



# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

VILPE Sense Mobile Base Station  
VILPE Oy



## EPD HUB, HUB-3481

Published on 17.06.2025, last updated on 17.06.2025, valid until 17.06.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	VILPE Oy
Address	Kauppatie 9, FI-65610 Mustasaari
Contact details	sales@vilpe.com
Website	https://www.vilpe.com/

### EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Milja Sarapaa, VILPE Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

### PRODUCT

Product name	VILPE Sense Mobile Base Station
Additional labels	-
Product reference	735043, 735044
Place of production	Mustasaari, Finland
Period for data	01/01/2024-31/12/2024
Averaging in EPD	No grouping
A1-A3 Specific data (%)	-

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass	0,31 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	6,47E+00
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	6,19E+00
Secondary material, inputs (%)	22,2
Secondary material, outputs (%)	100
Total energy use, A1-A3 (kWh)	29,1
Net freshwater use, A1-A3 (m <sup>3</sup> )	0,07

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

VILPE Oy is a Finnish family-owned company that develops and manufactures ventilation and roofing solutions for the construction industry. The company's operations are based on customer-oriented and innovative product development. Our high quality VILPE® products bring better indoor air quality, energy efficiency and longevity of structures to all spaces and thus improve people's quality of life. VILPE represents safe construction and living, which reinforces the company's commitment to quality and reliability.



### PRODUCT DESCRIPTION

Receives VILPE Sense data from the smart roof system's sensors and control unit. Uploads and stores this data directly to VILPE's cloud service for analysis and later use. 50 control units and 200 leak detectors can be linked to one mobile base station. Two models available: with and without preinstalled SIM card (card is required for use).

With SIM: Preinstalled SIM card with a data service subscription is included. The guarantee for the subscription is 10 years. The SIM card operator is Elisa M2M (Vodafone Global) and it works in EU and ETA countries.

No SIM: The local operator and subscription must support one or several of the following: LTE-M (LTE Cat. M1), or NB-IoT (LTE Cat. NB1) or 2G (EDGE/EGPRS). Data only subscription is enough. The subscription must allow data usage of 100 MB/month or more. The SIM must be configured not to require a PIN code.

For more information on the VILPE Sense system, please see: [vilpe.com/sense](http://vilpe.com/sense)

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	20,65 %	Finland
Minerals		
Fossil materials	79,35 %	Finland
Bio-based materials		

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,077

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit
Mass per declared unit	0,31 kg
Functional unit	1 pcs / 200m2
Reference service life	10 years

### SUBSTANCES, REACH - VERY HIGH CONCERN

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

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

### MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

VILPE Sense Mobile Base Stations are procured and packaged by the supplier in Finland. The plastic parts made of polyamide, ABS, and silicone have been manufactured using injection molding. The electronic components have been produced using several different methods. By mass, the largest among these is the printed circuit board with a mounted surface. The products are stored and shipped from the Mustasaari warehouse. Slightly less than 10% of the electricity for the site comes from the production facility's own solar power plant, and the rest is from nuclear electricity. The waste heat from the machines is directed to a heat recovery center and used for building heating. The material requirement and generated waste vary depending on the size of the product.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

### TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The average distribution distance is calculated as a weighted average of the significant sales volumes. Products are transported in full pallets. During installation, the disposal of packaging material is included in the estimate. VILPE Sense Mobile Base Stations are packed in cardboard boxes. After installation, the packaging material is transported by truck to a recycling facility. The average distance to a recycling facility in Finland has been used. Scenario estimates have employed average recycling methods and practices. There is no material waste during installation. The energy consumption during installation, mainly consisting of the use of a drill, has been excluded

from the calculations as it is assumed to be insignificant per examined product unit.

### **PRODUCT USE AND MAINTENANCE (B1-B7)**

Energy use during the product's use phase is taken into account. The power input of the VILPE Sense Mobile Base Station is 5 W. The expected service life of the VILPE Sense Mobile Base Station is approximately 10 years (with a technical warranty of 5 years). At the end of this period, the entire Mobile Base Station should be replaced.

Air, soil, and water impacts during the use phase have not been studied.

### **PRODUCT END OF LIFE (C1-C4, D)**

The end-of-life stage consists of the following modules:

C1: Deconstruction of the product

C2: Transportation of the discarded product

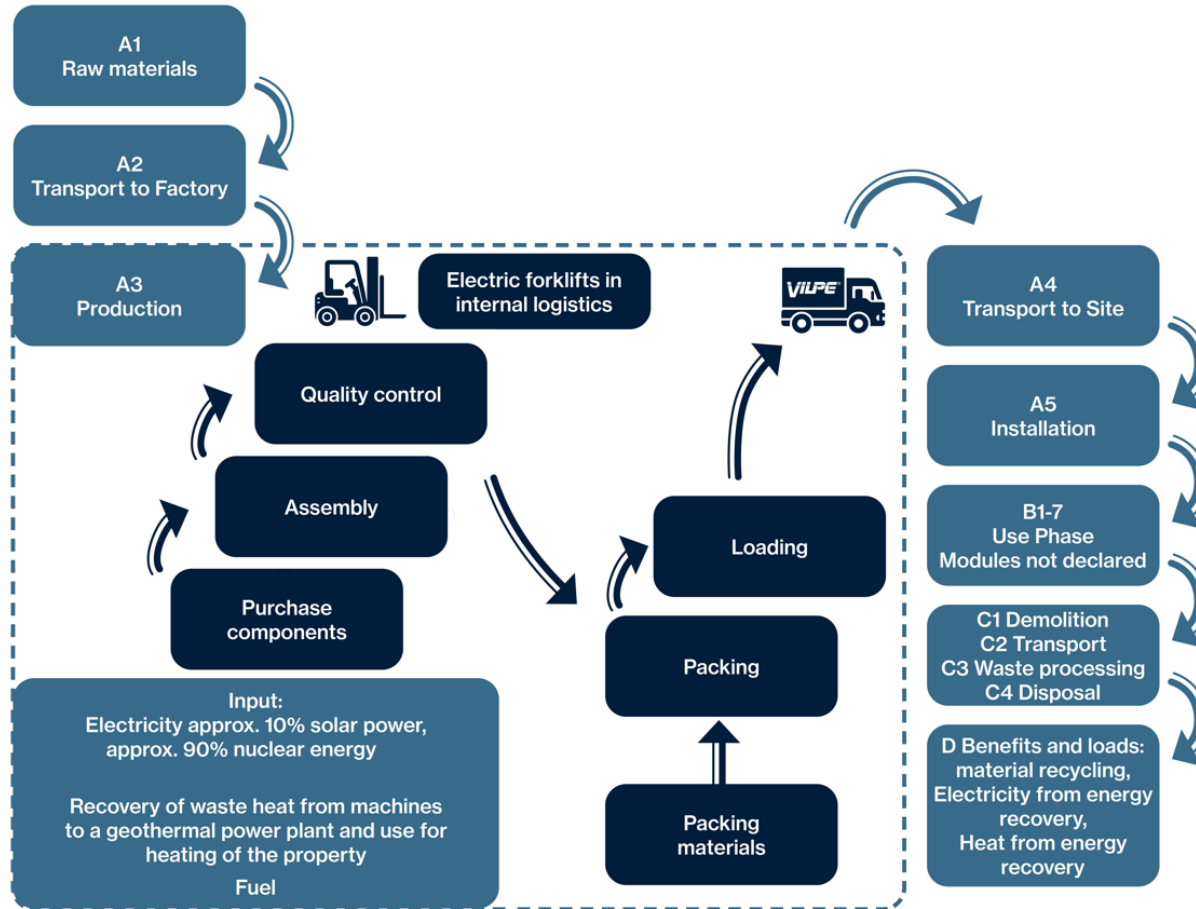
C3: Waste processing

C4: Disposal

At the end of the product's life cycle, it can be disassembled from its installation environment. The scenario used in the calculation represents the most likely option in Finland. In the assessment, it is assumed that the product is disassembled and the resulting material fractions are appropriately processed. Steel components are presumed to be predominantly recycled (85%), with a smaller portion directed to landfill (15%) (Source: World Stainless, 2024). Other minor metal fractions, such as solder wire, are assumed to be properly separated and recycled. Electronic components are considered to be treated in full compliance with electronic waste management regulations (100%). For instance, the printed circuit board is assumed to undergo shredding and separation processes (100%). Plastic components (PA and ABS), as well as silicone, are assumed to be treated through incineration (100%). The average distance to waste treatment

facilities in Finland has been used for waste transportation distance. Due to the energy usage possibilities of the product and packaging, recycled raw material leads to the avoidance of virgin material while energy recovery at the incineration plant displaces electricity and heat production.

# MANUFACTURING PROCESS



## LIFE-CYCLE ASSESSMENT

### CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

### VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

### ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Allocated by mass or volume
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

### PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This EPD is product and factory specific.

### LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

# ENVIRONMENTAL IMPACT DATA

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

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total <sup>1)</sup>	kg CO <sub>2</sub> e	6,36E+00	9,50E-03	-1,82E-01	6,19E+00	4,98E-02	5,33E-01	MND	MND	MND	MND	MND	3,16E+02	MND	0,00E+00	1,84E-03	3,46E-01	3,93E-06	3,25E-01
GWP – fossil	kg CO <sub>2</sub> e	6,34E+00	9,50E-03	1,20E-01	6,47E+00	4,97E-02	4,05E-03	MND	MND	MND	MND	MND	3,16E+02	MND	0,00E+00	1,84E-03	3,44E-01	3,93E-06	2,17E-01
GWP – biogenic	kg CO <sub>2</sub> e	1,18E-02	1,89E-06	-3,04E-01	-2,93E-01	1,12E-05	5,29E-01	MND	MND	MND	MND	MND	4,58E-02	MND	0,00E+00	4,15E-07	1,80E-03	-1,25E-09	1,08E-01
GWP – LULUC	kg CO <sub>2</sub> e	1,10E-02	4,25E-06	1,87E-03	1,29E-02	2,23E-05	3,06E-06	MND	MND	MND	MND	MND	5,56E-03	MND	0,00E+00	8,21E-07	2,47E-05	2,25E-09	-7,88E-04
Ozone depletion pot.	kg CFC <sub>-11</sub> e	1,37E-07	1,40E-10	3,22E-09	1,40E-07	7,34E-10	5,66E-11	MND	MND	MND	MND	MND	1,17E-05	MND	0,00E+00	2,70E-11	1,21E-10	1,14E-13	-1,00E-09
Acidification potential	mol H <sup>+</sup> e	6,10E-02	3,24E-05	5,32E-04	6,16E-02	1,76E-04	2,48E-05	MND	MND	MND	MND	MND	1,71E+00	MND	0,00E+00	6,25E-06	1,46E-04	2,79E-08	-2,18E-04
EP-freshwater <sup>2)</sup>	kg Pe	1,48E-02	7,39E-07	3,95E-05	1,48E-02	3,86E-06	1,55E-06	MND	MND	MND	MND	MND	5,06E-02	MND	0,00E+00	1,43E-07	-5,20E-02	3,23E-10	-5,20E-02
EP-marine	kg Ne	7,58E-03	1,06E-05	2,15E-04	7,81E-03	5,74E-05	3,63E-05	MND	MND	MND	MND	MND	2,41E-01	MND	0,00E+00	2,05E-06	1,01E-04	1,06E-08	2,34E-05
EP-terrestrial	mol Ne	8,34E-02	1,16E-04	1,66E-03	8,52E-02	6,25E-04	9,62E-05	MND	MND	MND	MND	MND	2,48E+00	MND	0,00E+00	2,23E-05	1,09E-03	1,16E-07	2,60E-04
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	2,76E-02	4,77E-05	6,11E-04	2,83E-02	2,54E-04	3,23E-05	MND	MND	MND	MND	MND	7,02E-01	MND	0,00E+00	9,18E-06	2,52E-04	4,16E-08	-6,63E-05
ADP-minerals & metals <sup>4)</sup>	kg Sbe	1,29E-03	2,65E-08	1,19E-06	1,30E-03	1,38E-07	1,63E-08	MND	MND	MND	MND	MND	3,50E-05	MND	0,00E+00	5,18E-09	1,93E-07	6,25E-12	-3,62E-07
ADP-fossil resources	MJ	8,15E+01	1,38E-01	1,05E+01	9,21E+01	7,21E-01	5,59E-02	MND	MND	MND	MND	MND	3,86E+03	MND	0,00E+00	2,66E-02	-3,31E+00	9,65E-05	-5,43E+00
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	2,12E+00	6,81E-04	1,45E-01	2,26E+00	3,56E-03	2,48E-03	MND	MND	MND	MND	MND	2,91E+03	MND	0,00E+00	1,31E-04	4,92E-03	2,78E-07	-4,44E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO<sub>4</sub>e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

### ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	3,46E-07	9,51E-10	8,75E-09	3,55E-07	4,96E-09	5,69E-10	MND	MND	MND	MND	MND	3,18E-06	MND	0,00E+00	1,81E-10	-8,23E-10	6,35E-13	-5,05E-09
Ionizing radiation <sup>6)</sup>	kBq I1235e	6,27E-01	1,20E-04	4,84E-01	1,11E+00	6,27E-04	3,04E-04	MND	MND	MND	MND	MND	5,72E+01	MND	0,00E+00	2,30E-05	-3,28E-04	6,07E-08	-8,76E-02
Ecotoxicity (freshwater)	CTUe	1,15E+02	1,95E-02	7,63E-01	1,16E+02	1,02E-01	1,83E-01	MND	MND	MND	MND	MND	5,27E+02	MND	0,00E+00	3,79E-03	1,76E-01	8,10E-06	-1,16E-01
Human toxicity, cancer	CTUh	6,27E-09	1,57E-12	2,51E-10	6,52E-09	8,22E-12	3,89E-12	MND	MND	MND	MND	MND	1,46E-08	MND	0,00E+00	3,04E-13	1,64E-10	7,25E-16	-1,39E-10
Human tox. non-cancer	CTUh	3,76E-07	8,92E-11	1,26E-09	3,77E-07	4,66E-10	2,22E-10	MND	MND	MND	MND	MND	1,39E-06	MND	0,00E+00	1,72E-11	1,62E-09	1,67E-14	-4,70E-10
SQP <sup>7)</sup>	-	3,36E+01	1,39E-01	2,08E+01	5,45E+01	7,23E-01	6,35E-02	MND	MND	MND	MND	MND	1,37E+02	MND	0,00E+00	2,61E-02	1,19E-01	1,90E-04	-9,35E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

### USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy <sup>8)</sup>	MJ	9,85E+00	1,89E-03	1,42E+00	1,13E+01	9,87E-03	-2,65E+00	MND	MND	MND	MND	MND	1,50E+02	MND	0,00E+00	3,64E-04	6,33E-03	9,32E-07	-2,75E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,66E+00	2,66E+00	0,00E+00	-2,66E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,42E-01
Total use of renew. PER	MJ	9,85E+00	1,89E-03	4,08E+00	1,39E+01	9,87E-03	-5,30E+00	MND	MND	MND	MND	MND	1,50E+02	MND	0,00E+00	3,64E-04	6,33E-03	9,32E-07	-2,51E+00
Non-re. PER as energy	MJ	8,30E+01	1,38E-01	1,03E+01	9,35E+01	7,21E-01	5,59E-02	MND	MND	MND	MND	MND	4,24E+03	MND	0,00E+00	2,66E-02	-3,80E+00	9,65E-05	-5,92E+00
Non-re. PER as material	MJ	6,21E+00	0,00E+00	1,39E-01	6,35E+00	0,00E+00	-1,39E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	-6,21E+00	0,00E+00	4,91E-01
Total use of non-re. PER	MJ	8,92E+01	1,38E-01	1,05E+01	9,98E+01	7,21E-01	-8,30E-02	MND	MND	MND	MND	MND	4,24E+03	MND	0,00E+00	2,66E-02	-1,00E+01	9,65E-05	-5,43E+00
Secondary materials	kg	6,87E-02	5,87E-05	4,70E-02	1,16E-01	3,07E-04	5,42E-05	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	1,14E-05	1,10E-04	2,43E-08	-2,71E-03
Renew. secondary fuels	MJ	4,20E-03	7,45E-07	7,38E-02	7,80E-02	3,89E-06	3,48E-07	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	1,44E-07	2,44E-05	5,02E-10	-6,31E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m <sup>3</sup>	7,01E-02	2,04E-05	3,24E-03	7,33E-02	1,06E-04	-2,19E-04	MND	MND	MND	MND	MND	3,87E+00	MND	0,00E+00	3,90E-06	1,30E-04	1,00E-07	-1,38E-03

8) PER = Primary energy resources.

### END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	8,72E-01	2,33E-04	8,23E-03	8,81E-01	1,22E-03	5,79E-04	MND	MND	MND	MND	MND	1,20E-03	MND	0,00E+00	4,51E-05	8,39E-02	1,07E-07	-1,03E-02
Non-hazardous waste	kg	2,63E+01	4,32E-03	2,37E-01	2,65E+01	2,26E-02	3,91E-01	MND	MND	MND	MND	MND	1,62E+01	MND	0,00E+00	8,36E-04	3,57E-02	2,44E-06	-2,08E-02
Radioactive waste	kg	1,59E-04	2,94E-08	1,15E-04	2,74E-04	1,53E-07	7,73E-08	MND	MND	MND	MND	MND	6,03E-03	MND	0,00E+00	5,64E-09	2,88E-07	1,48E-11	-1,85E-05

### END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	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	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,89E-02	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	1,46E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	1,84E-01	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,70E-01	MND	MND	MND	MND	MND	0,00E+00	MND	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	1,16E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	7,10E-01	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,54E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	4,00E+00	0,00E+00	0,00E+00

### ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO <sub>2</sub> e	6,33E+00	9,45E-03	1,22E-01	6,46E+00	4,95E-02	1,33E-02	MND	MND	MND	MND	MND	3,15E+02	MND	0,00E+00	1,83E-03	3,45E-01	3,90E-06	2,18E-01
Ozone depletion Pot.	kg CFC <sub>-11</sub> e	1,38E-07	1,12E-10	2,76E-09	1,40E-07	5,86E-10	4,60E-11	MND	MND	MND	MND	MND	1,20E-05	MND	0,00E+00	2,16E-11	-1,84E-10	9,05E-14	-1,14E-09
Acidification	kg SO <sub>2</sub> e	5,17E-02	2,47E-05	4,03E-04	5,21E-02	1,35E-04	1,85E-05	MND	MND	MND	MND	MND	1,47E+00	MND	0,00E+00	4,77E-06	8,84E-05	2,06E-08	-2,07E-04
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	1,15E-02	6,03E-06	1,88E-03	1,34E-02	3,21E-05	1,17E-05	MND	MND	MND	MND	MND	2,38E-01	MND	0,00E+00	1,16E-06	3,74E-05	6,56E-09	-1,23E-05
POCP (“smog”)	kg C <sub>2</sub> H <sub>4</sub> e	3,83E-03	2,20E-06	4,79E-05	3,88E-03	1,18E-05	3,71E-06	MND	MND	MND	MND	MND	5,88E-02	MND	0,00E+00	4,26E-07	-7,30E-06	1,95E-09	-4,38E-05
ADP-elements	kg Sbe	1,29E-03	2,58E-08	1,21E-06	1,29E-03	1,35E-07	1,57E-08	MND	MND	MND	MND	MND	3,50E-05	MND	0,00E+00	5,05E-09	1,91E-07	6,12E-12	-3,63E-07
ADP-fossil	MJ	7,98E+01	1,36E-01	1,63E+00	8,16E+01	7,11E-01	5,06E-02	MND	MND	MND	MND	MND	3,86E+03	MND	0,00E+00	2,62E-02	-3,28E+00	9,56E-05	-4,17E+00

### ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG <sup>9)</sup>	kg CO <sub>2</sub> e	6,35E+00	9,50E-03	1,22E-01	6,48E+00	4,98E-02	4,05E-03	MND	MND	MND	MND	MND	3,16E+02	MND	0,00E+00	1,84E-03	3,44E-01	3,93E-06	2,17E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH<sub>4</sub> fossil, CH<sub>4</sub> biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO<sub>2</sub> is set to zero.

## THIRD-PARTY VERIFICATION STATEMENT

### VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? [Read more online](#)

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

### THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited  
17.06.2025

