

**STUDY ON
RECYCLING OF
ALUMINIUM
CAPS AND
CLOSURES
IN SPAIN
DECEMBER 2023**



arpal (alu)
www.aluminio.org



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1 Introduction

ARPAL has conducted this study on aluminium caps and closures in Spain to gain first-hand knowledge about the situation in terms of market volume, collection and recycling.

To this effect, the key players were interviewed, regarding both the production and commercialisation of aluminium and its collection and subsequent recycling and consultations were held with several national and international sources that have conducted studies on the subject, to describe the global context.

In particular, in order to know the characteristics of the caps and closures on the Spanish market, we spoke to the three main manufacturers in Spain: Cápsulas Torrent, Guala Closures Group and Cápsulas Rivercap, part of the Crealis Group.

For the section on waste separation involving caps and closures, we interviewed Ecoembes, the organisation in charge of managing the yellow recycling containers for lightweight packaging and the blue recycling containers for paper and cardboard, and Ecovidrio, the Collective System of Extended Producer Responsibility (EPR) that manages the glass packaging collected in the green recycling container.

For the following stage, the waste management facility, we tried to talk to ASPLARSEM, the Association of Solid Urban Waste Packaging Recovery and Sorting Plants, (Asociación de Empresas de Recuperación y Selección de Envases Municipales), who were not available for interview, due to a change in management. In any case, they referred us to Ecoembes, as they share the same information.

Lastly, to understand the preparation of aluminium packaging for smelting, we interviewed the Spanish Federation of Recovery and Recycling (FER), who also conducted a study for ARPAL involving the traditional waste recovery plants to discover how many tonnes of aluminium packaging are recovered every year. Ecoembes participates in this study.

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Furthermore, this study explains the experiment performed in the city of Valencia by COAALI (Coalición por el Reciclaje del Aluminio y el Acero Ligero), the Coalition for Recycling Aluminium and Lightweight Steel to recover the small items of aluminium packaging (such as caps and closures).

The studies consulted were as follows:

- informe de mercado global Tapas y cierres de aluminio. **Spherical Insights** (Aluminum Caps & Closures Market Size, Forecast 2030 (sphericalinsights.com)) >
- Análisis de participación y tamaño del mercado de tapas y cierres de aluminio: Tendencias de crecimiento y pronósticos (2023-2028). **Mordor Intelligence** (Aluminum Caps & Closures Market Size & Share Analysis - Industry Research Report - Growth Trends (mordorintelligence.com)) >
- Mercado de tapas y cierres de aluminio. **Market and Markets** (Aluminum Caps & Closures Market Size & Forecast, [Latest] (marketsandmarkets.com)) >
- Mercado global de tapas y cierres de aluminio: tendencias de la industria y pronóstico para 2029. **Data Bridge. Market Research** (Aluminum Caps and Closures Market Opportunity, Trends & Forecast 2029 (databridgemarketresearch.com)) >
- Informe 2023 del sector de cierres y tapones en España. Entre la nueva legislación y la búsqueda de oportunidades. **Alimarket** (Informe 2023 del sector de cierres y tapones en España - Informes y reportajes de Envase en Alimarket) >

1 Introduction

The guidelines provided to Spanish citizens, as initial, general information, regarding where to put packaging for recycling are as follows:

- **Yellow** container: plastic packaging, metal and cartons
- **Green** container: glass packaging
- **Blue** container: paper and cardboard packaging

There are no specific campaigns about where to put aluminium caps and closures, although Ecovidrio does inform the public that only glass packaging itself should go in the green container, without caps and closures, which should be thrown in the yellow container. And in its information Ecoembes mentions that caps and closures should go in the yellow container.

In the case of the COAALI experiment in Valencia, this did, in fact, inform the public about all the small items of packaging or parts of packaging that could be placed in the yellow container, including aluminium caps and closures. To recover them, the packaging plant in Picassent (Valencia) was adapted with an additional eddy current separator for fine fraction to enable the recovery of small items of packaging and their parts.

Apart from general information, this study includes all the interviews with the previously mentioned entities, which were conducted during the course of 2023.

2 Market

2.1. Overall Context

According to the consultancy **Spherical Insights** (<https://www.sphericalinsights.com/reports/aluminum-caps-closures-market>), the world market for **aluminium caps and closures**, estimated at USD **81,214** million in the year 2021, will reach a revised amount of USD **125,710** million in **2030**, growing at a compound annual rate of **43.8%**.

The market for aluminium caps and closures is being driven by the increasing demand for convenience food, concerns about product safety, distinctive character, the product brand, and packaging size reduction. The packaging industry is expanding and growing, particularly in developing countries such as India and China, and there is an increasing demand for creative packaging solutions produced with cutting-edge manufacturing techniques. These factors, along with rising rates of consumption of alcoholic and non-alcoholic beverages and the increase in disposable personal income, are fuelling the growth of the packaging industry.

It has been proved that, compared to other materials, aluminium caps and closures offer greater rigidity and stability in packaging. These caps and closures come in many types and diameters. Over the next few years, all the market forecasts for the aluminium caps and closures market will rise as a result of the recent trend towards including processed and preserved food in the daily diet.

The aluminium caps and closures market will be driven by growing concerns about food safety, the safety of the product itself, and product distinctiveness and branding. Likewise, this market will be stimulated by the rising demand for the convenience and size of small items of packaging.

The interest in consumer goods that emphasise enhanced lifestyles is on the increase to the extent that the health and wellness trend is shifting towards preventive care. The illegal refilling of syrups and soft drinks, as well as their counterfeiting, has always posed a serious risk to consumer sentiment, human health and well-being in a highly competitive market. To reassure customers that the products they buy are safe and authentic, caps that prevent contamination, tampering and counterfeiting are increasingly important.

2.2. Aluminium caps and closures market by industrial sectors

The segment of roll-on pilfer proof closures dominated the global market of aluminium caps and closures due to the fact that they are cost-effective, compatible with the content, simple to open, able to provide an effective seal and because they are compliant with all the applicable product, packaging and environmental standards, laws and regulations. Aluminium caps and closures in the drinks industry are tamper resistant, which further aids in combatting the above-mentioned problems of counterfeiting. The fact that roll-on pilfer proof caps combine the traditional decorative function of a tamper resistant seal with helping to maintain the qualities of the packaged products is one of the main factors underpinning this expansion.

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- **Drink**

The drinks industry is one of the main contributors to the aluminium caps and closures market. Several types of aluminium caps are used for drinks packaging, such as crown caps, aluminium ROPP caps, long skirt caps, ring-pull caps, lug caps and others. Carbonated soft drinks, energy drinks and alcoholic drinks are among the main end-user segments for aluminium caps and closures. Furthermore, **the use of aluminium closures in the expanding wine industry is becoming more prevalent, as aluminium screw caps provide a better oxygen barrier for wine and are more advantageous in terms of cost compared to cork.** Aluminium caps and closures are also welcomed by the drinks industry for their advantages in terms of recycling and ease of disposal.

- **Pharmaceutical**

The pharmaceutical sector is the fastest growing segment that uses aluminium caps and closures, owing to their properties as a barrier and insulation. The containers can be securely sealed, easily opened and resealed in an effective way. In view of the expanding market for over-the-counter medicines, especially bottles of syrup, aluminium caps and closures have seen a growing demand on the market. Regulations specify that, in order to be suitable for their intended use, containers, closures and other parts of medicinal packaging should not contain reagents or additives, or be absorbent to the extent of affecting the identity, strength, quality or purity of the medicinal product.

- **Food**

Aluminium is an ideal material for food packaging as it provides a complete barrier between the food and the exterior. This barrier stops light, liquids, oxygen, microorganisms and other substances that may affect the flavour and/or the smell (organoleptic properties) of the packaged food.

- **Personal care/Cosmetics**

The cosmetics industry is a prominent user of caps and closures made of aluminium, due to its properties of being lightweight, strong and durable. As a result of these properties, aluminium closures are widely used as childproof closures for cosmetics such as perfumes, colour cosmetics and skincare cosmetics that are harmful to children. For example, Ball Corporation recently launched a line of infinitely recyclable aluminium bottles with screw caps that can be reclosed.

Sustainability of aluminium

As aluminium is a metal, it has an attractive, metallic appearance and is very light. Its carbon footprint during transport and handling is much lower than heavier alternatives. Furthermore, it is a material that is one hundred percent recyclable and is valued highly in the new economic paradigm of the circular economy.

2.3. Aluminium caps and closures—characteristics and possibilities

Characteristics

Edge: Normally, aluminium caps have a laminated rim that provides circular rigidity and they have a very attractive design. They may also have a rolled rim finish as an alternative to the laminated rim that offers the same rigidity but produces a closure with a straighter, more minimalist finish.

Knurls/threads: It is fairly common to add ridges, or knurls, to the upper part of the aluminium cap to provide the user with a better grip and make it easier to unscrew. However, there are also caps without knurls for design reasons.

Lacquered: Aluminium undergoes standard lacquering with a lining that is suitable for food use to guarantee the safety of the food it contains, even if there is direct contact with the aluminium.

Sealant: To guarantee the watertightness between the cap and the bottle, the cap has an EPE liner.

Decorative possibilities

Colours: As the aluminium sheets used to cast the caps can be printed or coated with colours, the options for working with colour are endless. Silver is considered to be a standard colour and gold is also often used as standard. The combinations of colour on one side and a silver or gold finish on the other can produce packaging that stands out from the rest and has its own identity.

Embossing/engraving: It is also possible to use a die-cutting tool that has been personalised with an embossed or engraved logo. This broadens the range of decorative options and gives the aluminium caps and closures a more luxurious aspect.

Printing: As an alternative to printing the sheets with a single colour, a complete client design can be printed in different colours, creating even more possibilities for personalising the caps and closures.

2.4. Spain

Data from **Informe 2023 del sector de cierres y tapones en España**, Entre la nueva legislación y la búsqueda de oportunidades (<https://www.alimarket.es/envase/informe/367791/informe-2023-del-sector-de-cierres-y-tapones-en-espana>):

The caps and closures sector **grew in 2022 for the second year running**, progress which is mainly due to the significant **price increase** shown by the pieces, after a year of rocketing costs for raw materials and energy. The moderation that both have undergone in 2023 indicates **a return to relative normality this year**, which will only be altered by **the impact on the industry of the new legislation approved regarding packaging material**, which focuses on the 'plastics tax'.

In parallel, **the industry is continuing to work on adapting its catalogues and production structure to European Directive 2019/904**, which will come into effect in 2024 and will make it mandatory for closures to remain attached to the container for articles with a capacity of under 3 litres. **A law that likewise lies behind most of the innovations and investments made by the industry in the last year and those foreseen for this year**, estimated at over €170m. However, **these models are only making a very gradual appearance on the market owing to inflation**, economic and social uncertainty and the low level of consumer acceptance of the initial models.

Other investments are closely linked to the perfume and cosmetics industry and the premium segment for wines and spirits, markets which are still expanding and which require **pieces that are functional, exclusive and, above all, sustainable**, the most significant driver for growth in the caps and closures market. Designs made to be reused, recycled or reduced are still being launched, many of them manufactured with new, post-consumer materials or biopolymers, whose use is on the rise, as is the use of wood or cork.

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ESPAÑA	2018		2019		2020		2021	
	millones unidades	toneladas netas de metal	millones unidades	toneladas netas de metal	millones unidades	toneladas netas de metal	millones unidades	toneladas netas de metal
Licores	280	783	276	773	209	585	233	653
Vino	144	620	148	634	128	549	138	593
Agua embotellada	1.085	1.519	1.147	1.605	822	1.151	1.044	1.461
Aceites y vinagres	143	214	151	226	166	248	179	268
Total	1.651	3.135	1.721	3.239	1.324	2.533	1.594	2.975

Fuente: Euromonitor International

2.4.1. Spanish market for aluminium caps and closures

According to the available data provided by Euromonitor Internacional, in 2021 the Spanish market for aluminium caps and closures stood at 2,975 tonnes with approximately 1,594 million pieces, data that is in line with those provided by the companies in the sector that we consulted such as **Grupo Torrent** (<https://torrentclosures.com/>), **GUALA Closures** (<https://www.gualaclosures.com/>) y **RIVERCAP/ CrealisGroup** (<https://www.crealisgroup.com/es/espagne/home-espana/>).

In terms of revenue, the data used were provided by Alimarket, with information on over 45 companies based in our country engaged in the production or commercialisation of all kinds of lids, caps and closures, as well as dispensing, spray and diffusion systems for food, drinks, cosmetics and perfumes, chemist shops, pharmacy and industry; **the caps and closures sector in Spain reached an income of more than €1,200m in 2022, that is to say, 22% higher than the data from the previous year.**

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This growth, however, fell to 7.5% in terms of volume, **with this progress practically being limited to manufacturers of caps and closures for drinks or complex cardboard packaging, who increased their activity over the last year in response to the greater demand for caps for charity, or those who work in the perfume and cosmetics sector.**

Thus, the caps and closures market grew by over 10% for the second year running (in 2021 growth was 16.5%), progress which is closely linked, in both years, to the rise in production costs being applied to the final retail price of the product in order to minimise the erosion of industrial margins. Although there is also the influence of higher prices of caps for charity and the rest of the advanced models that are appearing on the market, **with an exceedingly sustainable profile, either due to their design or the materials used.**

Staying with the Alimarket study, **with a view to 2023, the forecasts indicate a certain moderation in the market revaluation**, according to the operators' initial estimated revenue, **mainly because it is expected that energy and transport prices will continue to be kept in check, as will, above all, the price of raw materials, which in recent months have been extremely volatile, although with a downward trend.** Specifically, the value of aluminium (one of the materials that is most used in the caps and closures industry) on the London Stock Exchange (London Metal Exchange) fell by 36% between March 2022 and March 2023, with its listing reaching 2,265 \$/t. Furthermore, **operators predict a downturn in the demand for some products as a result of the fall in consumer purchasing power worldwide following the constant interest rate rises and inflation, which should also help to moderate prices.** In this context, it only remains to be seen how the caps and closures market will be affected by the second most important issue in modern-day packaging: the effect of the recently approved changes in Spanish legislation and the European regulations that are to come into effect shortly, particularly the new legislation on the circular economy, as a result of the

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incorporation of European Union directives on this area into Spanish regulations.

Most operators agree that some progress on environmental issues is necessary, although they consider that it is also necessary **to educate consumers so that these measures will be truly effective in minimising waste or increasing waste sorting.**

In any case, adaptation to the new legislation is becoming the sector's main sticking point, not only in the caps and closures industry but also in the whole area of containers and packaging in general. So, according to the 2023 Report on Innovation and Sustainability in Packaging (Informe 2023 sobre innovación y sostenibilidad en packaging) published by Alimarket last February: **65% of those interviewed referred to the bureaucracy involved in the new legal framework relating to aspects such as the 'plastics tax' as their main concern in 2023.**

Principales empresas de capital mayoritariamente español en el sector de cierres y tapones

Empresa	Ventas (M€) 2022 ⁽¹⁾	Accionistas de referencia	%
1 GRUPO TORRENT	122,00	Familia Torrent	100,00%
2 BETAPACK S.A. (GRUPO)	109,90	Alantra Private Equity	80,00%
3 VIROSPACK S.L.U.	51,90	Invi S.L.	100,00%
4 BEMASA CAPS S.A.	36,45	Productos Siderúrgicos del Segura S.A.	31,42%
5 PLÁSTICOS GONZÁLEZ S.A.	36,00 (*)	Modesto González Fernández	95,00%
6 JOSÉ COMBALÍA S.A.	28,70	Familia Planas	100,00%
7 SPBERNER PLASTIC GROUPS.L.	13,50	María Dolores Taberner Taberner	90,63%
8 QUADPACK WOOD S.L.	13,70	Eudald Holding S.L.	60,00%
9 PUJOLASOS S.L.	12,00 (*)	Josep Pujolasos Prat	98,55%
10 ITC PACKAGING S.L.	11,00 (*)	ITC Packaging Group S.L.	100,00%

(*) Estimado

(1) Ventas exclusivamente por el negocio de cierres y tapones

Fuente: Alimarket Envase

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Principales empresas de capital mayoritariamente extranjero en el sector de cierres y tapones

Empresa	Ventas (M€) 2022 ⁽¹⁾	Accionistas de referencia	Nacionalidad	%
1 GRUPO SILGAN	129,40	Silgan Holdings, Inc	Estados Unidos	100,00%
SILGAN DISPENSING SYSTEMS BARCELONA S.L.	82,40			
SILGAN WHITE CAPHOLDINGS SPAIN S.L.	24,00 (*)			
SILGAN DISPENSING SYSTEMS COVIT EUROPE S.L.	23,00			
2 BERICAPS S.A.	78,70	Bericap Holding GMBH	Alemania	100,00%
3 TETRA PAK CLOSURES SPAIN S.L.	70,00	Tetra Laval Group	Suecia	100,00%
4 GUALA CLOSURES IBÉRICA S.A.	54,55	Guala Closures, SPA	Italia	100,00%
5 AXILONE METAL S.A.	50,00 (*)	Citic Capital Holding	China	100,00%
6 GRUPO EVIOSYS (2)	49,00 (*)	KPS Capital Partners	Estados Unidos	100,00%
EVIOSYS PACKAGING CLOSURES SPAIN S.L.	29,00 (*)			
EVIOSYS EMBALAJES ESPAÑA S.A.U.	20,00 (*)			
7 GRUPO METALGRÁFICO S.A. (GRUMETAL)	46,00	Massilly Holding SAS	Francia	83,30%
8 MANUFACTURAS INPLAST S.A.	39,30	CDS Lavorazioni Materie Plastiche SRL	Italia	100,00%
9 COSTERTEC S.A.	33,54	Coster Tecnologie Speciali SPA	Italia	100,00%
10 CLOSURE SYSTEMS INTERNATIONAL ESPAÑA S.L.U.	30,90	Pactiv Evergreen INC	Nueva Zelanda	100,00%

(*) Estimado

(1) Ventas exclusivamente por el negocio de cierres y tapones

(2) Nueva razón social de Crown Holdings desde finales de 2021, tras la adquisición por parte de KPS Capital Partners de los negocios de envases de alimentos y productos de consumo del grupo

Fuente: Alimarket Envaso

General characteristics of the three companies consulted that produce or manufacture aluminium closures (Grupo Torrent, Guala Closures and Cápsulas Rivercap):

- They manufacture capsules for wines, spirits and other drinks.
 - > **Refillable:** they include a plastic liner and are practically 100% aluminium.
 - > **Non-refillable:** they have a plastic capsule and are approximately 75% aluminium, especially the screw caps.
- 100% of the aluminium wastage in production is recycled.
- There are many models and they are manufactured according to demand.

Ejemplos de cápsulas de aluminio y usos



Fuente: ARATAP

Some examples of caps and closures made in Spain:

- **Over capsule:** It fits over the stopper to protect it (over cork or over stopper). Some contain 34% LDPE between the two layers of aluminium. Although over capsules are also manufactured in 100% aluminium.
- **Screw cap:** composed of a part that is in contact with the food/drink, called the 'liner', manufactured in LDPE and aluminium. The liner is part of the capsule. The proportion is 90% aluminium and 1% LDPE. It is also known as a stopper as it comes into contact with the food.

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As we have explained in detail in this report, the aluminium caps and closures market is constantly growing. The rise of convenience food, the safety provided for these foods in terms of product preservation and the fact that it is a sustainable material all mean that this market is undergoing expansion and constant growth.

If we add in the fact that the main European manufacturers of aluminium closures and screw caps, along with manufacturers of aluminium sheet and linings for closures, have launched a campaign that explains the benefits of using aluminium closures for wines, the forecasts for growth increase, featuring the slogan 'Aluminium Closures – Turn 360°' (Startseite - Aluminium Closures (aluminium-closures.org)).

The Aluminium Closures Group (Startseite - Aluminium Closures (aluminium-closures.org)) consists of the main manufacturers of aluminium closures and their suppliers of aluminium strips and sheets. They represent around 75% of the world's production of aluminium closures, which are used mainly the markets for wine, spirits, water, oil and vinegar. A group that works because of and for market research, sustainability and recycling, as well as the promotion of aluminium closures.

Its advantages such as the elimination of cork taint from liquids; the preservation of the aroma, flavour and freshness of the product it covers; the great design possibilities; the ease of opening and closing, storage and transport; the fact that it is a product that is 100% recyclable and cheaper than traditional stoppers: all these factors mean that wine producers are getting behind the use of these closures. Without a doubt, aluminium closures can help to mitigate a bottle of wine's impact on climate change.

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In this sense, the premium segment offers new opportunities. Without forgetting the principles of sustainability, Alimarket has confirmed that luxury is still one of the great market drivers, especially if we are talking about sectors such as cosmetics or spirits. An example of this can be seen in the Grupo Torrent, which is increasingly focusing on solutions involving sustainable and premium closures for oils, liqueurs, spirits or wines, also opting to develop ad hoc projects for each client.

To understand what is being done and how work is being undertaken in Spain in terms of the recycling of aluminium caps and closures, in the following section we cover the interviews held with Ecoembes, Ecovidrio, FER and COAALI.

Interviews with the leading entities in the recycling of aluminium packaging in Spain

3.1 Ecoembes

Since 1996, ECOEMBES has been the non-profit organisation coordinating the recycling of lightweight household packaging in Spain and helping companies to integrate eco-design into the manufacturing of their containers in order to promote the reduction of waste generation. It assists the public, town councils and companies in making the recycling of packaging possible, thereby contributing to the consolidation of an efficient circular economy that is familiar and engaging and prioritises care of the environment thanks to an active society, responsible companies and public institutions that are committed to recycling. It uses a management model based on collaboration between the public and private sectors, seeking to promote the most ambitious objectives in the field of recycling. These days, Ecoembes has made waste separation of packaging a reality for 99% of the Spanish population.



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How many waste management facilities are there in Spain?

97 plants, 71 automatic and 26 manual.

How many have Eddy Current Separators?

95 have an eddy current separator and 2 do not, due to the amount of tonnes processed and the fact that they use manual sorting.

At Ecoembes, we have been pressing for a good level of aluminium sorting capacity for some time and, in fact, the two facilities that do not have it yet are small, old facilities that deal with a residual amount of packaging. In any case, when the time comes to renovate them, we will request aluminium sorting as we usually do, although the final decision on whether to install specific equipment or not lies with the public entity that owns the plant.

This drive to improve aluminium recovery has contributed to the fact that there are now 24 facilities that have more than one induction separator and we are continuing to collaborate in the design of the facilities being renovated so that additional separators will be incorporated in all the plants where we can convince them of the technical and economic viability of this installation.

How many have Eddy Current Separators for fine fraction (that escapes from the trommel)?

There are 7 facilities that have an eddy current separator with a fine stream.

How are parts of a container handled, such as aluminium caps and closures?

They are handled together with the packaging, there is no difference.

Do the aluminium caps and closures collected in the yellow container get recycled? What circuit do they follow? Are there any regulations to this effect? Are they considered part of the container or unsuitable for waste management facilities?

Yes, they get recycled, they are just another part of the container that is recyclable. Therefore, an effort is made to recover as much as possible at the waste management facility to send it to the relevant recycler afterwards.

Are indications provided to the consumer about where to place aluminium caps and closures? Have there been any campaigns to this effect?

We have not run specific campaigns for caps and closures but we have indeed indicated in the content

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that we generate via the media and social networks that metallic caps and closures should be placed in the yellow container to be recycled.

Are there any plans to run one?

Not right now but it is something that we are in the process of adapting in response to the doubts raised by each type of waste material among the general public.

Regarding the caps and closures market, we have the data on the Spanish aluminium caps and closures market of 2,975 tonnes, with around 1,600 million pieces. Does Ecoembes have data that confirm this?

Concerning green dot data what we do know is that attached aluminium caps, closures and lids make up 18,963 tonnes, which correspond to 9,425 million units.

In relation to the behaviour of the caps and closures at the facilities, we can tell you that our measurements do not stretch to packaging formats

and therefore we do not have information about their behaviour. While our analysis concerns the material, and not the format, we cannot separate the recycling of caps and closures—nor any other packaging formats—from the total recycled aluminium. What we do have planned in the second half of this year, as part of the strategic study of plastics, is to measure the packaging materials that end up in the fine fraction. So, we will be able to obtain more information about materials in this stream, although not so much as regards the format.

3.2 Ecovidrio



Ecovidrio is the Spanish collective system of extended producer responsibility (ERP or the Spanish acronym SCRAP) for the collection and recycling of single-use glass packaging waste that operates in Spain. It was founded in 1995 and began its activity in 1997 as a non-profit organisation under the provisions of the European directive on packaging of 1994. It bases its model on citizen collaboration and co-operation between the public and private sectors involving the companies that participate in the system and the local bodies that have powers to manage waste. In 2023 it celebrated its twenty-fifth anniversary of activity, having achieved the collection of 15 million tonnes of glass packaging through the green containers and the evolution of the recycling rate from 31.3% to 75.5%.

How many glass recycling plants are there in Spain?

There are 13 glass treatment plants in Spain.

How do they separate any aluminium that may reach the glass plants?

Using the induction/eddy current separator.

Are there eddy current separators at all the glass recycling plants?

All the plants, except REVICA in the Canary Islands,

have eddy currents in their treatment lines. At most of them, in the intermediate stream <50/45 mm and >20/16 mm at the shredder outlet and pre or post sieving depending on the plant.

How much aluminium is recovered at glass plants?

In 2022 aluminium made up an average of 0.18% of the input. The accumulated total over the last few years is 0.24% and we consider that to be more representative. Therefore, for 2022 the estimated amount is 1,500-2,000 t/year of recovered

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aluminium among all the glass treatment facilities.

Does Ecovidrio have characterisations for this aluminium in the glass plants?

The percentage of aluminium in the input was 0.10% in 2022. One possible explanation for the percentage being lower for the input than for the output is that in the input, when the cap or closure is attached to the body of the bottle, the characterisation study does not separate it and includes it in the total container weight.

What happens to this aluminium?

Provided that the plant separates it, then it is taken to the scrap dealer and recycled. We know that some plants have an agreement with Ecoembes for additional collections for the aluminium stream.

-What technical specifications are there for the aluminium present in the glass to be melted? What is the maximum aluminium content per tonne of glass?

Aluminium represents a problem in the furnace, the limit is <5 g/t and only one piece may be present in the total.

What indications are given to consumers regarding where (or where not) to put the aluminium caps and closures or other parts of aluminium packaging? Does the public awareness documentation give them any guidelines about aluminium caps and closures?

On the glass recycling container there is an indication that nothing should be put in it that is not glass packaging. This information is explained more fully in the leaflets for local bodies, where express reference is made to caps and closures being unsuitable.

3.3 FER Spanish Federation of Recovery and Recycling



The Spanish Federation of Recovery and Recycling addresses the interests of the waste recycling sector and advocates for them in the different economic, social and environmental areas, both nationally and internationally. It is an essential tool for companies when they engage in dialogue with Spanish and European public authorities. As a result of the work performed by the federation, the application of the extensive regulations affecting waste recovery and recycling does not hinder the development of business activities.

Do aluminium caps and closures reach the scrap dealers' plants? Through which channels?

Aluminium caps and closures usually reach the scrap dealers' plants mixed with aluminium packaging or mixed in with other scrap classification categories, such as mixed aluminium-scrap (in Spanish "cacharro").

In the survey sent out for the ARPAL Study, aluminium packaging in separate categories is classified according to the following origins by type:

- Other scrap dealers.
- Sorting plant.
- Others: hospitality industry/restaurants; shopping centres; small shops; public buildings; educational

centres; specific roadside containers; sporting events, concerts, etc.; others.

These are the most common channels for aluminium packaging to reach the scrap dealers' plants.

Are other aluminium products separated or are they mixed with others?

Normally they are mixed with aluminium packaging or other aluminium scrap, depending on the different aluminium scrap categories used in the sector.

The 'Guide to Classification and Identification of Aluminium Scrap' (Guía para Clasificación e identificación de las Chatarras de Aluminio) (<http://>

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www.aseral.es/guia.htm) identifies the different categories for aluminium scrap that are most widely used in Spain. This guide shows that there is not a specific category for aluminium caps and closures.

What is the volume of aluminium caps and closures recovered by scrap dealers' plants?

As we mentioned before, normally aluminium caps and closures are mixed with aluminium packaging or other aluminium scrap, depending on the different aluminium scrap categories used in the sector. Consequently, at present, we regret to say

that we do not have separate figures for the recovery of aluminium caps and closures.

Are caps and closures well-received by foundries?

Foundries accept aluminium scrap that fulfils the necessary characteristics and qualities. Provided that they are of the quality required by the foundries, they will be accepted.

3.4 COAALI Association for the Recycling of Aluminium and Lightweight Steel



COAALI is the association that was founded to promote the effective recycling of products made of aluminium and lightweight steel, which are infinitely recyclable materials. It is committed to fostering improvements in technological innovations, which will guarantee that the infinite recyclability of the above-mentioned products is harnessed. It operates through collaboration between the public and private sectors in a project aimed at progressing towards an economy that is increasingly more circular and sustainable, in line with the Sustainable Development Goals. It works to broaden the capacity for the classification of waste material, and the recovery and recycling of these products in pioneer cities in Spain.

[Give us a brief explanation about the pilot test in Valencia and the eddy current separator that was installed in the Picassent plant.](#)

The city of Valencia has launched a ground-breaking programme that increases the recyclability of aluminium and smaller steel items. This programme was inspired by an initiative headed by Nespresso in France, 'Projet Métal', whose goal was also to increase the recycling rate for these materials. In 10 years, this project has managed to get 50% of the French population to place these types of products in the yellow recycling container, and consequently

it was decided to reproduce this in Spain in order to provide infinite life to aluminium and smaller steel items.

To this effect, in 2016 the preparatory work began to decide where to conduct the pilot project. Due to the plant's location and technical characteristics, it was decided to launch the project at the Picassent plant, in Valencia. In parallel, the Association for the Recycling of Aluminium and Lightweight Steel (COAALI) was born, with the aim of promoting the effective recycling of smaller products made of steel and aluminium.

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COAALI, a coalition of companies headed by Nespresso, promoted, along with the Generalitat Valenciana (Regional Government of the Autonomous Community of Valencia) and the Valencia City Council, the Pilot Project for the recovery, classification and recycling of lightweight aluminium and steel products, putting Valencia at the forefront of the advocacy and promotion of Circular Economy.

The pilot project for aluminium and lightweight steel has four major lines of action and a Monitoring Committee to ensure the governance of the project and the correct implementation of all the actions. First, the small items made of aluminium and steel are collected from the yellow recycling container. Afterwards, it all arrives at the Picassent plant, where they have installed a magnetic separator to recover ferrous materials and an induction separator, known as an eddy current separator, which makes it possible to recover all the elements containing aluminium from the stream for the rejected fine fraction. The third line is the communication and dissemination of the project, as citizen engagement is essential.

Lastly, and with the focus firmly on the project objective, a second life is given to the aluminium and steel recovered.

How many aluminium caps and closures were recovered in the pilot experiment in Valencia?

Up to July 2022, when the project had been running for 24 months, it had managed to send 85,680 kg of aluminium and 173,000 kg of smaller steel items to be recycled, thereby increasing the plant's total recovery rate by 17.6% and 7.5% respectively.

Among the products recovered, 52% is aluminium not consider packaging.

Did the communication campaign explain that aluminium caps and closures could be recycled in the yellow container?

COAALI, in coordination with the Valencia City Council and the Generalitat Valenciana, and with the slogan 'En València, si és lluent va al groc' (In Valencia, if it is shiny, it goes in the yellow container'), launched several actions as regards communication

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and environmental education in order to raise awareness among the general public to promote these new recycling habits.

Opting for pedagogy aimed at the general public was a key factor in the project's success. Citizens are the first link in the chain and, without their collaboration, this project would not be possible. For this reason, a large number of communication actions have been implemented, such as the location of vinyl infographics on the yellow containers, sending letters to the residents in the area, publishing content on social media, creating a website on the project or, finally, running five civic education series.

During the local communication campaigns, information stands were set up where environmental educators gave didactic explanations on the correct way to separate aluminium and steel waste material at home. Furthermore, after the project was extended, this campaign was expanded and routes

were set up for bicycles made of recycled aluminium, provided by Nespresso, that toured hospitality businesses in the centre of Valencia. In all cases, explanations were given to the general public on the main materials of aluminium and steel in small pieces that can go into the yellow recycling container, including aluminium caps and closures.


How much of the population did this campaign reach? How was it received?

The communication campaign had a very positive impact, which made it a decisive factor in the project's success. This good reception has been reflected in the increase of some products in the yellow container. For example, the non packaging made of flexible aluminium in the fine stream at the plant (coffee capsules, aluminium foil, candle holders, etc...) have risen by 71.51% in relation to pre-campaign values.

4 Conclusions

- 1** No organisation has conducted specific awareness-raising campaigns on the recycling of aluminium caps and closures. ARPAL, in its campaign (advertising and videos) 'Aluminium packaging, everything goes in the yellow container' (Los envases de aluminio, todos los amarillo) explains that caps and closures, and other aluminium containers or parts of aluminium packaging should go into the yellow container.
- 2** Ecoembes states that metallic caps and closures should be placed in the yellow container.
- 3** Of the 97 waste management facilities in Spain, 95 have an eddy current separator for aluminium, 24 of them have more than one and seven of them have installed one for the fine stream.
- 4** Ecovidrio declares that aluminium caps and closures should not be put in the green container but nevertheless they collect between 1,500-2,000 tonnes of aluminium a year at the glass recycling plants.
- 5** Aluminium represents a problem for glass recycling furnaces. The maximum amount of aluminium per tonne of glass in the furnace should be <math>< 5 \text{ g/t}</math>, which in total is the equivalent of one piece.
- 6** Suitable technology exists to separate and recycle aluminium caps and closures.

4 Conclusions

- 7 Aluminium caps and closures are seen as being just another part of recyclable packaging.
- 8 ASERAL's Guide to Classification and Identification of Aluminium Scrap does not contain a specific category for aluminium caps and closures.
- 9 COAALI's experiment in Valencia specified that aluminium caps and closures should be thrown in the yellow container. The aluminium recovered by plants increased by 17.6%.
- 10 COAALI's experiment shows that non packaging made of flexible aluminium in the fine stream at the plant (coffee capsules, aluminium foil, candle holders, etc...) have risen by 71.51% in relation to pre-campaign values.
- 11 The success of COAALI's experiment to promote effective recycling of small steel and aluminium products proved once again that citizen collaboration is essential. People will get involved as long as they know how recovered aluminium and steel can be given a second life.
- 12 Citizens are the first link in the chain and, without their collaboration, recycling would not be possible. Opting for pedagogy and effective communication with citizens are key factors in engaging them. 



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