



# ENVIRONMENTAL PRODUCT DECLARATION

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



## HOT FINISHED STRUCTURAL HOLLOW SECTIONS BE GROUP SVERIGE AB

Programme operator:  
EPD HUB

EPD registration number:  
HUB-1323

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# GENERAL INFORMATION

## MANUFACTURER

Manufacturer	BE Group Sverige AB
Address	Barlastgatan 10, 603 85 Norrköping, Sweden
Contact details	Olof Berghell Olof.Berghell@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	Olof Berghell
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	Magaly Gonzalezvazquez, 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	Hot formed structural hollow sections
Additional labels	-
Product reference	-
Place of production	Norrköping, Sweden
Period for data	01/01/2021-21/12/2021
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

## ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of hot finished hollow sections
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	2,95
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	2,96
Secondary material, inputs (%)	15.6
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	9.23
Total water use, A1-A3 (m <sup>3</sup> e)	0,03

# 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

Hot finished structural hollow sections are tubular products produced from steel coils. The coil is slit to strips with appropriate width and then formed by rolling into the shape of the tubular product. The two strip edges, now lying next to each other, are welded together using a high frequency induction process. Further sets of rolling gives the final shape and size of the cold formed hollow section, and after trimming of the external weld bead and non-destructive testing, the tubes are cut to length prior to hot finishing. The subsequent hot finishing process comprises a reheating operation, and with the section at a normalising temperature of approximately 900 degrees Celsius, a further shaping and sizing operation imparts the product's final dimensions and properties before despatch.

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	1 kg of hot finished hollow sections
Mass per declared unit	1kg
Reference service life	Not declared

## SUBSTANCES, REACH - VERY HIGH CONCERN

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

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

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

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	X	X	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

Modules not declared = MND. Modules not relevant = MNR.

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 2021. 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 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.

BE Group purchase hollow sections from suppliers. The exact allocation of volume between suppliers varies over the years depending on supply and cost. The sections are delivered to the production site in Norrköping where they can be shot blasted, painted, cut and machined as requested by customer or delivered to customers in standard stock lengths. Some are delivered directly from the supplier to the customer. The transport from suppliers are made by ship, train and/or lorry.

The products are bundled, sometimes with steel wires. When sent to customers from BE Group site the products are either just bundled or also secured with steel strip with clips, if cut in short pieces EU pallets are used. During loading and unloading or displacement of the product diesel powered trucks are used. Electricity used at the site is fossil free, waste from production is steel scrap. All packaging materials are usually reused afterwards and are therefore not included in this study.

During loading and unloading or displacement of the product diesel 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 160 km. Vehicle capacity is 77%.



Some transports are made directly from the supplier to the customer, for these the actual distance from the supplier to the customer is considered. 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 product 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. Waste that originates from the installation process is also included.

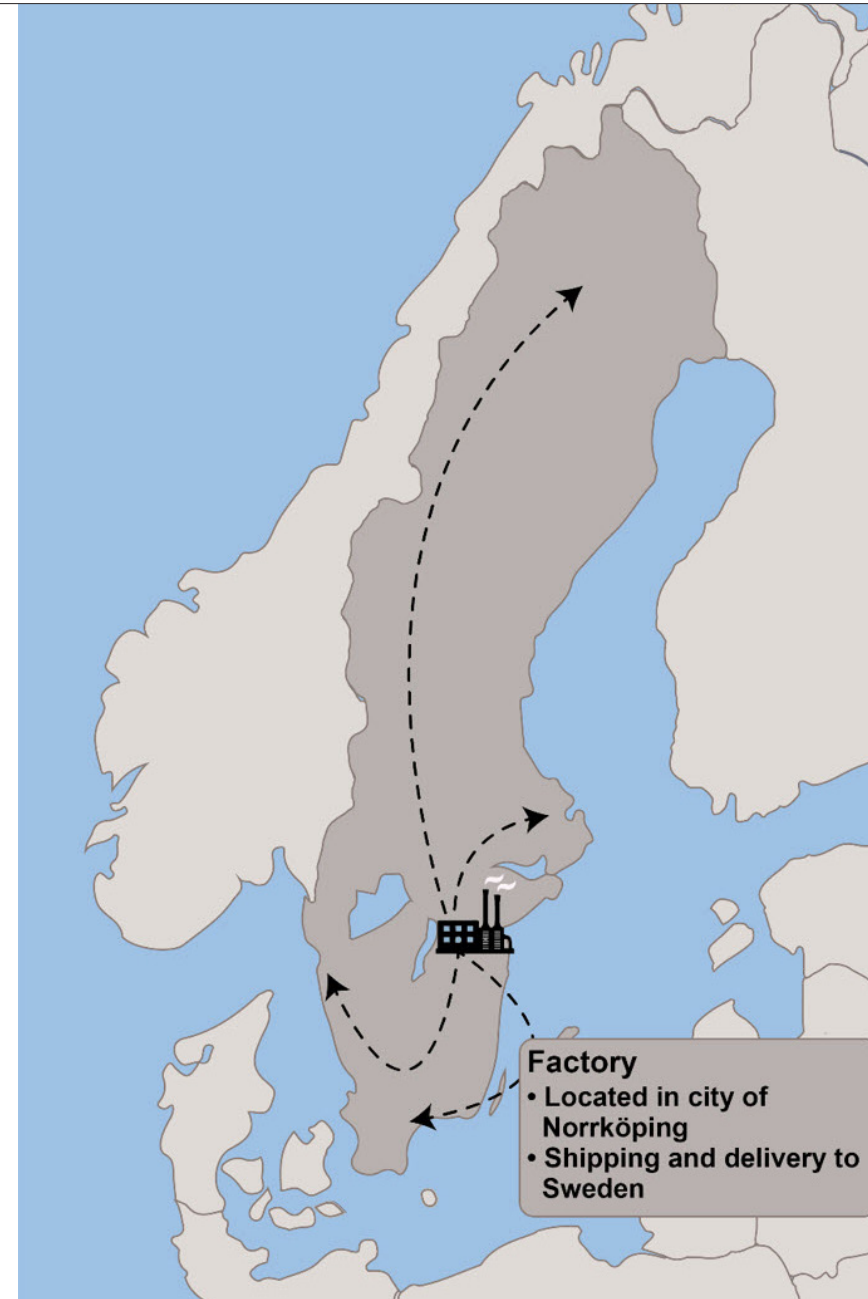
The geographical location of the declared site is shown in the figure to the right. It also shows that the products are delivered to customers within Sweden.

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

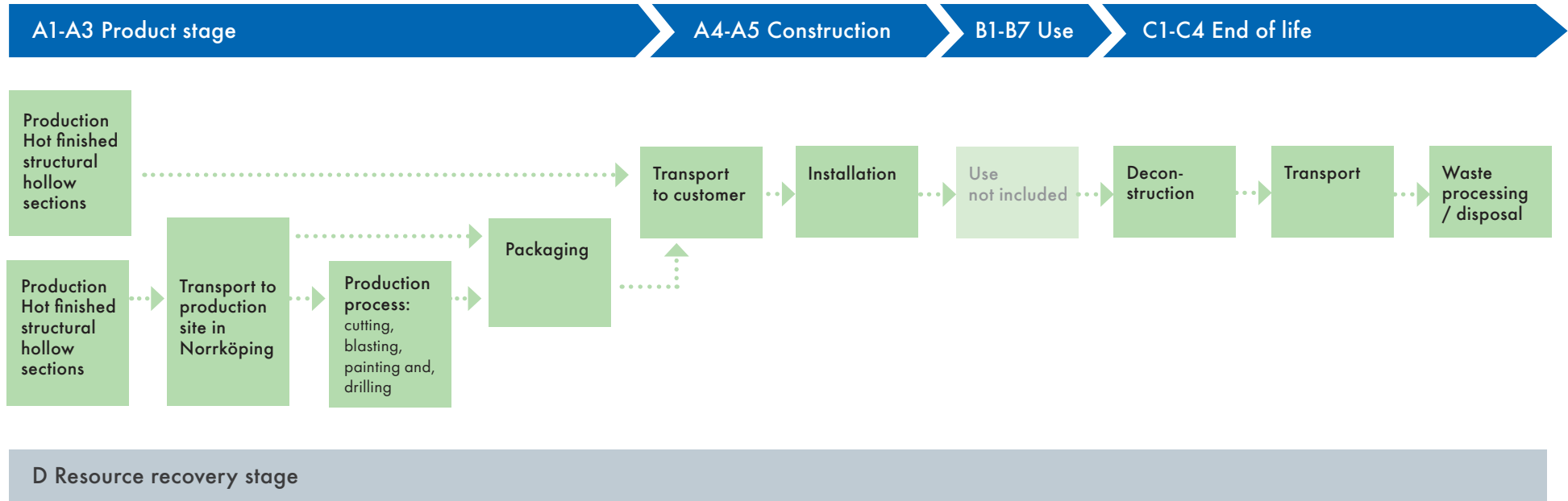
This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

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

At end of life the de-construction and demolition of the hollow sections 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 product 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 and ancillary materials. Packaging material for raw material supplies, packaging material for products delivered to customers and ancillary materials are omitted.

## 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 materials	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

## AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	-

This EPD is product and factory specific and does not contain average calculations.

## 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 v3.8 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
<b>GWP – total<sup>1)</sup></b>	<b>kg CO<sub>2</sub>e</b>	2,87E+00	7,44E-02	1,19E-02	2,96E+00	4,47E-02	3,08E-01	3,31E-03	8,32E-03	2,09E-02	2,64E-04	-5,25E-01
<b>GWP – fossil</b>	<b>kg CO<sub>2</sub>e</b>	2,87E+00	7,43E-02	1,19E-02	2,95E+00	4,47E-02	3,08E-01	3,31E-03	8,31E-03	2,08E-02	2,63E-04	-5,27E-01
<b>GWP – biogenic</b>	<b>kg CO<sub>2</sub>e</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,06E-07	3,32E-06	9,22E-05	1,72E-07	8,97E-04
<b>GWP – LULUC</b>	<b>kg CO<sub>2</sub>e</b>	7,26E-04	7,00E-05	5,01E-06	8,01E-04	3,83E-05	8,77E-05	3,30E-07	3,26E-06	2,73E-05	2,49E-07	5,85E-04
<b>Ozone depletion pot.</b>	<b>kg CFC-11e</b>	2,82E-08	1,38E-08	8,37E-09	5,03E-08	6,12E-09	7,19E-09	7,07E-10	1,92E-09	2,57E-09	1,07E-10	-1,42E-08
<b>Acidification potential</b>	<b>mol H<sup>+</sup>e</b>	9,28E-03	5,31E-04	9,37E-05	9,91E-03	6,21E-04	1,14E-03	3,44E-05	3,37E-05	2,64E-04	2,48E-06	-1,95E-03
<b>EP-freshwater<sup>2)</sup></b>	<b>kg Pe</b>	2,18E-04	1,70E-06	1,68E-07	2,20E-04	2,92E-06	2,24E-05	1,10E-08	5,83E-08	1,12E-06	2,76E-09	-3,87E-06
<b>EP-marine</b>	<b>kg Ne</b>	2,01E-03	1,40E-04	1,53E-05	2,16E-03	3,66E-04	2,83E-04	1,52E-05	1,01E-05	5,58E-05	8,57E-07	4,16E-06
<b>EP-terrestrial</b>	<b>mol Ne</b>	2,17E-02	1,55E-03	1,66E-04	2,34E-02	2,59E-03	2,93E-03	1,67E-04	1,11E-04	6,45E-04	9,43E-06	-5,42E-03
<b>POCP (“smog”)<sup>3)</sup></b>	<b>kg NMVOCe</b>	8,13E-03	4,42E-04	7,81E-05	8,65E-03	4,17E-04	9,99E-04	4,59E-05	3,40E-05	1,77E-04	2,74E-06	-3,02E-03
<b>ADP-minerals &amp; metals<sup>4)</sup></b>	<b>kg Sbe</b>	4,97E-06	2,98E-07	3,07E-07	5,58E-06	2,81E-07	8,87E-07	1,68E-09	2,94E-08	2,80E-06	6,05E-10	-1,68E-05
<b>ADP-fossil resources</b>	<b>MJ</b>	5,35E+00	1,11E+00	1,13E+00	7,59E+00	4,81E-01	9,18E-01	4,45E-02	1,23E-01	2,82E-01	7,22E-03	-4,34E+00
<b>Water use<sup>5)</sup></b>	<b>m<sup>3</sup>e depr.</b>	7,72E-01	1,13E-02	7,08E-03	7,91E-01	4,38E-02	8,43E-02	1,20E-04	5,70E-04	5,47E-03	2,29E-05	2,23E-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.



## USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy <sup>8)</sup>	MJ	1,80E+00	5,41E-02	7,14E-03	1,86E+00	2,94E-01	2,21E-01	2,54E-04	1,77E-03	5,00E-02	6,27E-05	-6,43E-01
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	1,80E+00	5,41E-02	7,14E-03	1,86E+00	2,94E-01	2,21E-01	2,54E-04	1,77E-03	5,00E-02	6,27E-05	-6,43E-01
Non-re. PER as energy	MJ	3,07E+01	1,11E+00	7,71E-01	3,26E+01	4,81E-01	3,41E+00	4,45E-02	1,23E-01	2,82E-01	7,22E-03	-4,34E+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	3,07E+01	1,11E+00	7,71E-01	3,26E+01	4,81E-01	3,41E+00	4,45E-02	1,23E-01	2,82E-01	7,22E-03	-4,34E+00
Secondary materials	kg	1,56E-01	7,70E-04	6,23E-05	1,57E-01	3,65E-04	1,58E-02	1,74E-05	4,14E-05	3,14E-04	1,52E-06	3,74E-01
Renew. secondary fuels	MJ	3,06E-05	3,87E-06	1,91E-06	3,63E-05	5,90E-06	6,08E-06	5,70E-08	4,56E-07	1,63E-05	3,96E-08	-7,41E-05
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 <sup>3</sup>	2,49E-02	3,22E-04	1,68E-04	2,54E-02	6,63E-04	2,63E-03	2,70E-06	1,55E-05	1,65E-04	7,90E-06	-1,49E-02

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	1,19E-01	3,02E-03	4,93E-04	1,22E-01	1,31E-02	1,38E-02	5,96E-05	1,38E-04	1,92E-03	0,00E+00	-3,32E-01
Non-hazardous waste	kg	7,36E-01	7,56E-02	8,41E-03	8,20E-01	7,15E-02	9,65E-02	4,19E-04	2,46E-03	6,12E-02	5,00E-02	-1,07E+00
Radioactive waste	kg	1,72E-04	7,39E-06	1,38E-05	1,93E-04	2,32E-06	2,03E-05	3,13E-07	8,50E-07	1,65E-06	0,00E+00	1,04E-06

### END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
<b>Components for reuse</b>	<b>kg</b>	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
<b>Materials for recycling</b>	<b>kg</b>	7,05E-04	0,00E+00	0,00E+00	7,05E-04	0,00E+00	7,05E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Materials for energy rec</b>	<b>kg</b>	1,73E-03	0,00E+00	0,00E+00	1,73E-03	0,00E+00	1,73E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Exported energy</b>	<b>MJ</b>	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 compliance 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 Gonzalezvazquez, as an authorized verifier acting for EPD Hub Limited  
20.04.2024



### EPD AUTHOR AND CONTRIBUTORS

Manufacturer	BE Group Sverige AB
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