

Environmental Product Declaration

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

Photovoltaic solar panel 290-510 Wp

from

SoliTek Cells



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on the average results of the product group, including products recently placed on the market. Results of this EPD shall be used with care as the LCI data is not yet based on 1 year of production which may result in increased uncertainty.
Registration number:	EPD-IES-0033161:001
Version date:	2026-07-08
Validity date:	2031-07-08

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

The included products are **SoliTek solar modules** with a **bifacial N-type TOPCon cell core** and protected by a robust **glass-glass construction**.



SoliTek

THE GREENEST & TOUGHEST IN THE WORLD

Bifacial panels

- PRAGUE 145 Wp**
- BLACKTOP 145 Wp**
- BLACKTOP 145 Wp**
- BLACKTOP 145 Wp**
- BLACKTOP 145 Wp**

Extreme wind resistance: withstands winds up to 240 km/h

Extreme hail resistance: withstands hail of up to 25 mm diameter

Extreme load resistance: withstands snow load up to 5.4 kN/m²

Find the best fit for you

Efficiency 50%

Efficiency 30%

Efficiency 90%

Efficiency 100%

Efficiency 98,8%

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>PCR 2019:14 Construction products (EN 15804+A2) (2.0.1) (2025-06-05)</i>
PCR review was conducted by: <i>Technical Committee of the International EPD® System. The review panel may be contacted via info@environdec.com.</i>
c-PCR: <i>PCR 2019:14-c-PCR-016 Photovoltaic modules and parts thereof (c-PCR to PCR 2019:14) (adopted from EPD Norway 2022-04-27)</i>

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: <i>Elisabet Amat, GREENIZE</i> Approved by: International EPD System
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 published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: SoliTek Cells

Address: Lithuania, Vilnius, Mokslininku street 6a.

Contact: vilius.aleknavicius@solitek.eu

Address and contact information of the LCA practitioner commissioned by the EPD owner, if applicable: Eco Intelligent Growth, Barcelona (Spain)

T. (+34) 934 199 080, info@ecointelligentgrowth.net

Description of the organisation:

SoliTek, part of the BOD Group, is a leading European solar energy technology company, specializing in the production of premium solar panels and energy storage solutions (batteries). Established in 2009, the company focuses on sustainable, innovative, and eco-friendly technologies. SoliTek manufactures solar modules using 100% renewable energy, ensuring high durability and performance. Known for its advanced research, SoliTek provides tailored solar solutions to residential, commercial, and industrial sectors, with products exported to major European markets, including Germany and Sweden.

Product-related or management system-related certifications:

C2C Gold certification

ISO 9001:2015 Quality Management System

ISO 14001:2015 Environmental Management System

ISO 45001:2018 Health and Safety Management System

PRODUCT INFORMATION

Product name: Photovoltaic solar panel modules, 290-510 Wp

Product identification:

Product name	Brochure	Description	Fire class	Cells	Cell type	Cell configuration	Weight (kg)	Dimensions (mm)	Front, back glass (mm)	Frame	Junction box
Blackstar B96	BLACKSTAR-B96-455W-EN.pdf	Made in the EU with 35% recycled glass content.	A	96	N type, TOPCon - bifacial	6x16	25.5	1762x1134x30	2 / 2	Black Alu, 30mm	Split / IP68
Blackstar Satin B96	BLACKSTAR-SATIN-B96-445W-EN.pdf	Extremely low-glare satin finished solar panel.	A	96	N type, TOPCon - bifacial	6x16	25.5	1762x1134x30	2 / 2	Black Alu, 30mm	Split / IP68
Magnus	Datasheet-solitek-Magnus-510W-EN.pdf	High power 510W module with hail resistance class	A	108	N type, TOPCon - bifacial	6x18	28.5	1961x1134x30	2 / 2	Black Alu, 30mm	Split / IP68
SOLID Agro Frameless B64	SOLID-Agro-Frameless-B64-300W-EN.pdf	Increased transparency for agrivoltaic applications.	A	64	N type, TOPCon - bifacial	4x16	33	1768x1140x7.2	3.2 / 3.2	Frameless	Split / IP68
SOLID Agro Framed B64 (35mm)	SOLID-Agro-framed-B64-300W-EN-35mm.pdf	Durable framed module for extreme loads up to 10500 Pa.	A	64	N type, TOPCon - bifacial	4x16	35	1762x1134x35	3.2 / 3.2	Black Alu, 35mm	Split / IP68
SOLID Agro Framed B64 (40mm)	SOLID-Agro-framed-B64-300W-EN-40mm.pdf	40mm profile for high mechanical resistance.	A	64	N type, TOPCon - bifacial	4x16	36	1762x1134x40	3.2 / 3.2	Black Alu, 40mm	Split / IP68
SOLID Black Frameless B96	SOLID-Black-Frameless-B96-455W-EN.pdf	Full black frameless module with bifacial technology.	A	96	N type, TOPCon - bifacial	6x16	33	1768x1140x7.2	3.2 / 3.2	Frameless	Split / IP68

SOLID Black Framed B96 (35mm)	SOLID-Black-framed-B96-455W-EN-35mm.pdf	35mm framed full black module with 30-year warranty.	A	96	N type, TOPCon - bifacial	6x16	35	1762x134x35	3.2 / 3.2	Black Alu, 35mm	Split / IP68
SOLID Black Framed B96 (40mm)	SOLID-Black-framed-B96-455W-EN-40mm.pdf	40mm frame for extreme environmental conditions.	A	96	N type, TOPCon - bifacial	6x16	36	1762x134x40	3.2 / 3.2	Black Alu, 40mm	Split / IP68
SOLID Satin Frameless B96	SOLID-Satin-Frameless-B96-445W-EN.pdf	Extremely low-glare frameless aesthetics.	A	96	N type, TOPCon - bifacial	6x16	33	1768x140x7.2	3.2 / 3.2	Frameless	Split / IP68
SOLID Satin Framed B96 (35mm)	SOLID-Satin-framed-B96-445W-EN-35mm.pdf	Framed satin module with 3.2mm thick glass.	A	96	N type, TOPCon - bifacial	6x16	35	1762x134x35	3.2 / 3.2	Black Alu, 35mm	Split / IP68
SOLID Satin Framed B96 (40mm)	SOLID-Satin-framed-B96-445W-EN-40mm.pdf	Durable 40mm profile for high load resistance.	A	96	N type, TOPCon - bifacial	6x16	36	1762x134x40	3.2 / 3.2	Black Alu, 40mm	Split / IP68
SOLID Semi-Clear Frameless B96	SOLID-Semi-Clear-Frameless-B96-455W-EN.pdf	Frameless semi-clear module for maximum transparency.	A	96	N type, TOPCon - bifacial	6x16	33	1768x140x7.2	3.2 / 3.2	Frameless	Split / IP68
SOLID Semi-clear Framed B96 (35mm)	SOLID-Semi-clear-framed-B96-455W-35mm.pdf	Framed semi-clear module for structural durability.	A	96	N type, TOPCon - bifacial	6x16	35	1762x134x35	3.2 / 3.2	Black Alu, 35mm	Split / IP68
SOLID Semi-clear Framed B96 (40mm)	SOLID-Semi-clear-framed-B96-455W-40mm.pdf	40mm profile for optimal snow and wind loading.	A	96	N type, TOPCon - bifacial	6x16	36	1762x134x40	3.2 / 3.2	Black Alu, 40mm	Split / IP68
Solrif D Agro B64	Solrif-D-Agro-B64-300W-EN-datasheet.pdf	Roof-integrated system for transparent agrivoltaics.	A	64	N type, TOPCon - bifacial	4x16	35	1806x160x20	3.2 / 3.2	Solrif D	Split / IP68
Solrif D Black B96	Solrif-D-Black-B96-455W-EN-datasheet.pdf	Full black roof-integrated module for aesthetics.	A	96	N type, TOPCon - bifacial	6x16	35	1806x160x20	3.2 / 3.2	Solrif D	Split / IP68
Solrif D Satin B96	Solrif-D-Satin-B96-445W-EN-datasheet.pdf	Low-glare roof integration with 50mm hail resistance.	A	96	N type, TOPCon - bifacial	6x16	35	1806x160x20	3.2 / 3.2	Solrif D	Split / IP68
Solrif D Semi-clear B96	Solrif-D-Semi-clear-B96-455W-EN-datasheet.pdf	Semi-clear roof-integrated system for durability.	A	96	N type, TOPCon - bifacial	6x16	35	1806x160x20	3.2 / 3.2	Solrif D	Split / IP68
Solrif N Black B96	Solrif-N-Black-B96-455W-EN.pdf	Lightweight 2+2mm roof integration system.	A	96	N type, TOPCon - bifacial	6x16	27	1806x160x17	2 / 2	Solrif N	Split / IP68
Solrif N Satin B96	Solrif-N-Satin-B96-445W-EN.pdf	Satin finished lightweight roof-integrated module.	A	96	N type, TOPCon - bifacial	6x16	27	1806x160x17	2 / 2	Solrif N	Split / IP68

Product description:

- 30 years product warranty
- 30 years efficiency warranty
- N-type TOPCon bifacial cell technology
- framed and frameless photovoltaic modules

The product portfolio covered by this EPD includes both framed and frameless photovoltaic modules. All modules are based on the same core technology, consisting of N-type TOPCon bifacial solar cells encapsulated in a glass-glass construction. The main distinction between product variants is the

presence or absence of an aluminium frame and, for framed products, the frame height (30 mm, 35 mm, or 40 mm) and mounting system configuration (including Solrif D/N integrated roof systems).

The aluminium frame provides additional mechanical protection and contributes to enhanced resistance to external loads and hail impact. As a result, framed modules are slightly heavier than their frameless counterparts and exhibit minor differences in external dimensions. Frameless modules consist solely of the laminated glass-glass structure and therefore have a lower overall mass and slightly higher recyclability potential due to the reduced aluminium content.

These design variations do not affect the fundamental photovoltaic technology, manufacturing process, or intended function of the products. The differences between framed and frameless configurations are primarily related to material composition, weight, dimensions, and installation requirements, and are accounted for in the life cycle assessment through product-specific bill of materials and mass data.

Results of this EPD shall be used with care as the LCI data is not yet based on 1 year of production, which may result in increased uncertainty.

Visual representation (e.g., an image) of the product



Figure 1. Image of Frameless Photovoltaic solar panel



Figure 2. Image of Framed Photovoltaic solar panel

UN CPC code:

47150 - Diodes, transistors and similar semi-conductor devices; photosensitive semi-conductor devices; light emitting diodes; mounted piezo-electric crystals

Name and location of production site(s):

Lithuania, Vilnius, Mokslininku street 6a.

References to any relevant websites for more information or explanatory materials, if applicable.

<https://www.solitek.eu/en>

CONTENT DECLARATION

The content declaration is based on the materials and packaging required to provide one Wp.

The product declared is an average product based on the solar panels included in the EPD, which have been averaged with equal weights for all models, since the models are recently on the market.

Product components	Weight, kg/Wp	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Solar cells	7,65E-04	0%	0% and 0
Ribbons	4,00E-04	0%	0% and 0
Glass	6,78E-02	0%	0% and 0
Encapsulant	5,45E-03	0%	0% and 0
Junction box with cables	5,30E-05	0%	0% and 0
Silicone	6,05E-04	0%	0% and 0
Frame	2,13E-03	0%	0% and 0
TOTAL	7,72E-02	0%	0% and 0
Packaging materials	Weight, kg/Wp	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Cardboard	2,48E-03	3,2%	1,24E-03
Plastic film	1,32E-04	0,2%	0,00E+00
Pallet	2,16E-03	2,8%	1,08E-03
TOTAL	4,77E-03	6,2%	2,32E-03

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

The product does not contain any REACH SVHC substances in amounts greater than 0,1% (1000 ppm).

LCA INFORMATION

Declared unit: 1 Wp of manufactured photovoltaic module, from cradle-to-grave.

The total external dimensions for the photovoltaic panels covered in this EPD are:

- **Standard Framed Modules:** 1162x1134 mm (includes Blackstar and SOLID Framed series).
- **Frameless Modules:** 1768x1140 mm (includes SOLID Frameless and SOLID Agro Frameless).
- **Roof-Integrated Modules:** 1806x1160 mm (includes Solrif N and Solrif D series).
- **Magnus High-Power Modules:** 1961x1134 mm

To calculate the approximate environmental impacts per m² for a given model, multiply the impacts of the functional unit (1 Wp) with the total Wp of the model and divide by the total area of the different dimensions. The impacts will be approximate because various specific panels have been included in this EPD.

Conversion factors of the average product:

- 208.5 W/m²
- 0.07kg/Wp

Conversion factor to mass if mass is not used as functional/declared unit (not applicable for services).

Reference service life: 30 years

Time representativeness: Primary data were collected from SoliTek's manufacturing operations for the year 2024 and subsequently updated to reflect production changes and operational conditions representative of the reference year 2026.

Geographical scope:

For A1 and A2, raw, auxiliary, and packaging materials are supplied from various locations worldwide. The manufacturing process (A3) is done in Lithuania. For A4 and A5, the product is distributed to various countries in Europe. Modules B and C take place in the same country where the final product is sold. Module D takes place in the same country where the waste is originated.

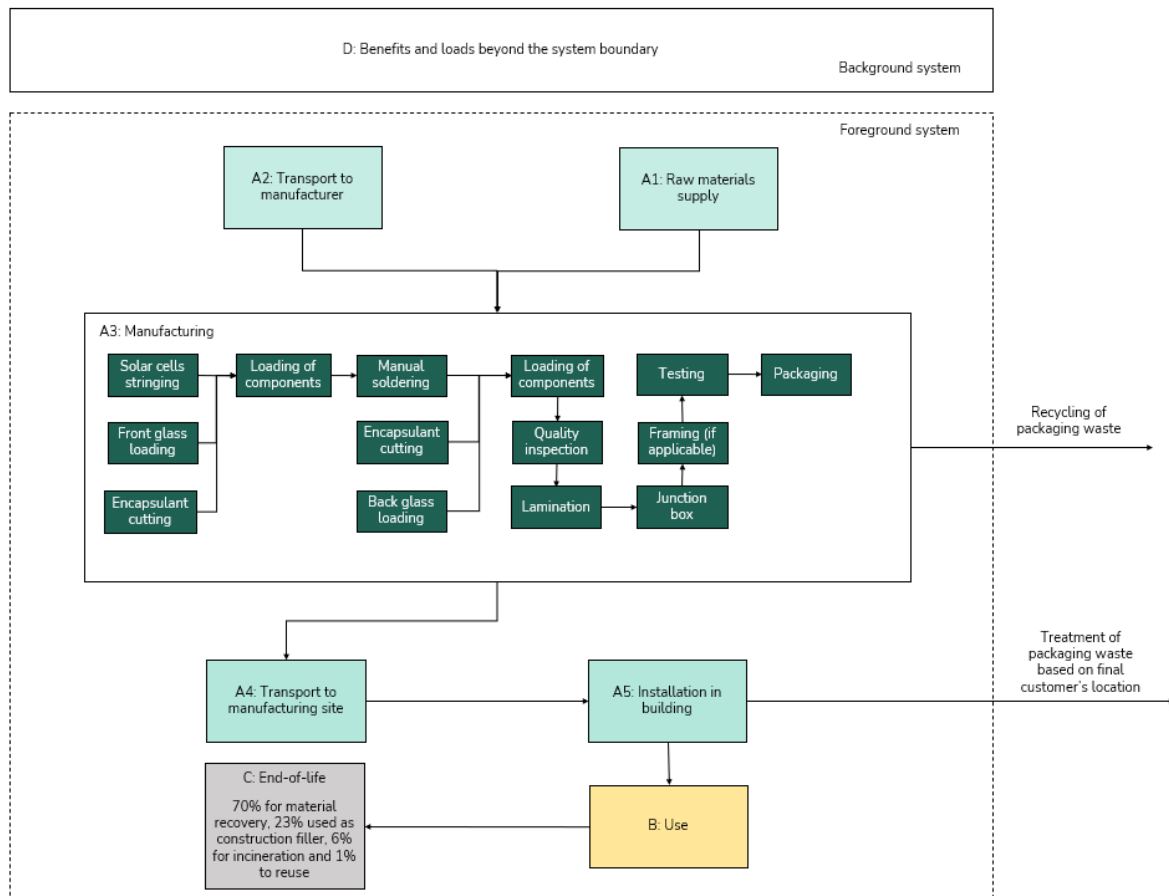
Database(s) and LCA software used: The database used was Ecoinvent 3.12 "Allocation, cut-off EN15804". The software used was brightway25 version 1.0.6.

Description of system boundaries:

The system boundaries of this EPD are Cradle to grave and module D (A + B + C + D).

All major materials, production energy use, and waste are included for product stages A1-A3, A4-A5, C1-C4, and D. Stages B1-B7 are also included, while the product only requires of limited maintenance by weekly cleaning. It is assumed that there is no replacement, or repair during its lifetime, and no direct emissions related to this kind of product.

Process flow diagram:



PRODUCT LIFE CYCLE:

A1 – Raw material supply

This module represents the extraction and processing of raw materials used in the SoliTek photovoltaic panels. The main raw materials are silicon solar cells, front and back glass, aluminium frame (for framed models), encapsulant (EVA), junction box, cables, and ribbon connectors. Packaging materials are also included in A1. The solar cells are modelled using the LCIs provided in Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems by the International Energy Agency (2020), with modifications to account for the efficiency (22.27%) and wafer thickness (130 µm) of the cells used by SoliTek. The rest of the raw materials and packaging are modelled using the corresponding activities from Ecoinvent 3.12.

Key assumptions:

1. The solar cells were modelled using the LCIs provided in *Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems* for the year 2018 by the International Energy Agency (2020). Given that the technology of solar cells has greatly improved since 2018, some modifications of the LCI are made to account for the new efficiency and the wafer thickness. The efficiency of the solar cells from the IEA study is 18%, whereas the ones used by Solitek have a greater efficiency of 22.27%. The wafer thickness is also reduced from 170 μm in the IEA study to 130 μm in the Solitek cells. The efficiency increase and the reduction of wafer thickness reduces the requirements of raw materials in the production of solar cells.
2. The solar modules use half solar cells. The cutting of the cells generates a waste of ~8%.
3. The packaging of all the raw materials is modelled.

A2 – Transport to production sites

Raw materials are transported to the factory in Vilnius, Lithuania. The modelling includes transport for each raw material individually. Silicon cells and other components sourced from Asia are transported by container ship, followed by lorry transport to the production site. Materials sourced within Europe are transported by lorry only.

Key assumptions:

1. Lorry transport assumes 16–32 tonne trucks with EURO 5 emission standard.
2. Sea transport assumes container ships using heavy fuel oil.

A3 – Manufacturing

This stage includes the manufacturing processes of the SoliTek photovoltaic panels at the production facility in Vilnius, Lithuania. Total annual inputs (packaging, energy, and water) and outputs (products and wastes) have been allocated according to mass.

The electricity consumed in production is supplied from the Lithuanian grid and matched with renewable electricity through Guarantees of Origin (GoOs) purchased by SoliTek. The renewable electricity mix associated with the GoOs is composed of solar (12.72%), wind (40.02%), biomass (47.20%), and hydropower (0.06%). The GWP-GHG of the renewable electricity mix is 0.072 kg CO₂ eq./kWh.

All photovoltaic panels covered by this EPD have an aluminium frame (including standard framed and roof-integrated Solrif models), except for the following frameless modules: SOLID Semi-Clear Frameless B96, SOLID Black Frameless B96, SOLID Satin Frameless B96, and SOLID Agro Frameless B64.

Key assumptions:

1. *Process water use is assumed to be negligible.*
2. *Pallets are assumed to be reused 30 times.*
3. *It is assumed that 0.05% of solar cells and ribbons are lost during the solar cell stringing process, 0.05% glass breakage occurs during glass handling and placement, 0.04% losses of encapsulant occur during cutting, 0.07% of solar cells and ribbons are lost during soldering, and 0.1% of solar cells are rejected due to breakage or defects during quality inspection.*

A4 - Transport

This module includes transport from the production facility to the building site. Transport is calculated on the basis of a scenario with the parameters described in the following table and the distances by road are weighted to historic sales data of previous models.

TECHNICAL PARAMETERS A4

Scenario parameter for truck transport	Value
Specific transport CO ₂ eq. emissions, kg CO ₂ e / tkm Lorry, 16-32, EURO5	0.189
Average transport distance, km	1.275
Capacity utilization (including empty return) %	Default value from Ecoinvent 3.12
Bulk density of transported products	N/A
Volume capacity utilization factor	≈ 1

Key assumptions:

1. The use of 16-32 tonne trucks with EURO5 emission standard is assumed.

A5 - Installation

This module includes the materials required for installation, as well as the waste generated during the installation of the panels. The installation process is assumed to be manual so there is no electricity consumption associated.

Scenarios of waste treatments of packaging are based on the EXIOBASE 3 hybrid database for the end-of-life treatment of paper and plastics.

Key assumptions:

1. The installation process is assumed to be manual, so there is no electricity consumption associated.

B1 - B7- Use stage

No activities are modelled in the use stage for the SOLID photovoltaic panels. The cleaning of the panels is optional by the user as they are cleaned with rainwater. Furthermore, no direct emissions during the reference service life could be identified.

C1 - De-construction

Module C1 assumes no electricity consumption for removal, in the same was as A5.

C2 - Transport to waste processing

The transport distance to the nearest waste processing plant is estimated at 50 km and the mode of transport is assumed to be truck, which is most common.

C3 - Waste processing for reuse, recovery and/or recycling

The panel is assumed to be treated according to the end-of-life statistics from ELKretsen in Sweden, where 70% of PV panels go to material recovery, 1% are reused, 23% undergo another type of recycling such as filler in construction and 6% go to thermal combustion.

C4 - Final disposal

The end-of-life scenario assumed for the panels contains no final disposal corresponding to C4.

D - Reuse, recovery, or recycling potential

This module includes the benefits and loads of material recovery, reuse, recycling and incineration with energy recovery.

Net loads are established as those related to activities necessary for the preparation of a product related to recycling or recovery processes beyond the system boundary (after the end of the waste condition) up to the point of functional equivalence where secondary material or secondary energy replaces primary production.

The correction factors in the Ecoinvent 3.12 "Allocation, cut-off EN15804" database are applied.

The benefits and loads are modelled as follows:

1. For the 70% of panels that go to material recovery, it is assumed that the glass is recovered and substitutes the production of virgin glass.
2. For the 1% of panels that are reused, it is assumed that they substitute new photovoltaic panels.
3. For the 23% that are recycled, it is assumed that the final use is for inert filler for construction, substituting the production of new filler.

CALCULATION METHOD FOR ELECTRICITY PRODUCTION

Energy production in the first year of operation:

$$E_1 = S_{rad} * A * y * PR * (1 - deg) \quad (1)$$

E₁ = Energy produced in the first year of operation, in kWh/year

S_{rad} = Site-specific annual average solar radiation on module (shadings not included), in kWh/kWp/year.

The annual radiation must take into consideration the specific inclination (slope, tilt) and orientation.

A = Area of module, from functional unit (FU), in m².

y = Module yield: electrical power, in kWp for standard test conditions (STC) of the module divided by the area of the module. STC: The ratio is given for standard test conditions: irradiance 1 000 W/m², cell temperature 25 °C, wind speed 1 m/s, AM1.5.

PR = Performance ratio, coefficient for losses. Site specific performance ratio can be modelled with PV simulation software tools, such as PVSyst or similar.

- Inverter losses
- Temperature losses
- DC cables losses
- AC cables losses
- Shadings
- Losses at weak radiation
- Losses due to dust, snow
- Other Losses

deg = yearly degradation rate.

Degradation

For bifacial N-type monocrystalline silicon modules - 99% of the name plate power during 1st year. The maximum annual power degradation can be up to 0.31% in each of the remaining 29 years¹.

The nameplate capacity of the PV module, as printed in the data sheet, shall be used as the starting point of the degradation curve. If uncertainties on performance measurements are factored in the

¹ <https://www.solitek.eu/storage/app/media/atsisiuntimai/2024-new/Warranty-for-Glass-Glass-solar-panels%20-%202024-09-11.pdf>

performance tolerance provided on the data sheet, e.g. +2.5% / -0%, the nameplate capacity without calculating uncertainties shall be used.

Energy production second year of operation:

$$E_2 = E_1 * (1 - deg) \quad (2)$$

Energy production n year of operation:

$$E_n = E_1 * (1 - deg)^{n-1} \quad (3)$$

Energy production over reference service life of module, assuming linear annual degradation:

$$E_{RSL} = E_1 * \left(1 + \sum_{n=1}^{RSL-1} (1 - deg)^n \right) \quad (4)$$

RSL = Reference service life for energy-producing unit, from functional unit (FU), stated in the EPD
n = year of operation.

Parameter	Value	Comment
S _{rad}	Site specific	Example of source for this is the Photovoltaic Geographical Information System (PVGIS): https://joint-research-centre.ec.europa.eu/pvgisphotovoltaic-geographical-information-system_en
A	Model specific	See product information for dimensions of the different models.
y	Model specific	Depends on the power and the area of the model. See product information for power and dimensions of the different models. For instance, the model SOLID Bifacial B108 435W has 0.22 kWp/m ²
PR	Site specific	Can be calculated with a PV simulation software such as PVSyst or similar
deg	0.31%	
RSL	30 years	Guarantee by Solitek

CUT-OFF RULES

No life cycle stage, processes, or required data were knowingly omitted. All relevant material and energy inputs were included. Flows related to both services (intangible products) and the use of fixed capital assets are considered irrelevant in the foreground system and are excluded. The effect of such exclusion is considered to be of low importance. No exclusion based on mass or energy has been made.

ALLOCATION

General allocation principles were applied according to EN 15804:2012+A2:2019. The background system uses economic partitioning with few exceptions where exergy partitioning is used. Regarding allocation of co-products in the foreground system, no allocation was required as no co-production takes place.

For the assigning of energy inputs at the plant level to specific processes related to the product under study in the foreground system, the assignment is done based on total number of panels produced in the plant. For the allocation of raw materials and packaging, the assignment is done based on the material needs for one panel. Regarding waste streams, the polluters pay principle has been considered for the modelling approach of end of life.

DATA QUALITY

According to the criteria of the "UN Environmental Global Guidance on LCA database development", the data quality for all three representativeness categories (geographical, technological and time) can be quantified as Very good. Data quality rating procedure has been performed using a rating system where "1" means Excellent quality, and "5" means Poor quality.

- Technological: 2 (All the input materials are modelled with the most accurate activities from Ecoinvent. The modelled solar cells do not match the exact characteristics of the bifacial cells used by SoliteK)
- Geographic: 1.5 (Solar cell production is modelled for China, which is the most impactful raw material. The electricity is modelled for Lithuania, and the rest of raw materials are modelled for Europe, when available)
- Time: 1.5 (The inventories from Ecoinvent are from 2025. For the solar cells, the inventory was created in 2018, but is connected to the 2025 Ecoinvent version.)
- Average DQR: 1.67

A summary of the data quality assessment, in line with requirements of PCR in Section 4.6.5. is shown below:

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Photovoltaic cell production, single-Si	Report (further adapted to match the characteristics of the cells used by SoliteK)	<i>Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems</i> for the year 2018 by the International Energy Agency (2020)	2022	Secondary data	0%
Glass production (front and back of solar panel)	Database	Ecoinvent v3.12	2025	Secondary data	0%
Other processes	Databases, collected data	Ecoinvent v3.12	2025	Primary data, secondary data	3%
Total share of primary data, of GWP-GHG results for A1-A3					3%

The 3% in primary data of GWP-GHG comes from the transport in A2. The contribution of A3 to GWP-GHG is < 1%.

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

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	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	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	LT	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU
Share of primary data	3% ²			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	3/37%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

² The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results based on average results of the product group weighted by sales

The Life Cycle Assessment study has been performed in accordance with the requirements of EN15804+A2:2019 (version 1.02), PCR 2019:14 (v2.0.1 issue data 2025-06-05 valid until 2030-04-07) and JRC characterization factors EF 3.1.

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	4.20E-01	1.84E-02	3.59E-03	0.00E+00	0.00E+00	6.98E-04	1.99E-02	0.00E+00	-2.50E-01
GWP-fossil	kg CO ₂ eq.	4.22E-01	1.84E-02	4.63E-04	0.00E+00	0.00E+00	6.98E-04	1.99E-02	0.00E+00	-2.50E-01
GWP-biogenic	kg CO ₂ eq.	-3.10E-03	1.13E-05	3.13E-03	0.00E+00	0.00E+00	4.28E-07	0.00E+00	0.00E+00	-9.43E-12
GWP-luluc	kg CO ₂ eq.	6.30E-04	5.94E-06	2.25E-07	0.00E+00	0.00E+00	2.25E-07	1.85E-06	0.00E+00	-3.60E-04
ODP	kg CFC 11 eq.	5.71E-08	4.16E-10	2.86E-12	0.00E+00	0.00E+00	1.58E-11	2.51E-11	0.00E+00	-2.19E-08
AP	mol H ⁺ eq.	3.62E-03	5.76E-05	1.13E-06	0.00E+00	0.00E+00	2.19E-06	1.48E-05	0.00E+00	-1.56E-03
EP-freshwater	kg P eq.	2.67E-04	1.28E-06	4.15E-08	0.00E+00	0.00E+00	4.84E-08	4.63E-07	0.00E+00	-1.01E-04
EP-marine	kg N eq.	6.28E-04	2.01E-05	8.17E-07	0.00E+00	0.00E+00	7.63E-07	4.93E-06	0.00E+00	-2.98E-04
EP-terrestrial	mol N eq.	6.80E-03	2.18E-04	4.45E-06	0.00E+00	0.00E+00	8.28E-06	5.70E-05	0.00E+00	-3.18E-03
POCP	kg NMVOC eq.	2.17E-03	9.12E-05	1.51E-06	0.00E+00	0.00E+00	3.46E-06	1.29E-05	0.00E+00	-1.06E-03
ADP-minerals&metals*	kg Sb eq.	4.27E-05	6.39E-08	7.71E-10	0.00E+00	0.00E+00	2.43E-09	1.69E-08	0.00E+00	-6.74E-06
ADP-fossil*	MJ	5.95E+00	2.59E-01	2.27E-03	0.00E+00	0.00E+00	9.84E-03	2.14E-02	0.00E+00	-3.17E+00
WDP*	m ³	1.30E+00	1.35E-03	1.31E-04	0.00E+00	0.00E+00	5.12E-05	1.24E-03	0.00E+00	-2.85E-01
Acronyms	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									

*** Disclaimers:**

The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

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.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG ³	kg CO ₂ eq.	4.23E-01	1.84E-02	4.64E-04	0.00E+00	0.00E+00	6.98E-04	1.99E-02	0.00E+00	-2.50E-01
Ecotoxicity-freshwater	CTUe	4.51E+00	3.85E-02	1.65E-02	0.00E+00	0.00E+00	1.46E-03	1.84E-01	0.00E+00	-1.75E+00
Human toxicity: carcinogenic	CTUh	1.68E-10	3.00E-12	1.98E-13	0.00E+00	0.00E+00	1.14E-13	6.64E-12	0.00E+00	-6.77E-11
Human toxicity: non-carcinogenic	CTUh	7.37E-09	1.58E-10	9.94E-12	0.00E+00	0.00E+00	5.98E-12	3.13E-10	0.00E+00	-4.86E-09
Ionising radiation: human health	kBq U235 eq.	5.47E-02	2.96E-04	5.96E-06	0.00E+00	0.00E+00	1.12E-05	6.38E-05	0.00E+00	-2.01E-02
Land use/soil quality potential	-	2.73E+00	1.54E-01	1.63E-03	0.00E+00	0.00E+00	5.85E-03	3.15E-02	0.00E+00	-1.03E+00
Particulate matter formation	disease incidence	2.77E-08	1.47E-09	2.38E-11	0.00E+00	0.00E+00	5.57E-11	1.83E-10	0.00E+00	-1.76E-08

Resource use indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	1.15E+00	3.81E-03	8.64E-05	0.00E+00	0.00E+00	1.45E-04	1.90E-03	0.00E+00	-5.06E-01
PERM	MJ	1.65E-01	4.56E-04	1.08E-05	0.00E+00	0.00E+00	1.73E-05	8.54E-04	0.00E+00	-6.91E-02
PERT	MJ	1.31E+00	4.26E-03	9.72E-05	0.00E+00	0.00E+00	1.62E-04	2.76E-03	0.00E+00	-5.75E-01
PENRE	MJ	5.36E+00	1.51E-01	1.63E-03	0.00E+00	0.00E+00	5.73E-03	1.61E-02	0.00E+00	-2.87E+00
PENRM	MJ	5.96E-01	1.08E-01	6.48E-04	0.00E+00	0.00E+00	4.11E-03	5.30E-03	0.00E+00	-3.00E-01
PENRT	MJ	5.96E+00	2.59E-01	2.27E-03	0.00E+00	0.00E+00	9.84E-03	2.14E-02	0.00E+00	-3.17E+00
SM	kg	1.61E-03	1.16E-04	2.26E-06	0.00E+00	0.00E+00	4.42E-06	2.82E-05	0.00E+00	-2.53E-03

³ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

RSF	MJ	1.08E-03	1.53E-06	2.08E-08	0.00E+00	0.00E+00	5.80E-08	1.17E-05	0.00E+00	-1.60E-04
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
FW	m ³	1.23E-02	3.07E-05	0.00E+00	0.00E+00	0.00E+00	1.16E-06	2.47E-05	0.00E+00	-6.62E-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									

Waste indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5.74E-01	1.58E-03	5.44E-05	0.00E+00	0.00E+00	6.01E-05	1.97E-03	0.00E+00	-9.69E-02
Non-hazardous waste disposed	kg	1.64E+00	2.08E-02	4.34E-03	0.00E+00	0.00E+00	7.90E-04	2.16E-02	0.00E+00	-5.99E-01
Radioactive waste disposed	kg	1.36E-05	7.17E-08	1.46E-09	0.00E+00	0.00E+00	2.72E-09	1.56E-08	0.00E+00	-4.94E-06

Output flow indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	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	0.00E+00
Material for recycling	kg	9.09E-04	7.32E-06	1.24E-03	0.00E+00	0.00E+00	2.78E-07	2.06E-05	0.00E+00	3.96E-04
Materials for energy recovery	kg	3.74E-07	1.62E-08	2.07E-10	0.00E+00	0.00E+00	6.17E-10	3.83E-09	0.00E+00	-2.38E-07
Exported energy, electricity	MJ	8.47E-03	4.89E-05	8.09E-07	0.00E+00	0.00E+00	1.85E-06	2.93E-04	0.00E+00	-2.27E-03
Exported energy, thermal	MJ	7.24E-03	6.30E-05	5.63E-07	0.00E+00	0.00E+00	2.39E-06	6.55E-06	0.00E+00	-5.80E-03

ADDITIONAL ENVIRONMENTAL INFORMATION

Variations for max-average and min-average results among the modules A1-A3

LCA result of one declared unit product (A-C)	Unit	Min	Representative/ Average	Max	Variation (Min to average)	Variation (Max to average)
GWP-total	kg CO2 eq.	4.35E-01	4.62E-01	6.44E-01	6%	39%
GWP-fossil	kg CO2 eq.	4.35E-01	4.61E-01	6.43E-01	6%	39%
GWP-biogenic	kg CO2 eq.	1.73E-05	4.16E-05	2.03E-04	58%	386%
GWP-luluc	kg CO2 eq.	6.00E-04	6.38E-04	8.80E-04	6%	38%
ODP	kg CFC 11 eq.	2.35E-08	5.76E-08	9.73E-08	59%	69%
AP	mol H+ eq.	3.33E-03	3.70E-03	5.36E-03	10%	45%
EP-freshwater	kg P eq.	2.65E-04	2.69E-04	3.63E-04	1%	35%
EP- marine	kg N eq.	5.83E-04	6.55E-04	9.39E-04	11%	43%
EP-terrestrial	mol N eq.	6.22E-03	7.09E-03	1.03E-02	12%	45%
POCP	kg NMVOC eq.	2.03E-03	2.28E-03	3.29E-03	11%	44%
ADP- minerals&metals*	kg Sb eq.	3.96E-05	4.28E-05	6.15E-05	7%	44%
ADP-fossil*	kg CO2 eq.	6.04E+00	6.24E+00	8.44E+00	3%	35%
WDP*	kg CO2 eq.	1.41E+00	1.30E+00	1.47E+00	8%	13%

The variations in results showed above occur due to the material differences between the products included in the EPD. As it can be seen in the product information section, the products differ in the thickness of the front and back glass, the quantity of solar cells per panel, whether the panel has frame or not, and the quantity of silicone and encapsulant.

The four scenarios of the End of life (100% material recovery, 100% reuse, 100% recycled as construction filler, 100% incinerated) have been declared in the EPD.

The 100% material recovery scenario

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	0.00E+00	7.10E-04	2.10E-02	0.00E+00	-7.09E-02
GWP-fossil	kg CO2 eq.	0.00E+00	7.10E-04	2.10E-02	0.00E+00	-7.49E-02
GWP-biogenic	kg CO2 eq.	0.00E+00	4.36E-07	0.00E+00	0.00E+00	4.02E-03
GWP-luluc	kg CO2 eq.	0.00E+00	2.29E-07	1.71E-06	0.00E+00	-1.48E-05
ODP	kg CFC 11 eq.	0.00E+00	1.60E-11	2.42E-11	0.00E+00	-1.67E-09
AP	mol H+ eq.	0.00E+00	2.22E-06	1.51E-05	0.00E+00	-7.54E-04
EP-freshwater	kg P eq.	0.00E+00	4.92E-08	4.74E-07	0.00E+00	-9.40E-06
EP-marine	kg N eq.	0.00E+00	7.76E-07	5.01E-06	0.00E+00	-1.23E-04
EP-terrestrial	mol N eq.	0.00E+00	8.42E-06	5.80E-05	0.00E+00	-1.50E-03
POCP	kg NMVOC eq.	0.00E+00	3.52E-06	1.28E-05	0.00E+00	-4.06E-04
ADP- minerals&metals	kg Sb eq.	0.00E+00	2.47E-09	1.76E-08	0.00E+00	-5.87E-07
ADP-fossil	MJ	0.00E+00	1.00E-02	2.06E-02	0.00E+00	-8.28E-01
WDP	m3	0.00E+00	5.21E-05	1.25E-03	0.00E+00	-2.06E-02
GWP-GHG	kg CO2 eq.	0.00E+00	7.10E-04	2.10E-02	0.00E+00	-7.49E-02

Ecotoxicity-freshwater	CTUe	0.00E+00	1.48E-03	1.95E-01	0.00E+00	-5.35E-01
Human toxicity: carcinogenic	CTUh	0.00E+00	1.16E-13	7.00E-12	0.00E+00	-8.39E-12
Human toxicity: non-carcinogenic	CTUh	0.00E+00	6.08E-12	3.32E-10	0.00E+00	-3.11E-10
Ionising radiation: human health	kBq U235 eq.	0.00E+00	1.14E-05	6.58E-05	0.00E+00	-2.74E-03
Land use	-	0.00E+00	5.95E-03	3.08E-02	0.00E+00	-4.36E-01
Particulate matter formation	disease incidence	0.00E+00	5.67E-11	1.73E-10	0.00E+00	-7.79E-09
PERE	MJ	0.00E+00	1.47E-04	1.99E-03	0.00E+00	-6.18E-02
PERM	MJ	0.00E+00	1.76E-05	9.03E-04	0.00E+00	-3.69E-02
PERT	MJ	0.00E+00	1.65E-04	2.89E-03	0.00E+00	-9.87E-02
PENRE	MJ	0.00E+00	5.82E-03	1.58E-02	0.00E+00	-6.80E-01
PENRM	MJ	0.00E+00	4.18E-03	4.82E-03	0.00E+00	-1.48E-01
PENRT	MJ	0.00E+00	1.00E-02	2.06E-02	0.00E+00	-8.28E-01
SM	kg	0.00E+00	4.49E-06	2.53E-05	0.00E+00	-1.55E-04
RSF	MJ	0.00E+00	5.90E-08	1.23E-05	0.00E+00	-4.39E-05
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	0.00E+00	1.18E-06	2.49E-05	0.00E+00	-4.54E-04
Hazardous waste disposed	kg	0.00E+00	6.11E-05	2.08E-03	0.00E+00	-9.72E-03
Non-hazardous waste disposed	kg	0.00E+00	8.03E-04	1.09E-02	0.00E+00	-7.66E-02
Radioactive waste disposed	kg	0.00E+00	2.77E-09	1.61E-08	0.00E+00	-6.86E-07
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	2.82E-07	2.18E-05	0.00E+00	1.30E-03
Materials for energy recovery	kg	0.00E+00	6.27E-10	3.96E-09	0.00E+00	-3.26E-08
Exported energy, electricity	MJ	0.00E+00	1.89E-06	7.88E-06	0.00E+00	-5.16E-04
Exported energy, thermal	MJ	0.00E+00	2.43E-06	6.73E-06	0.00E+00	-7.20E-03

The 100% panel reuse scenario

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	0.00E+00	7.22E-04	9.99E-02	0.00E+00	-1.26E+00
GWP-fossil	kg CO2 eq.	0.00E+00	7.22E-04	9.99E-02	0.00E+00	-1.25E+00
GWP-biogenic	kg CO2 eq.	0.00E+00	4.43E-07	0.00E+00	0.00E+00	-1.41E-03
GWP-luluc	kg CO2 eq.	0.00E+00	2.33E-07	6.88E-06	0.00E+00	-2.21E-03
ODP	kg CFC 11 eq.	0.00E+00	1.63E-11	7.93E-11	0.00E+00	-1.31E-07
AP	mol H+ eq.	0.00E+00	2.26E-06	4.40E-05	0.00E+00	-6.60E-03
EP-freshwater	kg P eq.	0.00E+00	5.01E-08	1.71E-06	0.00E+00	-5.95E-04
EP-marine	kg N eq.	0.00E+00	7.89E-07	2.11E-05	0.00E+00	-1.35E-03
EP-terrestrial	mol N eq.	0.00E+00	8.56E-06	1.94E-04	0.00E+00	-1.35E-02
POCP	kg NMVOC eq.	0.00E+00	3.58E-06	4.99E-05	0.00E+00	-4.93E-03
ADP-minerals&metals	kg Sb eq.	0.00E+00	2.51E-09	2.77E-08	0.00E+00	-4.01E-05
ADP-fossil	MJ	0.00E+00	1.02E-02	6.41E-02	0.00E+00	-1.64E+01
WDP	m3	0.00E+00	5.30E-05	4.40E-03	0.00E+00	-1.71E+00
GWP-GHG	kg CO2 eq.	0.00E+00	7.22E-04	9.99E-02	0.00E+00	-1.26E+00
Ecotoxicity-freshwater	CTUe	0.00E+00	1.51E-03	1.09E+00	0.00E+00	-8.75E+00
Human toxicity: carcinogenic	CTUh	0.00E+00	1.18E-13	2.82E-11	0.00E+00	-3.90E-10
Human toxicity: non-carcinogenic	CTUh	0.00E+00	6.18E-12	2.46E-09	0.00E+00	-2.94E-08
Ionising radiation: human health	kBq U235 eq.	0.00E+00	1.16E-05	1.20E-04	0.00E+00	-1.15E-01
Land use	-	0.00E+00	6.05E-03	6.15E-02	0.00E+00	-4.30E+00
Particulate matter formation	disease incidence	0.00E+00	5.76E-11	4.79E-10	0.00E+00	-7.73E-08

PERE	MJ	0.00E+00	1.49E-04	2.97E-03	0.00E+00	-2.90E+00
PERM	MJ	0.00E+00	1.79E-05	1.06E-03	0.00E+00	-2.51E-01
PERT	MJ	0.00E+00	1.67E-04	4.02E-03	0.00E+00	-3.15E+00
PENRE	MJ	0.00E+00	5.92E-03	4.78E-02	0.00E+00	-1.52E+01
PENRM	MJ	0.00E+00	4.25E-03	1.63E-02	0.00E+00	-1.23E+00
PENRT	MJ	0.00E+00	1.02E-02	6.41E-02	0.00E+00	-1.64E+01
SM	kg	0.00E+00	4.57E-06	5.74E-05	0.00E+00	-1.53E-02
RSF	MJ	0.00E+00	6.00E-08	1.30E-05	0.00E+00	-8.22E-04
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	0.00E+00	1.20E-06	8.74E-05	0.00E+00	-3.98E-02
Hazardous waste disposed	kg	0.00E+00	6.21E-05	5.23E-03	0.00E+00	-5.69E-01
Non-hazardous waste disposed	kg	0.00E+00	8.17E-04	1.14E-01	0.00E+00	-3.45E+00
Radioactive waste disposed	kg	0.00E+00	2.82E-09	2.91E-08	0.00E+00	-2.82E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	2.87E-07	4.27E-04	0.00E+00	-4.40E-03
Materials for energy recovery	kg	0.00E+00	6.38E-10	7.82E-09	0.00E+00	-1.42E-06
Exported energy, electricity	MJ	0.00E+00	1.92E-06	1.50E-05	0.00E+00	-1.21E-02
Exported energy, thermal	MJ	0.00E+00	2.47E-06	1.51E-05	0.00E+00	-4.82E-03

The 100% recycling as construction filler scenario

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	0.00E+00	7.10E-04	9.82E-02	0.00E+00	2.83E-04
GWP-fossil	kg CO2 eq.	0.00E+00	7.10E-04	9.82E-02	0.00E+00	-4.22E-03
GWP-biogenic	kg CO2 eq.	0.00E+00	4.36E-07	0.00E+00	0.00E+00	4.50E-03
GWP-luluc	kg CO2 eq.	0.00E+00	2.29E-07	6.76E-06	0.00E+00	-3.52E-07
ODP	kg CFC 11 eq.	0.00E+00	1.60E-11	7.80E-11	0.00E+00	-6.80E-11
AP	mol H+ eq.	0.00E+00	2.22E-06	4.32E-05	0.00E+00	-2.90E-05
EP-freshwater	kg P eq.	0.00E+00	4.92E-08	1.68E-06	0.00E+00	-8.46E-07
EP-marine	kg N eq.	0.00E+00	7.76E-07	2.08E-05	0.00E+00	-8.04E-06
EP-terrestrial	mol N eq.	0.00E+00	8.42E-06	1.91E-04	0.00E+00	-1.05E-04
POCP	kg NMVOC eq.	0.00E+00	3.52E-06	4.91E-05	0.00E+00	-3.31E-05
ADP-minerals&metals	kg Sb eq.	0.00E+00	2.47E-09	2.73E-08	0.00E+00	-2.02E-08
ADP-fossil	MJ	0.00E+00	1.00E-02	6.30E-02	0.00E+00	-5.88E-02
WDP	m3	0.00E+00	5.21E-05	4.33E-03	0.00E+00	-4.00E-03
GWP-GHG	kg CO2 eq.	0.00E+00	7.10E-04	9.82E-02	0.00E+00	-4.22E-03
Ecotoxicity-freshwater	CTUe	0.00E+00	1.48E-03	1.08E+00	0.00E+00	-1.13E-05
Human toxicity: carcinogenic	CTUh	0.00E+00	1.16E-13	2.78E-11	0.00E+00	-1.68E-12
Human toxicity: non-carcinogenic	CTUh	0.00E+00	6.08E-12	2.42E-09	0.00E+00	-1.83E-11
Ionising radiation: human health	kBq U235 eq.	0.00E+00	1.14E-05	1.18E-04	0.00E+00	-2.58E-04
Land use	-	0.00E+00	5.95E-03	6.05E-02	0.00E+00	-2.94E-01
Particulate matter formation	disease incidence	0.00E+00	5.67E-11	4.71E-10	0.00E+00	-4.06E-10
PERE	MJ	0.00E+00	1.47E-04	2.92E-03	0.00E+00	-2.99E-02
PERM	MJ	0.00E+00	1.76E-05	1.04E-03	0.00E+00	-2.71E-02
PERT	MJ	0.00E+00	1.65E-04	3.95E-03	0.00E+00	-5.70E-02
PENRE	MJ	0.00E+00	5.82E-03	4.70E-02	0.00E+00	-4.05E-02
PENRM	MJ	0.00E+00	4.18E-03	1.60E-02	0.00E+00	-1.83E-02
PENRT	MJ	0.00E+00	1.00E-02	6.30E-02	0.00E+00	-5.88E-02
SM	kg	0.00E+00	4.49E-06	5.64E-05	0.00E+00	-5.03E-06
RSF	MJ	0.00E+00	5.90E-08	1.28E-05	0.00E+00	-2.86E-07
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	0.00E+00	1.18E-06	8.59E-05	0.00E+00	-9.32E-05

Hazardous waste disposed	kg	0.00E+00	6.11E-05	5.14E-03	0.00E+00	-7.17E-04
Non-hazardous waste disposed	kg	0.00E+00	8.03E-04	1.13E-01	0.00E+00	-6.49E-03
Radioactive waste disposed	kg	0.00E+00	2.77E-09	2.86E-08	0.00E+00	-6.48E-08
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	2.82E-07	4.20E-04	0.00E+00	1.32E-03
Materials for energy recovery	kg	0.00E+00	6.27E-10	7.69E-09	0.00E+00	4.80E-08
Exported energy, electricity	MJ	0.00E+00	1.89E-06	1.48E-05	0.00E+00	-4.52E-05
Exported energy, thermal	MJ	0.00E+00	2.43E-06	1.49E-05	0.00E+00	-9.85E-04

The 100% incineration scenario

		Results per declared unit				
Indicator	Unit	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	0.00E+00	6.98E-04	2.14E-03	0.00E+00	3.41E-03
GWP-fossil	kg CO2 eq.	0.00E+00	6.98E-04	2.06E-03	0.00E+00	-1.10E-03
GWP-biogenic	kg CO2 eq.	0.00E+00	4.28E-07	7.06E-05	0.00E+00	4.51E-03
GWP-luluc	kg CO2 eq.	0.00E+00	2.25E-07	4.13E-06	0.00E+00	5.28E-06
ODP	kg CFC 11 eq.	0.00E+00	1.58E-11	4.10E-11	0.00E+00	-2.01E-11
AP	mol H+ eq.	0.00E+00	2.19E-06	1.03E-05	0.00E+00	-8.29E-06
EP-freshwater	kg P eq.	0.00E+00	4.84E-08	2.93E-07	0.00E+00	-4.46E-07
EP-marine	kg N eq.	0.00E+00	7.63E-07	3.83E-06	0.00E+00	-1.31E-07
EP-terrestrial	mol N eq.	0.00E+00	8.28E-06	4.13E-05	0.00E+00	-1.82E-05
POCP	kg NMVOC eq.	0.00E+00	3.46E-06	1.50E-05	0.00E+00	-5.89E-06
ADP-minerals&metals	kg Sb eq.	0.00E+00	2.43E-09	6.14E-09	0.00E+00	-7.31E-09
ADP-fossil	MJ	0.00E+00	9.84E-03	3.49E-02	0.00E+00	-1.65E-02
WDP	m3	0.00E+00	5.12E-05	9.99E-04	0.00E+00	-4.83E-04
GWP-GHG	kg CO2 eq.	0.00E+00	6.98E-04	2.07E-03	0.00E+00	-1.09E-03
Ecotoxicity-freshwater	CTUe	0.00E+00	1.46E-03	1.13E-02	0.00E+00	9.26E-03
Human toxicity: carcinogenic	CTUh	0.00E+00	1.14E-13	9.26E-13	0.00E+00	-3.86E-13
Human toxicity: non-carcinogenic	CTUh	0.00E+00	5.98E-12	1.59E-11	0.00E+00	6.93E-12
Ionising radiation: human health	kBq U235 eq.	0.00E+00	1.12E-05	3.27E-05	0.00E+00	-2.01E-04
Land use	-	0.00E+00	5.85E-03	4.39E-02	0.00E+00	-2.13E-01
Particulate matter formation	disease incidence	0.00E+00	5.57E-11	3.38E-10	0.00E+00	-9.44E-11
PERE	MJ	0.00E+00	1.45E-04	5.39E-04	0.00E+00	-2.91E-02
PERM	MJ	0.00E+00	1.73E-05	8.56E-05	0.00E+00	-2.70E-02
PERT	MJ	0.00E+00	1.62E-04	6.24E-04	0.00E+00	-5.60E-02
PENRE	MJ	0.00E+00	5.73E-03	2.18E-02	0.00E+00	-1.43E-02
PENRM	MJ	0.00E+00	4.11E-03	1.31E-02	0.00E+00	-2.24E-03
PENRT	MJ	0.00E+00	9.84E-03	3.49E-02	0.00E+00	-1.65E-02
SM	kg	0.00E+00	4.42E-06	7.39E-05	0.00E+00	1.86E-05
RSF	MJ	0.00E+00	5.80E-08	8.80E-07	0.00E+00	-6.21E-08
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	0.00E+00	1.16E-06	2.29E-05	0.00E+00	-1.02E-05
Hazardous waste disposed	kg	0.00E+00	6.01E-05	3.16E-04	0.00E+00	-2.83E-04
Non-hazardous waste disposed	kg	0.00E+00	7.90E-04	1.92E-01	0.00E+00	-2.41E-03
Radioactive waste disposed	kg	0.00E+00	2.72E-09	7.87E-09	0.00E+00	-5.08E-08
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	2.78E-07	1.38E-06	0.00E+00	1.33E-03
Materials for energy recovery	kg	0.00E+00	6.17E-10	1.88E-09	0.00E+00	5.04E-08

Exported energy, electricity	MJ	0.00E+00	1.85E-06	4.85E-03	0.00E+00	-3.84E-05
Exported energy, thermal	MJ	0.00E+00	2.39E-06	3.89E-06	0.00E+00	-9.78E-04

ABBREVIATIONS

General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CPC	Central product classification
Other Relevant Terms	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m ³	Cubic Meter
NM VOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO ₂ eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO ₂ eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

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VERSION HISTORY

Original Version of the EPD, 2026-07-08

