

# Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## Carbon steel long products

from

**BE Group Oy Ab**



Programme:

Programme operator:

EPD registration number:

Publication date:

Valid until:

The International EPD® System, [www.environdec.com](http://www.environdec.com)

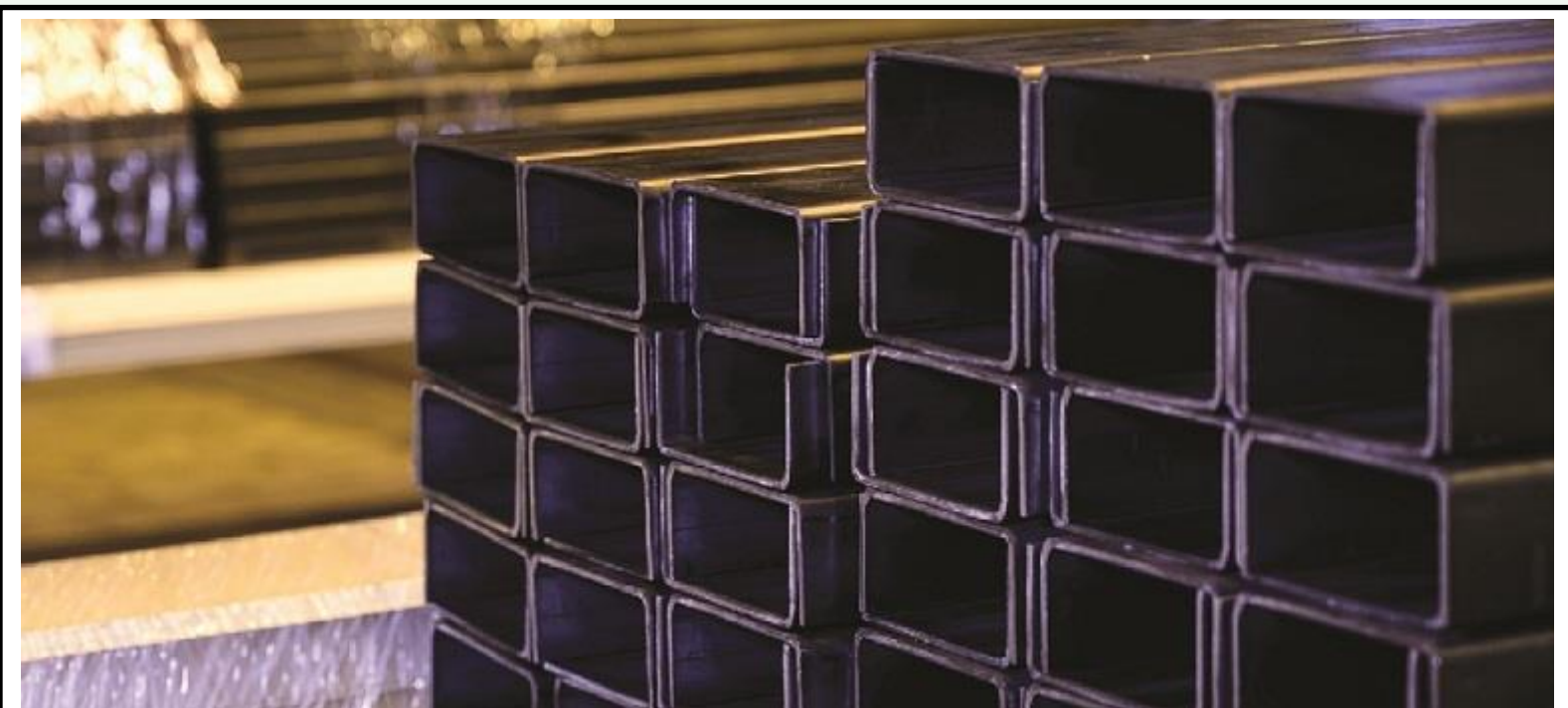
EPD International AB

S-P-07993

2023-01-13

2028-01-10

*An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com)*



## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:info@environdec.com">info@environdec.com</a>

<b>Accountabilities for PCR, LCA and independent, third-party verification</b>
<b>Product Category Rules (PCR)</b>
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): 2019:14, Construction products, version 1.2.5. UN CPC code 412 – Products of iron or steel.
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members available on <a href="http://www.environdec.com">www.environdec.com</a> . The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a> . Chair of the PCR review: Claudia A. Peña.
<b>Life Cycle Assessment (LCA)</b>
LCA accountability: Ecobio Oy
<b>Third-party verification</b>
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:  <input checked="" type="checkbox"/> EPD verification by individual verifier  Third-party verifier: Pär Lindman, Miljögiraff AB  Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, 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 cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

### Owner of the EPD:

BE Group Oy Ab

### Contact:

info@begroup.fi

### Description of the organisation:

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 Finland, the Baltic States and Sweden.

### Product-related or management system-related certifications:

BE Group is certified according to ISO 14001 and ISO 9001

### Name and location of production sites:

BE Group Oy Ab Lahti production site  
Vanhanradankatu 42, FI-15101 Lahti, Finland

BE Group Oy Ab Turku production site  
Paakarlantie 3, FI-20251 Turku, Finland

## Product information

### Product name:

Carbon steel long products

### Product identification:

Steel beams have their chemical composition, mechanical properties and other delivery conditions specified according to the European standard EN 10025. The dimensional tolerances of steel beams are specified according to EN 10034 for HEA-, HEB- and IPE-beams, and according to EN 10279 for UNP- and UPE-beams

Merchant bars have their chemical composition, mechanical properties and other delivery conditions specified according to the European standard EN 10025. The dimensional tolerances for different profiles are specified according to a separate norm for each variant.

### Product description:

Standardized steel beams are produced with hot rolling of steel into different profiles, or cross-sections. The most common standardized profiles are the H-, I- and U-profiles with their different sub variants. The BE Group assortment of beams include HEA-, HEB-, IPE-, UNP and UPE-beams. Steel beams can be produced in different steel grades, with different mechanical properties, where the low-carbon and weldable constructional steel grades S235JR and S355J2 are the most common ones.

Steel beams are primarily used within the construction industry for load-bearing structures. However, beams also find their application in machines, vehicles and other equipment. The products are characterized by having high axial and bending stiffness.

Merchant bars, or steel bars consist of a variety of standardized Carbon steel long products with different profiles, or cross sections. The most common standard profiles are flats, squares, rounds, angles, T- and U-bars. Merchant bars are produced by hot rolling of steel billets into the requested profile and dimension. Merchant bars can be produced in different steel grades, with different mechanical properties, where the low-carbon and weldable constructional steel grades S235JR and S355J2 are the most common ones.

Merchant bars are widely used within construction industry and mechanical engineering. The different profiles are used in load-bearing structures, buildings, infrastructure and within the manufacturing industry as parts of machines, vehicles and other equipment in an almost infinite number of uses.

UN CPC code:

4128 – Tubes, pipes and hollow profiles, of steel.

Geographical scope:

Raw materials used for production come from Europe and Asia.

Transportation of final products to retail covers the main customer locations in Finland.

End-of-life activities are modelled based on global averages. Global average is considered as conservative approach although the main customer locations are in Finland.

## **LCA information**

Functional unit / declared unit:

1 ton of long steel product

Reference service life:

The scenarios for modules B1-B5 are not given, thus the RSL is not specified in cradle to gate with options, modules C1–C4, and module D with additional module A4 type of EPD.

Time representativeness:

Data describing the acquisition of raw materials and manufacturing processes covers production year 2021.

Environmental product declarations used as background data for modelling are published less than five years ago.

Database data used for modelling is from 2022 for ecoinvent data and 2021 for Industry data 2.0 data.

Databases and LCA software used:

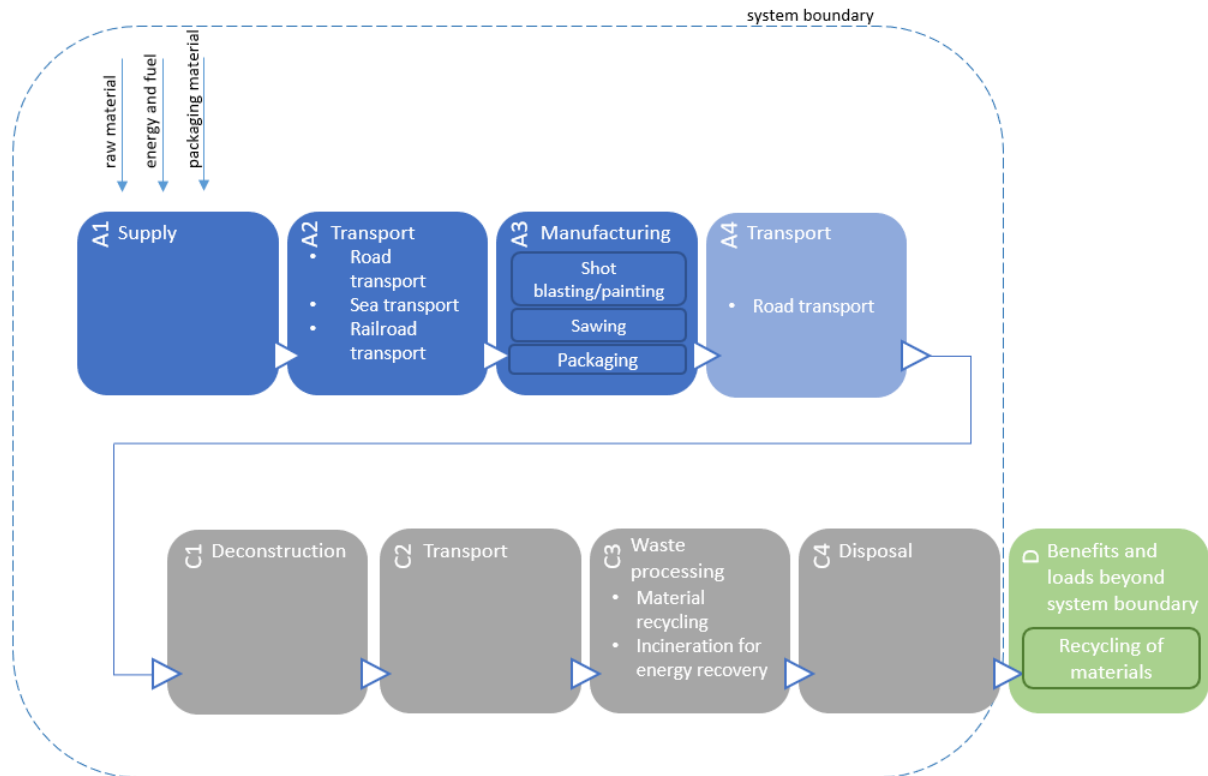
Databases used for modelling are ecoinvent 3.8 and Industry data 2.0 (Worldsteel data).

SimaPro LCA software version 9.4.0.2 was used for modelling.

Description of system boundaries:

Cradle to gate with options, modules C1–C4, module D and with optional module A4.

System diagram:



The pretreatment and processing of Carbon steel long products includes blasting/protective finishing and sawing. 32% of the Carbon steel long products are being processed and of that, 70% is sawing and 30% blasting/protective finishing.

More information:

LCA practitioner:

Ecobio Oy, info@ecobio.fi

Explanatory material can be obtained from the EPD owner and/or LCA practitioner.

Cut-off rule:

1% cut-off rule was applied for input flows in the inventory.

Allocation:

Steel scrap produced in module A3 is treated as co-product and environmental impacts are allocated for it based on economic co-product allocation principles.

Scenarios:

<b>Transports of Carbon steel long products from Lahti to the construction site by road</b>	
<b>Parameter</b>	<b>Unit</b>
Vehicle type	Lorry, >32 metric ton
Load capacity	37 % (ecoinvent 3.8)
Distance	227 km
Bulk density	2 633 kg/m <sup>3</sup>

<b>Transports of Carbon steel long products from Turku to the construction site by road</b>	
<b>Parameter</b>	<b>Unit</b>
Vehicle type	Lorry, >32 metric ton
Load capacity	37 % (ecoinvent 3.8)
Distance	233 km
Bulk density	2 633 kg/m <sup>3</sup>

<b>End-of-life phase of Carbon steel long products</b>	
<b>Parameter</b>	<b>Unit</b>
Collection process	Collected seperately
Transportation	50 km road
Recovery system	85% recycled
Disposal	15% to landfill

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	FI	FI	-	-	-	-	-	-	-	-	FI	FI	GLO	GLO	GLO
Specific data used	55 %					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0 %					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	86 %					-	-	-	-	-	-	-	-	-	-	-	-

## Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Carbon steel	1,000	42,0 %	0 %
Paint	< 0,001	0,0 %	0 %
TOTAL	1,000	42,0 %	0 %
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Cardboard	0,0003	0,03 %	0,00015
Polyethylene	0,0001	0,01 %	0
Steel	0,0001	0,01 %	0
Wood	0,0041	0,41 %	0,00205
TOTAL	0,0046	0,46 %	0,00220

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
Lead*	231-100-4	7439-92-1	0,30

\*Only concerns Engineering steel-products (384 ton).



## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804

#### Results per 1 ton of Carbon steel long products

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	1,05E+03	2,11E+01	3,31E+00	8,31E+00	1,76E+02	7,90E-01	-7,30E+02
GWP-biogenic	kg CO <sub>2</sub> eq.	3,39E+00	2,14E-02	1,24E-03	7,48E-03	2,15E+00	8,57E-04	-4,73E-01
GWP-luluc	kg CO <sub>2</sub> eq.	8,80E-01	7,57E-03	3,30E-04	3,26E-03	1,30E-01	7,46E-04	1,06E-01
GWP-total	kg CO <sub>2</sub> eq.	1,05E+03	2,11E+01	3,31E+00	8,32E+00	1,78E+02	7,91E-01	-7,30E+02
ODP	kg CFC 11 eq.	4,58E-05	5,03E-06	7,07E-07	1,92E-06	7,33E-06	3,20E-07	-3,97E-13
AP	mol H <sup>+</sup> eq.	4,39E+00	8,79E-02	3,44E-02	3,37E-02	4,90E-01	7,43E-03	-1,31E+00
EP-freshwater	kg P eq.	2,67E-02	1,31E-03	1,03E-04	5,35E-04	2,53E-01	7,23E-05	-1,49E-04
EP-freshwater	kg PO <sub>4</sub> <sup>-3</sup> eq.	9,89E-03	4,85E-04	3,79E-05	1,98E-04	9,37E-02	2,68E-05	-5,52E-05
EP-marine	kg N eq.	1,01E+00	2,68E-02	1,52E-02	1,02E-02	1,10E-01	2,58E-03	-1,95E-01
EP-terrestrial	mol N eq.	1,10E+01	2,93E-01	1,67E-01	1,11E-01	1,23E+00	2,83E-02	-1,90E+00
POCP	kg NMVOC eq.	2,88E+00	9,43E-02	4,59E-02	3,40E-02	3,73E-01	8,23E-03	-1,01E+00
ADP-minerals&metals*	kg Sb eq.	1,49E-01	4,83E-05	1,70E-06	2,89E-05	2,12E-02	1,80E-06	-1,55E-03
ADP-fossil*	MJ	1,29E+04	3,28E+02	4,54E+01	1,26E+02	1,41E+03	2,21E+01	-6,35E+03
WDP*	m <sup>3</sup>	2,39E+01	1,13E+00	7,11E-02	3,76E-01	2,57E+02	9,93E-01	-1,43E+02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption							

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potential environmental impact – additional mandatory and voluntary indicators

Results per 1 ton of Carbon steel long products								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	1,05E+03	2,11E+01	3,31E+00	8,32E+00	1,77E+02	7,91E-01	-7,30E+02

## Use of resources

Results per 1 ton of Carbon steel long products								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	1,15E+03	4,18E+00	2,55E-01	1,77E+00	2,05E+02	1,88E-01	5,23E+01
PERM	MJ	8,38E-02	0	0	0	0	0	0
PERT	MJ	1,15E+03	4,18E+00	2,55E-01	1,77E+00	2,05E+02	1,88E-01	5,23E+01
PENRE	MJ	1,36E+04	3,28E+02	4,54E+01	1,26E+02	1,41E+03	2,21E+01	-6,35E+03
PENRM	MJ	0,00E+00	0	0	0	0	0	0
PENRT	MJ	1,36E+04	3,28E+02	4,54E+01	1,26E+02	1,41E+03	2,21E+01	-6,35E+03
SM	kg	4,20E+02	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m <sup>3</sup>	4,90E+00	3,90E-02	2,59E-03	1,40E-02	6,39E+00	2,36E-02	-3,22E+00
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water							

<sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.

## Waste production and output flows

### Waste production

Results per 1 ton of Carbon steel long products								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,39E+00	7,94E-04	1,24E-04	3,28E-04	9,79E-04	3,34E-05	0,00E+00
Non-hazardous waste disposed	kg	1,48E+02	3,07E+01	6,06E-02	6,46E+00	1,57E+02	1,50E+02	0,00E+00
Radioactive waste disposed	kg	1,98E-01	2,22E-03	3,13E-04	8,50E-04	9,36E-03	1,45E-04	0,00E+00

### Output flows

Results per 1 ton of Carbon steel long products								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0
Material for recycling	kg	0	0	0	0	850	0	0
Materials for energy recovery	kg	0,88	0	0	0	0,4	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0

## Additional environmental information

### BE GROUP'S SUSTAINABILITY WORK

BE Group is working to reduce the Company's environmental impact and to be an economically, socially and ethically responsible actor. The sustainability issues are an important part of the operations and the goal is for them to be an integral part of daily activities and be taken into account in all strategic decisions and investments.

Read the Sustainability Report, which is a part of the Annual Report, here:

<https://www.begroup.com/about-be-group/sustainability>

### PRIORITIZED AREAS

The sustainability work is based on the UN Global Compact's 10 principles for responsible business and this mean that we will:

Strive to create a safe, inclusive and stimulating workplace

Work in a goal-oriented way to limit the environmental and climate impact

Be a reliable partner to our business partners, suppliers and customers

### References

General Programme Instructions of the International EPD® System. Version 4.0.

PCR 2019:14. Construction products. Version 1.2.5.

LCA Report – BE Group Oy Ab's steel and aluminium products. 2022-11-22.

