that will be assessed in future eco-modulation models.

REASONS FOR NON-ECOMODULATION









3

Characterization of attributes

This chapter presents a characterization of the attributes of the technical model that will have an economic impact on the prices.

The following table shows the **five technical attributes of the model**, as well as the main variables associated with each. These attributes will then be defined and briefly explained.

Summary table of the technical attributes












ATTRIBUTES FOR PLASTIC FRACTIONS	
COLOUR	 → Defined based on the fraction
MULTIMATERIALITY	 → <ul style="list-style-type: none">• Monomaterial• Multimaterial
LARGE LABEL	 → Factors to consider: <ul style="list-style-type: none">• Material• Size• Separability
ELEMENTS ACCOMPANYING THE MAIN ELEMENT	 → Factors to consider: <ul style="list-style-type: none">• Material• Separability
PERCENTAGE OF POST-CONSUMER RECYCLED MATERIAL	 → <ul style="list-style-type: none">• > 25% PET• > 20% Other plastics• > 50% UNE BAGS
ATTRIBUTES FOR THE PAPER/CARDBOARD FRACTION	
MULTIMATERIALITY	 → <ul style="list-style-type: none">• Monomaterial• MultimaterialFactor to consider:<ul style="list-style-type: none">• Separability

Secondly, these technical attributes have been analysed for the fractions managed by Ecoembes:

- PET non-tray
- PET tray
- HDPE
- Flexible plastic
- All other rigid plastics
- Paper/Cardboard
- Steel
- Aluminium
- Drink carton
- Wood

After a detailed analysis of the technical attributes, we have concluded that in this first eco-modulation model, only the fractions corresponding to plastic materials and paper/cardboard will be eco-modulated.

Feasibility of applying eco-modulation to different fractions

FRACTIONS SUBJECT TO ECO-MODULATION	FRACTIONS NOT SUBJECT TO ECO-MODULATION*
PET NON-TRAY	STEEL
	
PET TRAY	ALUMINIUM
	
HDPE	DRINK CARTON (BRIK)
	
PLASTIC FLEXIBLE	WOOD
	
OTHER RIGID PLASTICS (PP, PS, PVC)	COMPOSTABLE PACKAGING
	
PAPER/CARDBOARD	
	

* The categories of facial care, colour cosmetics, toothpastes and sunscreens will be exempt from eco-modulation for at least 2024 because they are currently under a pilot project developed by Stanpa and Ecoembes to promote the recovery of this type of packaging (consumer behaviour, recovery and recycling channels).

Description of the technical attributes

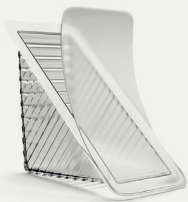


COLOUR

Why this attribute?

The colour and opacity of the packaging can interfere with the optical packaging detection systems that are used in the material sorting plants, hindering the classification process. This affects the degree of recyclability of the packaging. It also affects the ability to reintroduce it to the market, and the demand for this type of material, causing a **reduction in the use of the material in future applications**.

Additionally, description of colors for different materials is included at the end of the guide as an annex.



TRANSPARENT

Packaging that is completely transparent. It does not interfere with optical systems, making it more applicable in future applications. It therefore does not negatively impact the degree of recyclability. Its use in a greater number of applications also makes it more versatile.



LIGHT BLUE

Packaging with a light-blue tint. It also does not affect the sorting process.



OPAQUE

Packaging that obstructs the passage of light or impedes seeing what is behind it. To achieve this opacity, dyes are used that reduce the number of future applications of the material.



BLACK

Black-coloured packaging. When the pigment is obtained from the partial or thermal combustion of hydrocarbons (such as coal, oil or natural gas), it is called carbon black. The presence of carbon black prevents detection using the optical systems for processing lightweight packaging in plants.

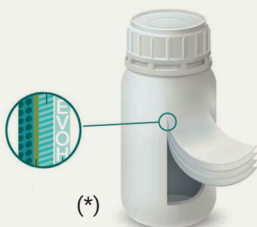
Description of the technical attributes



MULTIMATERIALITY OF THE MAIN PACKAGING ELEMENT

Why this attribute?

The use of different non-separable materials in the manufacture of packaging can pose a challenge to collection, sorting and recycling systems. This is because, depending on how the packaging is designed, it may be impossible to separate these different materials in the recycling process, resulting in some of the materials not being recovered or in the quality of the main materials to be recovered being insufficient for use as a secondary raw material.



MULTIMATERIAL

Packaging composed of two or more layers of different materials that cannot be separated by hand. Oftentimes, the bond between the materials is such that it is not possible to separate all the packaging fractions using current recycling systems, resulting in part of the material being lost.



MONOMATERIAL

Packaging made from a single material, even if it has several layers of the same material.

Description of the technical attributes



LARGE LABEL

Why this attribute?

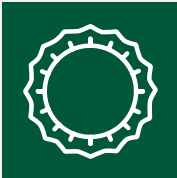
Labels can pose problems during the sorting process, affecting the proper classification of the packaging and impeding its recovery. Large labels (covering at least 2/3 of the main packaging element) can interfere with the optical systems and affect the proper classification and separation, making it difficult for the materials to end up in the corresponding fraction.



SURFACE AREA

If the label covers more than 2/3 of the main packaging element, to facilitate sorting in the optical system in sorting plants, the material of said label must be the same as that of the main element. This ensures the correct processing flow of the main element. In any case, whenever possible, labels should cover less than 2/3 of the surface area.

Description of the technical attributes



ELEMENTS ACCOMPANYING THE MAIN PACKAGING ELEMENT

Why this attribute?

The accessory elements can contaminate the main material to be recovered. The compatibility between the material of the main element and the elements that accompany it is key.



MATERIAL

There are technical incompatibilities between materials due to the greater difficulty of separating them in current recycling systems, and the risk of contamination that they entail.

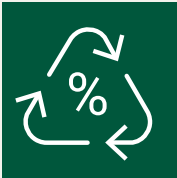
For example, the presence of PVC (when the main element is not PVC), even in minimal amounts (50-200 ppm), causes a visible negative impact on the physical and chemical properties of post-consumer plastic materials.



SEPARABILITY

If the accessory elements have to be forcibly removed from the main element to consume the contents, this would not pose a risk to the packaging recycling process.

Description of the technical attributes



% POST-CONSUMER RECYCLED MATERIAL

Why this attribute?

The incorporation of an attribute that takes into account the use of recycled raw material seeks to **boost the market for secondary raw materials**. The regulation has not established legal targets for the inclusion of post-consumer recycled material by 2024, except for plastic bags provided in stores. In this case, there is a legal obligation to incorporate over 50% post-consumer recycled material (UNE standard bag).














Additionally, for drink bottles, in 2025, the amount of recycled plastic must be at least 25% (on average for all bottles placed on the market), while for all other plastic packaging, the Royal Decree sets an aspirational target that it include at least 20% post-consumer recycled material.

The use and incorporation of material from post-consumer recycled packaging in packaging solutions must be incentivized. Therefore, it has been decided to reward all UNE bags with a percentage higher than 50%, for PET packaging the amount of recycled plastic must be greater than 25%, and for all other plastic packaging, greater than 20%.

Attributes of each fraction




FRACTION PET NON-TRAY

					
	COLOUR	MULTIMATERIAL	LARGE LABEL (≥ 2/3 SURFACE OF THE PACKAGING)	ELEMENTS ACCOMPANYING THE BODY OF THE PACKAGING	% POST-CONSUMER RECYCLED MATERIAL
	 Transparent Light blue				> 25%
	 Non-opaque	Mono-material w/o EVOH or w/ EVOH <5%	Forcibly-removed PET and non-PET tags, or zipper with legend*	Accessories not made of PVC, rubber, silicone or metal**	≤ 25%
	 Opaque	Multi-material w/o EVOH or w/ EVOH <5%	NON-PET labels (unless forcibly removed or zipper with legend*)	PVC, rubber, silicone or metal accessories**	

* Legend: "separate me" or other equivalent text that encourages separation or removal.













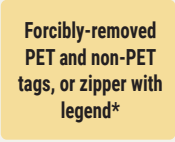

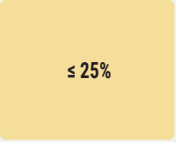


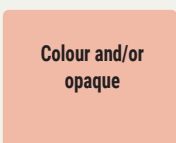
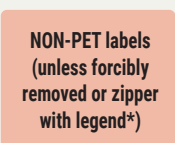

** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.

-  Case with discount
-  Neutral case
-  Penalizable case

Attributes of each fraction




FRACTION PET TRAY

	 COLOUR	 MULTIMATERIAL	 LARGE LABEL (≥ 2/3 SURFACE OF THE PACKAGING)	 ELEMENTS ACCOMPANYING THE BODY OF THE PACKAGING	 % POST-CONSUMER RECYCLED MATERIAL	
						
						
						

* Legend: "separate me" or other equivalent text that encourages separation or removal.












** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.

-  Case with discount
-  Neutral case
-  Penalizable case

Attributes of each fraction




FRACTION HDPE

						
	COLOUR	MULTIMATERIAL	LARGE LABEL (≥ 2/3 SURFACE OF THE PACKAGING)	ELEMENTS ACCOMPANYING THE BODY OF THE PACKAGING	% POST-CONSUMER RECYCLED MATERIAL	
		Natural			> 20%	
		Rest of colours	Mono-material w/o EVOH or w/ EVOH <5%	PE and NON-PE labels forcibly removed or zipper with legend*	Accessories not made of PVC, rubber, silicone or metal**	≤ 20%
		Black (with carbon black)	Multi-material w/o EVOH or w/ EVOH <5%	NON-PE labels (unless forcibly removed or zipper with legend*)	PVC, rubber, silicone or metal accessories**	

* Legend: "separate me" or other equivalent text that encourages separation or removal.












** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.

-  Case with discount
-  Neutral case
-  Penalizable case

Attributes of each fraction




FRACTION FLEXIBLE PLASTIC

	 COLOUR	 MULTIMATERIAL	 LARGE LABEL (≥ 2/3 SURFACE OF THE PACKAGING)	 ELEMENTS ACCOMPANYING THE BODY OF THE PACKAGING	 % POST-CONSUMER RECYCLED MATERIAL
	 Natural Transparent				> 20% UNE Bags > 50%
	 Rest of colours	Mono-material w/o EVOH or w/ EVOH <5%		Accessories not made of PVC*, rubber, silicone or metal**	≤ 20% UNE bags ≤ 50%
	 Black (with carbon black)	Multi-material w/o EVOH or w/ EVOH <5%		PVC, rubber, silicone or metal accessories**	

* If the main element is PVC, PVC accessories would not be penalized.











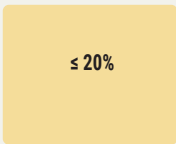


** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.

-  Case with discount
-  Neutral case
-  Penalizable case

Attributes of each fraction

FRACTION OTHER RIGID PLASTICS (PP, PS, PVC)

	 COLOUR	 MULTIMATERIAL	 LARGE LABEL (≥ 2/3 SURFACE OF THE PACKAGING)	 ELEMENTS ACCOMPANYING THE BODY OF THE PACKAGING	 % POST-CONSUMER RECYCLED MATERIAL
	 Natural Transparent				 > 20%
	 All other colours	Mono-material w/o EVOH or w/ EVOH <5%	Labels of other rigid plastics**** and of other materials**** that are forcibly removed or zipper with legend**	Accessories not made of PVC, rubber, silicone or metal**	 ≤ 20%
	 Black (with carbon black)	Multi-material w/o EVOH or w/ EVOH <5%	Labels of other materials***** unless forcibly removed or zipper with legend**	PVC*, rubber, silicone or metal accessories***	

* If the main element is PVC, PVC accessories would not be penalized.




** Legend: "separate me" or other equivalent text that encourages separation or removal.

*** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.

**** Includes PP, PS, PVC, EPS and other plastics.

***** Includes PET, PE, aluminium, steel, paper/cardboard and others.

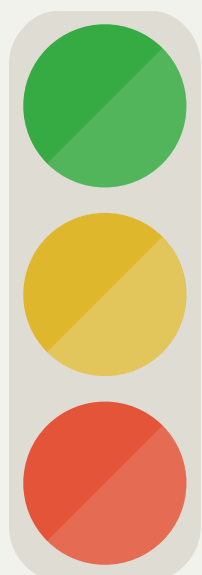
-  Case with discount
-  Neutral case
-  Penalizable case

Attributes of each fraction

FRACTION PAPER/CARDBOARD



MULTIMATERIAL



Monomaterial
or composite
packaging with
paper/cardboard
 $\geq 85\%$



Composite
packaging with
paper/cardboard
 $< 85\%^*$

* Exception for packaging that can be separated by hand by the consumer and that includes the legend "separate me" or other equivalent text that encourages separation or removal.

- ✓ Case with discount
- = Neutral case
- ✗ Penalizable case

4

Economic model

The technical part of the eco-modulation model developed by Ecoembes is supplemented by the economic model. **The economic incentives must be mobilizers for the economic driver to motivate technical development.** To define this part of the model, Ecoembes has relied on the following criteria (already presented in Chapter 3-Technical Model).

Taking into account the basic criteria, for this first eco-modulation model, a **penalty of 10%** has been established for all the fractions. This penalty will apply to the tonnes penalized, and depending on this amount, the **discount percentages** will be defined.

These discount percentages * weight the discounted attributes equally. As a result, the goal is to encourage the eco-design of packaging, while maintaining a financial balance.

The application of the percentages (both discounts and penalties) will apply on the Base Price for the the main element.

DISCOUNTS

The amount in euros that is generated from the penalized tonnes is the maximum amount to be distributed among the tonnes eligible for the discounts. This way, a **financial balance is achieved for each material.** Moreover, **the discounts are equal in percentage for the two current attributes eligible for a discount.**

ATTRIBUTES	COLOUR	% POST-CONSUMER RECYCLED MATERIAL
OTHER RIGID PLASTICS (PP, PS, PVC)	1.60%	1.60%
HDPE	5.95%	5.95%
PLASTIC FLEXIBLE	0.60%	0.60%
PET TRAY	-	5.55%
PET NON-TRAY	0.57%	0.57%

PENALTIES

Setting of a **single penalty percentage of 10% for all the fractions.** Applying this percentage and depending on the tonnes penalized, the discount percentages will be set for each attribute.



*The discount percents have been set based on the final data in the Annual Packaging Declaration for year n-2.

In the case of **PAPER/CARDBOARD**, after a study of the value chain, it has been concluded that the incorporation of other materials into paper/cardboard packaging creates negative impacts, and there is a technical justification for the application of a penalty:

→ **Composite packaging with < 85% paper/cardboard****
Penalty 10%***
 (Applicable to the % of PC. For all other materials, their price will apply).

→ **Packaging with paper/cardboard content ≥ 85%**
Not subject to eco-modulation. The PC price applies
 (% contained in the packaging, for the rest, the price for each material applies).

** Exception for packaging that can be separated by hand by the consumer and that includes the legend "separate me" or any equivalent text that encourages separation or removal.

*** The amount obtained from the penalty would be earmarked for studies, analyses, pilot tests, etc., to look for measures to reduce the impact of paper/cardboard-based composite packaging.

The eco-modulation will start to be applied in 2024, and affect the fees for that year.

The effect of the eco-modulation model on the fees payable in 2024 has been determined using the established criteria. The resulting fees will be applied in €/kg of packaging. The resulting formulas, using the 2024 Base Fees (BF) as a variable, would be as follows.

The application of the percentages (both discounts and penalties) will apply on the base fee for the the main element.

Prices*

FRACTIONS	DISCOUNTED PRICE 2 ATTRIBUTES	DISCOUNTED PRICE 1 ATTRIBUTE	BASE PRICE 2024	PENALIZED PRICE
OTHER RIGID PLASTICS (PP, PS, PVC)	B.P. -3.2%	B.P. -1.6%	B.P.	B.P. +10%
HDPE	B.P. -11.9%	B.P. -5.95%	B.P.	B.P. +10%
FLEXIBLE PLASTIC	B.P. -1.2%	B.P. -0.6%	B.P.	B.P. +10%
PET TRAY**	-	B.P. -5.55%	B.P.	B.P. +10%
PET NON-TRAY	B.P. -1.14%	B.P. -0.57%	B.P.	B.P. +10%
PAPER/CARDBOARD	-	-	B.P.	B.P. +10%

B.P.= Base Price; D=Discount; P=Penalty

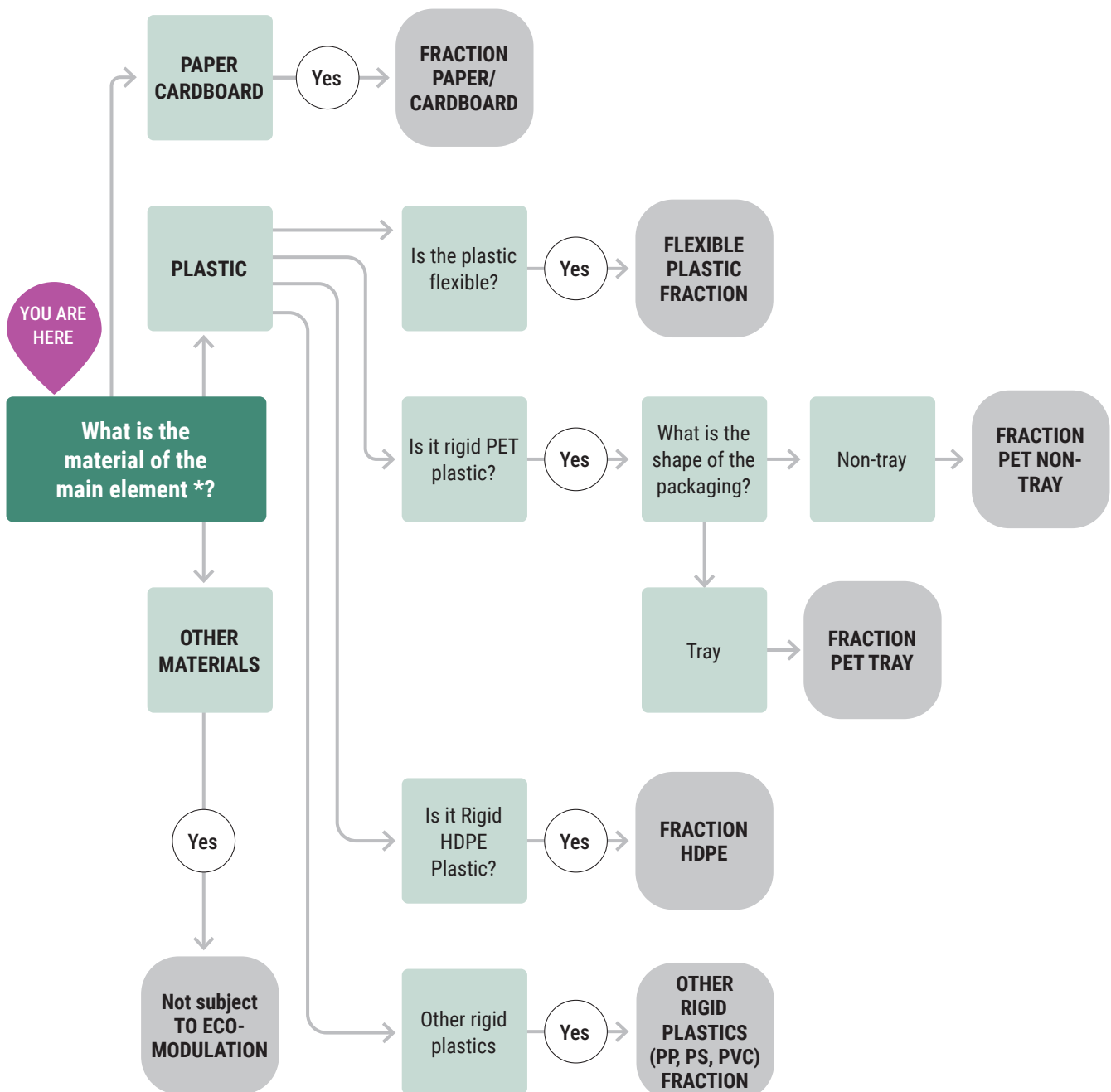
* The discount percents have been set based on the final data in the Annual Packaging Declaration for year n-2.

** Only the post-consumer recycled material attribute is eligible for the discount.

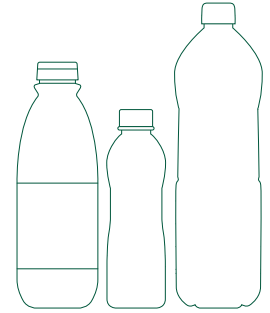
Summary tables

The tables below help identify the fraction to which each packaging belongs, and the potential discounts and/or penalties for each fraction.

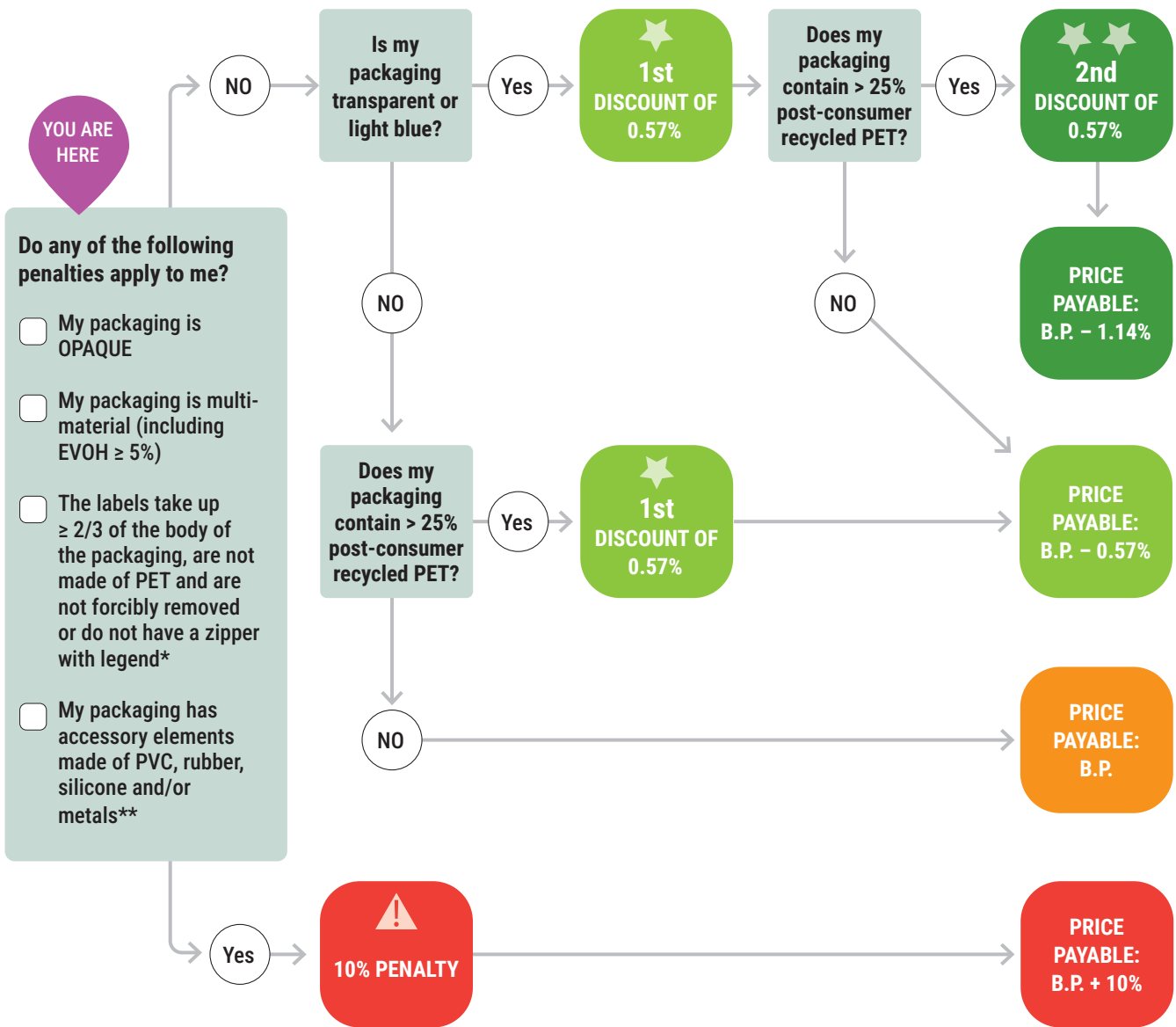
What fraction does my packaging belong to?



* Main element: hollow body (bottle, can, jar, etc.) in the packaging solution with the highest weight. If the packaging solution does not have a hollow body, the main element will be the household packaging with the highest weight.



FRACTION PET NON-TRAY

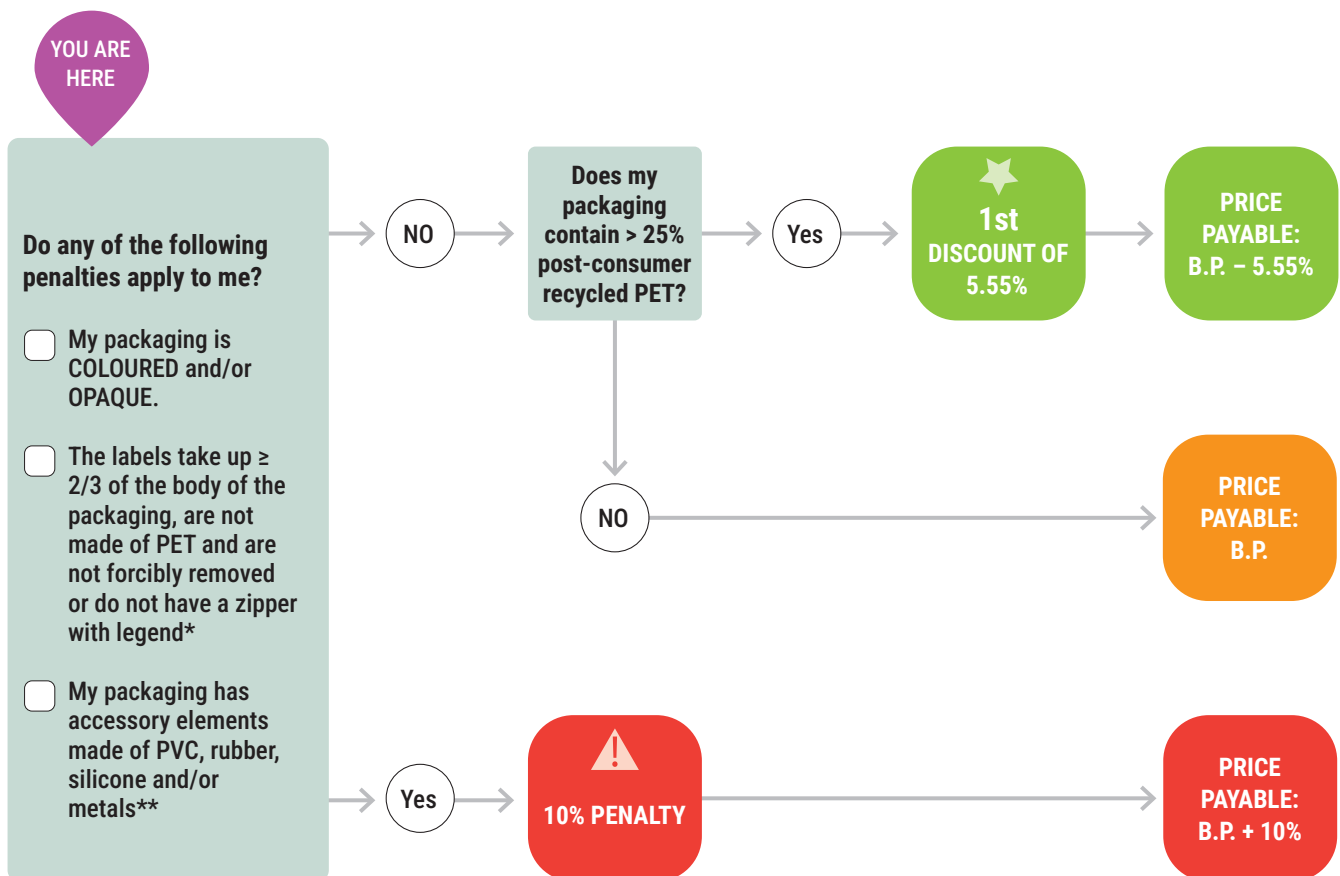
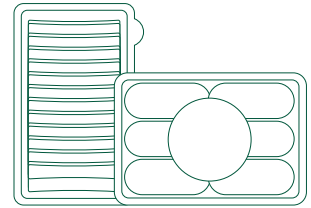


* Legend: "separate me" or other equivalent text that encourages separation or removal.

** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.

FRACTION PET TRAY



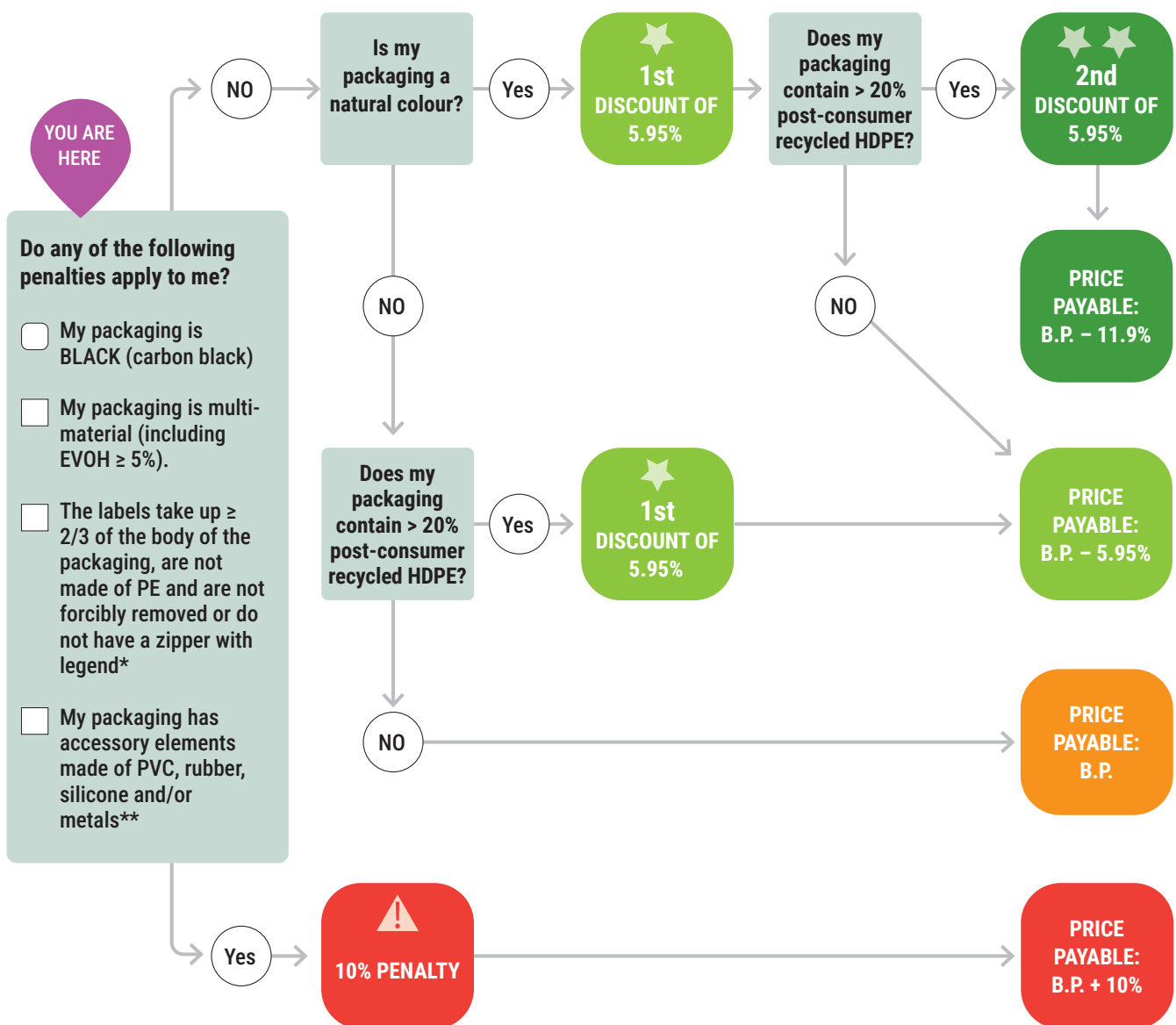
* Legend: "separate me" or other equivalent text that encourages separation or removal.

** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.



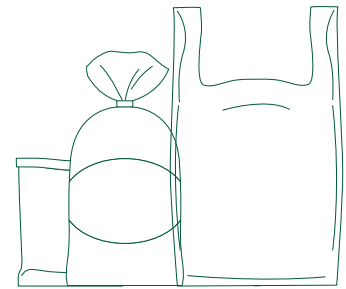
FRACTION HDPE



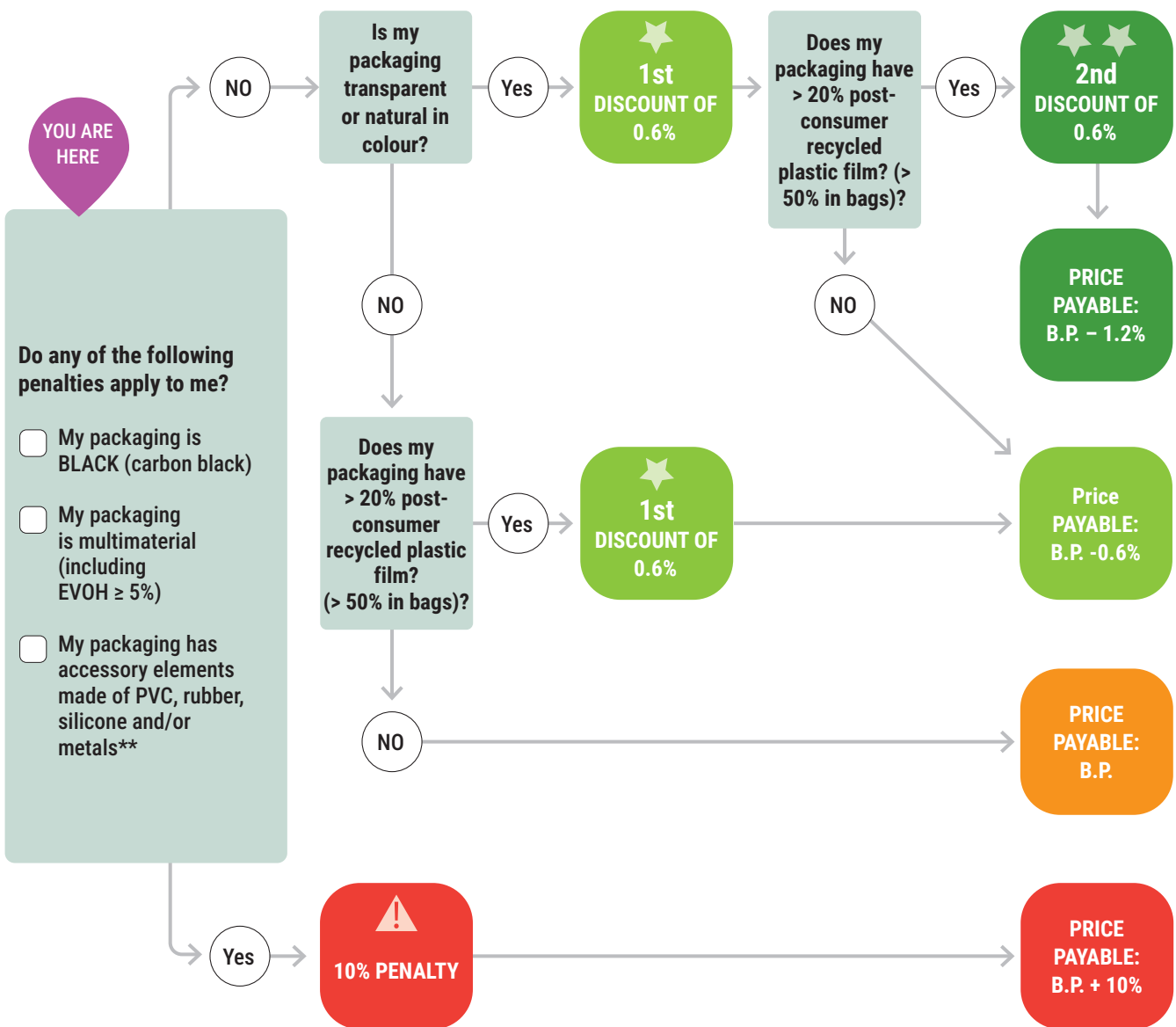
* Legend: "separate me" or other equivalent text that encourages separation or removal.

** Exceptions for PVC, rubber, silicone or metals if they are:

- forcibly-removed elements, or
- elements with a legend* that are removed to consume the product.

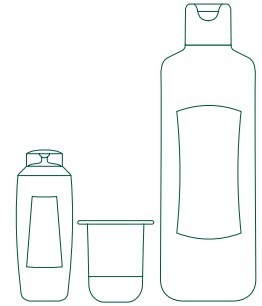


FRACTION FLEXIBLE PLASTIC

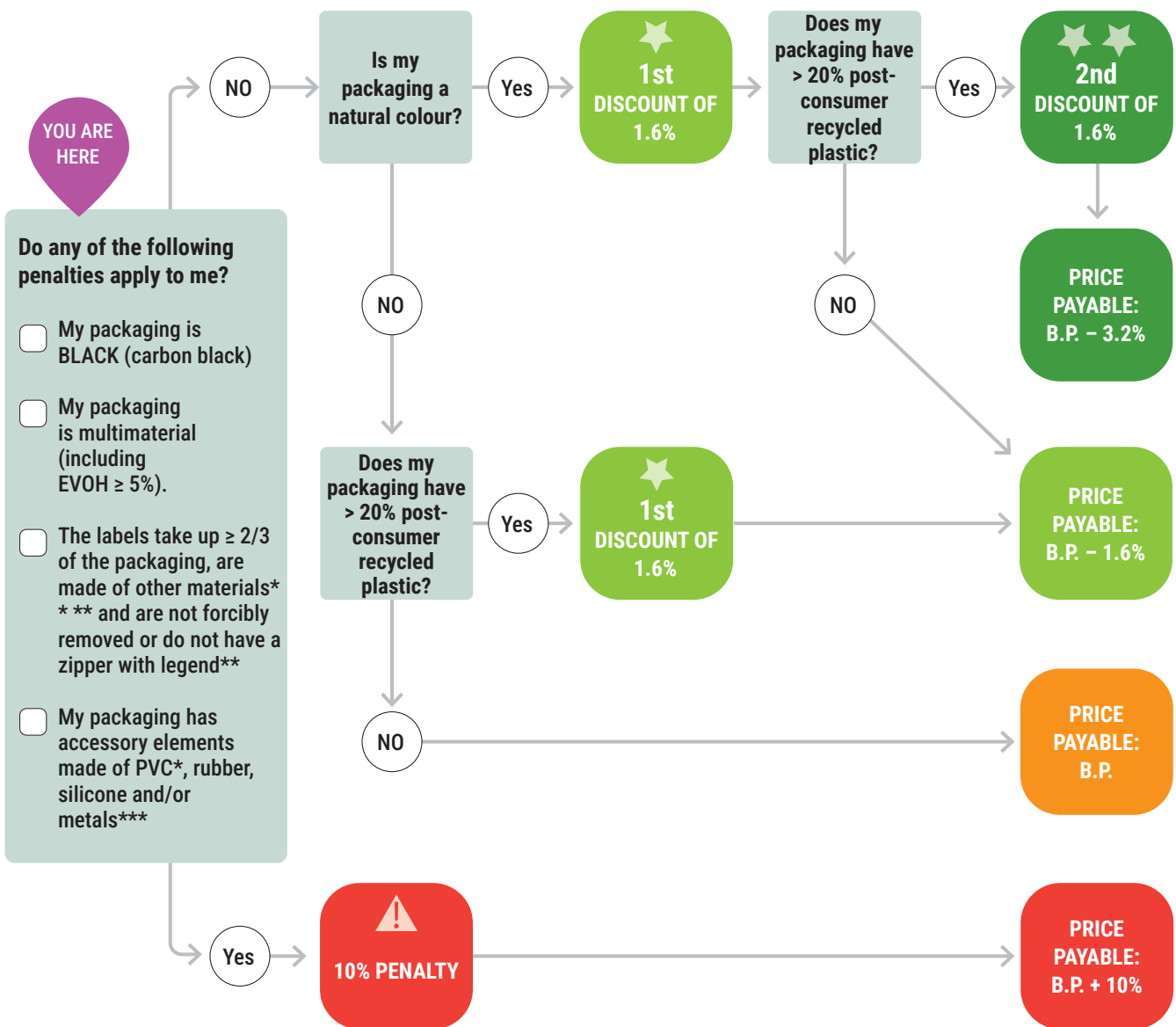


* Legend: "separate me" or other equivalent text that encourages separation or removal.

** Exceptions for PVC, rubber, silicone or metals if they are:
 - forcibly-removed elements, or
 - elements with a legend* that are removed to consume the product.



FRACTION OTHER RIGID PLASTICS (PP, PS, PVC)



* If the main element is PVC, PVC accessories would not be penalized.

** Legend: "separate me" or other equivalent text that encourages separation or removal.

*** Exceptions for PVC, rubber, silicone or metals if they are:
 - forcibly-removed elements, or
 - elements with a legend* that are removed to consume the product.

**** Includes PET, PE, aluminium, steel, paper/cardboard and others.

6

Case studies

FRACTION PET NON-TRAY



COLOUR



MULTIMATERIAL



LARGE
≥ 2/3 DIFFERENT
FROM PET



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



LIGHT BLUE	NO	NO	NO	55%	$B.P. - 2D = B.P. - 1.14\%$
------------	----	----	----	-----	-----------------------------



TRANSPARENT	NO	NO	NO	NO	$B.P. - 1D = B.P. - 0.57\%$
-------------	----	----	----	----	-----------------------------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

Case studies

FRACTION PET NON-TRAY



COLOUR



MULTIMATERIAL



LARGE
≥ 2/3 DIFFERENT
FROM PET



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



TRANSPARENT	NO	Yes	NO	50%	B.P. + P = B.P. + 10%
-------------	----	-----	----	-----	-----------------------



TRANSPARENT	NO	Yes	NO	NO	B.P. + P = B.P. + 10%
-------------	----	-----	----	----	-----------------------



TRANSPARENT	NO	NO	NO	NO	B.P. - 1D = B.P. - 0.57%
-------------	----	----	----	----	--------------------------



TRANSPARENT	NO	Yes	NO	Yes	B.P. + P = B.P. + 10%
-------------	----	-----	----	-----	-----------------------

B.P.= Base Price; D=Discount; P=Penalty

Price with 2 discounts

Price with 1 discount

Price with a penalty

Base Price

Case studies

FRACTION PET TRAY



COLOUR



MULTIMATERIAL



LARGE
≥ 2/3 DIFFERENT
FROM PET



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



TRANSPARENT	NO	NO	NO	50%	$B.P. - 1D = B.P. - 5.5\%$
-------------	----	----	----	-----	----------------------------



TRANSPARENT	NO	NO	NO	NO	B.P.
-------------	----	----	----	----	------



OPAQUE	NO	NO	NO	NO	$B.P. + P = B.P. + 10\%$
--------	----	----	----	----	--------------------------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

Case studies

FRACTION HDPE



COLOUR



MULTIMATERIAL



LARGE
≥ 2/3 DIFFERENT
FROM PE



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



NATURAL	NO	NO	NO	20%	$B.P. - 1D = B.P. - 5,95\%$
---------	----	----	----	-----	-----------------------------



COLOUR	NO	NO	NO	30%	$B.P. - 1D = B.P. - 5,95\%$
--------	----	----	----	-----	-----------------------------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

Case studies

FRACTION HDPE



COLOUR



MULTIMATERIAL



LARGE
≥ 2/3 DIFFERENT
FROM PE



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



CARBON BLACK	NO	NO	NO	25%	B.P. + P = B.P. + 10%
-------------------------	----	----	----	-----	------------------------------



COLOUR	NO	NO	NO	NO	B.P.
--------	----	----	----	----	------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

Case studies

FRACTION FLEXIBLE PLASTIC



COLOUR



MULTIMATERIAL



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



NATURAL/ TRANSPARENT	NO	NO	70%	$B.P. - 2D = B.P. - 1.2\%$
-------------------------	----	----	-----	----------------------------



COLOUR	NO	NO	NO	B.P.
--------	----	----	----	------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

Case studies

FRACTION FLEXIBLE PLASTIC



COLOUR



MULTIMATERIAL



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



CARBON BLACK	NO	NO	NO	B.P. + P = B.P. + 10%
-------------------------	-----------	-----------	-----------	------------------------------



COLOUR	Yes	NO	25%	B.P. + P = B.P. + 10%
---------------	------------	-----------	------------	------------------------------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

Case studies

FRACTION OTHER RIGID PLASTICS (PP, PS, PVC)



COLOUR



MULTIMATERIAL



LARGE
≥ 2/3 OF OTHER
RIGID PLASTICS
**



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC*, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



TRANSPARENT/ NATURAL	NO	NO	NO	50%	$B.P. - 2D = B.P. - 3.2\%$
-------------------------	----	----	----	-----	----------------------------



TRANSPARENT/ NATURAL	NO	NO	Yes	NO	$B.P. + P = B.P. + 10\%$
-------------------------	----	----	-----	----	--------------------------



COLOUR	NO	NO	NO	50%	$B.P. - 1D = B.P. - 1.6\%$
--------	----	----	----	-----	----------------------------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

* If the main element is PVC, PVC accessories would not be penalized.

** Includes PP, PS, PVC, EPS and other plastics.

Case studies

FRACTION OTHER RIGID PLASTICS (PP, PS, PVC)



COLOUR



MULTIMATERIAL



LARGE
≥ 2/3 OF OTHER
RIGID PLASTICS
**



ELEMENTS
ACCOMPANYING
THE PACKAGING
(PVC*, METAL
AND SILICONE)



% POST-
CONSUMER
RECYCLED
MATERIAL



FORMULA FOR
THE PRICE



COLOUR	NO	NO	NO	NO	B.P.
--------	----	----	----	----	------



COLOUR	NO	Yes	NO	NO	B.P. + P = B.P. + 10%
--------	----	-----	----	----	-----------------------



CARBON BLACK	NO	Yes	NO	NO	B.P. + P = B.P. + 10%
--------------	----	-----	----	----	-----------------------

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

* If the main element is PVC, PVC accessories would not be penalized.

** Includes PP, PS, PVC, EPS and other plastics.

Case studies

FRACTION PAPER/CARDBOARD



**MULTIMATERIAL
COMPOSITE
PACKAGING WITH
< 85% PAPER/
CARDBOARD ***



**FORMULA FOR
THE PRICE**



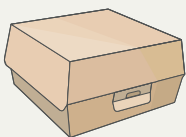
Yes

B.P. + P = B.P. + 10%



Yes

B.P. + P = B.P. + 10%



NO

B.P.

B.P.= Base Price; D=Discount; P=Penalty

- Price with 2 discounts
- Price with 1 discount
- Price with a penalty
- Base Price

* Exception for packaging that can be separated by hand by the consumer and that includes the legend "separate me" or equivalent text.

7

Annex. Color attribute description

Material	Tipo de color	Description
PET	TRANSPARENT / LIGHT BLUE	NON-dyed containers (natural colour of the material).
PET	COLOUR (NOT OPAQUE)	Translucent, non-opaque dyed packaging.
PET	OPAQUE OTHER COLOURS	Opaque packaging with non-white additives.
PET	OPAQUE WHITE	Opaque containers with Titania additive, which gives it a white colour.
OTHER PLASTICS	COLOURLESS	Non-pigmented packaging (natural colour of the material or transparent).
OTHER PLASTICS	COLOUR	Pigmented packaging except for black.
OTHER PLASTICS	BLACK	Black pigmented packaging, not including carbon black additive.
OTHER PLASTICS	BLACK WITH CARBON BLACK	Packaging pigmented with carbon black additive, which results when the pigment is obtained from the partial or thermal combustion of hydrocarbons (such as coal, oil or natural gas).

For more information, send an email to
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or call

900 84 83 82

