

## ENVIRONMENTAL PRODUCT DECLARATION

# ECOLEAN® AIR ASEPTIC PACKAGES

*FOR AMBIENT  
DISTRIBUTION*



**ecolean**  
a lighter approach to packaging

IN ACCORDANCE WITH ISO 14025

Date of validity 2026-07-14

Date of publication 2017-10-02

Registration number S-P-01054

Revision date 2021-07-15

Programme:

The International EPD® System

[www.environdec.com](http://www.environdec.com)

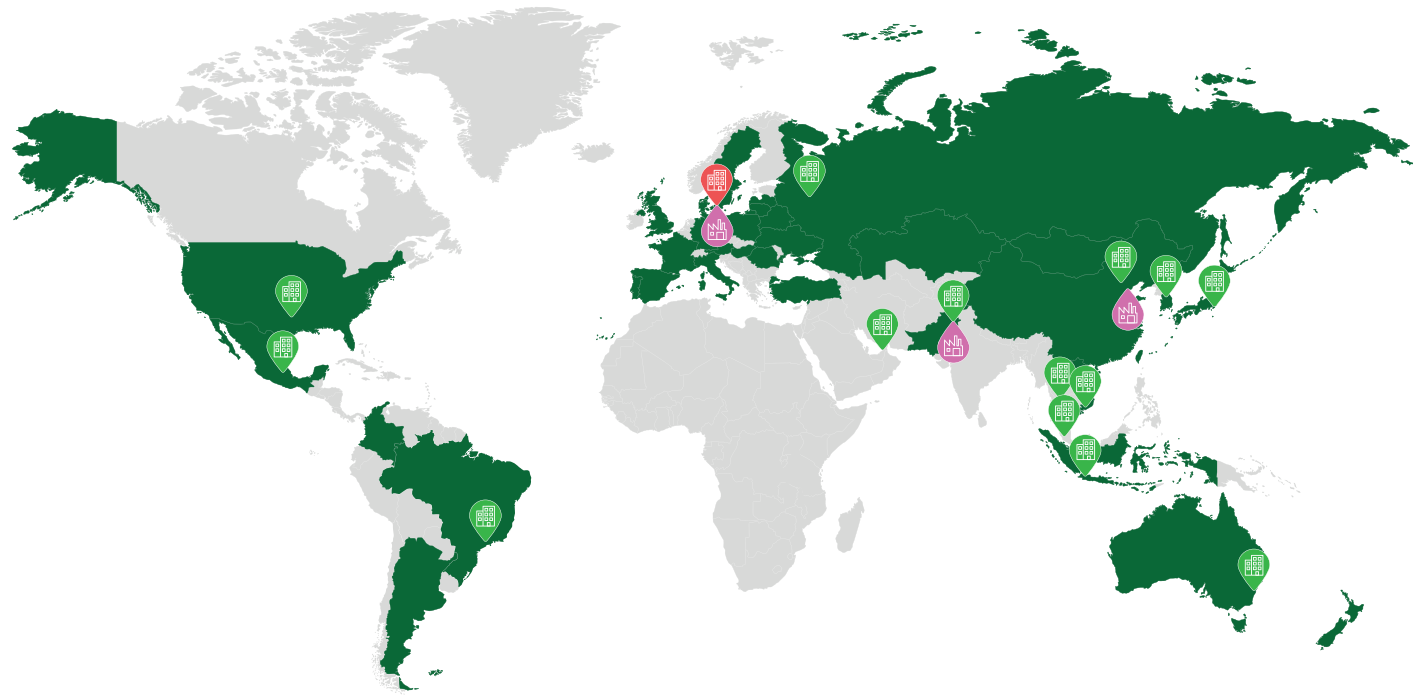
Programme operator:

EPD International AB

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# ECOLEAN LIGHTWEIGHT PACKAGING HAS BECOME A HEAVYWEIGHT ARGUMENT







Ecolean was founded in 1996 in Helsingborg, Sweden, and innovation has always been fundamental for Ecolean. The Ecolean concept is to use a minimal amount of raw materials to produce a unique flexible lightweight package and a filling system for liquid food products.

Today, Ecolean is a fast growing and globally expanding company that continuously develops its products in order to meet new customer and consumer demands. Ecolean is established on the market as a full system supplier producing both filling machines and lightweight packages. Ecolean presently employs more than 450 people, has its headquarter in Helsingborg, Sweden and production sites in Sweden as well as

China and Pakistan. The production of filling machines and manufacturing of packaging material takes place in Helsingborg, and the plants in Sweden, China and Pakistan convert the packaging material film into a range of hermetically sealed ready-to-fill packages in a variety of different sizes.

The plants in Sweden and China are certified according to ISO 14001. Ecolean production and products are in compliance with relevant legislation. Ecolean has commercial activities in 30 countries, the largest markets being China, Russia and Pakistan.

-  Headquarter, sales office
-  Sales offices
-  Production sites
-  Markets served

# COMMUNICATING ENVIRONMENTAL IMPACT

By using the life cycle approach, Ecolean can identify the areas with the most environmental impact and work to reduce it. The fundamental premise behind the Ecolean production process is the minimisation and efficient use of raw materials and energy, from the very start.

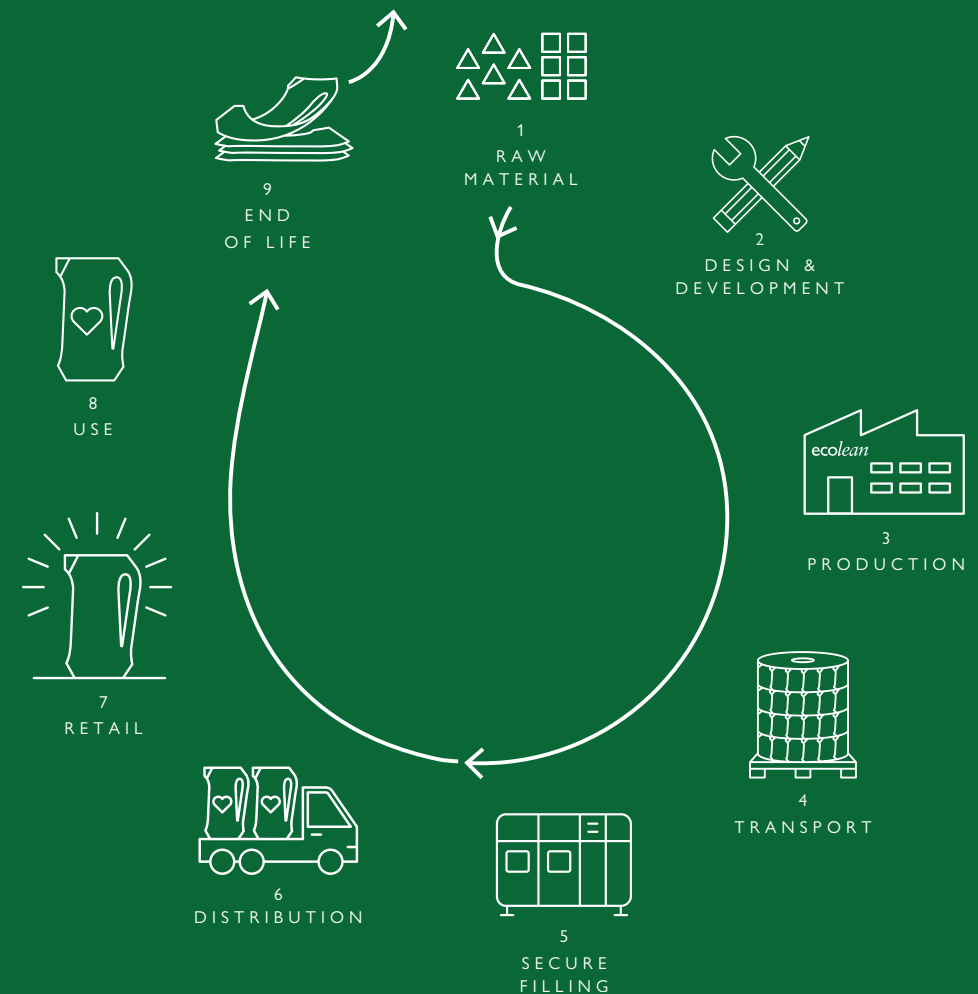
Ecolean believes in using less raw material from the start. Up to 33% of the package consists of chalk (dolomite or calcium carbonate), a natural mineral. By using chalk as a filler, the lightweight Ecolean package uses a lower amount of plastic, while providing strength and stiffness, to the package.

Reducing the amount of packaging material used, transported and disposed of, benefits the entire product life cycle.

The Environmental Product Declaration (EPD) is an independently verified and registered document based on verified life-cycle assessment (LCA) data. By using EPDs in accordance with the international EPD system, Ecolean can communicate the environmental performance of its products in a transparent way.

This EPD follows the Product Category Rules (PCR) for Closable Flexible Plastic Packaging UN CPC 36490 2017:05, version 1.11, as well as the principles and procedures of ISO 14025:2006.

The EPD has been externally validated by an independent verifier approved by the technical committee of EPD International.





125ml



200ml



Clear 200ml



250ml



Clear 250ml



500ml



750ml



1000ml

## ECOLEAN® AIR ASEPTIC UNIQUE, EYE- CATCHING AND CONVENIENT TO USE

Aseptic packaging brings healthy, flavourful and exciting food products to people all over the world – without the limitations of refrigerated distribution. These products can travel long distances, handle harsh environments and withstand long-term storage at ambient temperatures.

The Ecolean® Air Aseptic lightweight package is suitable, with its unique and eye-catching shape, for filling products such as; white milk, flavoured milk, drinking yoghurts, juice drinks, nectars, ice tea etc.

Ecolean® Air Aseptic packages are available in six different sizes: 125ml, 200ml, 250ml, 500ml, 750ml and 1000ml. The aseptic packages are also available in transparent versions, Ecolean® Air Aseptic Clear in the sizes 200ml and 250ml.

Total weight	125ml	200ml	250ml	500ml	750ml	1000ml	200ml Clear	250ml Clear
g/package	5.0	6.0	6.5	9.8	12.0	14.3	4.5	5.0

**Ecolean® Air Aseptic**

The package format is a stand-up pouch, with a multilayer structure with light and gas barriers that protects its content. The Ecolean® Air Aseptic package is produced in a three step process. First, a multilayer film is produced in a co-extrusion process, the film is then printed and in the final step folded and converted into a hermetically sealed, pre-sterilised ready-to-fill package on a reel. These reels can be inserted into an Ecolean filling machine at the customer site.

**Sterilisation of aseptic packages**

In order to ensure the highest possible food safety, Ecolean has chosen a non-chemical sterilisation alternative in order to insure that food contact surfaces are never exposed to any chemicals. The inside of the package is sterilised under secure and controlled conditions with the use of electron-beam technology at the Ecolean production site.

**Materials**

The packages are made of:

- Polyolefins (PE, PP)
- Dolomite as a filler, in order to reduce the amount of plastic
- Pigments for colour and light protection
- Barrier layer (EVOH) to protect the content from oxygen

All raw material used are of food grade quality. The packages are free from substances of very high concern (SVHC). The products contains no substances from the REACH Candidate list (of 15.06.2018). The packaging material does not contain any biodegradable materials.

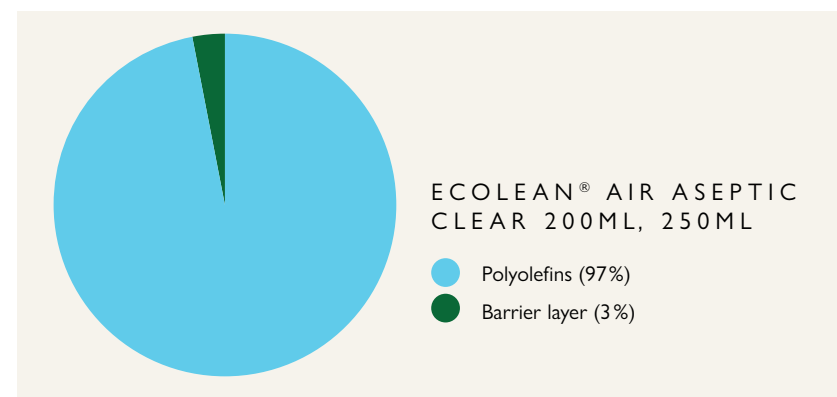
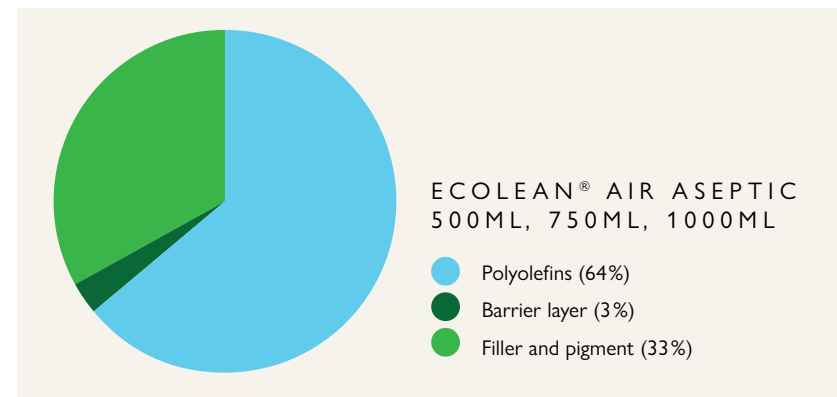
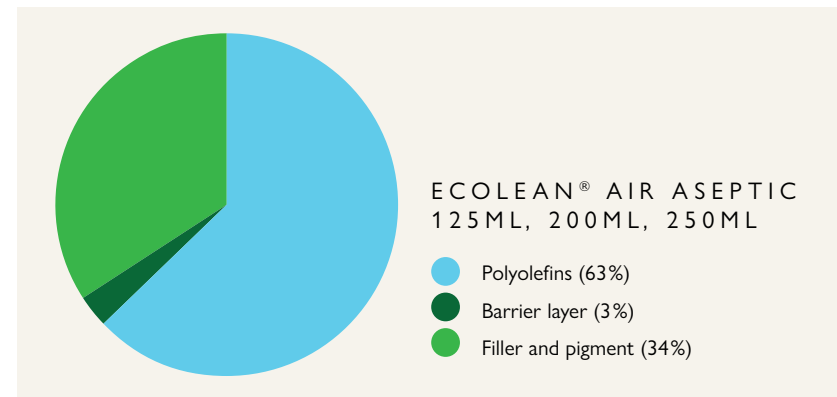
**Certifications**

The Certification to the Standard verifies technical performance, assists manufacturers' fulfilment of legal obligations, and helps provide protection to the consumer. The packaging material is also certified according BRC packaging and ISO 22000 standards.

BRC packaging and ISO 22000 specifies requirements for a food safety management system where an organisation in the food chain needs to demonstrate its ability to control food safety hazards in order to ensure that food is safe at the time of human consumption.

**Optional reclosing device**

The SnapQuick™ is a reclosing device, easy enough for everyone to use. SnapQuick™ is lightweight and a smart integrated part of the package. You just fold and snap! The SnapQuick™ is available for 500ml, 750ml and 1000ml packages. The environmental impact of the SnapQuick™ is presented separately in this EPD. The SnapQuick™ is made of PET-film and weighs 0.38g/piece.



# ENVIRONMENTAL PRODUCT DECLARATION

This EPD's boundary is cradle to grave.

## Upstream

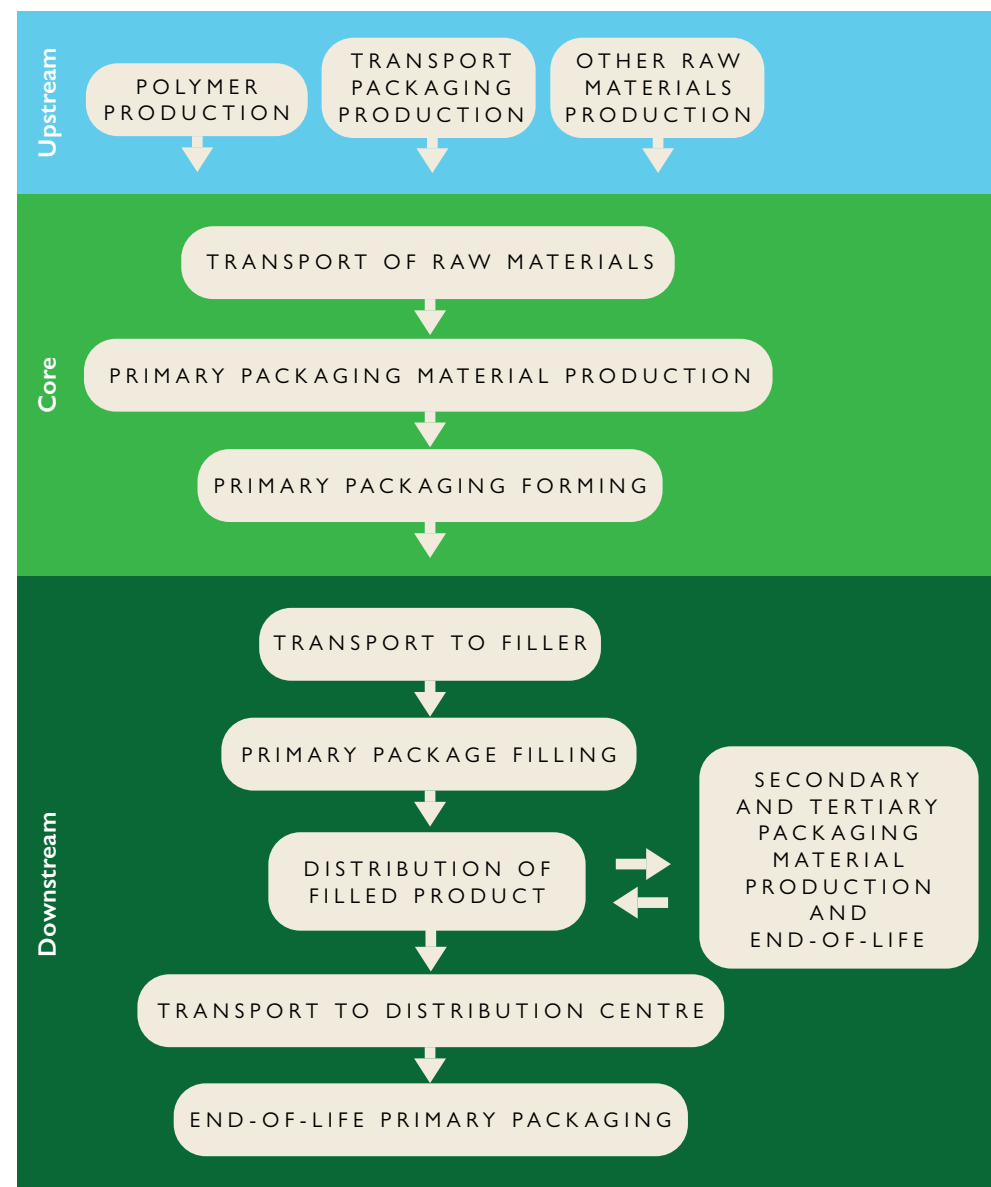
The upstream processes include all production processes for raw materials used in the packaging production. Generic data from Plastics Europe 2014, Ecoinvent database 3.3, FEFCO 2015, etc. has been used. The upstream process is identical for all markets analysed.

## Core

The production of Ecolan packages (primary packaging) is located in Helsingborg, Sweden. The core processes include transportation of raw materials to the Ecolan production site, manufacturing of the ready-to-fill packages, wound on reels. The reels are covered by plastic wrapping and placed on wooden pallets. The core process also include waste treatment for production waste and impacts

due to the production of electricity and fuels used in the production process.

Amounts of raw materials and energy consumption, as well as transport distances have been taken directly from the production site of Ecolan, Helsingborg, in 2019. Other site specific data from the Ecolan site in Helsingborg, has been used for the converting process (biogas, chemicals and water) and refers to year 2019 and are valid for a global market. Database data from the GaBi 10 LCA software 2020 have been used for the production of electricity (Swedish electricity from hydropower 14.2 g CO<sub>2</sub>-eq/kWh) and production and combustion of biogas. Chemicals (ink, etc.) are used in very minimal amounts and data from Ecoinvent database 3.3, 2015 is used. The core process is identical for all markets analysed.



*Infographics showing the boundaries and stages in the described LCA process.*

### Downstream

The downstream processes include transport of the packaging material to a customer, where the filling of the product takes place. At the customer's site (a dairy or beverage producer) the packages enter an Ecolean filling machine for ambient products. The packages are cut open, filled with the product and sealed in the machine. The impact from the production of the filled product, e.g. milk, juice, etc. is not part of the scope for this EPD.

Data for the filling process (the consumption of electricity, steam, chemicals and water) is based on direct measurements, provided by Ecolean (2016). For the production the energy and chemicals used in the filling process, database data from the GaBi 9 LCA software 2020 has been applied.

The downstream processes also include the distribution system (production and end-of-life of secondary and tertiary packaging), transport from the filling of product to a distribution centre and finally primary packaging end-of-life. The secondary package is defined by the customer however in this EPD it is assumed to be a corrugated board box, sealed by tape and stacked on a EUR wooden pallet.

The data used for production of the secondary and tertiary packaging materials (corrugated board and plastic PE film) are based on FEFCO 2015 and PlasticsEurope 2014 databases. The end of life scenario for the flexible plastic packages is varying depending on local conditions. The package should be

sorted as plastic packaging when appropriate system is available or sent for energy recovery depending on local conditions. The last option would be landfill. The package can be recycled, used for injection moulding into some plastic details. In line with the PCR, only the transport to the recycling site is taken into consideration.

### The European market

For the transport of the packages to Ecolean's customers, 1,700 km by truck has been applied. This is an estimation which should represent an average for a customer in Europe. The European electricity mix corresponds to a GWP-factor of 381 g CO<sub>2</sub>-eq/kWh. For the transport of the filled packages for distribution, an estimated distance of 150 km was used. The weight of the product (e.g. milk, juice, etc.) was included.

The mix of incineration, material recycling and landfill for the primary packaging depends upon the market and is for the European market based on statistics (Eurostat 2013 – Plastic packaging). The assumptions made for the end of life are 32% incineration, 37% recycling and 31% landfill.

### The Russian market

For the transport of the packaging to Ecolean's customers, 1,800 km by truck and 400 km by ship has been applied as an estimation.

The Russian electricity mix corresponds to a GWP-factor of 572 g CO<sub>2</sub>-eq/kWh. For the transport of the filled packages for distribu-

tion, an estimated distance of 150 km was used. The weight of the product (e.g. milk, juice, etc.) was included.

The mix of incineration, material recycling and landfill for the primary packaging depends upon the market. Due to lack of available data, the mix for Russia has been based on global statistics (Ellen MacArthur Foundation). The assumptions made for the end of life are 14% incineration, 14% recycling and 72% landfill.

### Geographic scope

The Upstream and Core processes in this EPD relates to the plants located in Helsingborg, Sweden. The Downstream process is calculated for two different markets: Europe and Russia.

### Functional unit

The functional/declared unit for this PCR is 1,000 flexible plastic packages for a certain type of contained product (e.g. milk or juice) in a defined volume (e.g. 1-litre) which is sealed at the point of filling of the contained product and delivered to a distribution centre.

### Cut off criteria

All raw material inputs larger than 1% have been included.

*The CML category indicators are used for the impact assessment.*

## ENVIRONMENTAL PERFORMANCE – ECOLEAN® AIR ASEPTIC THE EUROPEAN MARKET

INDICATORS	UNIT*	Ecolean® Air Aseptic															
		125ml				200ml				250ml				500ml			
		Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total
Global warming potential (GWP): Fossil	kg CO <sub>2</sub> eq	8.22E+00	9.14E-01	5.28E+00	1.44E+01	9.84E+00	1.09E+00	7.02E+00	1.80E+01	1.07E+01	1.24E+00	8.10E+00	2.00E+01	1.61E+01	2.08E+00	1.43E+01	3.25E+01
Global warming potential (GWP): Biogenic	kg CO <sub>2</sub> eq	5.97E-01	8.75E-01	2.92E+00	4.39E+00	7.09E-01	1.07E+00	4.52E+00	6.31E+00	7.71E-01	1.22E+00	5.60E+00	7.59E+00	1.15E+00	2.17E+00	1.11E+01	1.44E+01
Global warming potential (GWP): LUC	kg CO <sub>2</sub> eq	3.30E-05	5.81E-03	6.85E-03	1.27E-02	3.74E-05	7.12E-03	8.63E-03	1.58E-02	3.90E-05	7.83E-03	9.67E-03	1.75E-02	5.92E-05	1.31E-02	1.60E-02	2.92E-02
Global warming potential (GWP): Total	kg CO <sub>2</sub> eq	8.82E+00	1.79E+00	8.21E+00	1.88E+01	1.05E+01	2.17E+00	1.16E+01	2.43E+01	1.15E+01	2.46E+00	1.37E+01	2.76E+01	1.73E+01	4.26E+00	2.54E+01	4.69E+01
Acidification potential (AP)	kg SO <sub>2</sub> eq	5.74E-02	4.91E-03	8.55E-03	7.09E-02	6.84E-02	5.91E-03	1.17E-02	8.60E-02	7.45E-02	6.68E-03	1.37E-02	9.49E-02	1.10E-01	1.12E-02	2.48E-02	1.46E-01
Eutrophication potential (EP)	kg PO <sub>4</sub> eq	9.51E-03	3.14E-03	2.07E-03	1.47E-02	1.13E-02	3.77E-03	2.92E-03	1.80E-02	1.24E-02	4.37E-03	3.47E-03	2.02E-02	1.84E-02	7.61E-03	6.40E-03	3.24E-02
Photochemical ozone creation potential (POCP)	kg NMVOC eq	2.84E-02	1.32E-02	6.64E-03	4.82E-02	3.39E-02	1.38E-02	9.73E-03	5.75E-02	3.69E-02	1.44E-02	1.18E-02	6.30E-02	5.56E-02	2.75E-02	2.25E-02	1.06E-01
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	2.26E-05	2.34E-06	2.78E-07	2.52E-05	2.68E-05	2.81E-06	2.96E-07	3.00E-05	2.93E-05	3.26E-06	3.05E-07	3.29E-05	4.27E-05	5.76E-06	4.84E-07	4.90E-05
Abiotic depletion potential for fossil resources (ADPF)	MJ	2.57E+02	1.54E+01	4.65E+01	3.19E+02	3.08E+02	1.85E+01	6.65E+01	3.93E+02	3.35E+02	2.11E+01	7.96E+01	4.35E+02	5.09E+02	3.57E+01	1.51E+02	6.95E+02
Water scarcity	m <sup>3</sup> world eq	2.18E+00	1.90E-01	2.02E+00	4.39E+00	2.58E+00	2.28E-01	2.93E+00	5.74E+00	2.82E+00	2.66E-01	3.53E+00	6.61E+00	4.11E+00	4.67E-01	6.75E+00	1.13E+01
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	6.45E+00	1.89E+01	6.65E+00	3.20E+01	7.71E+00	2.21E+01	8.37E+00	3.82E+01	8.33E+00	2.43E+01	9.50E+00	4.22E+01	1.24E+01	4.31E+01	1.73E+01	7.27E+01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	6.45E+00	1.89E+01	6.65E+00	3.20E+01	7.71E+00	2.21E+01	8.37E+00	3.82E+01	8.33E+00	2.43E+01	9.50E+00	4.22E+01	1.24E+01	4.31E+01	1.73E+01	7.27E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	2.67E+02	1.59E+01	5.20E+01	3.35E+02	3.20E+02	1.91E+01	7.34E+01	4.12E+02	3.47E+02	2.19E+01	8.74E+01	4.57E+02	5.28E+02	3.70E+01	1.65E+02	7.30E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	2.67E+02	1.67E+01	5.20E+01	3.36E+02	3.20E+02	2.01E+01	7.34E+01	4.13E+02	3.47E+02	2.30E+01	8.74E+01	4.58E+02	5.28E+02	3.89E+01	1.65E+02	7.32E+02
Use of secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m <sup>3</sup>	6.74E-02	3.70E-02	5.69E-02	1.61E-01	8.01E-02	4.25E-02	8.19E-02	2.04E-01	8.71E-02	4.64E-02	9.83E-02	2.32E-01	1.27E-01	8.16E-02	1.89E-01	3.98E-01
Hazardous waste disposed (HWD)	kg	3.52E-09	2.08E-07	4.50E-07	6.61E-07	4.13E-09	2.48E-07	5.69E-07	8.21E-07	4.34E-09	2.69E-07	6.37E-07	9.11E-07	6.50E-09	4.04E-07	1.04E-06	1.45E-06
Non-hazardous waste disposed (NHWD)	kg	2.85E-03	7.88E-03	1.70E+00	1.71E+00	3.39E-03	9.48E-03	2.30E+00	2.31E+00	3.58E-03	1.05E-02	2.67E+00	2.69E+00	5.37E-03	1.86E-02	4.72E+00	4.74E+00
Radioactive waste disposed (RWD)	kg	1.12E-05	1.06E-05	2.04E-03	2.06E-03	1.15E-05	1.29E-05	2.55E-03	2.57E-03	1.16E-05	1.41E-05	2.89E-03	2.91E-03	1.75E-05	2.32E-05	5.28E-03	5.32E-03
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MFR)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for energy recovery (MER)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy (EEE)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (EET)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

\* Unit per declared unit

All results in the EPD are written in logarithmic base of ten. Reading example: 5.2E-03 = 5.2\*10<sup>-3</sup> = 0.0052.



## ENVIRONMENTAL PERFORMANCE – ECOLEAN® AIR ASEPTIC THE EUROPEAN MARKET

INDICATORS	UNIT*	Ecolean® Air Aseptic															
		750ml				1000ml				Clear 200ml				Clear 250ml			
		Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total
Global warming potential (GWP): Fossil	kg CO <sub>2</sub> eq	1.97E+01	2.23E+00	1.95E+01	4.15E+01	2.35E+01	2.68E+00	2.48E+01	5.10E+01	8.46E+00	9.51E-01	7.07E+00	1.65E+01	9.39E+00	1.09E+00	8.23E+00	1.87E+01
Global warming potential (GWP): Biogenic	kg CO <sub>2</sub> eq	1.40E+00	2.19E+00	1.64E+01	2.00E+01	1.66E+00	2.61E+00	2.18E+01	2.60E+01	3.44E-01	1.06E+00	4.51E+00	5.91E+00	3.80E-01	1.20E+00	5.57E+00	7.15E+00
Global warming potential (GWP): LUC	kg CO <sub>2</sub> eq	7.19E-05	1.42E-02	2.09E-02	3.53E-02	8.11E-05	1.69E-02	2.59E-02	4.29E-02	4.19E-05	5.95E-03	7.26E-03	1.33E-02	4.56E-05	6.61E-03	8.29E-03	1.50E-02
Global warming potential (GWP): Total	kg CO <sub>2</sub> eq	2.11E+01	4.43E+00	3.60E+01	6.15E+01	2.51E+01	5.31E+00	4.66E+01	7.70E+01	8.80E+00	2.01E+00	1.16E+01	2.24E+01	9.77E+00	2.30E+00	1.38E+01	2.59E+01
Acidification potential (AP)	kg SO <sub>2</sub> eq	1.35E-01	1.20E-02	3.45E-02	1.81E-01	1.60E-01	1.44E-02	4.43E-02	2.19E-01	1.99E-02	5.15E-03	1.09E-02	3.59E-02	2.20E-02	5.89E-03	1.29E-02	4.08E-02
Eutrophication potential (EP)	kg PO <sub>4</sub> eq	2.25E-02	7.75E-03	9.09E-03	3.93E-02	2.68E-02	9.37E-03	1.18E-02	4.79E-02	5.32E-03	3.64E-03	2.80E-03	1.18E-02	5.90E-03	4.22E-03	3.35E-03	1.35E-02
Photochemical ozone creation potential (POCP)	kg NMVOC eq	6.81E-02	2.78E-02	3.26E-02	1.28E-01	8.10E-02	3.94E-02	4.26E-02	1.63E-01	2.99E-02	1.36E-02	9.52E-03	5.30E-02	3.31E-02	1.41E-02	1.16E-02	5.88E-02
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	5.25E-05	5.81E-06	5.26E-07	5.88E-05	6.23E-05	7.01E-06	5.69E-07	6.99E-05	8.28E-08	2.79E-06	2.86E-07	3.16E-06	9.27E-08	3.24E-06	2.97E-07	3.63E-06
Abiotic depletion potential for fossil resources (ADPF)	MJ	6.23E+02	3.76E+01	2.15E+02	8.76E+02	7.42E+02	4.54E+01	2.80E+02	1.07E+03	3.18E+02	1.66E+01	6.45E+01	3.99E+02	3.52E+02	1.91E+01	7.76E+01	4.49E+02
Water scarcity	m <sup>3</sup> world eq	5.04E+00	4.68E-01	9.72E+00	1.52E+01	5.97E+00	5.70E-01	1.27E+01	1.92E+01	3.76E-02	2.27E-01	2.98E+00	3.24E+00	3.82E-02	2.65E-01	3.59E+00	3.89E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	1.52E+01	4.77E+01	2.29E+01	8.57E+01	1.80E+01	5.57E+01	2.85E+01	1.02E+02	4.31E+00	2.13E+01	8.26E+00	3.38E+01	4.82E+00	2.37E+01	9.39E+00	3.79E+01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	1.52E+01	4.77E+01	2.29E+01	8.57E+01	1.80E+01	5.57E+01	2.85E+01	1.02E+02	4.31E+00	2.13E+01	8.26E+00	3.38E+01	4.82E+00	2.37E+01	9.39E+00	3.79E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	6.46E+02	3.89E+01	2.35E+02	9.20E+02	7.70E+02	4.70E+01	3.04E+02	1.12E+03	3.28E+02	1.72E+01	7.14E+01	4.17E+02	3.64E+02	1.98E+01	8.54E+01	4.69E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	6.46E+02	4.09E+01	2.35E+02	9.22E+02	7.70E+02	4.94E+01	3.04E+02	1.12E+03	3.28E+02	1.81E+01	7.14E+01	4.18E+02	3.64E+02	2.09E+01	8.54E+01	4.70E+02
Use of secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m <sup>3</sup>	1.56E-01	9.31E-02	2.71E-01	5.20E-01	1.85E-01	1.08E-01	3.53E-01	6.46E-01	5.04E-03	4.05E-02	8.24E-02	1.28E-01	5.62E-03	4.50E-02	9.91E-02	1.50E-01
Hazardous waste disposed (HWD)	kg	7.93E-09	4.94E-07	1.36E-06	1.86E-06	9.16E-09	5.87E-07	1.68E-06	2.28E-06	3.52E-09	1.59E-07	4.64E-07	6.26E-07	3.93E-09	1.76E-07	5.31E-07	7.11E-07
Non-hazardous waste disposed (NHWD)	kg	6.55E-03	1.98E-02	6.51E+00	6.54E+00	7.65E-03	2.33E-02	8.32E+00	8.35E+00	2.85E-03	9.03E-03	2.48E+00	2.49E+00	3.21E-03	1.00E-02	2.89E+00	2.91E+00
Radioactive waste disposed (RWD)	kg	2.10E-05	2.60E-05	6.97E-03	7.02E-03	2.18E-05	3.08E-05	8.67E-03	8.72E-03	1.12E-05	1.04E-05	2.55E-03	2.57E-03	1.14E-05	1.16E-05	2.89E-03	2.91E-03
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MFR)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for energy recovery (MER)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy (EEE)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (EET)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

\* Unit per declared unit

All results in the EPD are written in logarithmic base of ten. Reading example: 5.2E-03 = 5.2\*10<sup>-3</sup> = 0.0052.

## ENVIRONMENTAL PERFORMANCE – ECOLEAN® AIR ASEPTIC THE RUSSIAN MARKET

INDICATORS	UNIT*	Ecolean® Air Aseptic															
		125ml				200ml				250ml				500ml			
		Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total
Global warming potential (GWP): Fossil	kg CO <sub>2</sub> eq	8.22E+00	9.14E-01	5.22E+00	1.44E+01	9.84E+00	1.09E+00	6.93E+00	1.79E+01	1.07E+01	1.24E+00	7.99E+00	1.99E+01	1.61E+01	2.08E+00	1.42E+01	3.24E+01
Global warming potential (GWP): Biogenic	kg CO <sub>2</sub> eq	5.97E-01	8.75E-01	3.57E+00	5.05E+00	7.09E-01	1.07E+00	5.67E+00	7.46E+00	7.71E-01	1.22E+00	7.08E+00	9.07E+00	1.15E+00	2.17E+00	1.41E+01	1.74E+01
Global warming potential (GWP): LUC	kg CO <sub>2</sub> eq	3.30E-05	5.81E-03	6.62E-03	1.25E-02	3.74E-05	7.12E-03	8.49E-03	1.56E-02	3.90E-05	7.83E-03	9.58E-03	1.75E-02	5.92E-05	1.31E-02	1.59E-02	2.90E-02
Global warming potential (GWP): Total	kg CO <sub>2</sub> eq	8.82E+00	1.79E+00	8.80E+00	1.94E+01	1.05E+01	2.17E+00	1.26E+01	2.53E+01	1.15E+01	2.46E+00	1.51E+01	2.90E+01	1.73E+01	4.26E+00	2.83E+01	4.98E+01
Acidification potential (AP)	kg SO <sub>2</sub> eq	5.74E-02	4.91E-03	1.37E-02	7.61E-02	6.84E-02	5.91E-03	1.74E-02	9.17E-02	7.45E-02	6.68E-03	1.97E-02	1.01E-01	1.10E-01	1.12E-02	3.43E-02	1.56E-01
Eutrophication potential (EP)	kg PO <sub>4</sub> eq	9.51E-03	3.14E-03	3.24E-03	1.59E-02	1.13E-02	3.77E-03	4.47E-03	1.96E-02	1.24E-02	4.37E-03	5.25E-03	2.20E-02	1.84E-02	7.61E-03	9.54E-03	3.55E-02
Photochemical ozone creation potential (POCP)	kg NMVOC eq	2.84E-02	1.32E-02	1.16E-02	5.31E-02	3.39E-02	1.38E-02	1.56E-02	6.34E-02	3.69E-02	1.44E-02	1.82E-02	6.95E-02	5.56E-02	2.75E-02	3.31E-02	1.16E-01
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	2.26E-05	2.34E-06	3.72E-07	2.53E-05	2.68E-05	2.81E-06	4.92E-07	3.01E-05	2.93E-05	3.26E-06	5.69E-07	3.31E-05	4.27E-05	5.76E-06	1.04E-06	4.95E-05
Abiotic depletion potential for fossil resources (ADPF)	MJ	2.57E+02	1.54E+01	5.49E+01	3.28E+02	3.08E+02	1.85E+01	7.60E+01	4.03E+02	3.35E+02	2.11E+01	8.98E+01	4.46E+02	5.09E+02	3.57E+01	1.67E+02	7.12E+02
Water scarcity	m <sup>3</sup> world eq	2.18E+00	1.90E-01	2.27E+00	4.63E+00	2.58E+00	2.28E-01	3.26E+00	6.08E+00	2.82E+00	2.66E-01	3.92E+00	7.00E+00	4.11E+00	4.67E-01	7.44E+00	1.20E+01
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	6.45E+00	1.89E+01	4.34E+00	2.97E+01	7.71E+00	2.21E+01	6.15E+00	3.60E+01	8.33E+00	2.43E+01	7.34E+00	4.00E+01	1.24E+01	4.31E+01	1.39E+01	6.94E+01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	6.45E+00	1.89E+01	4.34E+00	2.97E+01	7.71E+00	2.21E+01	6.15E+00	3.60E+01	8.33E+00	2.43E+01	7.34E+00	4.00E+01	1.24E+01	4.31E+01	1.39E+01	6.94E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	2.67E+02	1.59E+01	5.96E+01	3.43E+02	3.20E+02	1.91E+01	8.23E+01	4.21E+02	3.47E+02	2.19E+01	9.70E+01	4.66E+02	5.28E+02	3.70E+01	1.81E+02	7.46E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	2.67E+02	1.67E+01	5.96E+01	3.43E+02	3.20E+02	2.01E+01	8.23E+01	4.22E+02	3.47E+02	2.30E+01	9.70E+01	4.67E+02	5.28E+02	3.89E+01	1.81E+02	7.48E+02
Use of secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m <sup>3</sup>	6.74E-02	3.70E-02	5.44E-02	1.59E-01	8.01E-02	4.25E-02	7.81E-02	2.01E-01	8.71E-02	4.64E-02	9.38E-02	2.27E-01	1.27E-01	8.16E-02	1.80E-01	3.89E-01
Hazardous waste disposed (HWD)	kg	3.52E-09	2.08E-07	4.75E-07	6.87E-07	4.13E-09	2.48E-07	6.00E-07	8.53E-07	4.34E-09	2.69E-07	6.72E-07	9.46E-07	6.50E-09	4.04E-07	1.09E-06	1.51E-06
Non-hazardous waste disposed (NHWD)	kg	2.85E-03	7.88E-03	3.88E+00	3.89E+00	3.39E-03	9.48E-03	5.27E+00	5.28E+00	3.58E-03	1.05E-02	6.12E+00	6.13E+00	5.37E-03	1.86E-02	1.08E+01	1.08E+01
Radioactive waste disposed (RWD)	kg	1.12E-05	1.06E-05	1.77E-03	1.79E-03	1.15E-05	1.29E-05	2.29E-03	2.31E-03	1.16E-05	1.41E-05	2.63E-03	2.66E-03	1.75E-05	2.32E-05	4.88E-03	4.92E-03
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MFR)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for energy recovery (MER)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy (EEE)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (EET)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

\* Unit per declared unit

All results in the EPD are written in logarithmic base of ten. Reading example: 5.2E-03 = 5.2\*10<sup>-3</sup> = 0.0052.

## ENVIRONMENTAL PERFORMANCE – ECOLEAN® AIR ASEPTIC THE RUSSIAN MARKET

INDICATORS	UNIT*	Ecolean® Air Aseptic															
		750ml				1000ml				Clear 200ml				Clear 250ml			
		Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total	Upstream	Core	Downstream	Total
Global warming potential (GWP): Fossil	kg CO <sub>2</sub> eq	1.97E+01	2.23E+00	1.94E+01	4.13E+01	2.35E+01	2.68E+00	2.46E+01	5.07E+01	8.46E+00	9.51E-01	6.90E+00	1.63E+01	9.39E+00	1.09E+00	8.03E+00	1.85E+01
Global warming potential (GWP): Biogenic	kg CO <sub>2</sub> eq	1.40E+00	2.19E+00	2.11E+01	2.47E+01	1.66E+00	2.61E+00	2.81E+01	3.23E+01	3.44E-01	1.06E+00	5.66E+00	7.06E+00	3.80E-01	1.20E+00	7.05E+00	8.64E+00
Global warming potential (GWP): LUC	kg CO <sub>2</sub> eq	7.19E-05	1.42E-02	2.10E-02	3.53E-02	8.11E-05	1.69E-02	2.62E-02	4.32E-02	4.19E-05	5.95E-03	7.07E-03	1.31E-02	4.56E-05	6.61E-03	8.15E-03	1.48E-02
Global warming potential (GWP): Total	kg CO <sub>2</sub> eq	2.11E+01	4.43E+00	4.05E+01	6.60E+01	2.51E+01	5.31E+00	5.27E+01	8.31E+01	8.80E+00	2.01E+00	1.26E+01	2.34E+01	9.77E+00	2.30E+00	1.51E+01	2.72E+01
Acidification potential (AP)	kg SO <sub>2</sub> eq	1.35E-01	1.20E-02	4.55E-02	1.92E-01	1.60E-01	1.44E-02	5.67E-02	2.31E-01	1.99E-02	5.15E-03	1.61E-02	4.11E-02	2.20E-02	5.89E-03	1.84E-02	4.63E-02
Eutrophication potential (EP)	kg PO <sub>4</sub> eq	2.25E-02	7.75E-03	1.34E-02	4.36E-02	2.68E-02	9.37E-03	1.72E-02	5.33E-02	5.32E-03	3.64E-03	4.29E-03	1.32E-02	5.90E-03	4.22E-03	5.09E-03	1.52E-02
Photochemical ozone creation potential (POCP)	kg NMVOC eq	6.81E-02	2.78E-02	4.58E-02	1.42E-01	8.10E-02	3.94E-02	5.85E-02	1.79E-01	2.99E-02	1.36E-02	1.47E-02	5.82E-02	3.31E-02	1.41E-02	1.73E-02	6.46E-02
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	5.25E-05	5.81E-06	1.42E-06	5.97E-05	6.23E-05	7.01E-06	1.80E-06	7.11E-05	8.28E-08	2.79E-06	4.83E-07	3.36E-06	9.27E-08	3.24E-06	5.62E-07	3.89E-06
Abiotic depletion potential for fossil resources (ADPF)	MJ	6.23E+02	3.76E+01	2.35E+02	8.96E+02	7.42E+02	4.54E+01	3.04E+02	1.09E+03	3.18E+02	1.66E+01	7.37E+01	4.08E+02	3.52E+02	1.91E+01	8.76E+01	4.59E+02
Water scarcity	m <sup>3</sup> world eq	5.04E+00	4.68E-01	1.07E+01	1.62E+01	5.97E+00	5.70E-01	1.39E+01	2.05E+01	3.76E-02	2.27E-01	3.34E+00	3.60E+00	3.82E-02	2.65E-01	4.01E+00	4.31E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	1.52E+01	4.77E+01	1.98E+01	8.26E+01	1.80E+01	5.57E+01	2.57E+01	9.94E+01	4.31E+00	2.13E+01	6.05E+00	3.16E+01	4.82E+00	2.37E+01	7.25E+00	3.58E+01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	1.52E+01	4.77E+01	1.98E+01	8.26E+01	1.80E+01	5.57E+01	2.57E+01	9.94E+01	4.31E+00	2.13E+01	6.05E+00	3.16E+01	4.82E+00	2.37E+01	7.25E+00	3.58E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	6.46E+02	3.89E+01	2.54E+02	9.39E+02	7.70E+02	4.70E+01	3.27E+02	1.14E+03	3.28E+02	1.72E+01	8.00E+01	4.26E+02	3.64E+02	1.98E+01	9.48E+01	4.79E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	6.46E+02	4.09E+01	2.54E+02	9.41E+02	7.70E+02	4.94E+01	3.27E+02	1.15E+03	3.28E+02	1.81E+01	8.00E+01	4.26E+02	3.64E+02	2.09E+01	9.48E+01	4.80E+02
Use of secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m <sup>3</sup>	1.56E-01	9.31E-02	2.58E-01	5.08E-01	1.85E-01	1.08E-01	3.37E-01	6.30E-01	5.04E-03	4.05E-02	7.85E-02	1.24E-01	5.62E-03	4.50E-02	9.43E-02	1.45E-01
Hazardous waste disposed (HWD)	kg	7.93E-09	4.94E-07	1.43E-06	1.93E-06	9.16E-09	5.87E-07	1.77E-06	2.36E-06	3.52E-09	1.59E-07	4.91E-07	6.53E-07	3.93E-09	1.76E-07	5.62E-07	7.41E-07
Non-hazardous waste disposed (NHWD)	kg	6.55E-03	1.98E-02	1.49E+01	1.49E+01	7.65E-03	2.33E-02	1.91E+01	1.91E+01	2.85E-03	9.03E-03	5.68E+00	5.69E+00	3.21E-03	1.00E-02	6.65E+00	6.66E+00
Radioactive waste disposed (RWD)	kg	2.10E-05	2.60E-05	6.60E-03	6.64E-03	2.18E-05	3.08E-05	8.32E-03	8.37E-03	1.12E-05	1.04E-05	2.29E-03	2.31E-03	1.14E-05	1.16E-05	2.64E-03	2.66E-03
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MFR)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for energy recovery (MER)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy (EEE)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (EET)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

\* Unit per declared unit

All results in the EPD are written in logarithmic base of ten. Reading example: 5.2E-03 = 5.2\*10<sup>-3</sup> = 0.0052.

## ENVIRONMENTAL PERFORMANCE SNAPQUICK™

Per 1,000 SnapQuick™



INDICATORS	UNIT*	SnapQuick
		Total
Global warming potential (GWP): Fossil	kg CO <sub>2</sub> eq	1.89E+00
Global warming potential (GWP): Biogenic	kg CO <sub>2</sub> eq	1.21E-01
Global warming potential (GWP): LUC	kg CO <sub>2</sub> eq	6.47E-04
Global warming potential (GWP): Total	kg CO <sub>2</sub> eq	2.01E+00
Acidification potential (AP)	kg SO <sub>2</sub> eq	2.11E-03
Eutrophication potential (EP)	kg PO <sub>4</sub> eq	2.91E-04
Photochemical ozone creation potential (POCP)	kg NMVOC eq	4.01E-03
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	3.88E-07
Abiotic depletion potential for fossil resources (ADPF)	MJ	4.93E+01
Water scarcity	m <sup>3</sup> world eq	5.65E-02
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	1.66E+00
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	1.66E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	5.00E+01
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	5.00E+01
Use of secondary material (SM)	kg	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0.00E+00
Net use of fresh water (FW)	m <sup>3</sup>	7.65E-03
Hazardous waste disposed (HWD)	kg	1.41E-08
Non-hazardous waste disposed (NHWD)	kg	3.63E-02
Radioactive waste disposed (RWD)	kg	2.50E-04
Components for re-use (CRU)	kg	0.00E+00
Materials for recycling (MFR)	kg	0.00E+00
Material for energy recovery (MER)	kg	0.00E+00
Exported electrical energy (EEE)	MJ	0.00E+00
Exported thermal energy (EET)	MJ	0.00E+00

\* Unit per declared unit

# GLOSSARY

## ACIDIFICATION POTENTIAL (KG SO<sub>2</sub>-EQ)

Acidic gases such as sulphur dioxide (SO<sub>2</sub>) react with water in the atmosphere to form acid precipitation - commonly referred to as "acid rain", in an acid deposition process. When this rain falls, often a considerable distance from the original source to the gas, it causes ecosystem impairment of varying degree, depending upon the nature of the landscape's ecosystems. Gases that cause acid deposition include ammonia, nitrogen oxides and sulphur oxides.

## EUTROPHICATION POTENTIAL (KG PO<sub>4</sub><sup>3-</sup>-EQ)

Nitrates and phosphates are essential for life, nevertheless heightened concentrations or excess levels in bodies of water can encourage excessive growth of algae and reduce the oxygen levels in the water. Eutrophication can therefore be classified as the over-enrichment of water courses. Its occurrence can lead to harm to ecosystems, increasing mortality of aquatic fauna and flora, and to loss of species dependent upon low-nutrient environments. Emissions of ammonia, nitrates, nitrogen oxides and phosphorous to air or water all have an impact on eutrophication.

## GLOBAL WARMING POTENTIAL (KG CO<sub>2</sub>-EQ)

The aggregate measure of the contribution to the greenhouse effect of some gases through their conversion into carbon dioxide equivalents. Global warming potential and climate change refers to the change in global temperature caused via the greenhouse effect by the release of "greenhouse gases" such as carbon dioxide by human activity. Raised global temperature is expected to cause climatic disturbance, desertification, rising sea levels and the spread of disease. The Environmental Profiles characterisation model is based on factors developed by the UN's Intergovernmental Panel on Climate Change (IPCC). Factors are expressed as Global Warming Potential over the time horizon of 100 years (GWP100), measured in the reference unit, kg CO<sub>2</sub> equivalent.

## PHOTOCHEMICAL OZONE CREATION POTENTIAL (KG NMVOC-EQ)

In atmospheres containing nitrogen oxides (NO<sub>x</sub>, a common pollutant) and volatile organic compounds (VOCs), ozone can be formed via the presence of sunlight. Although ozone is critical in the high atmosphere to protect against ultraviolet (UV) light, low level ozone is implicated in impacts as diverse as crop damage and increased incidence of asthma and other respiratory ailments.

## DIFFERENCES VERSUS PREVIOUS VERSION

### Changes at the manufacturing plant

- Ecolean has since 2017 purchased renewable electricity from hydro-power. In the previous EPD (published 2017-10-02, based on 2016 data) Ecolean used general Swedish average electricity to calculate the climate impact from electricity use.
- Ecolean has since 2018 replaced natural gas with biogas.
- Small adjustments of the packaging content have occurred but the total packaging weight is the same.
- Site-specific data from the converting process at the Ecolean site in Helsingborg has been updated and refers to year 2019.

### Changes in geographical boundaries

- The previous EPD presented the results for three different markets; Europe, Russia and Pakistan. New market boundaries are Europe and Russia.
- In 2019 a new package forming factory was built in Pakistan. This means that the Pakistani market now is supplied by local production, this will be covered in a separate EPD.

### Changes in the LCA software

- GaBi 10 LCA software 2020 has been used for calculations.

### Version history S-P-01054 Ecolean Air Aseptic Packages for ambient distribution

- 2017-10-02: First publication
- 2021-07-15: Updated due to ended validity

## PROGRAMME-RELATED INFORMATION AND VERIFICATION

### Product Category Rules (PCR):

PCR 2017:05 Closable flexible plastic packaging, version 1.11 of 2018-11-14, UN CPC 36490.

### Product group classification:

UN CPC 36490

### Reference year for data:

2019

### Geographic scope:

Europe, Russia

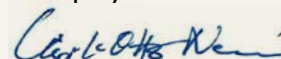
### The PCR review was conducted by:

The Technical committee of the International EPD® System. Chair: Maurizio Fieschi.  
Contact via [info@environdec.com](mailto:info@environdec.com)

### Independent verification of the declaration and data, according to ISO 14025:2006:

☐ EPD Process Certification (internal) ☒ EPD Verification (external)

### Third party verifier:

  
Carl-Otto Nevén

NEVÉN Miljökonsult  
Kvarnåsvägen 8, SE-433 31 Partille, Sweden  
Approved by the International EPD® System

### Procedure for follow-up of data during EPD validity involves third party verifier:

☒ Yes ☐ No

*EPDs within the same product category but from different programmes may not be comparable.  
The intended use for this EPD is for business to business communication.*

## CONTACT INFORMATION

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The EPD owner has the sole ownership, liability and responsibility of the EPD.

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**LCA practitioner:**

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The logo for Ecolean, featuring the word "ecolean" in a green, lowercase, sans-serif font.**Programme operator:**

The International EPD® System

EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden

[www.environdec.com](http://www.environdec.com)

**References:**

General Programme Instructions of the International EPD® System.

Version 3.01, dated 2019-09-18.

Closable Flexible Plastic Packaging UN CPC 36490 2017:05,  
version 1.11 of 2018-11-14.

Reach: EU REACH Regulation (EC) No 1907/2006

LCA report: LCA Report Ecolean Packaging EPD 170926,

Add-on LCA Report Ecolean Packaging EPD 200107

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