# Environmental Product Declaration

In accordance with ISO 14025:2006, ISO 21 930:2017 and EN 15804:2012+A2:2019/AC:2021 for:

## Preconal Frontshield 66  Entre` 2,79m2

**from**

## Preconal System AB

| | |
|---|---|
| Programme: | The International EPD® System, www.environdec.com |
| Programme operator: | EPD International AB |
| EPD registration number: | **EPD-IES-0016444** |
| Publication date: | 2025-04-25 |
| Valid until: | 2030-04-25 |

*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*

# General information

## Programme information

| | |
|---|---|
| **Programme:** | The International EPD® System |
| **Address:** | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| **Website:** | www.environdec.com |
| **E-mail:** | info@environdec.com |

| **Accountabilities for PCR, LCA and independent, third-party verification** |
|---|
| **Product Category Rules (PCR)** |
| ISO Standard ISO 21930 and CEN standard EN 15804 serve as the core Product Category Rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) 1.3.4. Windows and doors (EN 17213:2020) C-PCR-007 version 2024-04-30. UN CPC code 42120 doors, windows and their frames and thresholds for doors of iron, steel or aluminium |
| **PCR review was conducted by**: The Technical Committee of the International EPD® System. Chair: Claudia A. Peña 2020-09-17. Contact via info@environdec.com |
| **Life Cycle Assessment (LCA)** |
| **LCA accountability:** Freelance consultant Fredrik Broberg |
| **Third-party verification:**<br>Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><br>☒ EPD verification by individual verifier:<br>**Camilla Landen EPD Product manager/Lead auditor QMS+Sustainability.**<br>**Email:**hallbarhetsjouren*gmail.com<br>**Telephone:**+46 (0)793477033<br><br>Approved by: EPD International AB |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br>☐ Yes ☒ No |

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

**Owner of the EPD:**
Preconal System AB
Linjegatan 5
302 50 Halmstad
Sweden

**Contact:** Mats Jacobsen 035-2652751

Aluminum doors and glass facades are our specialty. We consist of two companies, Preconal Fasad AB and Preconal System AB. System works with doors, partitions and windows. While Fasad focuses on the large glass facade projects. This means that no project is too small or large for us!

Hiring us is a flexible and safe choice. We are with our customers all the way, from planning to assembly of the finished product. After 40 years of industry experience, we are also happy to help with tips and advice. Tell us which function you want, and together we will come up with a solution!
ur head office is in Halmstad with sales offices in Falkenberg, Malmö, Arboga, Gothenburg, Ljungby and Karlstad. Our production facility is located in Falkenberg. The work at the production facility is characterized by Swedish craftsmanship, seasoned with modern and market-leading machines. For larger projects, we can also use production facilities in Poland via our group HansenGroup.

Preconal is part of the HansenGroup with approximately 900 employees and a turnover of SEK 900 million. HansenGroup is Northern Europe's leading door, window and facade contractor with operations in Sweden, Denmark, Norway, England, Germany and Poland.

**The companys management system is certified according to**:
ISO 9001, ISO 14001 and ISO 45001

**The products are registered in:**
Sunda Hus, Byggvarubedömningen

**Name and location of production site:**
Preconal System AB
Halmstad

## Product information

**Product name: Preconal Frontshield 66**

High standard profile system with high quality and the right properties.
FrontShield™ 66 is an insulated profile system that can be used as outward- or inward-facing aluminum doors with side and skylights and fixed window sections.
Frontshield aluminum door is our best selling door in recent years. It is a modern system with a broken cold bridge that is both robust and meets today's energy requirements.

| Property | Value |
|---|---|
| Size | 1m² |
| Weight per m² | 29,54Kg |

**UN CPC code:**
42120 doors, windows and their frames and thresholds for doors of iron, steel or aluminium.

**Geographical scope**:
Sweden

## LCA information

**Declared unit:**
1m²

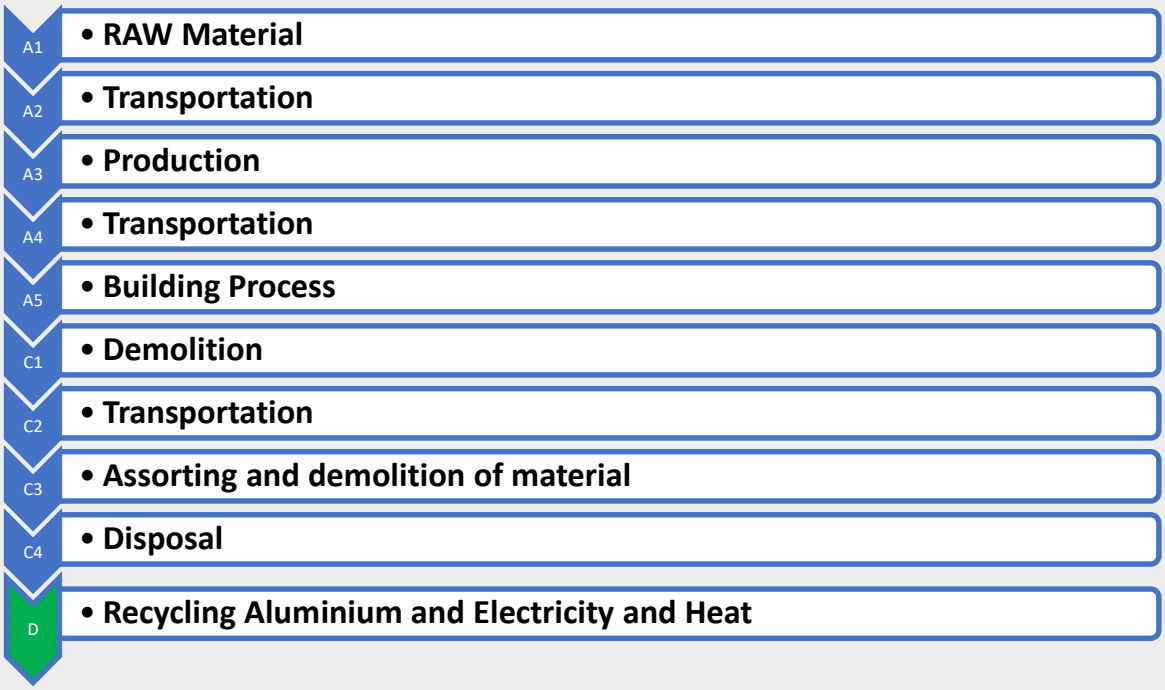
**Time representativeness:**
Data were collected by Preconal System AB and are representative of 2023 manufacturing. All used datasets are currently valid

**Database(s) and LCA software used**:
Database used is LCA for Experts 10.6.29. Software used: MLC Professional

**Additional info:**
The door is CE marked, the door comes without burglar proofing, added by customer

**Description of system boundaries**:
Type of EPD: cradle-to-gate with modules C1–C4, module D and optional modules A4-A5.

**System diagram:**




**Emissions:**
The factors used for this LCA are EN 15804 reference based on EF 3.1

## More information

**Website:**
www.preconal .se

**Allocation:**
Annual consumption of utilities (energy and non-energy resources), generation of waste and emissions – is allocated to each product group based on production volume (i.e. mass allocation).

We have allocated the constituent materials to these specific products so that they do not contain the environmental impact of other products.

In case of recycling of generated waste in production, impacts are borne by the product.

Polluter pays principle is applied for incoming raw materials of recycled origin, where the product carries the processes required to produce the raw materials from the recycled material, but not the upstream production of the virgin material.

**Cut-Off criteria:**
Input and output flows in a unit process were considered i.e., taking into account the value of all flows in the unit process and the corresponding LCI where data was available. Data gaps were filled by conservative assumptions with average or generic data. Any assumptions in such case were documented.

**Type of EPD: Specific**

**Additional information:**
The products does not contain any of the substances listed on the “Candidate List of Substances of Very High Concern (SVHC) for authorisation”.
(http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp).

Infrastructure and capital goods are not included in upstream, core and downstream processes with the exception of electricity. For electricity, infrastructure have been included

**List of assumptions:**
Assumption A4, A5, C1, C2, C3, C4 and D.
C1 to knock down 1/m² door, 2 min. C2 distance to waste treatment plant, is set to be 100 km.
C3 assumptions the collected goods is mixed with construction waste and sorted, here the waste is incinerated. C4 landfill.
D Recycling and Net gains and burdens of replacing electricity from the Swedish power grid and Swedish district heating.

| Material | Recycling Rate | Incineration rate | Landfill rate |
|---|---|---|---|
| Aluminium | 73% | 0 | 23% |
| Plastic, cardboard and Wood | 0 | 95% | 5% |
| Glass | 0 | 0 | 100% |

**A4 Transportation:**
Trip, using a Lorry Euro 5 (34-40 ton) 27ton payload, distance 800Km, loading 85%, 43,2Kg/m², Diesel consumption 0,00114Kg/m², go back full.

| **Information<br>A4 transport** | **Unit<br>( per declared unit)** |
|---|---|
| Diesel 0,001 liter /m²/100Km Truck, Euro 3, 28 - 32t gross weight / 22t payload capacity | |
| Distance 800 | km |
| 30 | % |
| 43,2 | kg/m² |

| **Information<br>C2 transport** | **Unit<br>( per declared unit)** |
|---|---|
| Diesel 0,001 liter Kg /m²/100Km Truck, Euro 5, 28 - 32t gross weight / 22t payload capacity | |
| Distance 100 | km |
| 85 | % |
| 43,2 | kg/m² |

**Biogen C**

| Modules | A1-A3 | A4 | A5 | C1-C2 | C3 | Sum A-C | |
|---|---|---|---|---|---|---|---|
| GWP-Biogen | -5,23 | 0,0646 | 5,23 | 0,00633 | 0,0000564 | 0,020 | Calculated |

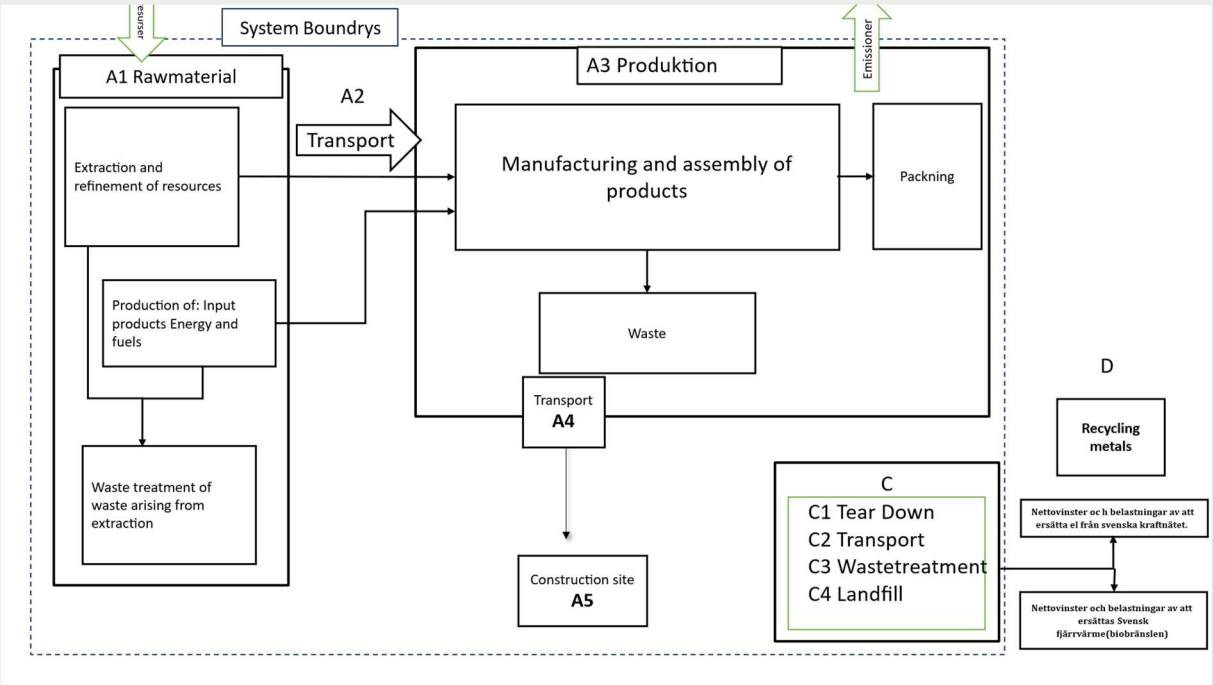
**Electricity dataset in A:3**

The electricity data used Swedish resudial Mix– 68gr CO2eq/kwh.

**Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):**

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Resource recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Construction installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| **Module** | **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Modules declared | X | X | X | X | X | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | SE | SE | SE | SE | SE | | | | | | | | SE | SE | SE | SE | SE |
| Specific data used | 1% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – products | 0% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | 0% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |

## Flow chart of studied processes




# Life Cycle Stages

- **A1 Raw material supply**. This includes the extraction and processing of all raw materials and energy which occur upstream from the manufacturing process.

- **A2 Transport to the manufacturer.** Transport of raw materials by truck to the factory for processing and production.

- **A3 Manufacturing**: This module includes the manufacture/assembling of product at the Preconal plant and the packaging. The processing of any waste arising from this stage is also included.

- **A4 Transport to the building site** This module includes transport from the production gate to the installation site. The average distribution distance is calculated based on the sales

- **A5 Installation into the building** Here installs the product on the building site. Packing material are taken care of and incinerated, and the benefit of incineration ends up in D.
- **C 1 De-construction** Here the building where the door has been installed is demolished.
- **C 2 Waste transport** Transport from the demolition site to sorting plant.
- **C 3 Waste processing**. Sorting plant, sorts out aluminum and 73% goes to recycling.
- **C4 Waste disposal** Landfill of aluminum 27%, landfill of window glass 100%
- **D Reuse, recycling and energy recovery** potentials The packaging material that ends up in A5 is incinerated here and becomes electricity and heat in D. 73% of the aluminum is recycled.

# Content information Preconal Frontshield 66

| Product components | Weight, kg | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/kg |
|---|---|---|---|
| Aluminium | 16,96 | 0 | 0 |
| Glass | 9,48 | 0 | 0 |
| Lock, handle and hinges | 1,35 | 0 | 0 |
| EPDM | 0,29 | 0 | 0 |
| Thermoplastic elastomer | 0,01 | 0 | 0 |
| Polyamid | 0,004 | 0 | 0 |
| Steel | 0,98 | 0 | 0 |
| Polyester | 0,4 | 0 | 0 |
| Polysulfid | 0,07 | 0 | 0 |
| TOTAL | 29,54 | 0 | 0 |
| **Packaging materials** | **Weight, kg** | **Weight-% (versus the product)** | **Weight biogenic carbon, kg C/kg** |
| Wood | 2,8 | 9 | 1,4 |
| Plastic Film | 0,22 | 0,7 | 0 |
| Corrugated board | 0,22 | 0,7 | 0,7 |
| TOTAL | 3,24 | 10,4 | 2,1 |

# Results of the environmental performance indicators

## Mandatory impact category indicators according to EN 15804+A2

## Preconal Frontshield 66

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP-Total | kg CO2 eq. | 1,65E+02 | 2,68E-01 | 5,26E+00 | 1,41E-02 | 2,49E-01 | 3,09E-01 | 8,81E-02 | 1,42E+01 |
| GWP-fossil | kg CO2 eq. | 1,70E+02 | 2,58E-01 | 3,43E-02 | 1,36E-02 | 2,39E-01 | 3,09E-01 | 8,70E-02 | 1,08E+01 |
| GWP-biogenic | kg CO2 eq. | -5,23E+00 | 6,46E-03 | 5,23E+00 | 3,23E-04 | 6,01E-03 | 5,64E-05 | 5,99E-04 | 3,40E+00 |
| GWP-luluc | kg CO2 eq. | 5,45E-02 | 4,23E-03 | 2,05E-05 | 2,19E-04 | 3,94E-03 | 1,85E-04 | 5,22E-04 | 1,30E-03 |
| ODP | kg CFC 11 eq | 2,84E-10 | 3,71E-14 | 1,05E-12 | 1,92E-15 | 3,46E-14 | 9,45E-12 | 2,35E-13 | 2,18E-11 |
| AP | mol H+ eq. | 9,11E-01 | 4,10E-04 | 1,04E-04 | 6,72E-05 | 1,47E-03 | 9,38E-04 | 6,18E-04 | 1,24E-02 |
| EP-freshwater | kg P eq. | 1,16E-04 | 1,07E-06 | 7,61E-07 | 5,56E-08 | 1,00E-06 | 6,87E-06 | 1,98E-07 | -2,82E-06 |
| EP-marine | kg N eq. | 1,83E-01 | 1,59E-04 | 3,75E-05 | 3,17E-05 | 7,24E-04 | 3,38E-04 | 1,59E-04 | 4,45E-03 |
| EP-terrestrial | mol N eq. | 2,02E+00 | 1,86E-03 | 3,15E-04 | 3,52E-04 | 8,02E-03 | 2,84E-03 | 1,75E-03 | 5,21E-02 |
| POCP | kg NMVOC eq | 5,20E-01 | 4,07E-04 | 7,99E-05 | 8,98E-05 | 1,43E-03 | 7,21E-04 | 4,86E-04 | 1,21E-02 |
| ADP-minerals&metals* | kg Sb eq. | 2,19E-04 | 2,19E-08 | 2,75E-08 | 1,13E-09 | 2,04E-08 | 2,48E-07 | 5,63E-09 | -1,53E-06 |
| ADP-fossil* | MJ | 2,19E+03 | 3,31E+00 | 3,42E+00 | 1,72E-01 | 3,09E+00 | 3,09E+01 | 1,15E+00 | 4,41E+01 |
| WDP | m3 | 6,30E+01 | 3,90E-03 | 3,54E-02 | 2,02E-04 | 3,63E-03 | 3,19E-01 | 9,95E-03 | 1,70E+00 |

GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

***Disclaimer**; The use of the results of modules A1-A3 (A1-A5 for services) without considering the results of module C, is not recommended.

## Additional mandatory and voluntary impact category indicators

## Potential environmental impact GWP-GHG – additional mandatory and voluntary indicators, per declared unit 1/m²

| Results per declared unit | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **A4** | **A5** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-GHG[1] | kg $CO_2$ eq. | 1,70E+02 | 2,58E-01 | 3,44E-02 | 1,36E-02 | 2,40E-01 | 3,10E-01 | 8,72E-02 | 1,08E+01 |

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

## Resource use indicators Preconal Frontshield 66

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 1,24E+03 | 2,85E-01 | 4,75E+00 | 1,48E-02 | 2,66E-01 | 4,29E+01 | 2,00E-01 | -5,42E+00 |
| 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 |
| PERT | MJ | 1,24E+03 | 2,85E-01 | 4,75E+00 | 1,48E-02 | 2,66E-01 | 4,29E+01 | 2,00E-01 | -5,42E+00 |
| PENRE | MJ | 2,19E+03 | 3,31E+00 | 3,42E+00 | 1,72E-01 | 3,09E+00 | 3,09E+01 | 1,15E+00 | 4,41E+01 |
| 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 |
| PENRT | MJ | 2,19E+03 | 3,31E+00 | 3,42E+00 | 1,72E-01 | 3,09E+00 | 3,09E+01 | 1,15E+00 | 4,41E+01 |
| 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 |
| 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 |
| 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 |
| FW | $m^3$ | 2,45E+00 | 3,18E-04 | 6,31E-03 | 1,65E-05 | 2,97E-04 | 5,69E-02 | 3,04E-04 | 6,37E-03 |

| | |
|---|---|
| Acronyms | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

## Waste indicators Preconal Frontshield

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| Hazardous waste disposed | kg | 7,92334E-07 | 1,27E-10 | 7,52E-09 | 6,57E-12 | 1,18E-10 | 6,78E-08 | 2,86E-10 | -1,35E-08 |
| Non-hazardous waste disposed | kg | 6,84E+01 | 5,41E-04 | 5,01E-03 | 2,80E-05 | 5,05E-04 | 4,52E-02 | 5,82E+00 | 1,84E+00 |
| Radioactive waste disposed | kg | 1,26E-01 | 6,04E-06 | 1,18E-03 | 3,13E-07 | 5,63E-06 | 1,06E-02 | 1,20E-05 | 1,76E-03 |

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

## Output flow indicators Preconal Frontshield 66

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| Components for re-use | 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 |
| Material for recycling | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,04E+01 |
| Materials for energy recovery | kg | 1,74E+00 | 0,00E+00 | 3,30E+00 | 0,00E+00 | 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 | 0,00E+00 | 2,37E+00 | 0,00E+00 | -2,37E+00 |
| Exported energy, thermal | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,79E+01 | 0,00E+00 | -1,79E+01 |

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

**Disclaimer:**
The results obtained from modules A1-A3 (A1-A5 for services) of the life cycle analysis (LCA) underlying this EPD are provided for information purposes only. Users are advised not to use these results without considering the results of module C. Any use of the results from modules A1-A3 (A1-A5 for services) without considering the results of module C is at the user's own risk, and the authors and/or performers of this LCA disclaims all liability for such use.

| Resultat per deklarerad enhet 1m² | | |
|---|---|---|
| **BIOGENT KOLINNEHÅLL** | **Enhet** | **Kvantitet** |
| **Biogent kolinnehåll i produkten** | **Kg C** | **0** |
| **Biogent kolinnehåll i packningen** | **Kg C** | **1,41** |

**1 kg biogenic carbon is equivalent to 44/12 kg $CO_2$**

# References

General Programme Instructions of the International EPD® System. Version 4.

PCR 2019:14 Construction products (EN 15804:A2) (1.3.3) 2024-03-01

European Committee for Standardization. (2021). Sustainability of construction works - Environmental Product declarations - Core rules for the product category of construction products (EN 15804:2012+A2:2019/AC:2021).

Data for separate collection and recycling of dry recyclable materials Carolina Liljenström1 and Göran Finnveden.

International Organization for Standardization [ISO]. (2006a). Environmental labels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025:2010)

ISO. (2006a). Environmental Management – Life cycle assessment – Principles and framework. 14040:2006. Geneva, Switzerland: International Organization for Standardization.

ISO. (2006b). Environmental Management – Life cycle assessment – Requirements and guidelines ISO 14044:2006. Geneva, Switzerland: International Organization for Standardization.

ISO. (2006c). Environmental labels and declarations—type III environmental declarations—principles and procedures. ISO 14025:2006.
Geneva, Switzerland: International Organization for Standardization

GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM VERSION 4.0
EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

**ISO 21930**
Livscykelanalys Fredrik Broberg Preconal System AB 2025-04-25

EPD®

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