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ECODESIGN GUIDE

FOR WINE PACKAGING

ecovidrio
ENTIDAD SIN ÁNIMO DE LUCRO

FEV FEDERACIÓN ESPAÑOLA DEL VINO

EXECUTIVE SUMMARY

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The beginning is half of the whole. This is one of the most popular mathematical quotes from Pythagoras. Without intending to contradict the philosopher and mathematician, in the field of ecodesign, the start is more than half. Today we know—and this is confirmed by the studies of the Ellen MacArthur Foundation—that the design stage (the beginning of any packaging) can determine up to 80 % of its total impact.

Surely, those who review this guide are already convinced of the importance of preventing waste generation and the ecodesign of products in order to save raw materials, enhance energy efficiency, increase recyclability and reduce the carbon footprint, among other factors. It is not a coincidence that ecodesign is an essential pillar in the Action Plan for the Circular Economy of the European Commission and that it has a leading role in the Law on Waste and Contaminated Soils for the Circular Economy, which transposes the guiding principles into our legal system and obligations of the European Directives in this matter. In the coming years we will see how these fundamental principles of sustainability are translated into obligations with economic and legislative implications for producers.

It is precisely the will to anticipate these requirements that makes the commitment of the Spanish Wine Federation especially commendable. The Wine Industry, a sector with such cultural, economic and social roots for our country, has decided to lead the necessary change towards circularity and decarbonisation. This guide is a real example of this commitment.

For Ecovidrio, it has been an honor to work—side by side with a committed sector—in this in-depth analysis of environmental impact, study of market trends, review of the most reliable international sources and land on specific ecodesign tools that could be applied to all the phases (production and recycling) of all types of packaging (primary, secondary and tertiary).

We will continue walking together and, returning to Pythagoras, we know that, although there is still a long way ahead, we are already halfway there.

José Manuel Núñez-Lagos
CEO OF ECOVIDRIO

Anticipation, proactivity and collaboration are three of the principles that for years have guided our day-to-day work at the Spanish Wine Federation, with the main goal of helping Spanish wineries carry out their work in the best way possible environment. Three principles that are present in every project that we carry out and that are the basis on which the publication that you have in hand today is built: the Ecodesign Guide for wineries.

The new policies that come to us from Europe, such as the Green Pact, the 'Farm to Fork' strategy or the Action Plan for the Circular Economy represents a paradigm shift at the legislative level in which sustainability, in its broadest sense, is going to play a fundamental role. New challenges and increasingly demanding environmental requirements for companies that force us to carry out an exercise in anticipation to offer wineries practical tools to thrive successfully in this context.

In addition, today we know things like that 1 in 4 Spaniards always, or almost always, take into account the sustainability of the products they are going to buy or that 7 % of the population considers the environmental impact as the main reason for their choice of food products (Anged Sustainability Report 2019). Therefore, although Spanish wine is probably at the highest levels of excellence and quality in its history as far as production is concerned, that is no longer enough. We must be proactive in answering these new consumer needs and go hand by hand with society in its own evolution, producing more sustainable wines as a whole, by reducing the possible environmental footprint, minimizing the volume of waste that we generate and encouraging more sustainable and recyclable packaging.

José Luis Benítez
CEO OF THE FEV

On this path, as in almost everything in life, collaboration is the best way to go further. The companies that are in the FEV and that selflessly contribute to projects like this, for the benefit of the entire sector, know this very well. To all of them, but also to Ecovidrio for pouring all their knowledge and experience into these pages, and to the industries that have collaborated in the analysis of the different materials, our recognition and thanks for making possible an exhaustive, rigorous and practical document that puts, once more, the wine sector and the wineries in the forefront of sustainability.

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INTRODUCTION

This report aims to serve as an **ecodesign guide** for different companies in the wine sector. This project has been led by **Ecovidrio** and the **Spanish Wine Federation (FEV)**. Moreover, several agents in the sector, such as recyclers as ANAREVI or ANFEVI, and the suppliers of the different materials (caps, labels, capsules, etc.) have also participated and been consulted.

In this aspect, business activity is still being updated. On September 28, 2021, MITECO published the **Draft Royal Decree (RD) on Packaging and Packaging Waste,** which regulates **the eco-modulation criteria for the financial contribution to the collective systems of extended producer responsibility**. Through this regulation, it is intended to establish a bonus/penalty system that will make of greater importance the incorporation of ecodesign to the packaging placed on the market.

Therefore, this guide focuses on the **possible improvements** to be implemented by the **wine sector to optimize the ecodesign** of its packaging. In this way, companies will be more prepared to adapt their activity to the new ecomodulation measures.

Requirements for the ecomodulation of the financial contribution

BONUSES

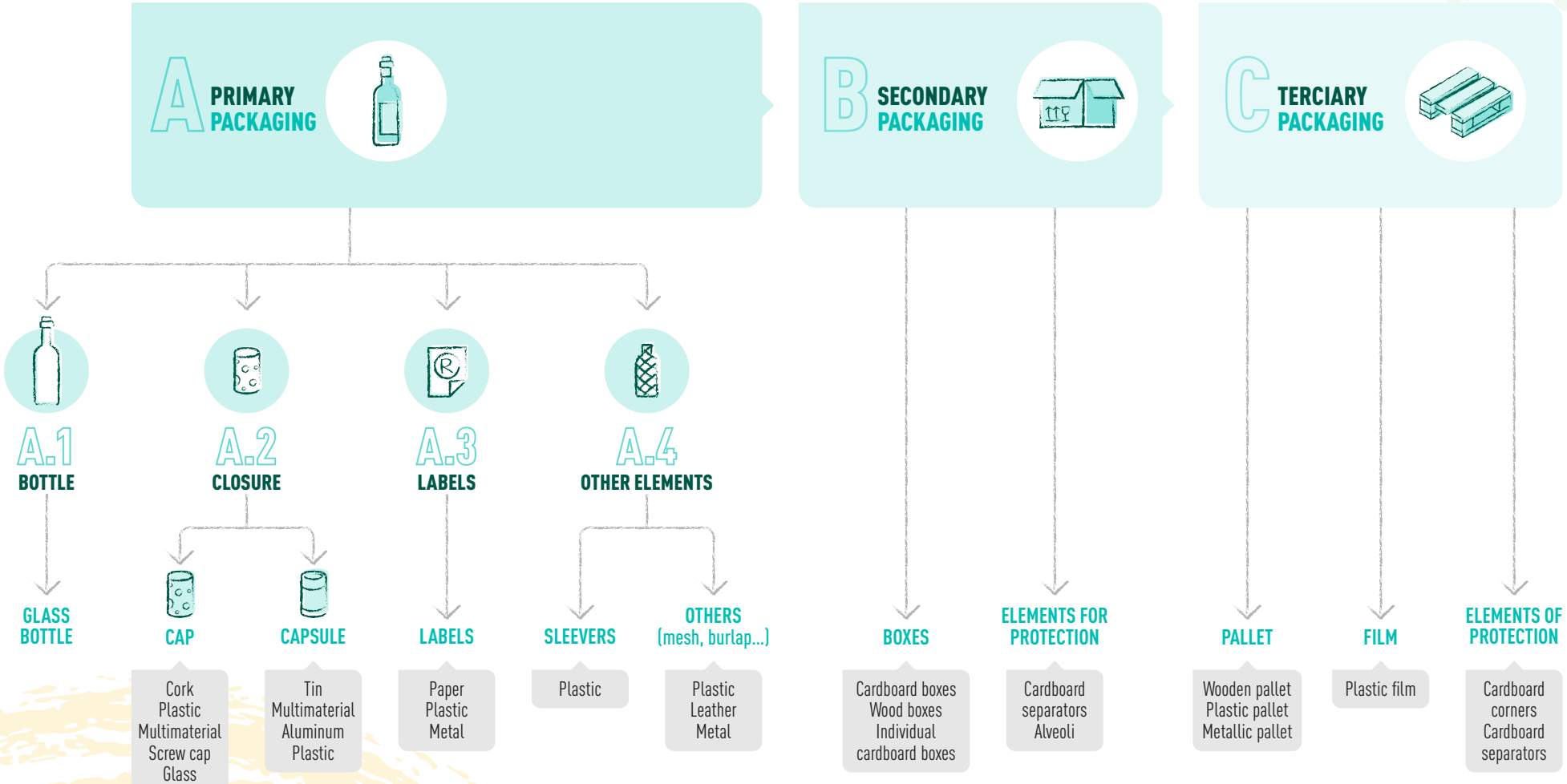
- Exceeding recycling targets.
- Reduction of weight and volume packaging.
- Increase of recyclability.
- Incorporation of secondary raw materials.
- Use of reusable packaging.

PENALTIES

- Not reaching recycling targets.
- Low recyclability.
- Presence of elements or substances that hinder recycling:
  - Ceramic or non-magnetic steel closure system.
  - Use of different types of glass other than the regular one.
  - Associated infusible element (porcelain, ceramic, stoneware, etc.).

PACKAGING ELEMENTS INCLUDED IN THE GUIDE

As it can be seen below, these are the elements of primary, secondary and tertiary packaging considered in the guide.



PRODUCTION AND RECYCLING IMPACTS

Summary of the impacts associated to the production and the recycling of the different types of the packaging included in the guide

The table below shows a summary of the impact assessment of all **primary packaging** celements considered in the guide. For each type (bottle, cap, capsule, labels, sleevers and other elements), **the main alternatives on the market are presented sorted by their estimated overall impact**. In order to do this, information from several technical sources such as scientific publications, other industrial guides and technical reports has been compared. This estimate of the overall impact has been made by considering only the main impacts associated with the standard production process of each element, how they fit into the current recycling systems and the influence they have on the recyclability of glass. Aspects related to the use or price of each alternative have been excluded from the analysis.

	FEWER IMPACT		GREATER IMPACT	
BOTTLE TYPE	When considering bottles, weight is key. Generally, the lighter, the lower impact. Therefore, it is important to encourage the reduction of bottle's weight.			
CAP TYPE	NATURAL AND AGGLOMERATED CORK	BIOPOLYMER	SCREW CAP (aluminum)	PLASTIC
CAPSULE TYPE	TIN ALUMINUM	BIOPOLYMER PLASTIC (PET)	MULTIMATERIAL (Plastic and aluminum)	PLASTIC (PVC)
LABEL TYPE (according to material)	PAPER LABEL	STONE-PAPER LABEL	PLASTIC LABEL	
LABEL TYPE (according to technology)	BY ADDING GLUE		SELF-ADHESIVE LABELS	
OTHER ELEMENTS	SERIGRAPHY	SLEEVER	METALLIC ELEMENTS (tights, pieces...)	FABRIC COVERS (leather, burlap...)

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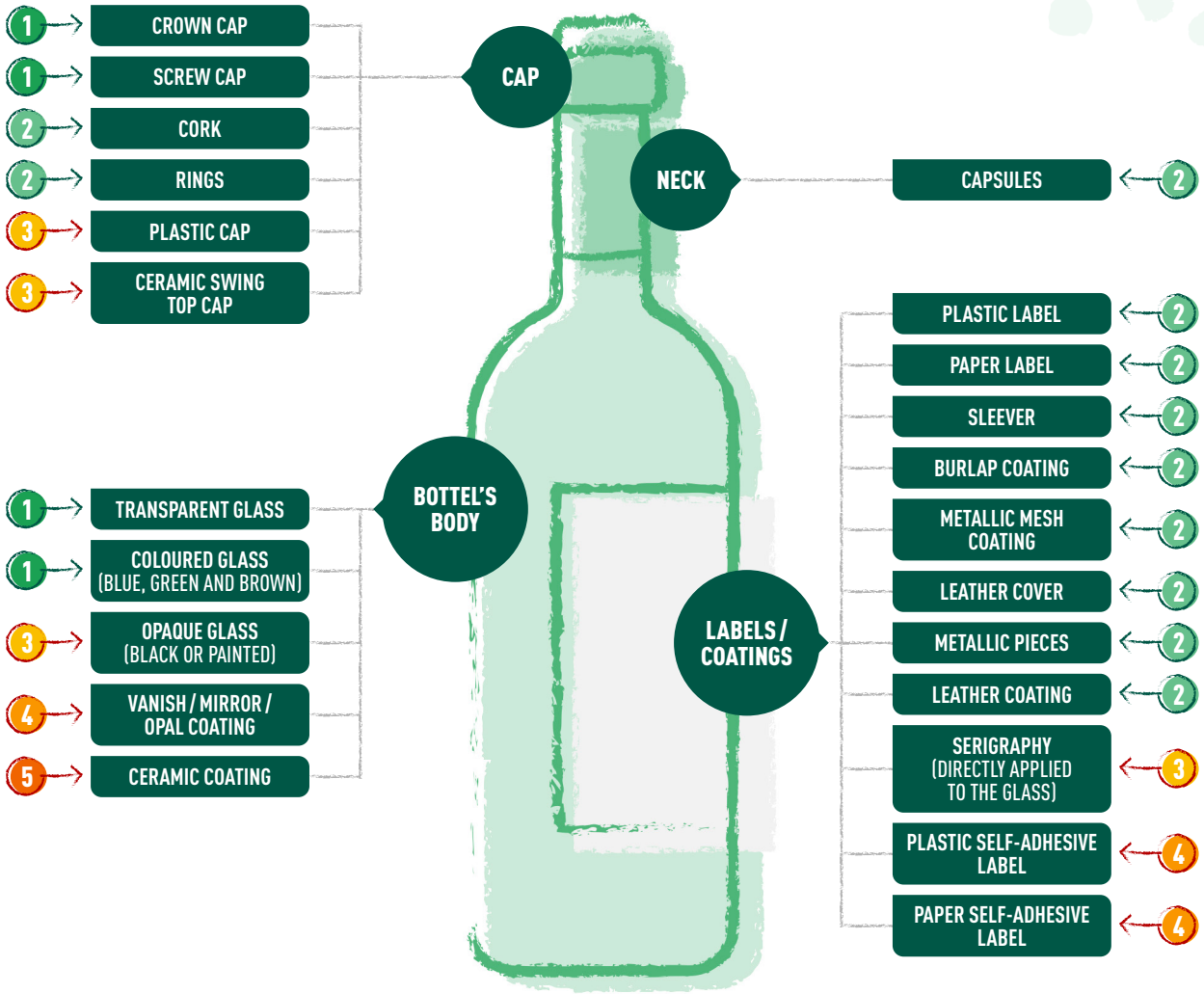
PRODUCTION AND RECYCLING IMPACTS

Summary of the impacts associated to the production and the recycling of the different types of the packaging included in the guide

TO IMPROVE BOTTLE'S RECYCLABILITY, THE ELEMENTS THAT ARE MORE DIFFICULT TO SEPARATE SHOULD BE AVOIDED



Rating based on the easiness to separate the element from the glass

1 2 3 4 5

Easy to separate — Hard to separate

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ECODESIGN MEASURES TO IMPLEMENT

Types of ecodesign measures

MEASURES

ELIMINATION OF PACKAGING ELEMENTS

The aim of these measures is to evaluate **which packaging elements are not necessary, in order to eliminate them**. Consequently, the amount of waste generated per product (Kr/ Kp ratio) is reduced.

REDUCTION OF PACKAGING WEIGHT

Aiming to reduce the amount of waste per product (Kr/Kp ratio), these measures seek to **reduce the unitary weight of the glass bottle, or any other packaging element**, by changing their composition or design.

IMPROVEMENT OF PACKAGING SOLUTIONS

Minimizing the ratio of packaging waste to product (Kr/ Kp ratio) can also be achieved by optimizing the packaging solution so that **it contains as much product as possible**. Logistics can also be upgraded.

PROMOTION OF PACKAGING REUSING SYSTEMS

This category includes all the initiatives focused **on promoting the use of reusable packaging at the primary, secondary, and tertiary levels,** so that, extending its useful life.

IMPROVEMENT OF PACKAGING RECYCLABILITY

This group of measures focuses on **improving packaging performance at the end of its life cycle**, by making more likely the recycling and subsequent use of the material as secondary raw material.

REDUCTION OF THE ECOLOGICAL FOOTPRINT

The production of packaging has an associated environmental impact that can be reduced **through the implementation of measures at critical points in the production chain** (e.g. extraction of raw materials).

INDIRECT MEASURES TO PROMOTE ECODESIGN

The direct application of the measures described above is only possible by developing indirect measures **to enhance the compromise of all the stakeholders and to promote innovation** (e.g. R&D projects).

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SUMMARY OF THE BOTTLE SECTION

Summary of bottle's production and recycling impacts

The criteria followed when producing a glass bottle are basically two:

01 **Weight:** The lower the mass of the bottle, the lower the relative impact per bottle.

02 The **colour or coating**, as this **influences the percentage of cullet added to the new bottles**.

In addition, when adding **elements** to the bottle (closures, labels...) **they must be easy to separate**, so that, a larger percentage of glass can be recycled.

MAIN ACTIONS

- **Reducing the weight** of the bottle.
- **Promoting the separability** of the elements attached to the bottle.
- **Eliminating** as many **ornamental elements** as possible.
- Green, amber and colorless containers are more recyclable than dark ones.

SUMMARY

TYPE OF BOTTLE	IMPACTS FROM PRODUCTION	IMPACTS FROM RECYCLING
GREEN 	Higher cullet percentage compared to transparent ones.	Doesn't interfere with the functioning of optical systems.
AMBER 	Higher cullet percentage compared to transparent ones.	Doesn't interfere with the functioning of optical systems.
NO COLOUR 	Lower cullet percentage in the melt.	Doesn't interfere with the functioning of optical systems.
OTHER COLOURS (dark) 	Higher cullet percentage compared to transparent ones.	Lighter coloured bottles tend to recycle better as they interfere less with the optical system (transmittance limit: 20 %*).
OTHER COATINGS 	Regardless of the colour, the application of coatings such as varnishing and painting adds steps into the production process and therefore increases the impact.	Some of these coatings are ceramic, so they are infusible in the ovens. In many cases they interfere with glass container recycling processes.

* References: PICVISA, 2021.

SUMMARY OF THE BOTTLE SECTION

Examples of ecodesign measures related to the bottle

MEASURE

REDUCTION OF PACKAGING WEIGHT

- Replacing the bottle for lighter options with the same volume.

MEASURES

REDUCTION OF THE ECOLOGICAL FOOTPRINT

- Calculating carbon footprint.
- Purchasing local raw materials.

MEASURES

PROMOTION OF PACKAGING REUSING SYSTEM

- Developing a bottle reuse system for the HORECA sector.
- Increasing the useful life of reusable packaging by improving its physical properties.

MEASURES

IMPROVEMENT OF PACKAGING RECYCLABILITY

- Promoting the separability of the elements attached to the bottle.
- Reducing the use of materials or elements containing materials that make more difficult the process of glass recovery.
- Preferably using green or amber bottles.

MEASURE

IMPROVEMENT OF PACKAGING SOLUTIONS

- Selling the product in bigger volumes.

MEASURE

INDIRECT MEASURES TO PROMOTE ECODESIGN

- Incorporating of instructions for the proper recycling of packaging.

SUMMARY OF THE CAP SECTION

Summary of cap's production and recycling impacts

SUMMARY

TYPE OF CAP	IMPACTS FROM PRODUCTION	IMPACTS FROM RECYCLING
NATURAL AND AGGLOMERATED CORK 	✓ Cork oak forests act as carbon sinks. ✓ The process is optimized so that the waste generated during the production of natural cork is used to manufacture agglomerated cork.	✓ Cork is a biodegradable natural product that can be composted. ✗ If it reaches the oven treatment plant, the cork is discarded and is not recovered.
BIOPOLYMER 	✓ The raw materials used are of renewable origin. ✗ The cultivation of sugarcane causes impacts on the environment to which must be added the transport distances.	✓ It can be reused for the manufacture of new stoppers. ✗ The biodegradation of stoppers requires specific and controlled environmental conditions (industrial process). ✗ If it reaches the glass treatment plant, the stopper is discarded and treated by disposal.
SCREW CAP (aluminum) 	✗ Obtaining aluminum from its raw material, bauxite, has a significant environmental impact, especially in relation to energy consumption and the release of emissions.	✓ Aluminium and other metallic materials are recovered in some glass and light packaging treatment plants.
PLASTIC 	✗ The initial stages of raw material extraction (plastic and aluminium) have a relevant environmental impact, especially in relation to water and energy consumption.	✗ If it reaches the glass treatment plant, the plastic is discarded and treated by disposal. ✗ They are usually composed of various types of plastic, which makes it difficult to recycle and reuse them.

References: *Evaluation of the environmental impacts of Cork Stoppers versus Aluminium and Plastic Closures,* PWC, 2008; Ecoembes.

SUMMARY OF THE CAP SECTION

Examples of ecodesign measures related to the cap

MEASURES

IMPROVEMENT OF PACKAGING RECYCLABILITY

- Reducing the use of materials or elements containing materials that hinder glass recovery.
- Increasing recyclability of headed caps.

MEASURES

REDUCTION OF THE ECOLOGICAL FOOTPRINT

- Reduce the use of materials or elements that contain materials that make it difficult to recover the glass.
- Preferably choose renewable raw material.
- Apply the proximity criterion in purchases.
- Identify new uses that allow a greater recovery of waste.

SUMMARY OF THE CAPSULE SECTION

Summary of capsule's production and recycling impacts

SUMMARY

TYPE OF CAPSULE*	IMPACTS FROM PRODUCTION	IMPACTS FROM RECYCLING
TIN 	✓ According to a Tecnalia study, the greenhouse gas emissions (GHE) generated per kilogram of primary tin are lower than in the case of primary aluminium.	✓ Tin capsules are made from one single material, which facilitates their recycling and reuse as a secondary raw material. ✓ They can be recovered in some glass treatment plants.
ALUMINIUM 	✗ According to a Tecnalia study, the GHE generated per kilogram of primary aluminium are higher than in the case of primary tin.	✓ Aluminium capsules are made from one single material, which facilitates their recycling and reuse as a secondary raw material. ✓ They can be recovered in some glass treatment plants.
BIOPOLYMER 	✓ The raw materials are from renewable sources, which reduces the environmental impact associated with this stage.	✗ If it is thrown away with the bottle, it cannot be recovered in the glass treatment plant. ✗ Not all bioplastics are biodegradable.
PLASTIC (PET) 	✗ The raw materials are from non-renewable sources. ✗ The initial stages of extracting raw materials have a significant environmental impact, especially in relation to water and energy consumption.	✓ Plastic capsules are made from one single material, which facilitates their recycling and reuse as a secondary raw material. ✗ If it is thrown away with the bottle, it cannot be recovered in the glass treatment plant.
MULTIMATERIAL (Plastic + Al) 	✗ The extraction of raw materials such as bauxite and petrochemical compounds has a significant environmental impact, especially in relation to energy consumption and the generation of GHE.	✗ It is an element made from different materials, which implies a high difficulty sorting the aluminium out from the plastic. Consequently, its current recycling is impossible.
PLASTIC (PVC) 	✗ The raw materials are from non-renewable sources. ✗ The initial stages of extracting raw materials have a significant environmental impact, especially in relation to water and energy consumption. ✗ Generally, PVC is mixed with a significant number of plastic additives. This supposes additional production impacts. Likewise, some of them, such as phthalates, can have harmful impacts on human health.	✓ They are generally made from one single material, which facilitates their recyclability. ✗ If it is thrown away with the bottle, it cannot be recovered in the glass treatment plant.

* Note: in this table only production and recycling impacts are taken into account. However, it is important to note that at the level of use, the tin capsule provides a more secure opening.

Referencess: ARPAL; Julian Cleary, 2013, *Life cycle assessments of wine and spirit packaging at the product and the municipal scale: A Toronto, Canada case study,* Zero Waste Europe, 2023, Consultation and LCA Analysis of the Ecoinvent Database v. 3.7.1, Tecnalia.

SUMMARY OF THE CAPSULE SECTION

Examples of ecodesign measures related to the capsule

MEASURE

IMPROVEMENT OF PACKAGING RECYCLABILITY

- Preferably using metallic monomaterial capsules such as tin capsules.

MEASURE

REDUCTION OF PACKAGING WEIGHT

- Reducing the size of the capsules in the bottle.

MEASURES

REDUCTION OF THE ECOLOGICAL FOOTPRINT

- Calculating carbon footprint.
- Appling the proximity criterion in purchases.
- Identifing new uses that allow a greater recovery of waste.

MEASURE

ELIMINATION OF PACKAGING ELEMENTS

- Carry out a test to assess if the capsule is essential.

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SUMMARY OF THE LABELS SECTION

Summary of label's production and recycling impacts

MAIN ACTIONS TO REDUCE THE IMPACT RELATED TO LABELS

- **Reducing label size*** to minimize the risk of organic material entering the melting furnace and thus minimize the loss of adhered glass.
- Prioritize those **adhesives with less cohesion** (easily detachable).

* This measure may be hindered by the need to comply with labelling and consumer information regulations.

SUMMARY

TYPE OF MATERIAL	IMPACTS FROM PRODUCTION	IMPACTS FROM RECYCLING
PAPER LABEL	✓ Paper is a raw material of renewable origin. ✓ When the label substrate material is paper, less drying energy is required to fix the ink.	✓ If they end up in the oven, they have a low impact on the melting process. ✓ They have a lower abrasion resistance than plastic or stone paper labels, therefore, they are easier to peel off.
STONE-PAPER LABEL	✓ Compared to conventional paper, its manufacture does not require chlorine or forest resources. In addition, the production of stone paper consumes less water and energy. ✗ About 20 % of its composition is HDPE. Generally, HDPE is made of petrochemical origin and therefore, it has a non-renewable origin.	✗ They are more resistant to abrasion than paper, therefore, they are more difficult to peel off. ✓ If they reach the oven, they have less impact on the melting process than plastic labels, since 80 % of their composition is calcium carbonate.
PLASTIC LABEL	✗ In many cases, plastic is manufactured from non-renewable raw materials. ✗ When the label base material is plastic, more drying energy is required during printing.	✗ If they reach the oven, they have a greater impact than paper on the melting process and on the quality of the new bottles. ✗ They are more resistant to abrasion than paper, so they are more difficult to peel off.

TYPE OF TECHNOLOGY	IMPACTS FROM PRODUCTION	IMPACTS FROM RECYCLING
BY ADDING GLUE	✓ No need to produce an anti-adherent coating. ✗ The bonding process is more complex, and they are less resistant to external conditions and may generate more waste in the process.	✓ Unlike self-adhesive labels, they are not bonded to an anti-adhesive layer, thus saving this waste. ✓ In the glue application process, the number of gluing points can be minimized, which reduces glass losses in processing plants (as less glass would remain adhered to the label).
SELF-ADHESIVE LABELS	✗ The non-stick layer must also be produced. ✓ The gluing process is more efficient, saving time and reducing the risk of waste generation. They are also stronger so there is less risk of detachment during distribution and labelling.	✗ More waste is generated because of the anti-adhesive layer. ✗ The entire surface of the label is already attached. As a result, they tend to contribute to more glass loss (as they stick to the label more easily).

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SUMMARY OF THE LABELS SECTION

Examples of ecodesign measures related to the label

MEASURES

ELIMINATION OF PACKAGING ELEMENTS

- Replacing primary packaging labels for other techniques as engraved glass.
- Substituting primary packaging labels for other techniques as serigraphy.
- Removing unnecessary labelling elements.

MEASURES

REDUCTION OF THE ECOLOGICAL FOOTPRINT

- Calculating carbon footprint.
- Preferably choosing renewable raw materials.
- Appling the proximity criterion in purchases.

MEASURE

REDUCTION OF PACKAGING WEIGHT

- Reducing labels size.

MEASURE

IMPROVEMENT OF PACKAGING RECYCLABILITY

- Promoting the separability of the elements attached to the bottle.

MEASURES

INDIRECT MEASURES TO PROMOTE ECODESIGN

- Using Sustainable Forest Management (FSC o PEFC) certified paper, cardboard, and wood.
- Incorporating instructions for correct recycling.

SUMMARY OF OTHER ELEMENTS SECTION

Summary of other elements production and recycling impacts

MAIN CRITERIA

- **Eliminate elements that have no function**, in order to save raw materials and minimize the management of the packaging waste.
- If they cannot be eliminated, it is advisable to **reduce weight** in order to save raw materials.

SUMMARY

OTHER ELEMENTS	IMPACTS FROM PRODUCTION	IMPACTS FROM RECYCLING
SERIGRAPHY* 	✓ It is less material intensive compared to sleevers or labels. Therefore, if the ink is used properly, the production impact is lower.	✗ It is impossible to separate from glass. ✗ The intensive use of ink generates interference with the optical system. ✓ If the design is simple, serigraphy has less impact on the recyclability of the glass.
SLEEVER 	✗ The initial stages of raw material extraction have a relevant environmental impact (non-renewable raw materials). ✗ Compared to the other elements, it usually involves a greater amount of material as it covers the entire bottle. ✓ When it replaces labels and/or bottle finishes (e. g. paints) it saves the materials associated with their production.	✓ If it has a pre-cut to facilitate its separability, the consumer is more likely to separate it from the bottle and recycle it with the rest of the light packaging. ✗ If the sleever is not separated and arrives at the glass treatment plant, it is easier to separate than labels but raw materials cannot be recovered.
METALLIC ELEMENTS (tights, pieces...) 	✗ The initial stages of raw material extraction have a relevant environmental impact. ✓ Since they are usually tiny elements, they do not require a great quantity of raw materials.	✓ In some glass treatment plants, metallic elements can be recovered. ✗ If they end up in the oven, they have a significant impact on the melting process and on the quality of new bottles.
FABRIC COVERS (leather, burlap...) 	✗ The environmental impact depends on the type of fabric (polymeric or natural). ✗ They are usually bigger ornamental elements than metallic ones.	✓ It is easy to pull them apart. ✗ In the glass treatment plants, raw materials are not recovered.

* Seripraphy is the best option only if the design is simple.

References: *Evaluación y propuesta de alternativas de ecomodulación del punto verde de Ecovidrio,* IC, 2020

SUMMARY OF OTHER ELEMENTS SECTION

Examples of ecodesign measures related to other elements

MEASURE

ELIMINATION OF PACKAGING ELEMENTS

- Eliminating ornamental elements of the bottle, such as metal nets.

MEASURE

REDUCTION OF PACKAGING WEIGHT

- Reducing the weight of decorative elements.

MEASURES

IMPROVEMENT OF PACKAGING RECYCLABILITY

- Promoting separability of the elements attached to the bottle (e. g. use of precut sleevers).
- Reducing the use of materials or elements containing materials that hinder glass recovery.

MEASURES

REDUCTION OF THE ECOLOGICAL FOOTPRINT

- Calculating carbon footprint.
- Preferably choosing renewable raw material.
- Appling the proximity criterion in purchases.
- Identifing new uses that allow a greater recovery of waste.

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SUMMARY OF SECONDARY AND TERTIARY PACKAGING SECTION

Measures to reduce secondary and tertiary packaging's production and recycling impacts

SUMMARY

MAIN ACTIONS TO REDUCE THE IMPACT RELATED TO SECONDARY PACKAGING

- **Eliminating ornamental elements** (individual boxes, separators, etc.).
- **Cardboard is lighter than wood**. This reduces CO_2 emissions during transportation.
- **Wrap-around box** models adjust to the volume of the primary package, so that, the use of cardboard is **optimized**.
- **Simplifying the printing design** of grouping boxes, so that, the use of inks is reduced, and recyclability is increased.
- **Increasing the use of recycled materials** instead of raw materials.

References: Ecoembes; *Valor 2030: Superación de las barreras a la utilización de materias primas secundarias en los principales sectores industriales,* IC, 2021; *Informes de diagnóstico sobre prevención de residuos de envases,* Ecovidrio.

MAIN ACTIONS TO REDUCE THE IMPACT RELATED TO TERTIARY PACKAGING

- Choosing **wooden pallets from sustainably managed forests**.
- Choosing **pallets with modular dimensions** to optimize efficiency in transport operations.
- Using a **pool of reusable pallets** (external company or internal reverse logistics system).
- Bearing in mind that **plastic pallets can withstand a greater number of uses**.
- **Adjusting consumption of film, strapping and/or separators.**
- **Eliminating non-essential elements** (strapping and corner pieces).
- Using transparent films, **in order to reduce ink consumption**.
- **Improving the packaging** process by optimizing the placement of unit loads on the pallet. This reduces the need to use protective elements (such as plastic film, strapping or corner protectors).

References: *Recomendaciones logísticas para el diseño e ingeniería de envases y embalajes,* Ecoembes, 2015; *Wooden and Plastic Pallets: A Review of Life Cycle Assessment LCA Studies,* Deviatkin et al., 2019.

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SUMMARY OF SECONDARY AND TERTIARY PACKAGING SECTION

Examples of ecodesign measures related to secondary and tertiary packaging

MEASURES

ELIMINATION OF PACKAGING ELEMENTS

- Eliminating the seals between cardboard boxes.
- Eliminating separators or other elements for protection from secondary packaging.
- Eliminating corner pieces in tertiary packaging.

MEASURES

REDUCTION OF PACKAGING WEIGHT

- Reducing weight of grouping boxes.
- Using wrap-around boxes (instead of the standard B1 pattern) in secondary packaging.
- Reducing separator length in case it cannot be eliminated.
- Reducing plastic film use in tertiary packaging.

MEASURES

INDIRECT MEASURES TO PROMOTE ECODESIGN

- Using Sustainable Forest Management (FSC o PEFC) certified paper and cardboard.
- Using certified wooden boxes.

MEASURES

IMPROVEMENT OF PACKAGING SOLUTIONS

- Increasing the number of product units per grouping unit in secondary packaging.
- Maximizing the load per pallet in tertiary packaging.
- Designing containers and packaging to suit modular storage, transport and distribution dimensions.

MEASURES

PROMOTION OF PACKAGING REUSING SYSTEM

- Developing an internal reusable circuit for secondary and tertiary packaging (inverse logistics).
- Using a pool of reusable pallets.

MEASURES

REDUCTION OF THE ECOLOGICAL FOOTPRINT

- Calculating carbon footprint.
- Reducing intensive use of ink on boxes and/or plastic films.
- Using biodegradable organic pigments.

EXAMPLES OF ECODESIGN MEASURES RELATED TO THE WINE SECTOR

Other examples of ecodesign measures

MEASURES

REDUCTION OF THE ECOLOGICAL FOOTPRINT

- Calculating carbon footprint.
- Appling the proximity criterion in purchases.
- Promoting manufacturing or packaging processes that minimize spillage.
- Implementing efficient sewage treatment systems.
- Integrating facilities into the landscape.
- Implementing the free-cooling system in the barrel room.
- Reducing consumption associated with manufacturing stages.
- Implementing energy efficiency measures and promote renewable energies.

MEASURE

IMPROVEMENT OF PACKAGING SOLUTIONS

- Optimizing transportation routes.

MEASURES

INDIRECT MEASURES TO PROMOTE ECODESIGN

- Certifing the production process with sustainability standards (e.g. Wineries for Climate Protection Certificate).
- Joining and/or promoting R&D projects.
- Developing and/or joining training activities.
- Disclosing the commitments to prevent packaging waste and the results obtained.

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