ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH
EN 15804+A2
ISO 14025

Ceramic Sanitaryware

EPD HUB, HUB-2109
Published on 7 June 2025
Last updated on 7 June 2025
Valid until 7 June 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	Laufen
Address	Wahlenstrasse 46, 4242 Laufen CH
Contact details	laufen@laufen.ch
Website	www.laufen.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 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 modules C1-C4, D
EPD author	Sustainability Department, Roca Group
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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	Ceramic Sanitaryware
Additional labels	-
Product reference	-
Place(s) of raw material origin	Austria, Bulgaria, Czech Republic, Finland, Germany, Poland, Spain, Switzerland, Turkey, United Kingdom
Place of production	Gmuden (AT), Kaspichan (BU), Bechyne (CZ), Gliwice (PL), Laufen (CH)
Place(s) of installation and use	Austria, Bulgaria, Czech Republic, Poland, Switzerland
Period for data	Calendar year 2024
Averaging in EPD	Multiple factories
Variation in GWP-fossil for A1-A3	-16% / +50%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	0,98

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg sanitary ceramic
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	1,98E+00
GWP-total, A1-A3 (kgCO2e)	1,98E+00
Secondary material, inputs (%)	0,03
Secondary material, outputs (%)	6,73
Total energy use, A1-A3 (kWh)	9,41
Net freshwater use, A1-A3 (m3)	0,02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

LAUFEN is dedicated to the production and sale of solutions that enrich people's everyday lives by creating unique spaces for wellbeing, personal care and health. LAUFEN is part of the Roca Group, an entity characterised by a long-term strategy based on growth. The group's Mission and Vision establish an approach based on creating shared value with the aim of producing a threefold positive impact in the areas of People, Planet and Prosperity. Our commitment to the promotion of sustainable development is spread throughout our organisation. It finds itself on a strategic level, as well as embedded within specific actions and initiatives that ensure our daily tasks contribute to the improvement of our impact in a tangible way.

Further information can be found at www.laufen.com.

PRODUCT DESCRIPTION

Sanitaryware appliances mainly include basins, bidets, WCs, urinals, cisterns and shower trays, including accessories. These products are made of materials such as clay, kaolin, quartz and feldspar. After the preparation of the slip, the mixture is cast, dried, glazed and then finished to obtain sanitaryware. To calculate the environmental impact, a representative average sanitaryware product based on the total volume manufactured in 2024 has been considered.

The products are available in different sizes, designs, and weights. Sanitary products and their average weights:

- Basins: 16,0 kg
- Bidets: 24,5 kg
- WC: 38,0 kg
- Urinals: 37,0 kg
- Cisterns: 11,0 kg
- Shower trays: 36,5 kg

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	100	Europe, Africa, Asia
Fossil materials	0	-
Bio-based materials	0	-

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	0,000022

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg sanitary ceramic
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

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		
×	×	×	MND	MND	MND	MND	MND	MND	MND	MND	MND	×	×	×	×	×		
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.

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.

The product is made of a mixture of minerals like clay, feldspar, kaolin and quartz. The materials are transported to the manufacturers production facility. The manufacturing includes material preparation, casting, drying, enameling, firing, inspection and control.

The manufacturing process requires electricity and fuels for the different equipment as well as heating. In addition, waste heat is recycled from various parts of the furnaces to ensure that the heat inside the furnace remains efficient.

The product is finally packaged and sent to the warehouse. Certain ancillary materials like water and moulds are also included. Production waste before firing is recycled internally.

The product does not contain VOC as is fired at temperatures above 1000ºC. Production waste as wastewater, moulds, sludge and fired ceramics waste are included.

Transport from suppliers is calculated according to the corresponding sales volumes. Packaging materials are modelled in.

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.

Modules not declared.

PRODUCT USE AND MAINTENANCE (B1-B7)

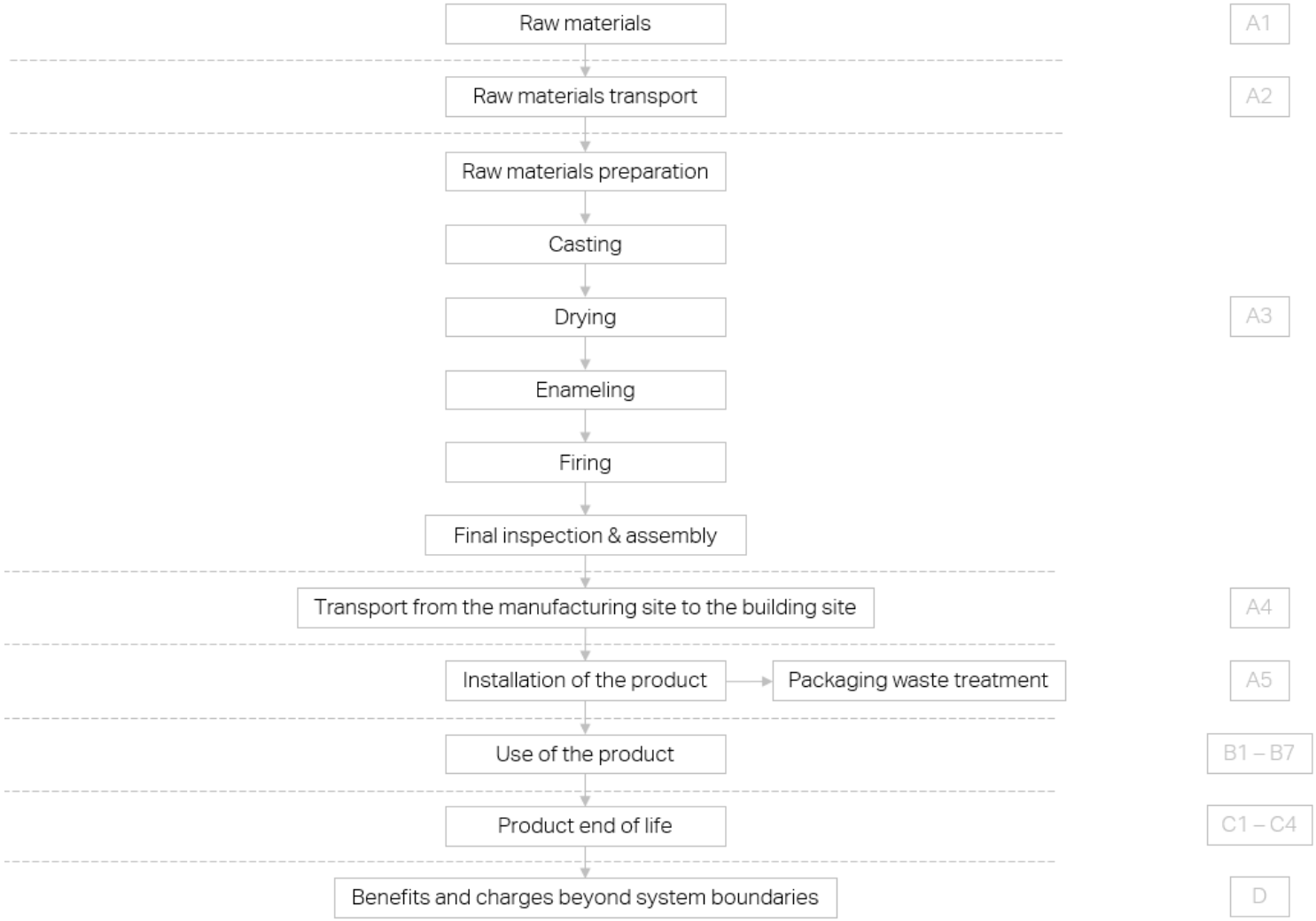
Air, soil, and water impacts during the use phase have not been studied.
Modules not declared.

PRODUCT END OF LIFE (C1-C4, D)

Energy consumption and natural resources of the disassembling end-of-life product and the impacts of demolition process are assumed to be zero due to the negligible consumptions (C1). Concerning to the end-of-life product, it is assumed to be sent to the closest waste disposal facility by lorry, estimated to be 100 km away (C2). Although the product, fully mineral material, is suitable for reuse and recycling, it is conservatively assumed to be disposed of in an inert landfill.

The benefits and loads of recycling of packaging waste are included in Module D.

MANUFACTURING PROCESS



The raw materials supplied are mainly stored in silos. A small percentage of the raw materials used is supplied in sacks and/or big bags.

The stages of the production process are as follow:

RAW MATERIALS PREPARATION

Mineral raw materials (clay, kaolin, feldspar and silica) are unloaded from trucks in the areas marked for this purpose.

The raw materials are taken to the mixer, where they are blended with osmotic water. The resulting mixture is sieved and pumped into the storage tanks and kept in suspension with the help of agitators. The paste resulting from this operation is known as slip.

CASTING

Once the quality of the desired mixture has been obtained and controlled by the laboratory, the slip is pumped into the overhead casting tanks. From there, it feeds the casting lines by gravity, where it is injected into hermetically sealed plaster moulds, moulds in which the piece is formed.

Other pieces are also produced using plastic moulds with medium pressure slip injection, although to a lesser extent. The plaster moulds used are produced in the same plant and are manufactured by filling a mixture of plaster and water into araldite master moulds. After setting, the master moulds are separated, and the plaster moulds are removed and transported to the dryers for their first dehydration prior to their use.

DRYING

Once the piece has achieved a mechanical consistency within the plaster mould, it is removed manually or automatically, depending on the line or its difficulty. These pieces are placed on trolleys and transported to the different dryers, where they are dried with hot air. Once dry, they are transported again by trolleys, this time to the polishing and enameling line.

ENAMELLING

The enamel applied is prepared in an adjoining room where the raw materials, which are stored in silos, are weighed before being dissolved with osmotic water. The product obtained is fed into ball mills that reduce the base particles and pigments to the desired fineness.

FIRING

The enamelled pieces are then transported to the kiln area for their firing. The process of heating, firing, enamel vitrification and cooling takes place inside the kiln.

FINAL INSPECTION AND ASSEMBLY

The pieces leaving the kiln are sent to the inspection and control area, where the defective pieces are separated from the conforming ones. Those that pass the final inspection are packed up and palletized for their transport to the dispatch warehouse. The complete cycle for the manufacturing of sanitary ware lasts approximately two to three days.

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.

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	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass or volume

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.

AVERAGES AND VARIABILITY

Type of average	Multiple factories
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	-16% / +50%

Primary data represents the manufacturers manufacturing sites of Bechyne (CZ), Gliwice (PL), Gmunden (AT), Laufen (CH) and Kaspichan (BU). The data was used to calculate average impacts for the product. The primary data was averaged by calculating a weighed average of the sites consumption of raw materials and energy, and production of wastes. The share of production volume per each site was used in the weighting. GWP Variation is caused by different share of product types produced and share of renewable electricity consumed per manufacturing site.

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

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 – total1)	kg CO2e	5,41E-02	5,60E-02	1,87E+00	1,98E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,24E-02	3,34E-03	1,05E-02	-6,63E-03
GWP – fossil	kg CO2e	5,41E-02	5,60E-02	1,87E+00	1,98E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,24E-02	3,34E-03	1,05E-02	-4,62E-03
GWP – biogenic	kg CO2e	0,00E+00	0,00E+00	3,65E-04	3,65E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,00E-03
GWP – LULUC	kg CO2e	6,44E-05	2,51E-05	2,82E-03	2,91E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,39E-06	1,18E-06	2,97E-06	-1,02E-05
Ozone depletion pot.	kg CFC-11e	1,45E-09	8,26E-10	3,68E-08	3,91E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,91E-10	1,15E-11	3,17E-10	-6,67E-11
Acidification potential	mol H+e	2,84E-04	2,04E-04	4,01E-03	4,50E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,18E-05	7,86E-06	1,12E-04	-2,67E-05
EP-freshwater	kg Pe	2,17E-05	4,33E-06	7,39E-04	7,65E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,46E-07	5,00E-07	1,69E-05	-2,21E-06
EP-marine	kg Ne	4,79E-05	6,57E-05	9,61E-04	1,07E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,38E-05	3,65E-06	4,30E-05	-4,32E-06
EP-terrestrial	mol Ne	4,97E-04	7,16E-04	7,60E-03	8,81E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,50E-04	2,45E-05	3,02E-04	-4,35E-05
POCP (“smog”)	kg NMVOCe	1,78E-04	2,90E-04	4,05E-03	4,52E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,21E-05	6,81E-06	1,13E-04	-1,65E-05
ADP-minerals & metals	kg Sbe	2,65E-07	1,55E-07	1,78E-06	2,20E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,54E-08	1,62E-08	2,00E-08	-1,11E-08
ADP-fossil resources	MJ	9,30E-01	8,11E-01	3,03E+01	3,20E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,79E-01	1,32E-02	2,36E-01	-8,00E-02
Water use	m3e depr.	3,73E-02	3,99E-03	2,87E-01	3,29E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,84E-04	6,74E-04	1,45E-03	-1,36E-03

1) GWP = Global Warming Potential; 2) LULUC = Land Use and Land Use Change; 3) EP = Eutrophication potential. Required characterization method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 4) POCP = Photochemical ozone formation; 5) ADP = Abiotic depletion potential; 6) 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.

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	MJ	1,24E-01	1,11E-02	1,84E+00	1,98E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,54E-03	-1,17E+00	-1,11E-01	-1,69E-02
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,90E-03
Total use of renew. PER	MJ	1,24E-01	1,11E-02	1,84E+00	1,98E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,54E-03	-1,17E+00	-1,11E-01	-8,04E-03
Non-re. PER as energy	MJ	9,30E-01	8,11E-01	3,01E+01	3,19E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,79E-01	-1,80E-02	1,23E-01	-8,00E-02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	1,57E-01	1,57E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,70E-02
Total use of non-re. PER	MJ	9,30E-01	8,11E-01	3,03E+01	3,20E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,79E-01	-1,80E-02	1,23E-01	-6,30E-02
Secondary materials	kg	3,07E-04	3,45E-04	3,49E-03	4,14E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,70E-05	3,93E-05	7,86E-05	3,94E-04
Renew. secondary fuels	MJ	1,68E-06	4,36E-06	1,39E-04	1,45E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,77E-07	1,80E-07	1,42E-06	8,60E-06
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m3	1,72E-03	1,19E-04	1,42E-02	1,60E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,62E-05	1,11E-05	-2,85E-03	-4,61E-05

7) 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	2,64E-03	1,37E-03	4,49E-02	4,89E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,97E-04	4,42E-04	4,03E-04	-3,34E-04
Non-hazardous waste	kg	1,17E-01	2,53E-02	9,59E+00	9,73E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,59E-03	1,37E-02	3,63E+00	-1,52E-02
Radioactive waste	kg	3,20E-06	1,72E-07	4,42E-05	4,76E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,06E-08	3,90E-08	7,83E-08	-2,39E-07

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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 CO2e	5,39E-02	5,57E-02	1,86E+00	1,97E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-02	3,94E-03	1,80E-02	-4,58E-03
Ozone depletion Pot.	kg CFC-11e	1,21E-09	6,59E-10	2,90E-08	3,09E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,53E-10	9,76E-12	2,53E-10	-5,50E-11
Acidification	kg SO2e	2,37E-04	1,56E-04	3,34E-03	3,74E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,19E-05	6,01E-06	9,01E-05	-2,25E-05
Eutrophication	kg PO43e	2,88E-05	3,65E-05	9,28E-04	9,93E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,81E-06	2,11E-06	3,47E-05	-1,83E-05
POCP (“smog”)	kg C2H4e	1,46E-05	1,34E-05	2,49E-04	2,77E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,87E-06	8,06E-07	7,51E-06	-1,69E-06
ADP-elements	kg Sbe	2,06E-07	1,51E-07	1,25E-06	1,61E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,45E-08	1,59E-08	1,94E-08	-1,09E-08
ADP-fossil	MJ	7,11E-01	8,00E-01	2,71E+01	2,86E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,76E-01	1,05E-02	2,31E-01	-6,37E-02

SCENARIO DOCUMENTATION

MANUFACTURING ENERGY SCENARIO DOCUMENTATION

Scenario parameter	Value
Electricity data source and quality	Market for electricity, medium voltage
Electricity CO2e / kWh	0,0225 – 0,9
District heating data source and quality	Heat production, natural gas, at industrial furnace >100kW
District heating CO2e / kWh	0,0753

END OF LIFE SCENARIO DOCUMENTATION

Scenario information	Value
Collation process – kg collected separately	1,00E+00
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	6,73E-02
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	3,63E+00
Scenario assumptions e.g. transportation	100 km for transportation

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

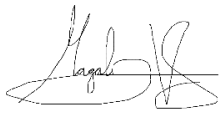
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
07.06.2025



VERIFIED ISO 14025