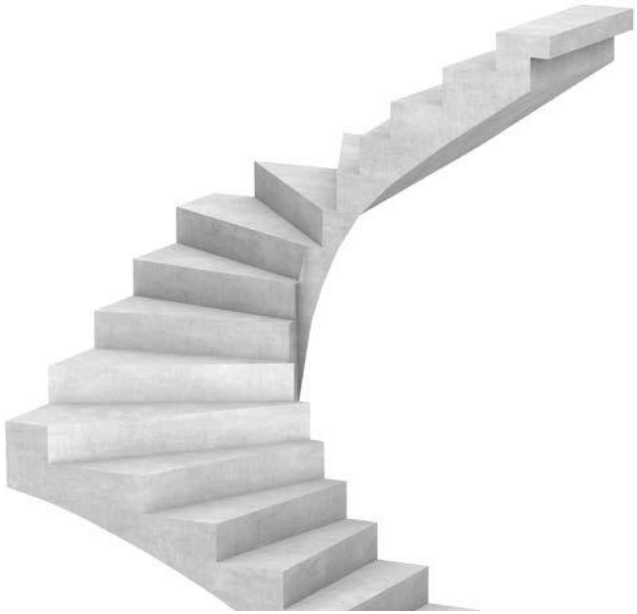


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

PRECAST CONCRETE STAIRCASE
K-Prefab AB



EPD HUB, HUB-4180
Published on 17.10.2025, last updated on 17.10.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	K-Prefab AB
Address	Hyllie Stationstorg 13, , 215 32, Malmö, SE
Contact details	info@kprefab.se
Website	https://www.kprefab.se

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 1.2, 24 Mar 2025 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Lena Almestrand K-Prefab
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Vera Durão, as an authorised verifier acting for EPD Hub Limited

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	PRECAST CONCRETE STAIRCASE
Additional labels	na
Product reference	na
Place(s) of raw material origin	EU
Place of production	Vara, Sweden
Place(s) of installation and use	Sweden
Period for data	calendar year 2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	na
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	93,7

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 ton
Declared unit mass	1000 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1,45E+02
GWP-total, A1-A3 ($kgCO_2e$)	1,40E+02
Secondary material, inputs (%)	7,81
Secondary material, outputs (%)	70,5
Total energy use, A1-A3 (kWh)	503
Net freshwater use, A1-A3 (m^3)	2,82

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

K-Prefab AB offers a wide range of precast concrete products used in various buildings and infrastructure projects on the Swedish market. K-Prefab AB develops and builds homes, schools, offices, industrial- and agricultural buildings with our different concepts and products. Sustainability and climate are strategic priorities for K-Prefab. K-Prefab's frame system is at the forefront of climate-improved concrete. K-Prefab is working with it's clients in all parts of the process – from the early project planning to assembly on site – K-Prefab can help create solutions that are more cost efficient and better for the environment, e.g. by minimizing transmissions through the structure.
the agenda. K-Prefab's construction sites are located nearby the largest cities in Sweden. By producing locally, K-Prefab can reduce the environmental impact from transportation. Another important part of our environmental strategy is that K-Prefab production sites have converted to fossil free fuels. We are constantly working to reduce our carbon dioxide emissions and thus our carbon footprint.

PRODUCT DESCRIPTION

Precast concrete staircases come in many different varieties, most of which are custom made for each project. The design varies between straight, curved and with a circular spread. The stairs are also made with different surface layers. This EPD covers the most common design which is with a terrazzo coating, where separately manufactured steps are placed at the bottom of the form. The stairs are then reinforced and cast with gray concrete. Other surface layers are based on gray concrete where smooth cast is a common variant.
The stairs are cast upside down in molds and the step surfaces are cast against the mold. For outdoor stairs, an exposed surface can be created, where the upper cement skin is washed away and part of the ballast is removed. All products are manufactured indoors, which ensures a high and even quality throughout the year. Since each product is custom made new drawings are made before the production process starts. The products are optimized for each project. In this phase of the project, the customer has the opportunity to make choices that affects the entire lifecycle of the building, e.g. reference service life, product dimension etc.

Additional information and technical data for the product can be found at the website:
https://www.kprefab.se/produkt/trappor/
https://www.kprefab.se/om-oss/hallbarhet/certifikat-bedomningar/

Further information can be found at:
https://www.kprefab.se

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	4	Norway
Minerals	96	Sweden, Italy
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

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 ton
Mass per declared unit	1000 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
na	-	-
na	-	-
na	-	-
na	-	-

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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND. 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.

A1: Extraction and processing of raw materials and generation of electricity and heat from primary energy resources
A2: Transports from suppliers to K-Prefab production sites
A3: Manufacturing of the product at K-Prefab production sites

Raw materials are purchased and transported to the factory. The raw material that has the biggest impact on the climate is the production of cement. During the production, in the cement factory, a process called calcination is taking place. During the calcination, CO2 is released from the limestone. The finished concrete, however, can retrieve some of this CO2 during its lifetime. Up to 1/5 of the CO2, which is released during the cement production, can be retrieved by the concrete. This is an important fact to consider when making a life cycle analysis for an entire building. In the factory, a mold is prepared. It can be made of different types of materials such as steel or wood. The reinforcement steel is prepared according to drawing. This means choosing the right quality and dimensions, bending, cutting to correct lengths and binding it together. The concrete is made from aggregate, water, cement and admixtures. It is all mixed in a large concrete mixer. There are different formulas used for different products in order to meet the different needs. After the concrete is poured in to the mold, there is usually a need to vibrate in order to make sure that the concrete fills out the mold and surrounds the reinforcement steel appropriately. Finally, the surface of the product is treated to ensure the correct quality. The product is then covered and left over night to harden. When the mold is removed, the product is inspected to make sure it meets the standards.
Ancilliary materials used are plastic protective cover for the stairs during transport and plywood for the mold.
Waste generated during the production process is recycled or incinerated and consists of residues of concrete, steel and wood.
Heat, electricity use and other energy use as well as waste in production are calculated as a weight average per produced tonne of all products using

yearly production data and rate for 2024. Allocation is based on weight. No assumptions made.

There are variation in the mix of materials (cement, reinforcement, gravel etc.) in the concrete products. Material percentages in the table below are averages. However, the variation in material composition for different mixes and the related environmental impact is within +/- 10% compared to the given average in this EPD.

Weight	kg per D.U.
Reinforcement	39
Cement	133
Aggregate	605
Water	66
Sludge	17
Terrazzo	139
Total	1000
Packaging	
PP-PET	0,8

For cement, the net value is used in the calculation i.e. the core GWP indicator declared from the supplier does not include the emissions from the combustion of waste fuels (GWP, net). The waste status of the waste-based fuels has been proven. The electricity mix has been moduled as 100% hydropower with a Guarantee of origin from the supplier of the electricity.

Land transport is used to ship materials from suppliers to K-Prefab production sites. Environmental impact from these transports is calculated in module A2.

LCA calculations have been made combining distance information with generic LCI data for lorry transports. The distances that the different materials were transported are presented below. The distances are calculated averages for the different production facilities of K-Prefab.

Material	Lorry [km]
Cementa Byggcement Skövde	61
Sludge	243
Aggregate	46
Reinforcement	230
Terrazzo	28

In module A3, environmental impact from energy use is calculated. The electricity mix has been modeled as 100% hydropower with a Guarantee of origin from the supplier of the electricity.

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.
Transports from K-Prefab production sites to customer. Transport distance to customer has been calculated as a mean value of the outgoing transports from K-Prefabs production sites during 2024. The transportation distance is assumed as 133 km roadway with Transport, freight, lorry >32 metric ton, euro 6 {RER}| market for transport, freight, lorry >32 metric ton, EURO6 | Cut-off, S. Capacity utilisation (included empty returns) has been assumed to 50 %.
Environmental impacts from installation into the building include generation of waste packaging materials (A5). Installation includes the energy use as well as the packaging waste generated. Production loss at installation is assumed negligible as the precast elements are delivered ready made from the factory. Energy consumption for installation by cranes is assumed as 0.01 kWh/kg. The source of energy is diesel fuel used by work machines.

PRODUCT USE AND MAINTENANCE (B1-B7)

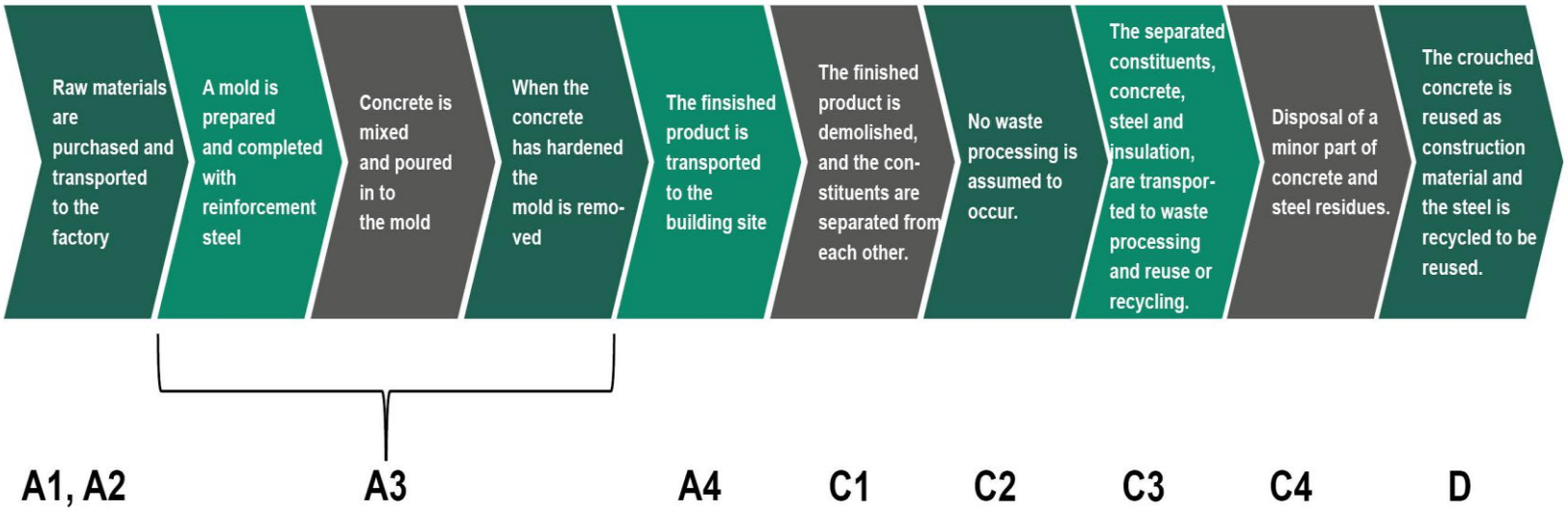
This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

In the end-of-life stage, all products are assumed to be demolished and the constituents are separated from each other (C2-C3) for recycling. The dismantled concrete blocks are delivered to the nearest construction waste treatment plant. It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. A conservative assumption that 30% losses in the recycling process of concrete has been used in the model. A conservative assumption of 15% losses in the recycling process for steel has been used. As a consequence 70% of the concrete can be used as ballast in construction projects and the remaining 30% becomes landfill while 85% of the steel can be recycled and the remaining 15% becomes landfill. Energy consumption for dismantling the products has been estimated with standard values. It has been assumed that crushing and shredding occur at the demolition site to facilitate transport.

Energy consumption for crushing concrete, diesel 2 kWh / tonne Ecoinvent 3.10.1.
Energy consumption for shredding steel, diesel 7,4 kWh / tonne Ecoinvent 3.10.1
The average transport distance for steel to waste processing is assumed to be 50 km. The transport value is an average since the transport distance is due to the location of the construction site as well as the waste processing site. The transport distance for the concrete is assumed to be 20 km.
The dataset for the modelling of transportation is Transport, freight, lorry >32 metric ton, euro6 {RER}| market for transport, freight, lorry >32 metric ton, EURO6 | Cut-off, S.
No steel recovery is accounted for in D since the steel that is used in the production to 100% consists of scrap steel.
The recycled material content in the concrete itself is assumed to be 0 % (D).

SYSTEM DIAGRAM



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.

This LCA study includes the provision of all materials, transportation, energy and emission flows, and end of life processing of product. All industrial processes from raw material acquisition and pre-processing, production, product distribution and installation and end-of-life management are included. Due to lack of data, some materials are excluded but they do not exceed the 1% cut-off criteria. These include materials which are used in the product only in very small amounts (e.g. additives and castings <0,2%) and have a negligible impact on the emissions of the product. 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	No allocation
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, %	na

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‘.

ILCD database

EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.

SS-EN 16757:2022 Sustainability of construction works – Environmental product declarations – Product Category Rules for concrete and concrete elements
requirements from the raw material suppliers.

S-P-00305 Steel, rebar products (concrete reinforcement), 4-40mm, 7700 kg/m3 (Celsa Steel (2021) - Halmstad, Västerås, and Vännäs plants (Sweden))

NEPD-11497-11391 CEM II/A-LL 52.5 Industricement Skövde

S-P-05377 Merit (GGBS)

NEPD-6308-5570-EN Italian style 30 mm cut to size

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, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	1,31E+02	5,70E+00	3,93E+00	1,40E+02	1,38E+01	1,02E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,10E+01	3,69E+00	1,83E+00	-7,81E+00
GWP – fossil	kg CO_2e	1,36E+02	5,69E+00	3,86E+00	1,46E+02	1,38E+01	1,02E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,10E+01	3,69E+00	1,83E+00	-7,80E+00
GWP – biogenic	kg CO_2e	-5,84E+00	1,21E-03	3,17E-02	-5,81E+00	3,01E-03	-3,77E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,21E-03	-1,89E-03	-5,84E-04	4,48E-05
GWP – LULUC	kg CO_2e	6,59E-02	2,20E-03	3,87E-02	1,07E-01	5,36E-03	3,62E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,02E-03	1,23E-03	1,05E-03	-6,96E-03
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	4,83E-06	1,10E-07	9,42E-08	5,03E-06	2,87E-07	5,30E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,08E-07	5,51E-08	5,31E-08	-9,05E-08
Acidification potential	mol H^+e	3,65E-01	1,85E-02	2,14E-02	4,05E-01	3,25E-02	2,73E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,46E-02	3,55E-02	1,30E-02	-4,55E-02
EP-freshwater[2)]	kg Pe	1,04E-02	3,93E-04	1,24E-03	1,20E-02	9,62E-04	7,46E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,46E-04	5,67E-04	1,51E-04	-2,39E-03
EP-marine	kg Ne	9,05E-02	6,27E-03	6,33E-03	1,03E-01	8,52E-03	1,82E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,16E-02	1,43E-02	4,96E-03	-1,05E-02
EP-terrestrial	mol Ne	1,35E+00	6,82E-02	6,61E-02	1,49E+00	9,22E-02	1,18E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,26E-01	1,57E-01	5,41E-02	-1,26E-01
POCP ("smog")[3)]	kg NMVOCe	3,41E-01	2,98E-02	2,78E-02	3,98E-01	5,65E-02	3,42E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,33E-02	4,68E-02	1,94E-02	-3,77E-02
ADP-minerals & metals[4)]	kg Sbe	7,02E-04	1,58E-05	2,70E-05	7,45E-04	3,94E-05	2,46E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,59E-05	5,42E-05	2,91E-06	-4,24E-05
ADP-fossil resources	MJ	1,14E+03	8,25E+01	1,03E+02	1,33E+03	2,07E+02	4,51E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,54E+02	4,85E+01	4,50E+01	-1,10E+02
Water use[5)]	m^3e depr.	1,25E+03	4,20E-01	2,82E+00	1,25E+03	1,06E+00	2,98E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,49E-01	2,77E-01	1,30E-01	-1,04E+01

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 PO4e; 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, EF 3.1

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	2,21E-06	5,67E-07	1,05E-06	3,83E-06	1,34E-06	3,73E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,63E-07	5,87E-06	2,96E-07	-6,59E-07
Ionizing radiation[6)]	kBq U235e	1,42E+01	9,53E-02	1,24E+00	1,55E+01	2,49E-01	1,69E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,85E-01	1,02E-01	2,83E-02	-7,18E-01
Ecotoxicity (freshwater)	CTUe	2,59E+02	1,00E+01	2,16E+01	2,90E+02	2,44E+01	4,36E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,08E+01	7,98E+00	3,78E+00	-2,15E+01
Human toxicity, cancer	CTUh	2,97E-08	9,38E-10	1,83E-09	3,25E-08	2,29E-09	5,46E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,87E-09	9,71E-10	3,38E-10	-2,01E-09
Human tox. non-cancer	CTUh	4,01E-07	5,36E-08	5,16E-08	5,06E-07	1,34E-07	2,03E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,66E-08	5,03E-08	7,77E-09	-6,10E-08
SQP[7)]	-	1,03E+03	8,31E+01	2,09E+02	1,32E+03	2,08E+02	5,01E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,16E+01	2,23E+01	8,86E+01	-7,94E+01

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[8)]	MJ	2,85E+02	1,31E+00	4,84E+01	3,35E+02	3,37E+00	2,64E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,58E+00	2,12E+00	4,35E-01	-9,00E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,85E+02	1,31E+00	4,84E+01	3,35E+02	3,37E+00	2,64E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,58E+00	2,12E+00	4,35E-01	-9,00E+00
Non-re. PER as energy	MJ	9,96E+02	8,25E+01	6,99E+01	1,15E+03	2,07E+02	-3,19E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,54E+02	4,85E+01	4,50E+01	-1,10E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	3,40E+01	3,40E+01	0,00E+00	-3,40E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,36E+01
Total use of non-re. PER	MJ	9,96E+02	8,25E+01	1,04E+02	1,18E+03	2,07E+02	-6,59E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,54E+02	4,85E+01	4,50E+01	-9,62E+01
Secondary materials	kg	7,81E+01	3,56E-02	3,17E-02	7,82E+01	8,94E-02	1,29E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,03E-02	2,82E-02	1,13E-02	2,44E-01
Renew. secondary fuels	MJ	6,79E+01	4,50E-04	2,90E-02	6,80E+01	1,13E-03	1,03E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,88E-04	6,12E-04	2,34E-04	-6,50E-04
Non-ren. secondary fuels	MJ	2,97E+02	0,00E+00	1,83E-03	2,97E+02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	2,75E+00	1,22E-02	6,90E-02	2,83E+00	3,05E-02	-3,65E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,07E-02	7,88E-03	4,68E-02	-2,48E-01

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	1,59E+00	1,23E-01	1,95E-01	1,91E+00	2,99E-01	1,13E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,28E-01	1,09E-01	4,97E-02	-6,82E-01
Non-hazardous waste	kg	9,81E+01	2,42E+00	2,18E+01	1,22E+02	5,99E+00	1,32E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,72E+00	2,96E+00	1,14E+00	-1,90E+01
Radioactive waste	kg	1,27E-02	2,35E-05	2,55E-04	1,29E-02	6,16E-05	4,30E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,60E-05	2,60E-05	6,90E-06	-1,75E-04

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	6,43E-04	0,00E+00	0,00E+00	6,43E-04	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	7,26E+00	0,00E+00	1,27E-05	7,26E+00	0,00E+00	3,20E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	7,05E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	7,18E-02	0,00E+00	6,78E-12	7,18E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	1,13E-01	0,00E+00	0,00E+00	1,13E-01	0,00E+00	4,78E+00	ND	ND	ND	ND	ND	ND	ND	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	2,01E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	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	2,77E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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 CO_2e	0,00E+00	5,66E+00	3,28E-01	5,99E+00	1,37E+01	1,01E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,09E+01	3,67E+00	1,82E+00	-7,75E+00
Ozone depletion Pot.	kg CFC_{-11}e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acidification	kg SO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Eutrophication	kg PO_4^3e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP (“smog”)	kg C_2H_4e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-elements	kg Sbe	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	1,36E+02	5,70E+00	3,90E+00	1,46E+02	1,38E+01	1,02E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,10E+01	3,69E+00	1,84E+00	-7,81E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	100 % hydropower
Electricity CO2e / kWh	0
District heating data source and quality	na
District heating CO2e / kWh	na

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	freight, lorry >32 metric ton, euro6 {RER}| market for transport, freight, lorry >32 metric ton, EURO6 |
Average transport distance, km	133
Capacity utilization (including empty return) %	50
Bulk density of transported products	na
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	-
Water use / m³	0
Other resource use / kg	0
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	0,01
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0,8
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	0,8
Direct emissions to ambient air, soil and water / kg	-

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	na
Collection process – kg collected with mixed waste	na
Recovery process – kg for re-use	na
Recovery process – kg for recycling	705
Recovery process – kg for energy recovery	na
Disposal (total) – kg for final deposition	na
Scenario assumptions e.g. transportation	The average transport distance for steel to waste processing is assumed to be 50 km. The transport value is an average since the transport distance is due to the location of the construction site as well as the waste processing site. The transport distance for the concrete is assumed to be 20 km.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Vera Durão, as an authorised verifier acting for EPD Hub Limited
17.10.2025



