

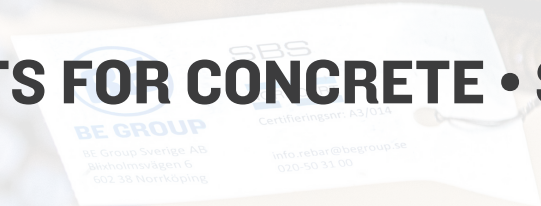


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930



REINFORCEMENT STEEL PRODUCTS FOR CONCRETE • SINGLE SUPPLIER BE GROUP SVERIGE AB



Programme operator: EPD HUB	EPD registration number: HUB-1290	Publishing date 12.04.2024	Last updated: 12.04.2024	Valid until: 12.04.2029
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GENERAL INFORMATION

MANUFACTURER

Manufacturer	BE Group Sverige AB
Address	Barlastgatan 10, 603 85 Norrköping
Contact details	Srdan Jovic srdan.jovic@begroup.se
Website	https://www.begroup.se

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 1.0, 1 Feb 2022
Sector	Construction Product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules A4-A5 and modules C1-C4, D
EPD author	Srdan Jovic
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
EPD verifier	EPD verifier Nemanja Nedic, as an authorised 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	Reinforcement steel products for concrete, single supplier
Additional labels	Reinforcement steel made from hot rolled product as coils, rebars and mesh, further processed into straight, cut and bend rebars, and mesh and special welded products
Product reference	-
Place of production	Norrköping, Sweden
Period for data	01/01/2022-21/12/2022
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	1,16%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	2,16E-01
GWP-total, A1-A3 (kgCO ₂ e)	2,17E-01
Secondary material, inputs (%)	121.0
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	0.85
Total water use, A1-A3 (m ³ e)	0

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

BE Group is a trading and service company, offering a broad range of steel, stainless steel and aluminium products. With extensive expertise and efficient processes in purchasing, logistics and production, we offer inventory sales, production service and direct deliveries to customers based on their specific needs for steel and metal products. The customers mainly operate in the manufacturing and construction industries in Sweden, Finland and the Baltic States. BE Group is certified according to ISO 9001, 14001 and 45001.

PRODUCT DESCRIPTION

BE Group purchase reinforcement products in form of straight bars, coils, meshes and special meshes from different suppliers. Some of the products are then cut to different lengths, bent and/or welded. The dimensions of the products vary according to the particular specifications of the construction project. BE Groups site in Norrköping provides reinforcement products in different dimension and lengths.

The products from BE Group are certified according to the relevant standards for steel reinforcement products.

The products declared are classified according to the United Nations Central Product Classification (UN CPC) 4126.

Further information can be found at <https://www.begroup.se/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	100	Europe

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	1kg
Mass per declared unit	1kg
Reference service life	Not declared

SUBSTANCES, REACH - VERY HIGH CONCERN

The products declared do not contain any substances of very high concern (SVHC) according to REACH.

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	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstructional demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Data that represent the current production process at the plant is used. All input data for the core module and for raw materials that BE Group has influence over are site specific data for the production year 2022. The environmental impact from infrastructure, construction, production equipment and tools that are not directly consumed in the production process are not accounted for in the LCI. Personnel-related impacts, such as transportation to and from work, are neither accounted for in the LCI.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production. Also, fuels used by machines, and handling of waste from the production processes at the manufacturing facility are included in this stage.

This EPD is based on one single supplier, Megasa. EPD from the supplier have been used in the calculations.

The reinforcement steel is delivered to the production site in Norrköping. The transports are made by ship, train and/or lorry.

The products are either delivered in standard length/standard format directly to customer from the warehouse in Norrköping or are processed further. The manufacturing process contains cut to the required length, the bars are then bent into the final shape according to customer specifications. For cages, individual bars are welded together. At the end of the process, textile lifting slings are wrapped around the reinforcing products or fixed on pallets and are thus ready for delivery. Depending on the type of product, euro pallets are also equipped with collars. All packaging materials are usually reused afterwards and are therefore not included in this study.

During loading and unloading or displacement of the product (electrical cranes and biodiesel powered trucks) are used. Electricity used at the site is fossil free. Waste from production is mainly steel scrap from the production where 100% goes to recycling.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occur from final products delivery to construction site and cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Transport to the customer is declared in module A4. BE Group's site delivers to all of Sweden. Transport is done by lorry and the most common fuel is renewable diesel. An average distance to the production site is 382 km. Vehicle capacity is 77%. Empty returns are not taken into account as it is assumed that return trips are used by the transportation company to serve the needs of other clients.

Installation of the rebar on the construction site is declared in module A5. This module is scenario based because BE Group don't have knowledge of the exact installation process of the product on construction site. Energy is required to fabricate construction steel forms. Further steel for ancillary wires used in the installation process is included. Waste that originates from the installation process is also included. Waste from the installation process is assumed to go to recycling.

The geographical location of the declared site is shown in the figure to the right. It also shows that the products are delivered to customers within Sweden.

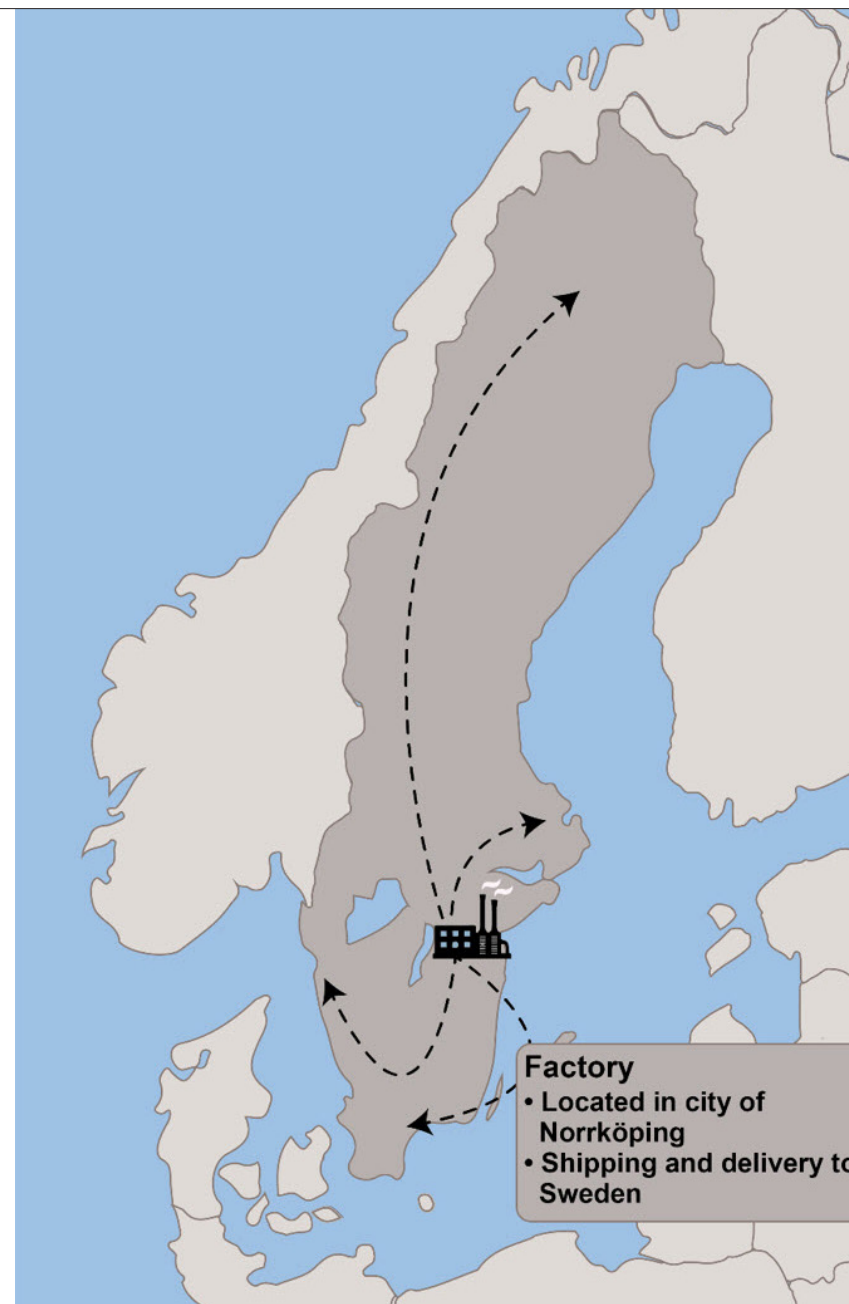
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

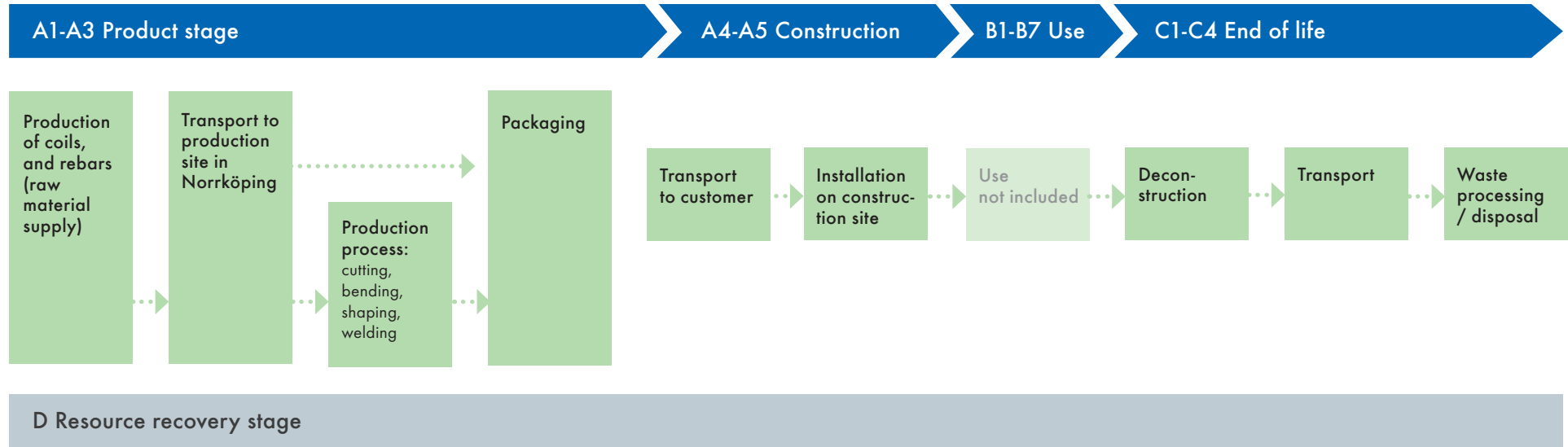
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At end of life the de-construction and demolition of the reinforced concrete is assumed to be made by diesel powered machinery which consumes 0,01 kWh/kg of product. It is assumed that 100% of the waste is collected. Distance for transportation to treatment is assumed to be 50 km and the transportation method is assumed to be lorry. 95% of the reinforcing bar is assumed to be recycled, this assumption is based on World Steel Association, 2020. It is assumed that 5% of the product is taken to landfill. Due to the recycling process the end-of-life product is converted into recycled steel.



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.

All inventories specified and known have been included in the LCA, except for packaging material. Packaging material for raw material supplies and packaging material for products delivered to customers are omitted. These are estimated to constitute less than 0.1 % of the total product weight.

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.

This EPD represent an average product from BE Group's site in Norrköping. All inventory data is therefore separately independent of the specific product produced. Each inventory data (e.g. all electricity consumed) is then divided by the total amount of products manufactured at the site. This is based on a weighted mass allocation where high volume products have a larger influence on the result. No other allocations are conducted.

In this study, allocation has been done in the following ways:

DATA TYPE

ALLOCATION

Raw materials	Allocated by mass or volume
Packaging materials	Allocated by mass or volume
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

The EPD declares multiple products from BE Group's site in Norrköping. The calculations are based on an average value for all of the products. This means that some products have lower and some products have higher actual environmental impact than what is declared. This variation is due to the various electricity consumption in the different steps of the manufacturing process. The variation between the products is low.

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	1,16%

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. Ecoinvent 3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total¹⁾	kg CO₂e	1,89E-01	2,55E-02	2,86E-03	2,17E-01	1,57E-01	6,07E-02	3,31E-03	4,16E-04	2,09E-02	2,64E-04	0,00E+00
GWP – fossil	kg CO₂e	1,88E-01	2,55E-02	2,86E-03	2,16E-01	1,57E-01	6,05E-02	3,31E-03	4,16E-04	2,08E-02	2,63E-04	0,00E+00
GWP – biogenic	kg CO₂e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,06E-07	1,66E-07	9,22E-05	1,72E-07	0,00E+00
GWP – LULUC	kg CO₂e	1,34E-03	2,26E-05	1,86E-06	1,36E-03	1,03E-04	2,50E-04	3,30E-07	1,63E-07	2,73E-05	2,49E-07	0,00E+00
Ozone depletion pot.	kg CFC-11e	5,01E-09	5,04E-09	4,00E-10	1,05E-08	2,96E-08	6,27E-09	7,07E-10	9,62E-11	2,57E-09	1,07E-10	0,00E+00
Acidification potential	mol H⁺e	4,66E-04	7,19E-04	1,84E-05	1,20E-03	1,52E-03	4,20E-04	3,44E-05	1,69E-06	2,64E-04	2,48E-06	0,00E+00
EP-freshwater²⁾	kg Pe	0,00E+00	1,08E-07	7,40E-08	1,82E-07	6,58E-06	2,25E-06	1,10E-08	2,92E-09	1,12E-06	2,76E-09	0,00E+00
EP-marine	kg Ne	1,55E-04	1,62E-04	4,07E-06	3,21E-04	8,77E-04	1,69E-04	1,52E-05	5,04E-07	5,58E-05	8,57E-07	0,00E+00
EP-terrestrial	mol Ne	1,24E-03	1,81E-03	4,61E-05	3,10E-03	6,23E-03	1,39E-03	1,67E-04	5,55E-06	6,45E-04	9,43E-06	0,00E+00
POCP ("smog")³⁾	kg NMVOCe	6,36E-04	4,77E-04	1,30E-05	1,13E-03	1,11E-03	3,64E-04	4,59E-05	1,70E-06	1,77E-04	2,74E-06	0,00E+00
ADP-minerals & metals⁴⁾	kg Sbe	5,35E-08	4,45E-08	1,78E-07	2,76E-07	2,96E-06	6,93E-07	1,68E-09	1,47E-09	2,80E-06	6,05E-10	0,00E+00
ADP-fossil resources	MJ	2,02E+00	3,21E-01	1,13E-01	2,46E+00	2,10E+00	7,24E-01	4,45E-02	6,17E-03	2,82E-01	7,22E-03	0,00E+00
Water use⁵⁾	m³e depr.	1,79E-01	1,11E-03	1,06E-03	1,81E-01	8,19E-02	4,37E-02	1,20E-04	2,85E-05	5,47E-03	2,29E-05	0,00E+00

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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	2,55E+00	2,63E-03	3,31E-03	2,56E+00	6,82E-01	3,46E-01	2,54E-04	8,85E-05	5,00E-02	6,27E-05	0,00E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,55E+00	2,63E-03	3,31E-03	2,56E+00	6,82E-01	3,46E-01	2,54E-04	8,85E-05	5,00E-02	6,27E-05	0,00E+00
Non-re. PER as energy	MJ	5,42E-02	3,21E-01	1,13E-01	4,89E-01	2,10E+00	5,27E-01	4,45E-02	6,17E-03	2,82E-01	7,22E-03	0,00E+00
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	5,42E-02	3,21E-01	1,13E-01	4,89E-01	2,10E+00	5,27E-01	4,45E-02	6,17E-03	2,82E-01	7,22E-03	0,00E+00
Secondary materials	kg	1,21E+00	1,76E-04	2,19E-05	1,21E+00	6,34E-04	1,29E-01	1,74E-05	2,07E-06	3,14E-04	1,52E-06	0,00E+00
Renew. secondary fuels	MJ	0,00E+00	4,81E-07	1,04E-06	1,52E-06	9,81E-06	4,28E-06	5,70E-08	2,28E-08	1,63E-05	3,96E-08	0,00E+00
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	3,68E-03	2,41E-05	2,71E-05	3,73E-03	1,66E-03	6,09E-04	2,70E-06	7,76E-07	1,65E-04	7,90E-06	0,00E+00

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	7,92E-06	5,09E-04	1,47E-04	6,64E-04	1,78E-02	7,48E-03	5,96E-05	6,92E-06	1,92E-03	0,00E+00	0,00E+00
Non-hazardous waste	kg	3,47E-02	4,25E-03	4,00E-03	4,29E-02	1,89E-01	5,71E-02	4,19E-04	1,23E-04	6,12E-02	5,00E-02	0,00E+00
Radioactive waste	kg	4,52E-06	2,26E-06	1,34E-06	8,11E-06	1,26E-05	3,28E-06	3,13E-07	4,25E-08	1,65E-06	0,00E+00	0,00E+00

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	kg	1,41E-01	0,00E+00	0,00E+00	1,41E-01	0,00E+00	1,41E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	4,27E-02	0,00E+00	0,00E+00	4,27E-02	0,00E+00	4,27E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	2,11E-04	0,00E+00	0,00E+00	2,11E-04	0,00E+00	2,11E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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.

Nemanja Nedic, as an authorized verifier acting for EPD Hub Limited
12.04.2024




EPD AUTHOR AND CONTRIBUTORS

Manufacturer	BE Group Sverige AB
EPD author	Srdan Jovic, BE group Sweden AB
EPD program operator	EPD Hub, hub@epdhub.com
LCA software	One Click LCA, EPD Generator for EPD Hub V2

