

Programme:

The International EPD System:
www.environdec.com

Programme Operator:

EPD International AB

EPD Registration Number:

EPD-IES-0025558

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2030-10-19

EPD of multiple products, based on worst-case results

In accordance with ISO 14025:2006 and
EN15804:2012+A2:2019/AC:2021 for:

Product model:

MAC350, MAC450, MAC600, MAC900, MAC350-DUO, MAC450-DUO,
MAC600-DUO, MAC900-DUO, MAC350-SUS, MAC450-SUS, MAC600-SUS,
MAC900-SUS, MAC350-SUS-DUO, MAC450-SUS-DUO, MAC600-SUS-DUO,
MAC900-SUS-DUO

MAC

From Orlight Limited



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.



Programme Information:

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

Product Category Rules (PCR):

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): 2019:14 Construction products (EN 15804+A2) 2.0.1

PCR review was conducted by:

The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@environdec.com. Members of the Technical Committee were requested to state any potential conflict of interest with the PCR Committee, and if there were conflicts of interest they were excused from the review.

Life Cycle Assessment (LCA) accountability:

Jiliang Tao ,Lingyao Xu, CTI Certification Co., Ltd

Third party verification:

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by individual verifier

Third-party verifier: Rui Wang, IVL Swedish Environmental Research Institute

Approved by: The 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 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.



Owner of the EPD: ORLIGHT LIMITED

Contact: Wilson Mendes

E-mail: info@orlight.com

About Us

Orlight, your premier turn-key lighting supply partner. Established in 1997, Orlight has become a dominant force in the architectural lighting market, consistently adding value to our clients' propositions with unparalleled lighting products and services. Our unique approach to the ever-evolving industry has made us a trusted name among developers and construction firms.

Our Mission

We pride ourselves on being 100% in command of our supply chain, from quality control and product innovation to research, development and procurement. With no third-party involvement, we deliver superior products at competitive prices. Our substantial stock holdings in the UK and Europe ensure swift dispatch, minimising waiting times and providing a distinct advantage to our clients.

Market Sector and Credibility

Orlight caters to large-scale residential and commercial developments, in response to market demand, we expanded from a predominantly residential lighting business into the commercial lighting sector for data centres, office spaces and other commercial environments, which has proven a success for us. Our growing commercial product range combines high-specification LED technology with aesthetic appeal, ensuring first-class offerings that maintain critical performance values. Our reputation, built over more than 25 years, is reinforced by long-standing relationships with major developers and construction firms. We also serve a diverse portfolio of clients, with projects extending globally to the Middle East, Europe and China.

Sustainability Commitment

At Orlight, sustainability is a core value that informs all aspects of our business. We take our environmental responsibilities seriously, integrating eco-friendly practices throughout our supply chain and manufacturing processes. We are committed to reducing our carbon footprint and improving operational efficiency. We continuously seek ways to enhance our sustainability efforts, ensuring that our products are not only high-quality but also environmentally responsible.

Value Proposition and Deliverability

To streamline processes, we offer direct credit accounts to M&E Contractors, Electrical Installers and Construction Companies, now extending these facilities to North America, Europe and the Middle East. By eliminating third parties, we help clients control costs effectively. With stocks exceeding £10M and a fleet of vehicles, our FORS Gold Accredited operation guarantees high performance, safety and efficiency, reinforcing our commitment to a reliable Source to Site® service.

The Complete Project from Concept to Delivery

Orlight's Source to Site business model is rooted in value, quality and efficiency. Our comprehensive in-house departments provide a full spectrum of services, from initial design to bespoke product manufacturing and technical support. Our adaptability allows us to tackle various projects, including luxury Apartments, Commercial & Hospitality developments, Gyms, Spas, Data Centres and other areas located both internally and externally. This flexibility and control over our manufacturing process make Orlight a sought-after partner for high-end projects across London and beyond.

At Orlight, our commitment to innovation, quality, sustainability and client satisfaction drives us to deliver exceptional lighting solutions for every project. Join us in illuminating the future with excellence.

Product-related or management system-related certifications

- ISO 9001:2015 – Quality Management Service
- ISO 14001:2015 – Environmental Management System

Name and location of production site:

Dongguan, China

Product Name:

This EPD represents the MAC family from Orlight, including the following models: MAC350, MAC450, MAC600, MAC900, MAC350-DUO, MAC450-DUO, MAC600-DUO, MAC900-DUO, MAC350-SUS, MAC450-SUS, MAC600-SUS, MAC900-SUS, MAC350-SUS-DUO, MAC450-SUS-DUO, MAC600-SUS-DUO and MAC900-SUS-DUO.

All products are manufactured at the same location and share identical structure and functionality, the difference lies in the size, weight and color.

MAC Family



Product Identification

PRODUCT	WATTAGE	COLOUR TEMPERATURE	MOUNT
MAC350	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED / TRACK
MAC350-DUO	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED / TRACK
MAC450	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED / TRACK
MAC450-DUO	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED / TRACK
MAC600	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED / TRACK
MAC600-DUO	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED / TRACK
MAC900	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED
MAC900-DUO	VARIABLE	2700K / 3000K / 4000K / TUNABLE WHITE	SURFACE / SUSPENDED

The test standard of products refers to: IES LM-79-08, ANSI C78.377-2017

Manufacturing Process: The MAC900-DUO products from Orlight are manufactured in the same site and have the same major steps in the core manufacturing processes, inspecting materials, assembling the whole lamp, testing and packaging etc.



This EPD is based on the worst-case product, which is **MAC900-SUS-DUO**, according to the weight and power of the product.

Product Description:



MAC900-DUO

The MAC900-DUO is a sophisticated and versatile lighting solution, precision-crafted from durable aluminium and offered in premium White RAL9016 or Black RAL9005 finishes as standard. Designed for maximum flexibility, it can be surface-mounted on walls or ceilings, or suspended, making it suitable for a wide range of architectural and interior applications.

With a 2-Step MacAdams binning strategy for precise colour consistency, a CRI>80 for exceptional light quality, and a micro prismatic diffuser to ensure even, comfortable illumination, the MAC900-DUO delivers lighting that is both accurate and visually refined. Its UGR<19 rating guarantees glare-free performance, creating an ideal atmosphere for offices, retail spaces, and hospitality environments. An integral driver further simplifies installation for maximum convenience.

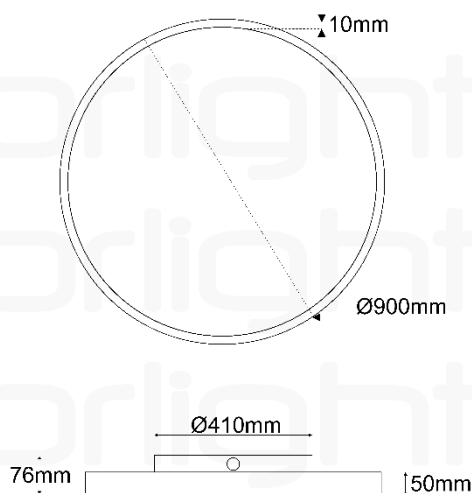
Featuring dual-lighting capability, the MAC900-DUO provides both direct and indirect illumination, enhancing the ambience and functionality of any space.

UN CPC Code:

4653 Lighting Equipment

Geographical Scope:

Modules A1-A3: CN
Modules A4-A5: GLO
Modules B and C: UK



Declared Unit:

One piece of MAC900-DUO product, the weight of the worst-case product per declared unit is 13.18 kg.

Reference service life:

50,000 Hours

Time representativeness:

From 1st January 2024 to 31st December 2024

Database(s) and LCA software used:

Database Ecoinvent 3.10 and Simapro 9.6

Cut-off criteria:

In the event of insufficient input data or data gaps for a unit process, the cut-off criteria should be set at 1% for both renewable and non-renewable primary energy usage, as well as 1% for the total mass input of that unit process. The cumulative neglected input flows A1-A3, A4-A5, B1-B7, C1-C4 and module D, shall not exceed 5% of energy usage and mass. In addition, the consumption and emissions of roads and plants' infrastructure, capital goods, equipment of each process, personnel and living facilities in the plants were excluded.

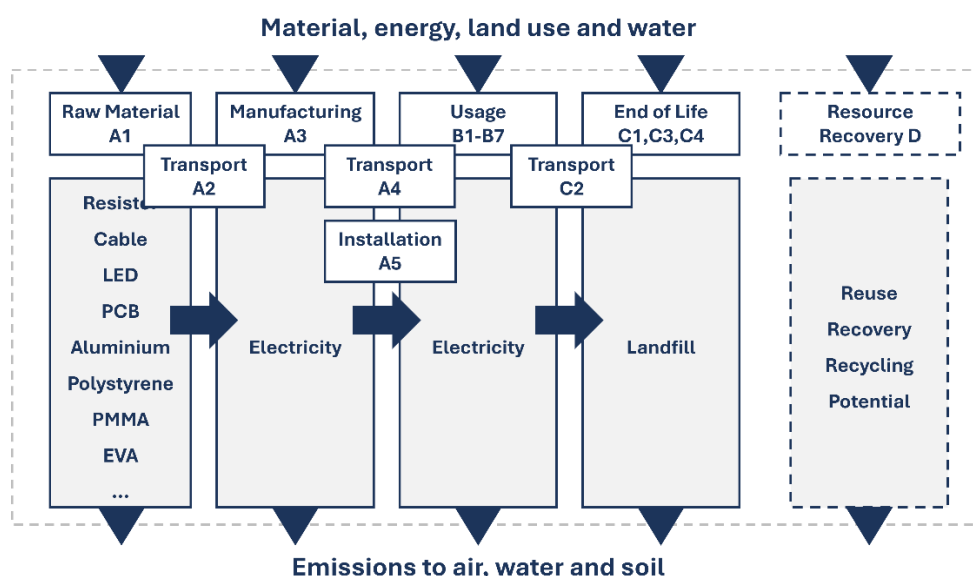
Allocation rules:

In this assessment, the allocation of energy consumption, resource use, emissions and wastes from the manufacturing process are based on mass of the products when they leave the unit process, which is the weight of MAC900-DUO and other products, which are from the same manufacturing site of Orlight Limited.

Description of system boundaries:

Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + A4+A5 + C + D and B)

System diagram:



Assumptions:

In construction process stage A5, the transportation of the product to the customer or building site is considered, with the transport distance assumed to be 100 km. The product is installed manually.

In end-of-life stage C2, an average distance of 100 km is assumed for transport the used products to the recycling facility and landfill site.

In end-of-life stage C3. it is assumed that processes such as crushing are included (diesel consumption).

In end-of-life stage C4, 100% scrap metal from the waste products is collected and reused, whilst the recycling rate for the remaining part is 65%, the remaining 35% of non-metallic product components, having not entered the recycling system, were ultimately sent to landfills. Also, the corresponding 100% scenarios (100% recycling, 100% landfill) are declared.

Additional information:

In this EPD, the EN 15804 reference package is based on EF 3.1

In this EPD, the benefits of 100% of scrap metal and 65% of the rest part from MAC product are included in module D.

The data for the generation of electricity applied in A3 is electricity mixes on the market, namely “electricity, low voltage in China” in the Ecoinvent 3.10 (cut-off) database. Its GWP-GHG impact is 0.96 kgCO₂eq/kWh. The reference year of electricity dataset is 2015-2023.

The data for the generation of electricity applied in B6 is electricity mixes on the market, namely the United Kingdom Power Grid Mix in the Ecoinvent 3.10 (cut-off) database. Its GWP-GHG impact is 0.261 kgCO₂eq/kWh. The reference year of electricity dataset is 2020-2023.

Conversion Factor:

PRODUCT	WEIGHT (KG/DECLARED UNIT)	CONVERSION FACTOR
MAC900-DUO	13.18	13.18

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	X	X	X	X	X	X	X	X	X	X	X	X
Geography	CN	CN	CN	GLO	GLO	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK
Share of primary data	0.41%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-94.49%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Data quality:

Declaration of sources and share of primary data are as blow (taking DATA-PRO-1500 as the example as it is the worst-case product):

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Generation of electricity used in manufacturing of product	Database	Ecoinvent V3.10	2024	Primary data	0.37%
Transport of raw materials to manufacturing site	Database	Ecoinvent V3.10	2024	Primary data	0.04%
Production of Printed wiring board	Database	Ecoinvent V3.10	2024	Secondary data	81.88%
Total share of primary data, of GWP-GHG results for A1-A3					0.41%

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.

Referring to EN 15804:2012+A2:2019/AC:2021, datasets for which at least 80% of the absolute impact of the core environmental indicator contributes, shall be analyzed for data quality. The data quality assessment was conducted in accordance with Table E.1 in Annex E of EN 15804:2012+A2:2019/AC:2021. The quality of the collected data was assessed for the use stage (average of over 70% of total stages), see results in the following table:

Life cycle stage	Unit process	Geographical representativeness	Technical representativeness	Time representativeness	Reason for level	Relevance
B6	Operational electricity use	Good	Good	Fair	United Kingdom Power Grid Mix based on data from 2020	94% of GWP, 17%-85% of other core impacts

The content information below is based on 1 piece of MAC, which is the worst-case product within the product family. The product weight is 13.18 kg, excluding packaging materials. As the share of bio-based/recycled material is unknown, this part of the content declaration is declared as 0% as a conservative estimation.

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Transformer	0.1786	0	0
Printed wiring board	1.3568	0	0
Nylon 6-6	0.0429	0	0
PC	1.0602	0	0
Electronics,for control units	0.0891	0	0
Battery cell	0.0908	0	0
PMMA	1.6320	0	0
LED	0.0118	0	0
Resistor	0.0002	0	0
Aluminium	1.2269	0	0
Steel	4.7184	0	0
Cast iron	2.4848	0	0
Silicone rubber	0.0130	0	0
PP	0.0029	0	0
Cable	0.0934	0	0
Polyvinylchloride, bulk polymerised	0.000004	0	0
EVA	0.0503	0	0
PET	0.0111	0	0
kraft paper	0.0027	0	0
Glass fibre reinforced plastic	0.1057	0	0
Neodymium magnet	0.0085	0	0
TOTAL	13.1800	0	0
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
HDPE	0.7805	5.92%	0
Corrugated board box	2.0514	15.56%	0
PE	0.0680	0.52%	0
TOTAL	2.9000	22.00%	0

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
None	-	-	-

The product does not include in its life cycle any dangerous substances included in the "Very High Impact Candidate List for Authorization (SVHC)" in a percentage greater than 0.1% of the weight of the product.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804:

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	5.23E+02	1.31E+02	-5.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.81E+02	0.00E+00	0.00E+00	2.06E-01	7.57E-04	1.03E-01	-3.40E+02
GWP-biogenic	kg CO ₂ eq.	-2.27E-01	1.60E-02	1.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E+00	0.00E+00	0.00E+00	1.02E-05	1.60E-07	2.07E+00	-7.53E-01
GWP-luluc	kg CO ₂ eq.	6.89E-01	9.34E-03	-6.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.54E-01	0.00E+00	0.00E+00	8.40E-05	1.90E-07	7.04E-07	-3.98E-01
GWP-total	kg CO ₂ eq.	5.24E+02	1.31E+02	-3.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.83E+02	0.00E+00	0.00E+00	2.06E-01	7.58E-04	2.17E+00	-3.41E+02
ODP	kg CFC 11 eq.	2.44E-05	2.02E-06	-1.33E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.95E-05	0.00E+00	0.00E+00	2.99E-09	4.76E-11	1.24E-10	-1.57E-05
AP	mol H ⁺ eq.	3.72E+00	5.48E-01	-2.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.90E+00	0.00E+00	0.00E+00	9.35E-04	3.48E-06	1.34E-04	-2.45E+00
EP-freshwater	kg P eq.	6.63E-01	2.11E-03	-1.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E-01	0.00E+00	0.00E+00	1.65E-05	4.29E-08	1.23E-04	-4.30E-01
EP-marine	kg N eq.	7.25E-01	2.21E-01	-8.52E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.28E-01	0.00E+00	0.00E+00	3.51E-04	5.34E-07	1.71E-03	-4.73E-01
EP-terrestrial	mol N eq.	7.76E+00	2.41E+00	-5.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.26E+00	0.00E+00	0.00E+00	3.83E-03	5.70E-06	3.76E-04	-5.08E+00
POCP	kg NMVOC eq.	2.21E+00	7.77E-01	-2.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E+00	0.00E+00	0.00E+00	1.32E-03	6.51E-06	7.99E-04	-1.44E+00
ADP-minerals&metals*	kg Sb eq.	1.83E-01	3.75E-05	-2.69E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-02	0.00E+00	0.00E+00	6.42E-07	5.90E-10	2.82E-09	-1.19E-01
ADP-fossil*	MJ	6.61E+03	1.74E+03	-1.02E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+04	0.00E+00	0.00E+00	2.93E+00	4.71E-02	1.06E-01	-4.21E+03
WDP*	m³	1.62E+02	3.54E+00	-1.80E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.93E+02	0.00E+00	0.00E+00	1.70E-02	5.46E-05	3.11E-04	-1.05E+02
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															
Disclaimer: The use of the results of Modules A1-A3 (A1-A5 for services) without considering the results of Module C is discouraged. 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 of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Results of the environmental performance indicators

Additional mandatory and voluntary impact category indicators:

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GWG ¹	kg CO ₂ eq.	5.24E+02	1.31E+02	-5.22E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.82E+02	0.00E+00	0.00E+00	2.06E-01	7.58E-04	1.03E-01	-3.40E+02

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.

Results of the environmental performance indicators

Resource use indicators:

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	7.43E+02	6.80E+00	-2.99E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.09E+03	0.00E+00	0.00E+00	3.97E-02	1.30E-04	6.50E-04	-4.70E+02
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
PERT	MJ	7.43E+02	6.80E+00	-2.99E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.09E+03	0.00E+00	0.00E+00	3.97E-02	1.30E-04	6.50E-04	-4.70E+02
PENRE	MJ	6.61E+03	1.74E+03	-1.03E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+04	0.00E+00	0.00E+00	2.93E+00	4.71E-02	1.06E-01	-4.21E+03
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
PENRT	MJ	6.61E+03	1.74E+03	-1.03E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+04	0.00E+00	0.00E+00	2.93E+00	4.71E-02	1.06E-01	-4.21E+03
SM	kg	6.37E+00	1.72E-01	-1.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.77E+00	0.00E+00	0.00E+00	1.31E-03	4.26E-06	4.42E-05	-4.37E+00
RSF	MJ	2.68E-01	1.04E-03	-2.27E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.72E-02	0.00E+00	0.00E+00	1.66E-05	2.92E-08	1.15E-07	-2.90E-02
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
FW	M³	4.18E+00	8.58E-02	-4.36E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.01E+00	0.00E+00	0.00E+00	4.15E-04	1.34E-06	7.58E-06	-2.72E+00
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															

Results of the environmental performance indicators

Waste indicators:

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7.03E+01	7.67E-01	-3.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.25E+01	0.00E+00	0.00E+00	5.16E-03	1.83E-05	1.19E-04	- 5.50E+01
Non-hazardous waste disposed	kg	1.40E+03	1.58E+01	-2.19E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.30E+02	0.00E+00	0.00E+00	9.70E-02	2.73E-04	1.66E+00	- 9.00E+02
Radioactive waste disposed	kg	1.32E-02	1.31E-04	-7.10E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-01	0.00E+00	0.00E+00	6.21E-07	2.45E-09	1.17E-08	-8.42E-03

Output flow indicators:

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E+01
Materials for energy recovery	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
Exported energy, electricity	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
Exported energy, thermal	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

Additional LCA results

The environmental impact indicators of 100% recycling scenario in end-of-life stage:

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	5.23E+02	1.31E+02	-5.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.81E+02	0.00E+00	0.00E+00	2.06E-01	7.57E-04	0.00E+00	-4.98E+02
GWP-biogenic	kg CO ₂ eq.	-2.27E-01	1.60E-02	1.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E+00	0.00E+00	0.00E+00	1.02E-05	1.60E-07	0.00E+00	-1.12E+00
GWP-luluc	kg CO ₂ eq.	6.89E-01	9.34E-03	-6.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.54E-01	0.00E+00	0.00E+00	8.40E-05	1.90E-07	0.00E+00	-6.05E-01
GWP-total	kg CO ₂ eq.	5.24E+02	1.31E+02	-3.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.83E+02	0.00E+00	0.00E+00	2.06E-01	7.58E-04	0.00E+00	-5.00E+02
ODP	kg CFC 11 eq.	2.44E-05	2.02E-06	-1.33E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.95E-05	0.00E+00	0.00E+00	2.99E-09	4.76E-11	0.00E+00	-2.41E-05
AP	mol H ⁺ eq.	3.72E+00	5.48E-01	-2.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.90E+00	0.00E+00	0.00E+00	9.35E-04	3.48E-06	0.00E+00	-3.61E+00
EP-freshwater	kg P eq.	6.63E-01	2.11E-03	-1.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E-01	0.00E+00	0.00E+00	1.65E-05	4.29E-08	0.00E+00	-6.55E-01
EP-marine	kg N eq.	7.25E-01	2.21E-01	-8.52E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.28E-01	0.00E+00	0.00E+00	3.51E-04	5.34E-07	0.00E+00	-7.00E-01
EP-terrestrial	mol N eq.	7.76E+00	2.41E+00	-5.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.26E+00	0.00E+00	0.00E+00	3.83E-03	5.70E-06	0.00E+00	-7.52E+00
POCP	kg NMVOC eq.	2.21E+00	7.77E-01	-2.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E+00	0.00E+00	0.00E+00	1.32E-03	6.51E-06	0.00E+00	-2.12E+00
ADP-minerals&metals*	kg Sb eq.	1.83E-01	3.75E-05	-2.69E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-02	0.00E+00	0.00E+00	6.42E-07	5.90E-10	0.00E+00	-1.83E-01
ADP-fossil*	MJ	6.61E+03	1.74E+03	-1.02E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+04	0.00E+00	0.00E+00	2.93E+00	4.71E-02	0.00E+00	-6.25E+03
WDP*	m³	1.62E+02	3.54E+00	-1.80E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.93E+02	0.00E+00	0.00E+00	1.70E-02	5.46E-05	0.00E+00	-1.58E+02
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															
Disclaimer: The use of the results of Modules A1-A3 (A1-A5 for services) without considering the results of Module C is discouraged. 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.																

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Additional LCA results

The environmental impact indicators of 100% landfill scenario in end-of-life stage:

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	5.23E+02	1.31E+02	-5.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.81E+02	0.00E+00	0.00E+00	2.06E-01	0.00E+00	8.13E-01	0.00E+00
GWP-biogenic	kg CO ₂ eq.	-2.27E-01	1.60E-02	1.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E+00	0.00E+00	0.00E+00	1.02E-05	0.00E+00	1.64E+01	0.00E+00
GWP-luluc	kg CO ₂ eq.	6.89E-01	9.34E-03	-6.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.54E-01	0.00E+00	0.00E+00	8.40E-05	0.00E+00	5.58E-06	0.00E+00
GWP-total	kg CO ₂ eq.	5.24E+02	1.31E+02	-3.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.83E+02	0.00E+00	0.00E+00	2.06E-01	0.00E+00	1.72E+01	0.00E+00
ODP	kg CFC 11 eq.	2.44E-05	2.02E-06	-1.33E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.95E-05	0.00E+00	0.00E+00	2.99E-09	0.00E+00	9.82E-10	0.00E+00
AP	mol H ⁺ eq.	3.72E+00	5.48E-01	-2.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.90E+00	0.00E+00	0.00E+00	9.35E-04	0.00E+00	1.06E-03	0.00E+00
EP-freshwater	kg P eq.	6.63E-01	2.11E-03	-1.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E-01	0.00E+00	0.00E+00	1.65E-05	0.00E+00	9.71E-04	0.00E+00
EP-marine	kg N eq.	7.25E-01	2.21E-01	-8.52E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.28E-01	0.00E+00	0.00E+00	3.51E-04	0.00E+00	1.36E-02	0.00E+00
EP-terrestrial	mol N eq.	7.76E+00	2.41E+00	-5.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.26E+00	0.00E+00	0.00E+00	3.83E-03	0.00E+00	2.98E-03	0.00E+00
POCP	kg NMVOC eq.	2.21E+00	7.77E-01	-2.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E+00	0.00E+00	0.00E+00	1.32E-03	0.00E+00	6.33E-03	0.00E+00
ADP-minerals&metals*	kg Sb eq.	1.83E-01	3.75E-05	-2.69E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-02	0.00E+00	0.00E+00	6.42E-07	0.00E+00	2.24E-08	0.00E+00
ADP-fossil*	MJ	6.61E+03	1.74E+03	-1.02E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+04	0.00E+00	0.00E+00	2.93E+00	0.00E+00	8.38E-01	0.00E+00
WDP*	m³	1.62E+02	3.54E+00	-1.80E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.93E+02	0.00E+00	0.00E+00	1.70E-02	0.00E+00	2.46E-03	0.00E+00
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															
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Original version of the EPD, 2025-10-20

Abbreviation	Definition
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
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
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO ₂ eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO ₂ eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO ₂ eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO ₂ eq.)
GWP-total	Total Global Warming Potential (kg CO ₂ eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO ₂ eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H ⁺ eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m ³)
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m ³)

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations

Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804:2012 +A2:2019/AC:2021 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

EPD System PCR 2019:14 Construction products (EN 15804+A2) 2.0.1.



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