

# LIFE CYCLE ASSESSMENT

based on ISO 14040 and ISO 14044



## ASEPTIC PACKAGING



Greatview is the world's third largest supplier of aseptic packaging materials, combining roll-fed and blank-fed systems.

We are committed to provide customised, high quality and competitively priced aseptic packaging to dairy and non-carbonated soft drink producers.

Operating headquarters  
Greatview Aseptic Packaging Co., Ltd.  
Beijing  
Winnethur

Factories  
Shandong (F1)  
Inner Mongolia (F2)  
Halle, Germany (F3)

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choice@greatviewpack.com

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www.greatviewpack.com  
www.choicecreatevalue.com

Caution:  
Please do not drink.

**LCA holder:**  
Greatview Aseptic Packaging  
Manufacturing GmbH  
Orionstraße 8  
D-06184 Kabelsketal  
<https://greatviewpack.com/>

**LCA creator:** PeoplePlanetProfit GmbH  
**Creation date:** 02.08.2021  
Note: The life cycle assessment was calculated using the Umberto LCA + software. The procedure for the calculation can be requested.

**Document number:** LCA-GV-A-121  
**Valid until:** 02.08.2026  
Note on validity: This manufacturer-specific balance sheet is valid for five years from the date of creation.

# LIFE CYCLE ASSESSMENT



based on ISO 14040 and ISO 14044

## ASEPTIC PACKAGING

### Summary

#### Life cycle assessment holders

Greatview Aseptic Packaging Manufacturing GmbH  
Orionstraße 8  
D-06184 Kabelsketal (Halle/Saale)  
<https://greatviewpack.com/>

#### Life cycle assessment creator

PeoplePlanetProfit GmbH  
Kapuzinerstraße 8  
88212 Ravensburg

#### Designation

Aseptic packaging for liquid foods

#### Document number

LCA-GV-A-121

#### Creation date

02.08.2021

#### Valid until

02.08.2026

Note: This creator-specific life cycle assessment is valid for five years from the date of creation

#### Goal

This life cycle assessment is used to present the environmental aspects of aseptic packaging.

#### Procedures and notes

The life cycle assessment was calculated using the Umberto LCA + software based on ISO 14040 and ISO 14044. The procedure is documented in a life cycle assessment report. The life cycle assessment study includes the definition of the objective and the framework of the study, the life cycle assessment, the impact assessment, and the evaluation.

A comparison of the life cycle assessment values is possible in principle, but not recommended, as assumptions in the report, life cycle assessment models and the balancing software can differ from each other.

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## ASEPTIC PACKAGING

The procedure is documented in a life cycle assessment report. The life cycle assessment study includes the definition of the objective and the framework of the study, the life cycle assessment, the impact assessment, and the evaluation. The procedure for the preparation of the life cycle assessments can be requested.

### Considered life cycle stages

In the life cycle assessment, the entire life cycle from cradle to grave was considered.

### Information modules

The following information modules or life cycle stages are considered:

- Product Stage A1 – A3, Transport A4, Installation/Assembly A5
- Use B1, Maintenance B2, Repair B3, Replacement B4, Refurbishment B5, Operational energy use B6, Operational water use B7,
- Deconstruction, demolition C1, Transport C2, Waste processing C3, Disposal C4,
- Recycling potential D

### Data basis

The life cycle assessment data were collected by Greatview and checked by PPP. These are divided according to the respective proportions of BA PE.

### System boundaries

The system boundaries refer to the Greatview plant in Halle, Germany. Outsourced processes are not included or considered.

### Functional/ Declared unit

The following units have been defined:

- Aseptic packaging in kg

Based on the unit, the following sizes were calculated:

- 1000 B equivalent 0 % BA PE in kg
- 1000 B equivalent 25 % BA PE in kg
- 1000 B equivalent 50 % BA PE in kg
- 1000 B equivalent 75 % BA PE in kg
- 1000 B equivalent 100 % BA PE in kg

### Reference service life

Since it is a disposable packaging, no useful life is indicated. Thus, there is no replacement.

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### Information modules and assumptions

As far as possible, the life cycle phases are fully represented via scenarios. If there are multiple scenarios, the common scenario is marked in blue.

#### A1 Raw material supply

If available, the data for raw material supply comes from suppliers as well as auxiliary materials, etc. These were modelled in the software.

#### A2 Transport

The upstream transports are from the CCF 2020 as an average. Other transport routes were not considered because they are either marginal and have no relevant impact on the balance sheets or they were not available.

#### A3 Manufacturing

The production-relevant data was recorded and accounted.

#### A4 Transport

The downstream transports are based on data from the CCF 2020. The transport routes shown represent a transport average.

#### A5 Installation

No installation is required.

#### B1 Use

There are no known emissions that can occur during the usage phase through the packaging.

#### B2 Maintenance

No maintenance is required.

#### B3 Repair

No repair is required.

#### B4 Replacement

No replacement is required.

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### B5 Refurbishment

There is no refurbishment required.

### C1 De-installation

There is no de-installation required.

### C2 Transport

The transport is carried out by 40 t truck, fully utilised with 50 km distance to the collection point.

### C3 Waste processing

Waste management was based on the packaging shipped to the respective countries. For this purpose, the percentage of the countries supplied, and the respective recycling rate are available. Based on the determined values, an average was calculated:

- Recycling of aluminium 20 percent.
- Recycling of paper 20 percent.
- Recycling of PE 20 percent.
- 50 % thermally recycled.

### C4 Disposal

The remaining fractions are deposited.

### D Benefits and loads beyond the system boundary

Credits from all modules.

### Additional relevant environmental aspects

In addition to the LCIA-factors according to DIN EN ISO 14025, the GWP was divided into GWP fossil, GWP biogenic and GWP land use. Background is DIN EN ISO 14067.

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### **Additional environmental claims**

No additional environmental information has been taken into account.

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## ASEPTIC PACKAGING

Packaging 1000B e		Production stage	Building stage		Use stage							End of life stage			Benefits / loads	
	Unit	Product Stage A1 – A3	Transport A4	Installation/Assembly A5	Use B1	Maintenance B2	Repair B3	Replacement B4	Refurbishment B5	Operational energy use B6	Operational water use B7	Deconstruction, demolition C1	Transport C2	Waste processing C3	Disposal C4	Recycling potential D
<b>PER</b>	MJ e	6,74E-02	7,61E-07	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,83E-05	3,05E-05	3,05E-06	-8,47E-03
<b>PENR</b>	MJ e	0,72	6,47E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,77E-03	1,74E-03	4,12E-04	-0,19
<b>GWP total</b>	kg CO2 e	2,93E-02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	2,02E-02	2,93E-05	-7,91E-03
<b>GWP fossil</b>	kg CO2 e	2,90E-02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	3,11E-03	2,93E-05	-7,88E-03

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<b>GWP biogenic</b>	kg CO2 e	8,89E-05	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,80E-08	1,71E-02	6,43E-09	-1,62E-05
<b>GWP land use</b>	kg CO2 e	2,47E-04	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,99E-08	4,36E-08	2,51E-09	-9,71E-06
<b>ODP</b>	kg CFC-11 e	1,25E-09	8,89E-13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,87E-11	2,07E-11	5,88E-12	-2,56E-10
<b>POCP</b>	kg C2H4 e	9,97E-06	3,69E-10	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,42E-08	7,82E-06	9,37E-09	-2,74E-06
<b>EP</b>	kg PO4 e	3,15E-05	4,14E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,27E-07	1,38E-05	4,89E-08	-9,45E-06
<b>AP</b>	kg SO2 e	1,19E-04	2,07E-08	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	6,28E-07	2,15E-05	2,67E-07	-3,28E-05
<b>ADPE</b>	kg Sb e	2,36E-07	1,38E-11	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,92E-10	3,44E-10	1,18E-11	-5,77E-08
<b>ADPF</b>	MJ e	0,72	6,19E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,64E-03	1,74E-03	3,92E-04	-0,19



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## ASEPTIC PACKAGING

Packaging 1000B e 25 % BA PE		Pro- duc- tion stage	Building stage		Use stage							End of life stage				Benefits / loads
	Unit	Product Stage A1 – A3	Transport A4	Installation/Assembly A5	Use B1	Maintenance B2	Repair B3	Replacement B4	Refurbishment B5	Operational energy use B6	Operational water use B7	Deconstruction, demolition C1	Transport C2	Waste processing C3	Disposal C4	Recycling potential D
<b>PER</b>	MJ e	6,61E-02	7,61E-07	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,83E-05	3,05E-05	3,05E-06	-1,04E-02
<b>PENR</b>	MJ e	0,66	6,47E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,77E-03	1,74E-03	4,12E-04	-0,18
<b>GWP total</b>	kg CO2 e	2,72E-02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	2,02E-02	2,93E-05	-7,46E-03
<b>GWP fossil</b>	kg CO2 e	2,69E-02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	3,11E-03	2,93E-05	-7,43E-03

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<b>GWP biogenic</b>	kg CO2 e	8,47E-05	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,80E-08	1,71E-02	6,43E-09	-1,56E-05
<b>GWP land use</b>	kg CO2 e	2,45E-04	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,99E-08	4,36E-08	2,51E-09	-9,29E-06
<b>ODP</b>	kg CFC-11 e	1,21E-09	8,89E-13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,87E-11	2,07E-11	5,88E-12	-3,68E-10
<b>POCP</b>	kg C2H4 e	8,76E-06	3,69E-10	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,42E-08	7,82E-06	9,37E-09	-2,38E-06
<b>EP</b>	kg PO4 e	2,93E-05	4,14E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,27E-07	1,38E-05	4,89E-08	-9,57E-06
<b>AP</b>	kg SO2 e	1,11E-04	2,07E-08	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	6,28E-07	2,15E-05	2,67E-07	-3,33E-05
<b>ADPE</b>	kg Sb e	2,24E-07	1,38E-11	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,92E-10	3,44E-10	1,18E-11	-6,04E-08
<b>ADPF</b>	MJ e	0,65	6,19E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,64E-03	1,74E-03	3,92E-04	-0,18

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## ASEPTIC PACKAGING

Packaging 1000B e 50 % BA PE		Pro- duc- tion stage	Building stage		Use stage							End of life stage				Benefits / loads
	Unit	Product Stage A1 – A3	Transport A4	Installation/Assembly A5	Use B1	Maintenance B2	Repair B3	Replacement B4	Refurbishment B5	Operational energy use B6	Operational water use B7	Deconstruction, demolition C1	Transport C2	Waste processing C3	Disposal C4	Recycling potential D
<b>PER</b>	MJ e	6,31E-02	7,61E-07	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,83E-05	3,05E-05	3,05E-06	-1,23E-02
<b>PENR</b>	MJ e	0,47	6,47E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,77E-03	1,74E-03	4,12E-04	-0,16
<b>GWP total</b>	kg CO2 e	2,14E-02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	2,02E-02	2,93E-05	-7,01E-03
<b>GWP fossil</b>	kg CO2 e	2,11E-2	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	3,11E-03	2,93E-05	-6,99E-03

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## ASEPTIC PACKAGING

<b>GWP biogenic</b>	kg CO2 e	7,44E-05	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,80E-08	1,71E-02	6,43E-09	-1,50E-05
<b>GWP land use</b>	kg CO2 e	2,43E-04	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,99E-08	4,36E-08	2,51E-09	-8,88E-06
<b>ODP</b>	kg CFC-11 e	1,07E-09	8,89E-13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,87E-11	2,07E-11	5,88E-12	-4,80E-10
<b>POCP</b>	kg C2H4 e	6,78E-06	3,69E-10	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,42E-08	7,82E-06	9,37E-09	-2,02E-06
<b>EP</b>	kg PO4 e	2,40E-05	4,14E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,27E-07	1,38E-05	4,89E-08	-9,68E-06
<b>AP</b>	kg SO2 e	9,08E-05	2,07E-08	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	6,28E-07	2,15E-05	2,67E-07	-3,38E-05
<b>ADPE</b>	kg Sb e	1,88E-07	1,38E-11	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,92E-10	3,44E-10	1,18E-11	-6,32E-08
<b>ADPF</b>	MJ e	0,47	6,19E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,64E-03	1,74E-03	3,92E-04	-0,16

# LIFE CYCLE ASSESSMENT



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## ASEPTIC PACKAGING

Packaging 1000B e 75 % BA PE		Pro- duc- tion stage	Building stage		Use stage							End of life stage			Benefits / loads	
	Unit	Product Stage A1 – A3	Transport A4	Installation/Assembly A5	Use B1	Maintenance B2	Repair B3	Replacement B4	Refurbishment B5	Operational energy use B6	Operational water use B7	Deconstruction, demolition C1	Transport C2	Waste processing C3	Disposal C4	Recycling potential D
<b>PER</b>	MJ e	6,22E-02	7,61E-07	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,83E-05	3,05E-05	3,05E-06	-1,42E-02
<b>PENR</b>	MJ e	0,43	6,47E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,77E-03	1,74E-03	4,12E-04	-0,15
<b>GWP total</b>	kg CO2 e	2,00E-02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	2,02E-02	2,93E-05	-6,56E-03
<b>GWP fossil</b>	kg CO2 e	1,97E-2	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	3,11E-03	2,93E-05	-6,54E-03

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<b>GWP biogenic</b>	kg CO2 e	7,16E-05	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,80E-08	1,71E-02	6,43E-09	-1,44E-05
<b>GWP land use</b>	kg CO2 e	2,42E-04	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,99E-08	4,36E-08	2,51E-09	-8,47E-06
<b>ODP</b>	kg CFC-11 e	1,05E-09	8,89E-13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,87E-11	2,07E-11	5,88E-12	-5,92E-10
<b>POCP</b>	kg C2H4 e	5,86E-06	3,69E-10	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,42E-08	7,82E-06	9,37E-09	-1,66E-06
<b>EP</b>	kg PO4 e	2,25E-05	4,14E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,27E-07	1,38E-05	4,89E-08	-9,80E-06
<b>AP</b>	kg SO2 e	8,58E-05	2,07E-08	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	6,28E-07	2,15E-05	2,67E-07	-3,44E-05
<b>ADPE</b>	kg Sb e	1,80E-07	1,38E-11	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,92E-10	3,44E-10	1,18E-11	-6,59E-08
<b>ADPF</b>	MJ e	0,43	6,19E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,64E-03	1,74E-03	3,92E-04	-0,15

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based on ISO 14040 and ISO 14044

## ASEPTIC PACKAGING

Packaging 1000B e 100 % BA PE		Pro- duc- tion stage	Building stage		Use stage							End of life stage			Benefits / loads	
	Unit	Product Stage A1 – A3	Transport A4	Installation/Assembly A5	Use B1	Maintenance B2	Repair B3	Replacement B4	Refurbishment B5	Operational energy use B6	Operational water use B7	Deconstruction, demolition C1	Transport C2	Waste processing C3	Disposal C4	Recycling potential D
<b>PER</b>	MJ e	6,06E-02	7,61E-07	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,07E-05	2,82E-05	3,05E-06	-1,61E-02
<b>PENR</b>	MJ e	0,32	6,47E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,77E-03	1,74E-03	4,12E-04	-0,13
<b>GWP total</b>	kg CO2 e	1,66E-02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	2,02E-02	2,93E-05	-6,12E-03
<b>GWP fossil</b>	kg CO2 e	1,63E -02	4,04E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,71E-04	3,11E-03	2,93E-05	-6,10E-03

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<b>GWP biogenic</b>	kg CO2 e	6,56E-05	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,80E-08	1,71E-02	6,43E-09	-1,38E-05
<b>GWP land use</b>	kg CO2 e	2,40E-04	1,45E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,99E-08	4,36E-08	2,51E-09	-8,06E-06
<b>ODP</b>	kg CFC-11 e	9,64E-10	8,89E-13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,87E-11	2,07E-11	5,88E-12	-7,04E-10
<b>POCP</b>	kg C2H4 e	4,96E-06	3,69E-10	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,42E-08	7,82E-06	9,37E-09	-1,31E-06
<b>EP</b>	kg PO4 e	1,96E-05	4,14E-09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,27E-07	1,38E-05	4,89E-08	-9,91E-06
<b>AP</b>	kg SO2 e	7,40E-05	2,07E-08	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	6,28E-07	2,15E-05	2,67E-07	-3,49E-05
<b>ADPE</b>	kg Sb e	1,58E-07	1,38E-11	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,92E-10	3,44E-10	1,18E-11	-6,87E-08
<b>ADPF</b>	MJ e	0,32	6,19E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,64E-03	1,74E-03	3,92E-04	-0,13



# LIFE CYCLE ASSESSMENT



based on ISO 14040 and ISO 14044

## ASEPTIC PACKAGING

ADPE - Abiotic depletion potential elements

ADPF – Abiotic depletion potential fossil fuel

AP – Acidification potential

EP – Eutrophication potential

GWP – Climate change

ODP – Stratospheric ozone depletion

PENR – Primary energy nonrenewable

PER – Primary energy renewable

POCP – Photochemical oxidation