

1

1

TECNOCAP TL SRL
LECCO
ITALIA



The International EPD® System, www.environdec.com
EPD International AB
S-P-02313
2021-02-03
2026-02-02
2023-04-21

An EPD must provide current information and can be updated if conditions change. The declared validity is therefore subject to continued registration and publication on www.environdec.com

Programme information

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
-------------------	---

Accountabilities for PCR, LCA and independent, third-party verification
Product category rule (PCR)
PCR: PACKAGING PRODUCT - CATEGORY CLASSIFICATION: MULTIPLE CPC PCR 2019:13 VERSION 1.1 VALID UNTIL: 2023-11-08
PCR revision was conducted by: Anna Bortoluzzi on 17-12-2020, Università degli Studi di Milano – Dipartimento di chimica – anna.bortoluzzi@unimi.it
Life cycle assessment (LCA)
LCA accountability:: Tecnocap TL Srl – Corso Carlo Alberto, 29 – 23900 - Lecco (Italy)
Third party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: X EPD verification by individual verifier - Dr.Ugo Pretato – Studio Fieschi & Soci srl – Torino (Italy)
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third-party verifier: yes ☒ No

Company information

Description of the organisation:

Tecnocap Group is a worldwide metal packaging manufacturer, specialized in tinplate metal closures for glass jars and plastic containers as well as in producing aluminum monobloc aerosol cans and aluminum bottles for some of the world's best known consumer brands.

In Italy, the plant considered in this EPD located in Cava de'Tirreni (SA) specializes in producing tinplate closures whilst the other Italian plant of Tecnocap Group, located in Lecco, is specialized in producing aluminum monobloc aerosol cans and aluminum bottles.

Tecnocap commitment goes beyond providing the best quality product. The company helps its clients succeed by enhancing the identity of their brand and preserving the safety of their product working as a partner and advisor, improving existing products and developing new designs & engineering solutions.

Constantly evolving technologies and tailored engineering projects are key factors which drive the Tecnocap market reputation and business growth. The group heavily invests in improving production performance, total quality management and lean manufacturing principles.

Sustainability is a key point for all Tecnocap activities and strategic decisions. Tecnocap works closely with its customers to support them in reaching their sustainability targets by providing "responsible packaging solutions".

3



Tab.1 – Tecnocap plant in Lecco (Italy)

Certifications

Tecnocap has developed and implemented an Integrated Management System related to workplace safety and the environment and has acquired recognition of compliance with relevant international standards



4

Tab.7 – Tecnocap certifications – Lecco plant -

To download certificates and quality policy: <https://www.tecnocapclosures.com/it/capsule-metallo-qualita/>

An EPD must provide current information and can be updated if conditions change. The declared validity is therefore subject to continued registration and publication on www.environdec.com

Owner of the EPD:

Tecnocap TL Srl
Corso Carlo Alberto, 29 – 23900 - Lecco (Italy)
Tel. +39 0341 484199
VAT 03690020130

Company contacts:

Ing. Alfonso Violante
a.violante@tecnocapgroup.com

Dr. Vittorio D'amore
v.damore@tecnocapgroup.com

Name and location of production site:

Tecnocap TL srl
Plant of Lecco - Corso Carlo Alberto, 29 – 23900 - Lecco (Italy)

Product information

Product name:	aluminum monobloc Aerosol Cans and Bottles
Product identification:	products under study are identified by alphanumeric codes corresponding to their technical data sheet
UN CPC code:	42931
Geographical scope:	global

Product description

In the plant of Lecco Tecnocap produces two categories of aluminum packaging:

- 1. Aluminum aerosol cans
- 2. Aluminum bottles

Aluminum aerosol cans

The monoblock aerosol cans guarantee high quality standards and excellent barrier properties for product integrity. Suitable for use with all types of propellants and formulations, it is easy to store, and allows safe handling along the entire supply chain.



Tab.2 – aluminum aerosol cans

The aluminum monoblock cans have no joints thus assuring to be leak-proof containers without welds. They also have a great resistance to internal pressure (standards: 12 and 18 bars) and can be printed up to 7 colors and more with special finishes and unlimited design possibilities. The aluminum monobloc can is widely used: In the personal and beauty care industry, in the food industry, for household and chemical products, for pharmaceutical, medical devices and OTC products.

PRODUCT DATA			DIMENSIONS (MM)										NOZZLE	
LIQUEFIED GAS	COMPRESSED GAS	AEROSOL CAN MINIMUM CAPACITY	25	35	45	55	65	75	85	95	105	115	1 INCH	SPECIAL 20
50	-	75 ± 4	88										*	*
-	50	85 ± 4	105	90									*	*
75	-	110 ± 4	125	110									*	*
100	75	140 ± 6	90	105									*	*
125	100	175 ± 6			135								*	*
125	100	175 ± 6		138	125								*	*
150	125	210 ± 6		150	125	110							*	*
200	150	270 ± 8		190	156	142							*	*
200	200	320 ± 10		190	173	152	142						*	*
300	250	410 ± 10					130						*	*
300	250	405 ± 12		225	205	179	169	143					*	*
400	300	520 ± 13				225	214	178					*	*
500	400	650 ± 13				276	265	218					*	*
600	500	800 ± 16						260	210				*	*
750	600	1000 ± 20							263				*	*

AVAILABLE SHOULDER OPTIONS



ROUND



OGIVAL



SUPER OGIVAL
Bullet/Trimline



RIM
Available on Round, Ogival and Flat



SHAPED



FLAT

Tab.3 - aerosol cans technical features

An EPD must provide current information and can be updated if conditions change. The declared validity is therefore
 EPD **Aluminum bottles** nt information and can be updated if conditions change. The declared validity is therefore
 subject to continued registration and publication on www.environdec.com

Aluminum Bottles are widely used in the food and beverage industry, as well for packaging essential Oils, Perfumes, Fragrances, Aroma Therapy, Chemical products and much more.



Tab.4 – aluminum bottles

Aluminum bottles are premium stylish container, fully recyclable, suitable with existing filling lines, cool and fresh to touch and available in a huge variety of profiles and closures. Their high definition decoration also enhance shelf appeal and brand recognition.

DIAMETERS (mm)	HEIGHT	NECK TYPE	BRIMFULL CAPACITY ML
35	85	GPI 24/410	63
38	115	GPI 24/410	100
40	110	GPI 24/410	110,6
40	125	GPI 24/410	127
40	135	GPI 24/410	138,5
45	105	GRN 20	140
45	145	GPI 24/410	185
45	160	GPI 24/410	221
50	175	GPI 24/410	283
55	140	GPI 25/410	298
55	167	GPI 25/410	364
55	178	GPI 25/410	370
55	185	CRONIN	330
66	166	GPI 25/410	453
66	196	GPI 25/410	536
66	196	ROPP 28	536

Special sizes available by customer request to be verified

CUSTOMIZABLE HEIGHTS



Tab.5 - aluminum bottles technical features

Manufacturing process

Aluminum is made from a material found in the earth's crust. It occurs naturally in a mineral called bauxite. The aluminum in bauxite is formed when the material is refined to remove impurities. The refining process produces a fine, white powder called alumina or aluminum oxide. Electricity "zaps" the aluminum powder with a continuous electric current, which separates the aluminum from the oxygen. The electricity melts the aluminum so that it is hot and bubbly, like lava. Next, small amounts of other metals are added to the molten aluminum to add strength and corrosion resistance to the final product (the addition of zinc to aluminum - in conjunction with some other elements, primarily magnesium and/or copper - produces heat-treatable aluminum alloys of the highest strength).

The molten metal is cast into ingots or blocks, which are then melted again and shape-casted into slugs (metal disks that are impact extruded to make aerosol cans, aluminum collapsible tubes and bottles).

Packaging from aluminum slugs

Manufacturing processes in Tecnocap plant in Lecco start with the impact extrusion of aluminum slugs.

In an impact extrusion process, a hydraulic ram punches an aluminum slug to begin forming the can. The sides of the can are thinned to approximately 0.40 mm through an ironing process that lengthens the walls of the can.

The rough edges of the wall are trimmed and the can is passed through a series of necking dies to form the top of the can.

Next tables show the manufacturing processes that lead to the realization of aerosol cans and bottles and aluminum bottles:



Tab.6 – aluminum packaging manufacturing process

An EPD must provide current information and can be updated if conditions change. The declared validity is therefore
 EPD must provide current information and can be updated if conditions change. The declared validity is therefore
 subject to continued registration and publication on www.environdec.co

LCA information

Time representativeness: data used in the LCA study relate to the productions made in 2021

Database and LCA software used: Ecoinvent® 3.8 - Simapro® 9.4.0.2

Declared Unit: the Declared Unit is a unit of packaging belonging to the product's categories considered in the study (Aluminum aerosol cans and aluminum bottles)

System diagram: table below shows processes included in the LCA study, divided into life cycle stages and into life cycle modules:

LIFE CYCLE STAGE	LIFE CYCLE MODULE		
UPSTREAM	A1	Raw material supply	X
CORE	A2	Transport	X
	A3	Manufacturing	X
DOWNSTREAM	A4	Transport to forming or filling	MND
	A5	Forming	MND
	B1	Filling operations	MND
	B2	Distribution of filled packaging	MND
	B3	Transport to reconditioning	MND
	B4	Reconditioning	MND
	B5	Transport to re-filling point	MND
	C1	Disassembling/sorting	MND
	C2	Transport to recovery/disposal of distribution packaging	X
	C3	Final disposal of distribution packaging	X

Tab.7 – System diagram of the processes included in the study

Description of system boundaries

System boundaries are “cradle to gate with options” as they include the production of aluminum ingots, the subsequent shaping into slugs and extrusion process, painting operations, as well as the packaging for product's shipping. Taking into account the relevant quantity of packaging associated with products' shipping, an end-of-life scenario for packaging materials was also modeled and included in the study. That scenario was modeled and based on Italian data on EOL of packaging materials released by Fondazione per lo Sviluppo Sostenibile in the report "Italy of recycling 2021". The Italian scenario was preferred as it prevails over the total of the other destinations of Tecnocap's customers.

The following table shows the reference scenario adopted:

Packaging end of life scenario		
Corrugated paper packaging	Recycling	87%
	Incineration	7,50%
	Landfill	5,50%
Plastic packaging	Recycling	49%
	Incineration	44,60%
	Landfill	6,40%
End of life scenario based on the report "L'Italia del Riciclo 2021" – Fondazione per lo sviluppo sostenibile -		

Excluded lifecycle stages

Modules from A4 to C1 of the "packaging" PCR system diagram have been excluded; modules C2 and C3 have been included only for the end of life scenario of the distribution packaging of aluminum cans and bottles.

Environmental performance indicators

Below are the environmental performance indicators represented, according to the default list v. 2.0 (updated 03/29/2022) of the International EPD System:

- 1. Climate Change (kg CO₂eq)**
Fossil – biogenic - land use and land use change (luluc), and total
- 2. Acidification potential (AP) (mol H⁺ eq);**
- 3. Eutrophication potential (EP);**
EP, aquatic freshwater, (kg P eq.)
EP, aquatic marine (kg N eq)
EP, terrestrial, (mol N eq)
- 4. Photochemical ozone creation potential (POCP) (kg NMVOC eq.);**
- 5. Ozone depletion potential (ODP) (kg CFC-11 eq)**
- 6. Abiotic depletion potential (ADP) for minerals/metals (non-fossil resources) (kg Sb eq)**
- 7. Abiotic depletion potential (ADP) for fossil resources (MJ)**
- 8. Water deprivation potential (WDP) (m³ eq)**

For the results of the impact indicators, the characterization factors of the EF v.1.01 method were used

For data processing, the SimaPro software version 9.4.0.2 and the Ecoinvent database were used

Product 01: aluminum aerosol can

Product 01	Aluminum aerosol can	
Product ref.	205 012	
Kind of packaging	component	
Material	aluminum	
Brimful capacity (ml)	405	
Height (mm)	205	
Diameter (mm)	53	
Weight (g)	39,7	
Number of uses	01	
Reference service life	NA	

11

Content declaration

Materials per unit of packaging ref. 205 012 "aerosol can" 39,7g	weight (g)	%	Environmental / hazardous properties
Aluminum	37,7	94,93%	100% recyclable
Paint, enamel and ink	2,0	5,07%	food contact compliant
Distribution packaging	100% recycled corrugated board 0,69g - Strapping 0,31g - Stretch plastic film 0,35g - Plastic top 0,08g -		
Consumer packaging	NA		
Recycled material	26,62% recycled aluminum from post manufacturing scrap		
REACH declaration	Declaration on the registration, evaluation, authorization and restriction of chemical substances - REACH - Regulation (EC) No. 1907/2006 of the European Parliament: metal closures produced by Tecnocap TL Srl do not contain substances subject to registration and therefore, as required by the standard, it will be Tecnocap Spa to ask its suppliers, in the supply chain, to fully comply with all obligations relating to pre-registration, registration, authorisation, preparation of the scenario for the disclosure of security practices, as required by articles 6,31,95 of the aforementioned regulation.		

Environmental performance product 01

Potential environmental impacts - Ref. 205 012 “aluminum aerosol can”

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	4,225E-01	1,124E-01	3,249E-03	5,382E-01
	Biogenic	kg CO ₂ eq.	1,215E-04	5,091E-04	6,994E-05	7,005E-04
	Land use and land transformation	kg CO ₂ eq.	4,150E-03	8,832E-06	2,083E-07	4,159E-03
	TOTAL	kg CO ₂ eq.	4,268E-01	1,129E-01	3,319E-03	5,430E-01
Acidification potential (AP)		kg mol H ⁺ eq.	3,475E-03	2,535E-04	1,508E-05	3,744E-03
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	9,069E-06	7,128E-06	4,532E-08	1,624E-05
	Aquatic marine	kg N eq.	3,289E-04	5,555E-05	6,638E-06	3,911E-04
	Aquatic terrestrial	mol N eq.	3,352E-03	5,855E-04	7,074E-05	4,009E-03
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	1,034E-03	1,841E-04	2,479E-05	1,243E-03
Ozone layer depletion (ODP)		kg CFC 11 eq.	3,910E-09	1,814E-08	5,221E-10	2,257E-08
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	7,000E-07	4,025E-07	1,481E-08	1,117E-06
	Fossil resources	MJ, net calorific value	4,796E+00	1,722E+00	3,253E-02	6,550E+00
Water deprivation potential (WDP)		m ³ world eq.	2,626E+00	8,685E-05	3,177E-07	2,626E+00

12

An EPD must provide current information and can be updated if conditions change. The declared validity is therefore subject to continued registration and publication on www.environdec.com

Use of resources - Ref. 205 012 “aluminum aerosol can”

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1,741E+00	2,664E-02	1,751E-04	1,768E+00
	Used as raw materials	MJ, net calorific value	0,000E+00	0,000E+00	0,000E+00	0,000E+00
	TOTAL	MJ, net calorific value	1,741E+00	2,664E-02	1,751E-04	1,768E+00
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	5,229E+00	1,886E+00	3,453E-02	7,149E+00
	Used as raw materials	MJ, net calorific value	3,589E-02	0,000E+00	0,000E+00	3,589E-02
	TOTAL	MJ, net calorific value	5,265E+00	1,886E+00	3,453E-02	7,185E+00
Secondary material		kg	1,214E-02	0,000E+00	0,000E+00	1,214E-02

Product 02: aluminum bottle

Product 02	Aluminum bottle	
Product ref.	196 062	
Kind of packaging	component	
Material	aluminum	
Brimful capacity (ml)	548	
Height (mm)	196	
Diameter (mm)	66	
Weight (g)	58,2	
Number of uses	01	
Reference service life	NA	

13

Content declaration

Materials per unit of packaging ref. 196 062 "aluminum bottle" 58,2g	weight (g)	%	Environmental / hazardous properties
Aluminum	55,2	94,93%	100% recyclable
Paint and enamel	3,0	5,07%	food contact compliant
Distribution packaging	100% recycled corrugated board 1,01g - Strapping 0,45g - Strech plastic film 0,52g - Plastic top 0,12g -		
Consumer packaging	NA		
Recycled material	26,62% recycled aluminum from post manufacturing scrap		
REACH declaration	Declaration on the registration, evaluation, authorization and restriction of chemical substances - REACH - Regulation (EC) No. 1907/2006 of the European Parliament: metal closures produced by Tecnocap TL srl do not contain substances subject to registration and therefore, as required by the standard, it will be Tecnocap Spa to ask its suppliers, in the supply chain, to fully comply with all obligations relating to pre-registration, registration, authorisation, preparation of the scenario for the disclosure of security practices, as required by articles 6,31,95 of the aforementioned regulation.		

An EPD n°
EP

is therefore
dity is therefo
environdec.co

Environmental performance product 02

Potential environmental impacts - Ref. 196 062 “aluminum bottle”

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	6,194E-01	1,648E-01	4,762E-03	7,889E-01
	Biogenic	kg CO ₂ eq.	1,781E-04	7,464E-04	1,025E-04	1,027E-03
	Land use and land transformation	kg CO ₂ eq.	6,083E-03	1,295E-05	3,054E-07	6,096E-03
	TOTAL	kg CO ₂ eq.	6,257E-01	1,655E-01	4,865E-03	7,961E-01
Acidification potential (AP)		kg mol H ⁺ eq.	5,095E-03	3,716E-04	2,210E-05	5,489E-03
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	1,330E-05	1,045E-05	6,644E-08	2,381E-05
	Aquatic marine	kg N eq.	4,822E-04	8,144E-05	9,732E-06	5,733E-04
	Aquatic terrestrial	mol N eq.	4,915E-03	8,584E-04	1,037E-04	5,877E-03
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	1,517E-03	2,699E-04	3,633E-05	1,823E-03
Ozone layer depletion (ODP)		kg CFC 11 eq.	5,732E-09	2,659E-08	7,654E-10	3,309E-08
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	1,026E-06	5,901E-07	2,171E-08	1,638E-06
	Fossil resources	MJ, net calorific value	7,031E+00	2,524E+00	4,768E-02	9,602E+00
Water deprivation potential (WDP)		m ³ world eq.	3,850E+00	1,273E-04	4,658E-07	3,850E+00

14

Use of resources - Ref. 196 062 “aluminum bottle”

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	2,552E+00	3,905E-02	2,567E-04	2,591E+00
	Used as raw materials	MJ, net calorific value	0,000E+00	0,000E+00	0,000E+00	0,000E+00
	TOTAL	MJ, net calorific value	2,552E+00	3,905E-02	2,567E-04	2,591E+00
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	7,669E+00	2,764E+00	5,062E-02	1,048E+01
	Used as raw materials	MJ, net calorific value	4,992E-02	0,000E+00	0,000E+00	4,992E-02
	TOTAL	MJ, net calorific value	7,719E+00	2,764E+00	5,062E-02	1,053E+01
Secondary material		kg	1,780E-02	0,000E+00	0,000E+00	1,780E-02

Main differences from the previous EPD

Compared to the first LCA study relating to 2019 Tecnocap TL productions, the following factors were considered/integrated/modified in this study:

1. In accordance with the version 1.1 of the "packaging" PCR, all impacts were related to a packaging unit and not to the ton of product.
2. A better and more detailed allocation of the weights of the individual materials making up the aluminum packaging (metal, paint, varnish) has been carried out.
3. All data have been updated and recalculated on the basis of the production results for the year 2021
4. Updated Simapro software version (9.4.0.2) and Ecoinvent v. 3.8 were used to calculate the environmental impacts along with the EF v.1.01 method as it is more in line with the environmental performance indicators of the list v. 2.0 (updated 03/29/2022) of the International EPD System.
5. Adopted GPI 3.1 for the international EPD System instead of version 3.0.
6. Compared to the previous LCA, GWP impact decreased by 24,15%. The reasons for this reduction lie, in addition to a general efficiency improvement of all processes, in the adoption in 2021 of a CHP plant fueled by natural gas which made possible to reduce electricity consumption by more than 50%, increasing gas consumption only by 16,87% (per ton of product)

15

More information

An EPD must provide current information and can be updated if conditions change. The declared validity is therefore subject to continued registration and publication on www.environdec.com

The study was commissioned by:

Tecnocap TL Srl
Corso Carlo Alberto, 29 – 23900 - Lecco (Italy)
Tel. +39 0341 484199
VAT 03690020130

Contact persons for the study are:

Ing. Alfonso Violante
a.violante@tecnocapgroup.com

Dr. Vittorio D'amore
v.damore@tecnocapgroup.com

The LCA study was carried out by:
Valore Sostenibile Srls
Dr. Massimo Lombardi – LCA Practitioner
massimolombardi@valoresostenibile.it
www.valoresostenibile.it



References

PCR (Product Category Rules) del sistema EPD: PACKAGING PRODUCT - CATEGORY CLASSIFICATION: MULTIPLE CPC PCR 2019:13 VERSION 1.1 VALID UNTIL: 2023-11-08

*GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM
Version 3.1 del 2019-09-18*

ISO14040: 1997 - Environmental management - Life cycle assessment - Principles and framework

ISO 14044: 2006 - Environmental Management — Life Cycle Assessment — Requirements and Guidelines

IPCC-Intergovernmental Panel On Climate Change- 2021.

L'Italia del Riciclo 2021 – Fondazione per lo sviluppo sostenibile

Raccomandazione 2021/9332/UE, relativa all'uso di metodologie comuni per misurare e comunicare le prestazioni ambientali nel corso del ciclo di vita dei prodotti

Pré (Product Ecology), "SimaPro 9.4.0.2 – Reference Manual"

LCA - Life cycle assessment Tecnocap TL 2021 – Aluminum monobloc aerosol cans and bottles

