
ENVIRONMENTAL PRODUCT DECLARATION

COLLATION SHRINK FILM FOR MILK AND JUICE



FOLLOWING THE STANDARD ISO 14025 FOR COLLATION
SHRINK FILM RANGES 317 MM
COLOURLESS 40 MM, AND 180 MM COLOURLESS 30 MM,
FOR MILK AND JUICE PRODUCTS

PROGRAMME: THE INTERNATIONAL EPD® SYSTEM
REGISTRATION NUMBER: S-P-02654
PUBLICATION DATE: 2022-02-03
VALID UNTIL: 2027-01-30
AN EPD SHOULD PROVIDE CURRENT INFORMATION AND
MAY BE UPDATED IF CONDITIONS CHANGE. THE STATED
VALIDITY IS, THEREFORE, SUBJECT TO THE CONTINUED
REGISTRATION AND PUBLICATION AT
WWW.ENVIRONDEC.COM

ENVIRONMENTAL PRODUCT DECLARATION

COLLATION SHRINK FILM FOR MILK AND JUICE

Macresac, S.A.
Armando Alvarez Group

PROGRAMME INFORMATION

THE INTERNATIONAL EPD SYSTEM
EPD INTERNATIONAL AB
BOX 210 60
SE-100 31 STOCKHOLM
SWEDEN

www.environdec.com

info@environdec.com

PRODUCT CATEGORY RULE (PCR): 2019:13 V1.1
PACKAGING (VALID UNTIL: 2023-11-08)
GPIs v3.0

PCR reviewed by: the technical committee of The International EPD® System. The review panel may be contacted via: info@environdec.com. Chairman of the PCR review panel: Maurizio Fieschi

VERIFICATION OF THE DECLARATION AND OF THE DATA BY AN INDEPENDENT THIRD PARTY, ACCORDING TO THE STANDARD ISO 14025:2006
 EPD PROCESS CERTIFICATION
 EPD VERIFICATION

THIRD-PARTY VERIFIER: TECNALIA R&I CERTIFICACIÓN, S.L. (VERIFIER: CRISTINA GAZULLA)

ACCREDITED BY: ENAC. ACCREDITATION NO.125/C-PR283

LCA CONSULTANT:
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PACKAGING, TRANSPORT & LOGISTICS
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PROCEDURE FOR FOLLOW-UP OF DATA DURING EPD VALIDITY INVOLVES THIRD PARTY VERIFIER:
 YES NO

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable.

COMPANY INFORMATION



Macresac S.A. is part of the Armando Alvarez Group, which comprises a group of companies that complement each other, with an extrusion volume of over 400,000 tonnes and a turnover of close to €980 million. The Group is currently part of a reduced number of the leading companies in the sector in Europe. The Armando Alvarez Group, as the main plastics converter in Spain, and in alignment with its commitment to improving the environment and optimising resource consumption, is

continuously working on developing techniques and applications to minimise waste products throughout its production system, promoting product recyclability and/or reuse.

One of its main principles is its environmental commitment throughout all stages of the value chain in the manufacture of plastic materials and in the provision of services in this field.

CONTACT INFORMATION

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COMPANY INFORMATION

MACRESAC, S.A.
CARRER DE VILALLONGA, 0, KM 1
43470 - TARRAGONA
SPAIN



PRODUCTION PLANTS

This range of collation shrink film products is manufactured at the following Armando Alvarez Group production plant:

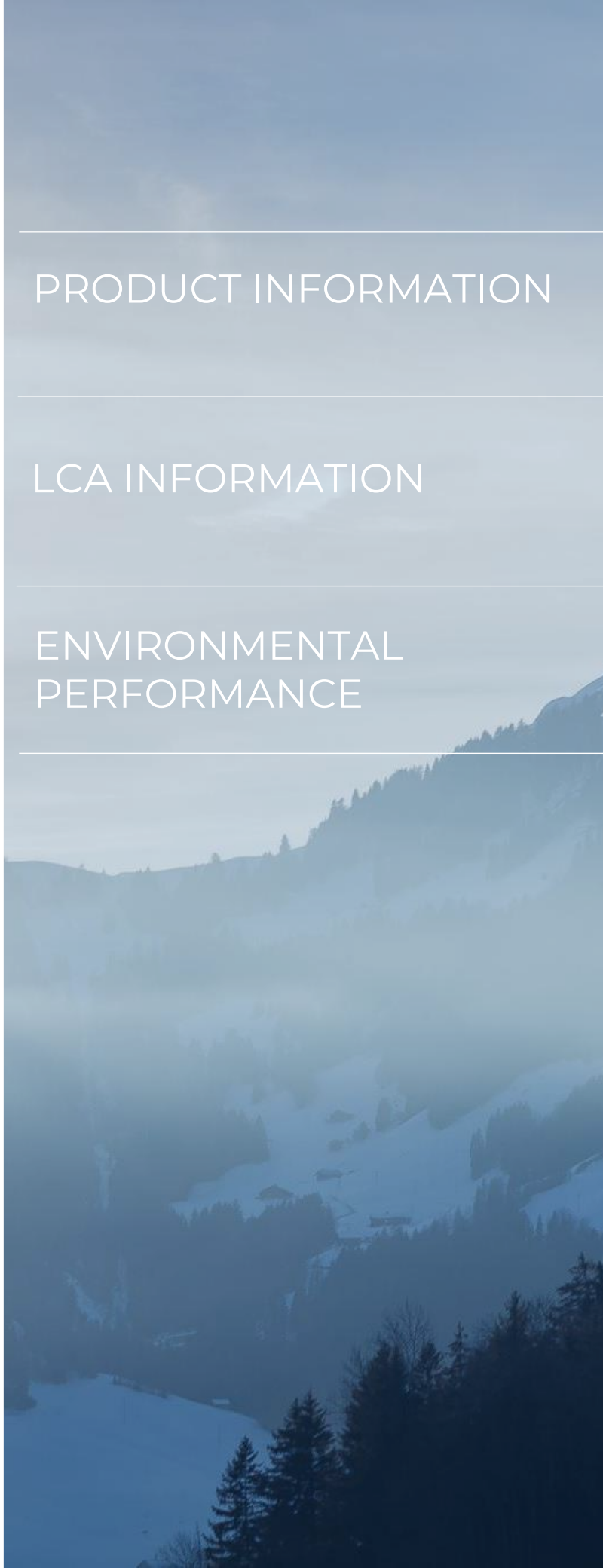
MACRESAC, S.A.

Production plant in La Selva de Camp (Tarragona)

PRODUCT INFORMATION

LCA INFORMATION

ENVIRONMENTAL
PERFORMANCE





PRODUCT INFORMATION

Environmental Product Declaration collation shrink film for milk and juice.

PRODUCT NAME

- Shrink film for 6 x 1 L milk beverage carton
- Shrink film for 6 x 200 mL juice beverage carton

PRODUCT IDENTIFICATION

- Shrink film 317 mm uncoloured 40 mm - milk
- Shrink film 180 mm uncoloured 30 mm - juice



CERTIFICATIONS
RELATED TO THE
PRODUCT OR TO THE
MANAGEMENT
SYSTEM

ISO 9001

Quality management system

ISO 14001

Environmental management system

ISO 2200:2018

Food safety management system

PRODUCT
DESCRIPTION

Shrink film is part of a range of products developed to group products together in PE film. This film offers high glossy surface, transparency and high resistance.

Both the shrink film for the 6-packs of milk and for the 6-packs of juice are made of a mix of low density polyethylene (LDPE) and linear low density polyethylene (LLDPE). The material is extruded and rolled in the reels that are fed to the filler, where the shrink film receives its final shaping by applying heat.

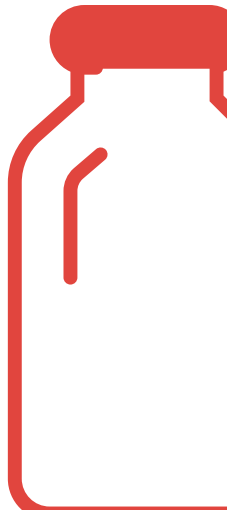
This product is especially recommended for the milk and juice sector.

GEOGRAPHICAL SCOPE

The product is made in Spain and is marketed in Spain and several European countries.

UN CPC CODE

364 Plastic packaging products.



LCA INFORMATION



The purpose of this document is to illustrate how the life cycle assessment has been carried out and its results. It was performed following the standard ISO 14040:2006 and ISO 14044:2006 and taking into account the PCR of reference: Packaging. Classification of the product category: CPC multiple. PCR 2019:13 Version 1.1.

FUNCTIONAL UNIT/ DECLARED UNIT

The declared unit is 1 unit of packaging product, which is the amount of shrink film needed for 6 milk beverage cartons and 6 juice beverage cartons. The packaging unit for six 1 L beverage cartons of milk weighs 9.27 g, whereas the packaging unit for six 200 mL juice beverage cartons weighs 2.19 g.

This information, as declared in the PCR, is deemed clear enough for the user to be able to evaluate the impact.

REFERENCE SERVICE LIFE

N.A

TEMPORAL REPRESENTATIVENESS

The specific data for the 2020 production period (shrink film for 200 mL juice) and 2017 (shrink film for 1 L milk beverage cartons) was collected from Macresac, S.A. by means of a questionnaire. It includes information on the technical features of the containers, the production processes and the logistics data. In the specific case of electricity, the energy mix for the manufacturing period of the above-mentioned shrink film was considered.

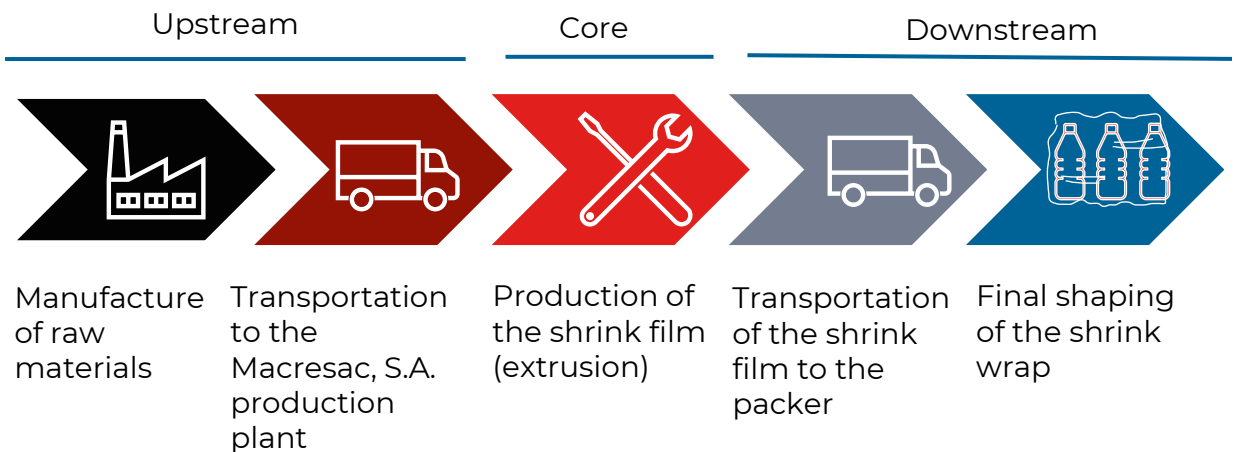
DATABASE AND LCA SOFTWARE USED

The software SimaPro V9.2.0.1 was used for carrying out the LCA. The reference data are from Ecoinvent 3.7.1 and from the ITENE internal databases on processing and packaging systems. The representativeness of the data is 10 years from the year of reference.

DESCRIPTION OF THE SYSTEM BOUNDARIES

The type of analysis is cradle to gate with options, which includes the three main stages: upstream processes (manufacture of raw materials and packaging and transportation to the Macresac, S.A facilities), core processes (shrink film production) and downstream processes (transportation of the film to the packer and final shaping of the shrink wrap).

Figure 1 describes the cradle to gate with options stages. We must point out that the shrink film is delivered to the drinks manufacturer on reels to shape the shrink wrap.



EXCLUDED LIFE CYCLE STAGES

B1-B5 and C1-C3 life cycle stages are excluded from the assessment, because the purpose of the LCA is the “cradle to gate” approach with options. Therefore the distribution of the filled containers to the final customer and the end of life were deliberately excluded because they are not upon Macresac, S.A.’s control, so that various different scenarios are possible.

Upstream		Core	Downstream			
A1	A2	A3	A4	A5	B1-B5	C1-C3
Raw materials	Transport	Manufacturing	Transport to the shaping or filling point	Shrink wrap film shaping	Other downstream processes	End of life
Incl.	Incl.	Incl.	Incl.	Incl.	Excl.	Excl.

CUT-OFF CRITERIA TO INCLUDE INPUTS AND OUTPUTS

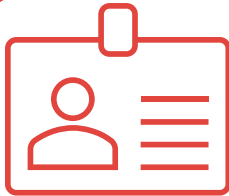
The LCA model includes the supporting material for shrink film production (which includes the processing additives) and the entire group of packaging.

Therefore no cut-off criteria were applied and the EPD presented covers 100% of the materials used during production.

In accordance with the PCR on packaging, both the capital goods (equipment) and their maintenance are excluded.

**ALLOCATION
PRINCIPLES AND
PROCEDURES**

The allocation of the consumables to manufacture the shrink film at the production facilities was obtained directly from Macresac, S.A., calculating it by unit of shrink film regarding production of the reference being analysed. The use of energy and material per unit of shrink film was extrapolated based on the data from the production batches, also including the production of extrusion rests (scraps) during film extrusion, and it was calculated per unit of shrink film.

**Name and
contact
information for
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DECLARATION OF CONTENT



PRODUCT & USE OF RECYCLED MATERIAL

The product is comprised mainly of LDPE and LLDPE in different proportions, which represent more than 98% of the material used.

No recycled material is used to make the shrink film. However, Macresac, S.A. uses scraps from the extrusion process, it shreds them again and feeds them back into the extruder.

This was taken into consideration in the LCA calculations.



PACKAGING

The packaging materials to distribute the reels to the client (packer) are considered in this EPD. The packaging system consists mainly of a cardboard tube placed onto a pallet with auxiliary cardboard separators when necessary. The pallets are wrapped with stretch film.

Shrink film for six 1 L milk beverage cartons

Material/chemical product	Weight (g)	% weight	Hazard classification
LDPE grade 1	3.11E+00	33.56%	Substance not classified according to Regulation (EC) No. 1272/2008
LDPE grade 2	4.62E+00	49.85%	Substance not classified according to Regulation (EC) No. 1272/2008
LLDPE	1.39E+00	15.00%	Substance not classified according to Regulation (EC) No. 1272/2008
Anti-static additive	3.71E-02	0.40%	Substance not classified according to Regulation (EC) No. 1272/2008
Anti-slip additive	1.11E-01	1.20%	Substance not classified according to Regulation (EC) No. 1272/2008

Shrink film for six 200 mL juice beverage cartons

Material/chemical product	Weight (g)	% final weight	Hazard classification
LDPE	1.51E+00	68.85%	Substance not classified according to Regulation (EC) No. 1272/2008
LLDPE	6.57E-01	29.96%	Mix not classified according to Regulation (EC) No. 1272/2008
Silica additive	1.75E-02	0.80%	Substance not classified according to Regulation (EC) No. 1272/2008
Co-polymer additive	8.76E-03	0.40%	Substance not classified according to Regulation (EC) No. 1272/2008



ENVIRONMENTAL PERFORMANCE

The environmental indicators were evaluated using the IPCC GWP 100a method for the global warming potential, CML-IA non-baseline for the acidification and eutrophication categories, ReCiPe 2008 for the photochemical oxidant formation potential, the CML 2001 baseline for the abiotic depletion potential for elements and fossil fuels, and AWARE for the water footprint. These impact assessment methods meet the guidelines on the methods provided by The International EPD® System.

Final results are presented below:



PRODUCT SHRINK FILM FOR SIX 1 L MILK BEVERAGE CARTONS

Potential environmental impacts

PARAMETER		UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Global warming potential	Fossil	kg CO ₂ eq.	6.64E-02	7.31E-02	3.83E-03	1.43E-01
	Biogenic	kg CO ₂ eq.	1.67E-01	2.04E-01	2.32E-03	3.73E-01
	Land use and land use changes	kg CO ₂ eq.	4.52E-04	5.06E-04	5.74E-06	9.63E-04
	TOTAL	kg CO ₂ eq.	2.34E-01	2.78E-01	6.16E-03	5.17E-01
Acidification potential		kg SO ₂ eq.	3.60E-04	4.60E-04	1.88E-05	8.38E-04
Eutrophication potential		kg PO ₄ ³⁻ eq.	1.01E-04	1.20E-04	2.95E-06	2.24E-04
Photochemical oxidant formation potential		kg NMVOC eq.	3.68E-04	4.10E-04	9.96E-06	7.87E-04
Abiotic depletion potential – Elements		kg Sb eq.	4.49E-08	5.19E-08	3.51E-10	9.71E-08
Abiotic depletion potential– Fossil resources		MJ, net calorific value	1.27E+00	9.72E-01	4.56E-02	2.29E+00
Water scarcity potential		m ³ eq.	1.39E-01	1.30E-01	1.16E-03	2.70E-01

Use of resources

PARAMETER		UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Primary energy resources - renewable	Use as energy carrier	MJ, net calorific value	0.00E+00	3.13E-02	1.83E-02	4.96E-02
	Used as raw material	MJ, net calorific value	2.29E-02	1.18E-05	1.06E-05	2.29E-02
	TOTAL	MJ, net calorific value	2.29E-02	3.13E-02	1.83E-02	7.25E-02
Primary energy resources – non renewable	Use as energy carrier	MJ, net calorific value	0.00E+00	2.98E-05	8.34E-02	8.35E-02
	Used as raw material	MJ, net calorific value	6.90E-01	9.68E-03	9.55E-03	7.10E-01
	TOTAL	MJ, net calorific value	6.90E-01	9.71E-03	9.30E-02	7.93E-01
Secondary materials		kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water		m ³	3.72E-03	1.01E-04	7.36E-02	7.74E-02

Waste production and output flows

Waste production

PARAMETER	UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Hazardous waste disposed	kg	0.00E+00	4.42E-06	0.00E+00	4.42E-06
Non-hazardous waste disposed	kg	0.00E+00	2.37E-05	0.00E+00	2.37E-05
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Outflow mechanisms

PARAMETER	UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	5.76E-04	0.00E+00	5.76E-04
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00



PRODUCT SHRINK FILM FOR SIX 200 ML JUICE BEVERAGE CARTONS

Potential environmental impacts

PARAMETER		UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Global warming potential	Fossil	kg CO ₂ eq.	3.91E-03	1.89E-04	5.63E-04	4.66E-03
	Biogenic	kg CO ₂ eq.	4.26E-04	2.56E-07	4.94E-04	9.20E-04
	Land use and land use changes	kg CO ₂ eq.	6.34E-07	2.07E-09	1.58E-06	2.21E-06
	TOTAL	kg CO ₂ eq.	4.34E-03	1.89E-04	1.06E-03	5.59E-03
Acidification potential		kg SO ₂ eq.	9.66E-06	3.05E-07	1.61E-06	1.16E-05
Eutrophication potential		kg PO ₄ ³⁻ eq.	2.68E-06	3.88E-08	2.89E-07	3.01E-06
Photochemical oxidant formation potential		kg NMVOC eq.	1.59E-05	2.41E-07	1.31E-06	1.75E-05
Abiotic depletion potential- Elements		kg Sb eq.	3.98E-10	8.68E-12	5.13E-11	4.58E-10
Abiotic depletion potential – Fossil resources		MJ, net calorific value	1.47E-01	2.70E-03	8.29E-03	1.58E-01
Water scarcity potential		m ³ eq.	5.59E-03	-3.05E-07	2.08E-04	5.80E-03

Use of resources

PARAMETER		UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Primary energy resources - renewable	Use as energy carrier	MJ, net calorific value	0.00E+00	8.07E-03	1.43E-03	9.50E-03
	Used as raw material	MJ, net calorific value	9.22E-03	3.56E-06	2.50E-06	9.23E-03
	TOTAL	MJ, net calorific value	9.22E-03	8.07E-03	1.43E-03	1.87E-02
Primary energy resources – non renewable	Use as energy carrier	MJ, net calorific value	0.00E+00	7.69E-06	1.58E-02	1.58E-02
	Used as raw material	MJ, net calorific value	1.63E-01	2.86E-03	2.26E-03	1.68E-01
	TOTAL	MJ, net calorific value	1.63E-01	2.87E-03	1.80E-02	1.84E-01
Secondary materials		kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water		m ³	1.36E-03	2.92E-05	3.45E-02	3.58E-02

Waste production and outflows

Waste production

PARAMETER	UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Hazardous waste disposed	kg	0.00E+00	3.18E-07	0.00E+00	3.18E-07
Non-hazardous waste disposed	kg	0.00E+00	8.00E-06	0.00E+00	8.00E-06
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Outflow mechanisms

PARAMETER	UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTAL
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	9.80E-05	0.00E+00	9.80E-05
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

REFERENCES

General Programme Instructions of the International EPD® System. Version 3.0

PCR 2019:13. Packaging. Version 1.1

VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD06201

TECNALIA R&I CERTIFICACION S.L., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:

TECNALIA R&I CERTIFICACION S.L., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:

MACRESAC, S.A. (GRUPO ARMANDO ALVAREZ, S.A.)
Carrer de Vilallonga, 0, km 1
43470 TARRAGONA - SPAIN

for the following product(s):
para el siguiente(s) producto(s):

COLLATION SHRINK FILM FOR MILK AND JUICE
of 317 mm colourless 40 mm, and 180 mm colourless 30 mm.

FILM RETRÁCTIL DE AGRUPACIÓN PARA LECHE Y ZUMOS
de 317 mm sin color 40 mm, y 180 mm sin color de 30 mm.

with registration number **S-P-02654** in the International EPD® System (www.environdec.com)
con número de registro **S-P-02654** en el Sistema Internacional EPD® (www.environdec.com)

it's in conformity with:
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **General Programme Instructions for the International EPD® System v.3.0.**
- **PCR 2019:13 Packaging v. 1.1.**
- **UN CPC 364 Plastic packaging products.**

Issued date / Fecha de emisión: 03/02/2022
Update date / Fecha de actualización: 03/02/2022
Valid until / Válido hasta: 30/01/2027
Serial N° / N° Serie: EPD0600100-E



Carlos Nazabal Alsua
Manager

This certificate is not valid without its related EPD.
Este certificado no es válido sin su correspondiente EPD.

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This certificate is subject to modifications, temporary suspensions and withdrawals by TECNALIA R&I CERTIFICACION.

El estado de vigencia del certificado puede confirmarse mediante consulta en www.tecnaliacertificacion.com.
The validity of this certificate can be checked through consultation in www.tecnaliacertificacion.com.





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