

# Environmental Product Declaration



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

## Basin & Bidet Mixers

from **Eczacibasi Building Products**

This EPD covers multiple products, based on the worst-case results of the product group

**Programme:** The International EPD® System

**Programme Operator:** EPD International AB

**EPD Registration Number:** EPD-IES-0016184

**Publication Date:** 2024-10-01

**Validity Date:** 2029-09-30

**Geographical Scope:** Global



# How to Read This EPD?

An Environmental Product Declaration (EPD) is an ISO Type III Environmental Declaration based on ISO 14025 standard. An EPD transparently reports the environmental performance of products or services from a lifecycle perspective. The preparation of an EPD includes different stages, from acquiring raw materials to the end of life of the final product/service. EPDs are based on international standards and consider the entire value chain. Additionally, EPD is a third-party verified document. This EPD includes several sections described below.

## 1. General and Program Information

The first part of an EPD has information about the name of the manufacturer and product/service and other general information such as the validity and expiration dates of the document, the name of the program operator, geographical scope, etc. The second page states the standards followed and gives information about the program operator, third-party verifier, etc. The followed Product Category Rule (PCR) is indicated on the second page.

## 2. Company and Product/Service Information

Information about the company and the investigated product is given in this section. It summarizes the characteristics of the product provided by the manufacturer. It also includes information about the product such as product composition and packaging.

## 3. LCA Information

LCA information is one of the most important parts of the EPD as it describes the functional/ declared unit, time representativeness of the study, database(s) and LCA software, along with system boundaries.

The table presented in this part has columns for each stage in the life cycle. The considered stages are marked 'X' whereas the ones that are not declared are labeled as 'ND'. Not all EPDs consider the full life cycle assessment for a product's entire life stages. The 'System Boundary' page is also the place where one can find detailed information about the stages and the assumptions made.

## 4. LCA Results

The results of the Life Cycle Assessment analysis are presented in table format. The first column in each table indicates the name of the impact category and their measurement units are presented in the second column. These tables show an amount at each life cycle stage to see the impact of different indicators on different stages. Each impact can be understood as what is released through the production of the declared unit of the material—in this case, one mixer, the benefits of reuse/recycling of the declared product is reflected in this section.

The first impact in the table is global warming potential (GWP), which shows how much CO<sub>2</sub> is released at each stage. Other impacts include eutrophication potential, acidification potential, ozone layer depletion, land use related impacts, etc. The second table provides results for resource use and the third table is about the waste produced during the production. The fourth and final table shows the results for the GWP-GHG indicator, which is almost equivalent to the GWP-Total indicator mentioned previously. The only difference is that this indicator excludes the biogenic carbon content by following a certain methodology.

## Programme Information

The International EPD® System: EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden,  
info@environdec.com

PCR 2019:14 Construction products, version 1.3.4., Construction EN 15804:2012+A2:2019/AC:2021 Sustainability of Construction Works

Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile.

The review panel may be contacted via the Secretariat [www.environdec.com/contact](http://www.environdec.com/contact).

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

EPD process certification      EPD verification

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

**Third Party Verifier:** Stephen Forson, ViridisPride

**Approved by:** The International EPD® System Technical Committee supported by the Secretariat

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Procedure for follow-up of data during EPD validity involves third party verifier:

Yes      No

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**Life Cycle Assessment (LCA)**

**LCA Practitioner:** Orhan Atacan MSc MBA, Metsims Sustainability Consulting

EPDs within the same product category but registered in different EPD programmes 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 cutoff rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

# About the Company

**Owner of the EPD:** Eczacıbaşı Building Products

**Head Office:** Büyükdere Cad. Ali Kaya Sok No:5 34394 Levent/İstanbul

**Production Plant:** 4 Eylül Mah. Necmi Soylu Cad. No:4 11300 Bozüyük Bilecik Türkiye

Eczacıbaşı Building Products has the widest range of products, production, and sales network in its sector. With 60 years of experience, it holds the market leadership in Turkey for both bathroom and tile products. Eczacıbaşı Building Products employs over 6,500 people, about one-third of whom are abroad, and operates 16 production facilities in 4 countries. The production campus in Bozüyük, which utilizes environmentally friendly technologies, ranks among the top ceramic manufacturing facilities in the world in terms of capacity, technology, and quality. Eczacıbaşı Building Products is one of the few organizations globally capable of designing and manufacturing all products used in bathrooms. Its annual production capacity includes 6.7 million ceramic sanitary ware pieces, 33 million square meters of ceramic tiles, 2 million faucets, 1 million bathroom accessories, 200,000 bathtubs and shower trays, 795,000 modular bathroom furniture units, 2 million concealed cisterns, and 1.2 million toilet seats.

## Our Mission

Our mission is to manufacture high-quality and essential bathroom products that promote hygiene and well-being for all. By empowering our employees and fostering a culture of innovation and excellence, we are dedicated to preserving the delicate balance of the environment, resources, and society for nourishing a sustainable future.

## Our Group Values

As members of the Eczacıbaşı Group:

- We hold our dignity and self-respect above all else. Ethical business principles underpin our business activities.
- Our management style respects the individual. We believe that each of us has the right to learn about issues that affect us and to voice our opinions on these. We regard it as our duty, as well as our right, to challenge our personal limits and develop our abilities.
- We believe that quality is a way of life. In all that we do, in every product and service we provide, we aim for the highest level of quality. Our customer is the focal point of this pursuit of quality.
- We are open to the world and to change; by nature, we are pioneering and entrepreneurial. The search to innovate in every area of activity is a fundamental aspect of our corporate tradition.
- We uphold the tradition of serving our community because we esteem our society and respect our environment. We are proud of the contributions that we have made to culture and the arts, education, science, and sports.
- We recognize that participatory management gives each of us the responsibility of working forcefully towards the objectives and goals of our institution. We are careful to observe the rules of our work environment as we understand that this reflects our respect for our colleagues.

Eczacıbaşı Building Products, which constitutes the largest business segment of the Eczacıbaşı Group, develops its growth strategy with a multi-brand, multi-production center, and multi-market structure. As the first company in its sector to export, it now generates 80% of its revenue from over 75 countries outside of Turkey. Leading in tile product exports to EU countries, Eczacıbaşı Building Products accounts for 52% of Turkey's total ceramic sanitary ware exports.

One of the brands under Eczacıbaşı Building Products, VitrA, offers a wide product range with a variety of colors, materials, and sizes, enabling the creation of unique and personalized bathrooms for everyone. Focusing on innovation centered around people, VitrA develops numerous innovations at its innovation center in Bozüyük to improve and facilitate users' lives in every way. Throughout these processes, it acts with a responsibility to protect natural resources, adopting sustainability in every aspect from design and production to management.

Eczacıbaşı Building Products, which includes the brands VitrA, Artema, Intema, and Burgbad, offers the industry's most extensive product range and greatest production capacity. For the global market, faucets and bathroom accessories are produced under the VitrA brand, while the Artema brand serves the Turkish market.

The company have Quality Management System - ISO 9001, Occupational Health and Management System - ISO 45001, Environmental Management System - ISO 14001 and Energy Management System - ISO 50001.

# About the Products

## Product Group & Description: Basin & Bidet Mixers (faucet)

Basin and bidet mixers consist of a metal housing in most cases made of brass, a plastic valve with ceramic discs, and several assembly parts of various materials. The faucet surface is usually chrome-plated using various galvanic process stages. Other coating techniques are also applied for different color options like PVD and wet coating, against corrosion.

Mechanically operated basin mixers are separated into single-lever and two-handle models. Single-lever mixers have cartridges. The cartridge mechanism enables users to adjust water temperature and flow with one handle. For two-handle mixers, separate headworks are utilized for regulating the flow and temperature of the water.

The products comply with the applicable standards and regulations listed below. Following standards depending on the operating mechanism may apply to faucets and roughs to prove product safety:

- TS EN 817: 2024: Sanitary tapware – Mechanical mixing valves (PN 10)
- TS EN 200: 2023: Sanitary tapware – Single taps and combination taps for water supply systems of type 1 and type 2
- ISO 3822: Acoustics – Laboratory tests on noise emission from appliances and equipment used in water supply installations

The products UN CPC code is 42911.

**Included products:** Similar products of different sizes and weights. (Product weight range: 0,8- 4,9 kg)

The EPD is a group EPD and based on the worst-case approach according to environmental impacts. The criterion for defining the worst-case product is mainly based on the declared environmental performance indicator. The heaviest product in the product group was taken as reference.

## Application Areas

**Basin Mixers:** A basin mixer is a plumbing fixture used to wash hands in lavatories and bathrooms by mixing hot and cold water, shutting off the water, and regulating the amount of water.

**Bidet Mixers:** A bidet mixer is a plumbing fixture used with bidets in lavatories and bathrooms by mixing hot and cold water, shutting off the water, and regulating the amount of water.



# Water- Energy Conserving

## Durable

## Practical



### Water Conservation

Maximum comfort is ensured with minimum amount of water thanks to the special system used for faucets

### V-Bright

It offers a rich variety of matt and bright colors thanks to its PVD and wet coating technology



### Energy Conservation

The grey band on the cartridge can be used to set an upper limit on water temperature, saving energy by avoiding unnecessary heating

### BrightLight

Thanks to its bright chrome finish that is resistant to tarnish and corrosion, it shines like the first day



### BluEco

With the cartridge that moves to the left at 90 degrees, it saves energy by supplying cold water instead of warm water when the faucet is turned on in the mid-position

### V-Superfix

It provides easy and error-free installation in 15 seconds, without the need for tools with manually adjustable part.



## Technical Specifications

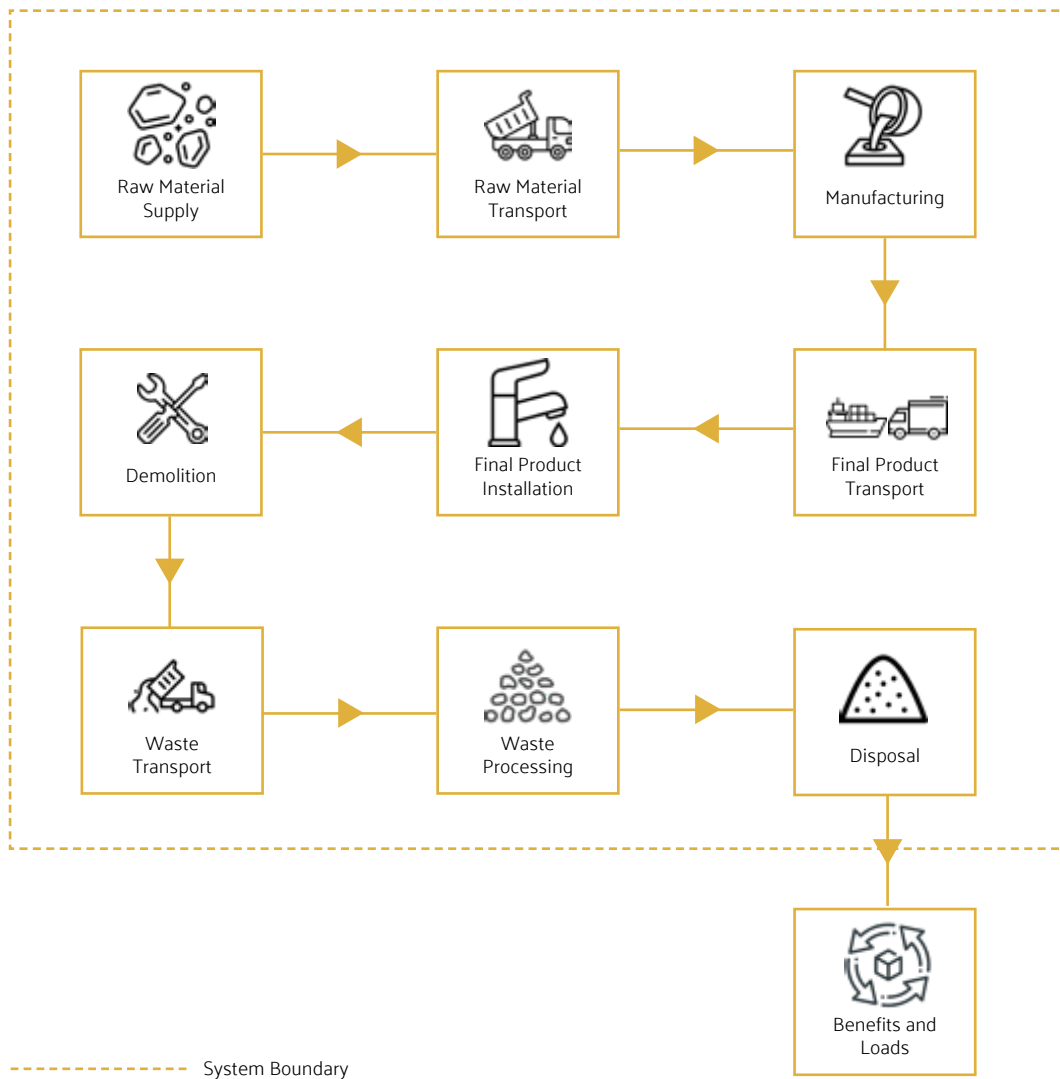
Technical specifications regarding the products are given below. For detailed information regarding technical specifications, please contact your sales representative.

Parameter	Value
Water pressure operating range	0.5 bar (Dynamic Pressure) 10 bar (Static Pressure)
Recommended working pressure	1-5 bar (Dynamic Pressure)
Recommended working temperature	+5 °C, +65 °C
Maximum operating temperature	80 °C

## Quality Checks

- Chemical analysis
- Flow smoothness control
- Flow rate test
- Cartridge movement control
- Surface control
- Dimensional control
- Life cycle test
- Measurement of coating thickness
- Neutral salt spray test
- Acoustic test
- Marking control
- Leakage tests
- Packaging control
- Drop tests

# System Boundaries



## A1 - Raw Material Supply

Production starts with raw materials mainly locally sourced, but some transported from other parts of the world. 'Raw material supply' includes raw material extraction and pre-treatment processes before production. The stage covers the supply (quarrying) and production of all components and additives. The use of electricity, fuel and auxiliary materials in production is also taken into account.

## A2 - Raw Material Transport

Raw material transport from supplier to manufacturer is considered in raw material supply stage. The distances and routes are calculated accordingly. Depending the manufacturer, locally supplied materials are transported via trucks and other supplies come through seaway.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil

### A3 - Manufacturing

This stage is refer the production process of mixers. The below outlines the main steps in the production of brass mixers.

**Brass Melting:** Raw materials like copper, zinc, etc. are melted in a furnace at high temperatures to obtain molten brass.

**Sand Core Preparation:** Sand mixed with a binder is shaped and hardened to be used for forming the internal cavities of the faucet.

**Casting:** The molten brass is poured into molds and around sand cores to create the rough shape of the faucet.

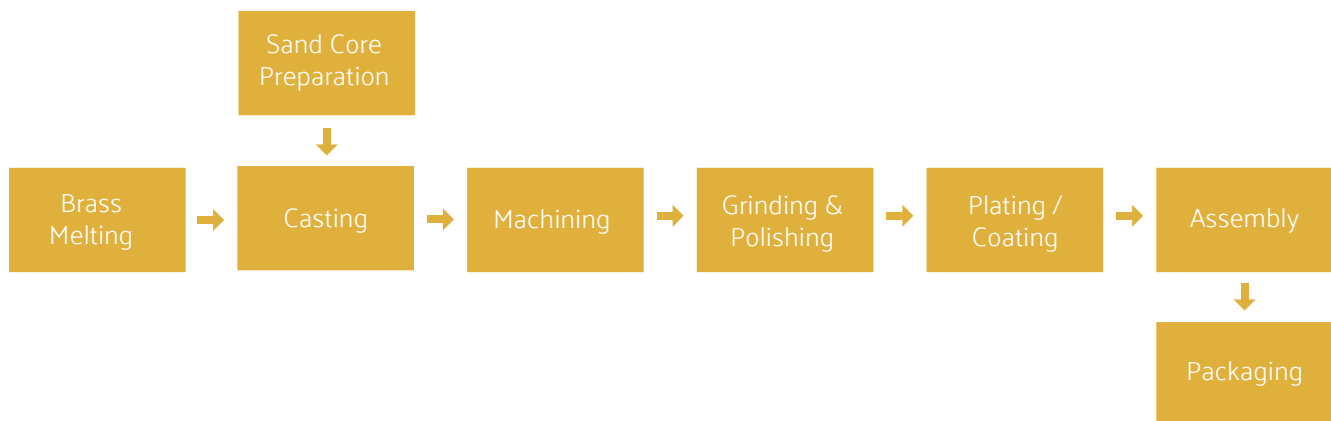
**Machining:** The casted parts are machined to form the screw/connection areas by drilling and milling.

**Grinding & Polishing:** Grinding helps to diminish surface porosity, polishing helps to remove scratches on the surface and to get mirror-like finish.

**Plating / Coating:** Parts are plated first with nickel (7 micron) and then with chrome to increase the resistance of the surface to the corrosion and to obtain an aesthetic appearance. Additional coatings methods such as PVD, wet coating etc. can be applied to obtain more color options.

**Assembly:** Coated bodies and all other components including cartridges, aerators, handles, spouts, are assembled together before packaging.

**Packaging:** The faucet with necessary accessories and manuals is packed in a protective packaging.



Electric, natural gas and diesel are consumed during the manufacturing. The company uses 100% renewable energy in its facilities through green electricity certificates and promises to achieve this in the next years.

Information	Description
Electricity Data	Hydro Power Sourced Electricity in Türkiye, from Ecoinvent
Type of dataset	Cradle to gate
GWP of Electricity Data	0,0065 kg CO <sub>2</sub> eq./kWh

### A4 - Product Transport

Product transport from manufacturer to customer is considered in product in this stage. Average distance and transportation mode are assumed according to sales locations. Depending the customer location, product is transported via trucks, and other supplies come through seaway.



Transport Mode	Type
Road	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil

#### A5 - Installation

No material or energy use was taken into account for the installation. Mounting equipment is included in the product. Installation can be done by manpower. Additionally, disposal of packaging is taken into account at this stage. The end-of-life scenario of the package was modelled according to EU statistics. It is assumed that 75% of the paper and cardboard, 27,5% of the plastics are recycled. Materials other than not recycled, assumed to be incinerated or landfilled.

#### B7 - Operational Water Use

In this module, operational water usage throughout the life of the product is modeled. Assumptions are given in the table below. According to this assumption, daily water consumption is taken into account as 35 liters.

Parameter	Value
Daily frequency per user	7 times
Time of use (cycle)	1 min
Reference flow	5 l/min

#### C1 - Deconstruction / Demolition

It is assumed that at the end of its life, the mixer product will be manually dismantled from its installation site. Therefore, no burdens are assigned to module C1.

#### C2 - Waste Transport

Recycling post-consumer mixers is possible due to the high value and high mass of the product. A distance of 100 km by lorry 16-32 tonnes from construction/demolition sites to disposal sites has been chosen as a conservative assumption.

Parameter	Value
Vehicle Type	Vehicle: Lorry Size Class: 16-32 metric ton Emission Standard: EURO4 Fuel Type: Diesel

#### C3 - Waste Processing

Mixers that have reached the end of their life cycle should be disassembled for disposal. Separating parts such as brass, and plastic is usually done manually. Therefore, it is assumed that there is no environmental impact at this stage. It is assumed that 95% of brass and other alloys and 29% of plastic parts go to recycling. All other parts are assumed to go to landfill.

#### C4 - Disposal

At the end of the product life cycle, mixers are disposed of. It is assumed that 55% of the non-recyclable parts go to landfill and 45% to incineration.

#### D - Benefits

The benefits from recycling, the benefits from incineration and the burdens of disposal stages are evaluated in this module..

# LCA Information

**Functional Unit/Declared Unit:** One of basin & bidet mixer (faucet). The product weight is 2,17 kg.

**Time Representativeness:** 2023 (12 months)

**Database(s) and LCA Software:** Ecoinvent 3.10 and SimaPro 9.6

**System Boundaries:** Cradle to gate with options, modules A4, A5, B7, C1-C4, module D and with optional modules (A1-A3 + A4 + A5 + B7 + C + D). Human activities such as employee transportation and infrastructure of the production site are excluded.

**Reference Service Life:** The RSL for the reference product is 16 years .

	Product Stage			Construction Process Stage		Use Stage						End of Life Stage				Benefits and Loads	
	Raw Material Supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-construction	Transport	Waste Processing	Disposal	Reuse-Recycling-Recovery Potential
<b>Module</b>	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
<b>Modules Declared</b>	X	X	X	X	X	MND	MND	MND	MND	MND	MND	X	X	X	X	X	X
<b>Geography</b>	GLO		TR	GLO													
<b>Specific Data Used</b>	85%			-													
<b>Variation - Products</b>	84%			-													
<b>Variation - Sites</b>	0%			-													

(ND: Not declared, X:Included in LCA)

## Geographical Scope

The geographical scope of this EPD is global.

## Allocation

Source of raw material, water consumption, energy consumption and raw material transportation were weighted according to 2023 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the 2023 total waste generation.

## Cut-Off Criteria

1% cut-off is applied in LCA. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

### REACH Regulation

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No	Weight-% per functional or declared unit
Lead (Pb)	231-100-4	7439-92-1	0,2-1,4%*

\*Brass can contain between 0,2 and 1,4% of lead.

### Product Composition

Component	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Brass	1,78	0	0
Zamak	0,21	0	0
Plastic	0,05	0	0
Rubber	0,07	0	0
Steel	0,06	0	0
<b>Sum</b>	<b>2,17</b>	<b>0</b>	<b>0</b>

### Packaging

Component	Weight, kg	Weight-% (versus the product)	Biogenic material, kg C/ product or declared unit
Cardboard	0,186	8,6%	0,084
Plastic	0,013	0,6%	0
Paper	0,016	0,7%	0,007
<b>Sum</b>	<b>0,215</b>	<b>9,9%</b>	<b>0,090</b>

### LCA Modelling, Calculation And Data Quality

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations. For LCA modelling and calculation, ecoinvent database (v3.9.1) and SimaPro (v9.5) LCA software were used. Characterization factors of EN 15804 reference package based on EF 3.1 are utilized. Impact of infrastructure and capital goods are excluded from the analysis.

Stage	Data Type
Raw Material Supply	Generic database, plant specific data
Raw Material Transport	Generic database, plant specific data
Manufacturing	Generic database, plant specific data
Product Transport	Generic database, plant specific data
Installation	Generic database, assumptions
Use Phase	Generic database, plant specific data
End of Life	Generic database, assumptions
Benefits & Loads	Generic database, assumptions

# LCA Results

It is discouraging the use of the results of modules A1-A3 without considering the results of module C. 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.

CORE ENVIRONMENTAL IMPACTS PER DECLARED UNIT											
Mandatory indicators	Unit	A1-A3	A4	A5	B7	C1	C2	C3	C4	D	
Global Warming Potential	Total	kg CO <sub>2</sub> eq.	1,31E+01	2,01E-01	-9,01E-02	1,80E+02	0,00E+00	2,33E-02	0,00E+00	1,69E-01	8,74E+00
	Fossil	kg CO <sub>2</sub> eq.	1,24E+01	2,01E-01	2,64E-03	1,80E+02	0,00E+00	2,33E-02	0,00E+00	4,64E-02	-8,69E+00
	Biogenic	kg CO <sub>2</sub> eq.	2,09E-01	3,40E-05	-9,27E-02	2,35E-01	0,00E+00	3,97E-06	0,00E+00	1,22E-01	-2,54E-02
	Luluc	kg CO <sub>2</sub> eq.	5,36E-01	8,21E-05	2,59E-07	2,15E-01	0,00E+00	9,24E-06	0,00E+00	1,08E-05	-1,64E-02
ODP	kg CFC-11 eq.	1,61E-07	3,62E-09	2,41E-11	2,57E-05	0,00E+00	3,25E-10	0,00E+00	1,02E-09	-8,28E-08	
AP	mol H+ eq.	6,89E-01	2,56E-03	1,51E-05	9,41E-01	0,00E+00	7,77E-05	0,00E+00	2,17E-04	-6,12E-01	
EP - Freshwater	kg P eq.	4,97E-02	1,10E-05	3,62E-07	7,32E-02	0,00E+00	1,83E-06	0,00E+00	2,04E-05	-4,88E-02	
EP - Marine	kg N eq.	3,81E-02	6,75E-04	1,07E-05	1,89E-01	0,00E+00	2,52E-05	0,00E+00	3,98E-04	-3,22E-02	
EP - Terrestrial	mol N eq.	7,08E-01	7,47E-03	7,33E-05	1,93E+00	0,00E+00	2,74E-04	0,00E+00	8,89E-04	-4,42E-01	
POCP	kg NMVOC	1,42E-01	2,28E-03	1,91E-05	5,90E-01	0,00E+00	1,08E-04	0,00E+00	3,52E-04	-1,24E-01	
**ADPE	kg Sb eq.	8,97E-03	4,15E-07	2,77E-09	8,25E-04	0,00E+00	7,46E-08	0,00E+00	1,08E-07	-8,48E-03	
**ADPF	MJ	7,70E+01	1,93E-01	2,14E-03	1,48E+03	0,00E+00	3,19E-02	0,00E+00	1,16E-01	-5,99E+01	
**WDP	m <sup>3</sup> depriv.	3,36E+01	1,09E-02	2,27E-04	8,50E+03	0,00E+00	1,48E-03	0,00E+00	-4,17E-02	-1,02E+01	
Additional environmental impact indicators per declared unit (Optional)											
PM	disease inc.	2,13E-06	1,49E-08	1,27E-10	1,15E-05	0,00E+00	1,85E-09	0,00E+00	4,37E-09	-1,43E-06	
*IR	kBq U-235 eq.	1,50E+00	2,65E-03	3,56E-05	2,13E+01	0,00E+00	2,68E-04	0,00E+00	3,95E-03	-1,04E+00	
**HTP - C	CTUh	1,35E-07	1,10E-09	1,65E-11	3,27E-06	0,00E+00	1,21E-10	0,00E+00	2,25E-10	-1,11E-07	
**HTP - NC	CTUh	6,49E-06	1,41E-09	1,34E-10	5,86E-06	0,00E+00	2,03E-10	0,00E+00	2,55E-09	-6,45E-06	
**SQP	Pt	2,31E+02	1,93E+00	9,74E-03	4,97E+02	0,00E+00	1,95E-01	0,00E+00	1,31E+00	-2,01E+02	
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site, A5: Installation, B7: Operational Water Usage, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.										
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EPmarine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality										
*Disclaimer 1	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.										
**Disclaimer 2	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 experienced with the indicator.										

ADDITIONAL MANDATORY IMPACT CATEGORY INDICATORS PER DECLARED UNIT

Parameter	Unit	A1-A3	A4	A5	B7	C1	C2	C3	C4	D
GWP - GHG	kg CO <sub>2</sub> eq.	1,30E+01	2,01E-01	2,64E-03	1,80E+02	0,00E+00	2,33E-02	0,00E+00	1,61E-01	-8,74E+00

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology. The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. The GWP-GHG indicator is identical to GWP-total except that the characterisation factor (CF) for biogenic CO<sub>2</sub> is set to zero.

RESOURCE USE INDICATORS PER DECLARED UNIT

Parameter	Unit	A1-A3	A4	A5	B7	C1	C2	C3	C4	D
PERE	MJ	8,77E+01	3,62E-02	8,37E+00	2,54E+02	0,00E+00	4,30E-03	0,00E+00	7,18E-02	0,00E+00
PERM	MJ	3,19E+00	0,00E+00	-3,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	9,08E+01	3,62E-02	5,18E+00	2,54E+02	0,00E+00	4,30E-03	0,00E+00	7,18E-02	0,00E+00
PENRE	MJ	7,30E+01	1,93E-01	5,39E-01	1,48E+03	0,00E+00	3,19E-02	3,40E+00	1,16E-01	0,00E+00
PENRM	MJ	3,94E+00	0,00E+00	-5,39E-01	0,00E+00	0,00E+00	0,00E+00	-3,40E+00	0,00E+00	0,00E+00
PENRT	MJ	7,70E+01	1,93E-01	0,00E+00	1,48E+03	0,00E+00	3,19E-02	0,00E+00	1,16E-01	0,00E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	4,75E-01	4,01E-04	0,00E+00	3,63E+02	0,00E+00	5,11E-05	0,00E+00	6,62E-04	-3,27E-01

Legend

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 resources; 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 & OUTPUT INDICATORS

Parameter	Unit	A1-A3	A4	A5	B7	C1	C2	C3	C4	D
HWD	kg	6,00E-02	6,42E-05	0,00E+00	1,36E-01	0,00E+00	8,20E-06	0,00E+00	4,08E-02	-1,99E-02
NHWD	kg	2,10E-01	1,60E-01	5,99E-02	1,47E+01	0,00E+00	1,54E-02	1,08E-01	7,88E-02	-1,18E+00
RWD	kg	3,90E-04	6,55E-07	9,02E-09	5,30E-03	0,00E+00	6,57E-08	0,00E+00	9,10E-07	-2,72E-04
CRU	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
MFR	kg	0,00E+00	0,00E+00	1,55E-01	0,00E+00	0,00E+00	0,00E+00	2,02E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,45E-02	0,00E+00	0,00E+00
EE (Electrical)	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
EE (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

Legend

HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, thermal.

# References

**GPI** / General Programme Instructions of the International EPD® System. Version 5.0. EN ISO 9001/ Quality Management Systems - Requirements EN ISO 14001/ Environmental Management Systems - Requirements

**EN 15804**: 2012+A2:2019 / Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products

**ISO 14025 / DIN EN ISO 14025:2009-11**: Environmental labels and declarations - Type III environmental declarations - Principles and procedures

**PCR for Construction Products and Construction Services** / Prepared by IVL Swedish Environmental Research Institute, Swedish environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.3.4

**ISO 14040/44 / DIN EN ISO 14040**: 2006-10 / Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

**ISO 9001** / Quality Management System

**ISO 45001** / Occupational Health and Management System

**ISO 14001** / Environmental Management System

**ISO 50001** / Energy Management System

**The International EPD® System** / The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. [www.environdec.com](http://www.environdec.com)

**Ecoinvent** / Ecoinvent Centre, [www.ecoinvent.org](http://www.ecoinvent.org)

**SimaPro** / SimaPro LCA Software, Pré Consultants, the Netherlands, [www.pre-sustainability.com](http://www.pre-sustainability.com)

**Metsims** / [www.metsims.com](http://www.metsims.com)

**Eczacıbaşı Building Products** / [www.eczacibasi.com.tr/en](http://www.eczacibasi.com.tr/en)

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