

Owner: Give Steel A/S  
No.: MD-20042-EN  
Issued: 18-12-2020  
Valid to: 18-12-2025

3<sup>rd</sup> PARTY VERIFIED

**EPD**

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



**Owner of declaration**

Give Steel A/S  
Sjællandsvej 14  
DK-7330 Brande  
26998115

**Programme**

EPD Danmark  
www.epddanmark.dk

- ☐ Industry EPD  
☒ Product EPD

**Declared product(s)**

Structural steel

Number of declared datasets/product variations: 2

**Production site**

Sjællandsvej 14  
DK-7330 Brande

**Product(s) use**

The product can be used as part elements or as an independent static system, where all parts are made of steel. The product is widely used in numerous construction projects in Denmark, Scandinavia and northern part of Europe.

**Declared or functional unit**

1 ton of structural steel

**Year of data**

2019


**Issued:**

18-12-2020

**Valid to:**

18-12-2025

**Basis of calculation**

This EPD is developed in accordance with the European standard EN 15804+A2.

**Comparability**

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

**Validity**

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

**Use**

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

**EPD type**

- ☐ Cradle-to-gate with modules C1-C4 and D  
☐ Cradle-to-gate with options, modules C1-C4 and D  
☒ Cradle-to-grave and module D  
☐ Cradle-to-gate  
☐ Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:



David Althoff Palm, Ramboll



Henrik Fred Larsen  
EPD Danmark

**Life cycle stages and modules (MND = module not declared)**

Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

## Product information

### Product description

The main product components are shown in the two tables below for painted structural steel and galvanized structural steel respectively.

The steel used consist of 80 scrap, with 85% post-consumer scrap.

The steel delivered to Give Steel is an average of 10% flat iron, 55% plates and 35% beams.

Material	Weight-% of declared product
Scrap steel	78%
Primary steel	20%
Welding rod (iron)	1%
Paint	1%

Material	Weight-% of declared product
Scrap steel	78%
Primary steel	20%
Welding rod (iron)	1%
Galvanization (zink)	1%

### Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of structural steel on the production site located in Brande in Denmark. Product specific data are based on average values collected in the period January 2019 to December 2019. Background data are based on GaBi professional and EcoInvent 3.6 and are less than 10 years old. Generally, the used background datasets are of good quality, and the majority of the datasets are only a couple of years old.

### Hazardous substances

The structural steel does not contain substances listed in the "Candidate List of Substances of Very High Concern for authorisation"

(<http://echa.europa.eu/candidate-list-table>)

### Essential characteristics (CE)

Structural steel construction from Give Steel is designed and produced according to European design codes and production standards, as well as in compliance with project specifications. While Eurocode 1 and Eurocode 3 apply to the design and civil engineering works, manufacturing is carried out according to EN 1090 for steel construction.

Furthermore, these codes and standards outline specific product standards for choosing the most appropriate constitute products for each component. Such standards include EN 10025 which defines the requirements for non-alloy and fine grain weldable structural steels, EN 10219 for cold formed hollow sections and EN 13479 and ISO 544 which sets out the same set of requirements for materials.

Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:

<https://givesteel.com/>

### Reference Service Life (RSL)

A reference service life for structural steel is not declared. It is a construction product with many different application purposes. The lifetime therefore will be limited by the service life of the work.

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Picture of product(s)



## LCA background

### Declared unit

The LCI and LCIA results in this EPD relates to impacts caused by the production of 1 ton structural steel.

Name	Value	Unit
Declared unit	1	ton
Density	7850	kg/m <sup>3</sup>
Conversion factor to 1 kg.	0.001	-

### Functional Unit

Not defined

### PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2 and NPCR – Part B for steel and aluminum construction products.

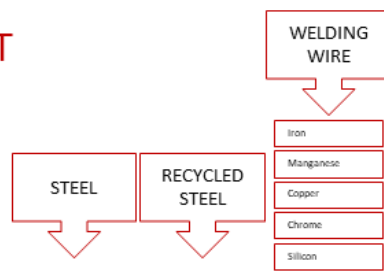
### Flowdiagram

## FLOW CHART



**A1**

Raw material supply



**A2**

Transport



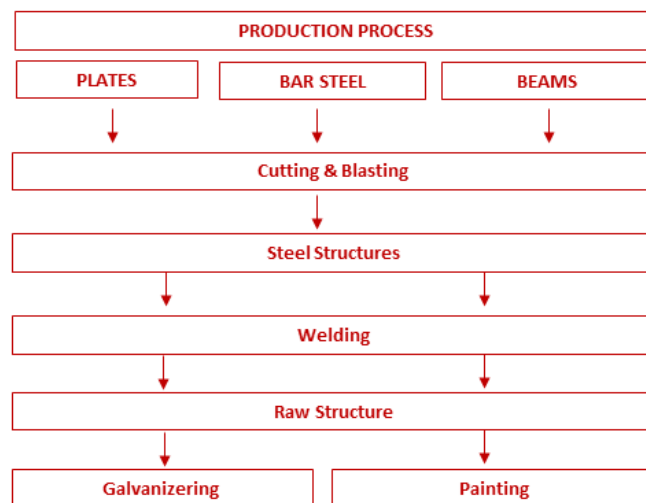
TRANSPORT TO FACTORY

**A3**

Manufacturing



Sjællandsvej 14,  
7330 Brande - DK



**A4**

Transportation



TRANSPORTATION TO BUILDING SITE



**A5**

Installation proces



Fuel - trucks

**B1-B7**

Use stage



USE OF STEEL STRUCTURE IN BUILDING

**C1**

Demolition/ Deconstruction



DEMOLITION OF BUILDING

**C2**

Transport to waste processing



TRANSPORT OF STEEL STRUCTURE TO RECYCLING

**C3**

Waste processing



MAKING STRUCTURE READY FOR RECYCLING

**C4**

Disposal



**D**

Benefits



INCREASES THE TOTAL AMOUNT OF RECYCLED STEEL  
AS A GLOBAL RESSOURCE  
= Less need for extraction of steel from iron ore.

## System boundary

This EPD is based on a cradle-to-grave + module D LCA.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.6. where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

### Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the "end-of-waste" state or final disposal. The LCA results are declared in aggregated form for the product stage, which means that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

The raw materials: flat iron, plate and beams are brought in, processed, shot cleaned, cut and welded. The process will vary, depending on the involved raw material.

The various materials are transported by side loader from our warehouse to the appropriate production machines: Flat iron to the CNC flat iron machine, plate to the CNC plasma cutter and beams to the shot ball cleaner. Flat iron is processed if necessary, by adding holes and cutting into strips. Plate is plasma cut following 2D models. Beams are shot cleaned and cut to length. Flat iron, steel plate and beams are shot cleaned before production to produce the correct surface. The shot cleaner is always kept full to save power. The steel balls are reused in production until steel dust is all that remains. After cleaning, flat iron and plate are distributed for use as beams and to the welding robot, respectively. Beams and associated plates are stapled together. Beams are then welded, according to design diagrams.

When manufacturing welded wedges for robot welding, all parts are assembled from the CNC

cutting table and CNC flat iron cutter. Once the parts are collected, they are stapled together according to design diagrams. The stapled wedges are robot welded and sent on. The remaining components are mounted, and remaining parts are welded manually.

When the items are ready for surface treatment, they are moved to the factory's painting booth, where they are painted according to the desired paint system, which is shown on a label on the beam. Drying follows the specifications of the paint supplier. Once dry, the painted beams are ready for transportation to the construction site.

Beams that need to be galvanised instead of painted are loaded onto a lorry and transported to a subcontractor. After galvanisation, the beams are brought back to the factory and stored until delivery to the construction site.

### Construction process stage (A4-A5) includes:

A4 – Transportation from the Give Steel factory in Brande, Denmark to a construction site.

A5 – Installation of the steel structure, using a truck.

### Use stage (B1-B7) includes:

The entire use phase is not included as the product has no impact during this phase and therefore has no associated environmental impacts.

### End of Life (C1-C4) includes:

C1 – Deconstructing of the steel structure, using a truck.

C2 – Transportation of the demolished steel parts to a waste processing site.

C3 – Sorting of scrap steel. Paint from the steel structure is incinerated in this module.

C4 – The end of life processes is handled in C1-C3.

**Re-use, recovery and recycling potential (D) includes:** Refers to the possible benefits and loads from the end of life of the structural steel, including reuse and recycling.

## LCA results

### LCA results for 1 ton painted structural steel

ENVIRONMENTAL IMPACTS PER TON										
Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> eq.]	1.05E+03	8.39E+00	6.58E-01	0.00E+00	6.58E-01	8.47E+00	4.23E+01	0.00E+00	-3.18E+02
GWP-fossil	[kg CO <sub>2</sub> eq.]	1.05E+03	8.23E+00	6.93E-01	0.00E+00	6.93E-01	8.32E+00	4.36E+01	0.00E+00	-3.18E+02
GWP-biogenic	[kg CO <sub>2</sub> eq.]	1.11E+00	8.95E-02	0.00E+00	0.00E+00	0.00E+00	9.04E-02	-8.76E-04	0.00E+00	-1.67E-01
GWP-luluc	[kg CO <sub>2</sub> eq.]	1.27E+00	6.74E-02	7.62E-03	0.00E+00	7.62E-03	6.80E-02	2.87E-02	0.00E+00	4.14E-02
ODP	[kg CFC 11 eq.]	8.47E-12	1.53E-15	1.73E-16	0.00E+00	1.73E-16	1.54E-15	3.54E-06	0.00E+00	-5.57E-13
AP	[mol H <sup>+</sup> eq.]	3.01E+00	3.00E-02	3.41E-03	0.00E+00	3.41E-03	3.03E-02	3.09E-01	0.00E+00	-5.71E-01
EP-freshwater	[kg PO <sub>4</sub> eq.]	1.69E-03	2.54E-05	2.87E-06	0.00E+00	2.87E-06	2.56E-05	2.09E-02	0.00E+00	-7.67E-05
EP-marine	[kg N eq.]	8.52E-01	1.37E-02	1.52E-03	0.00E+00	1.52E-03	1.38E-02	7.17E-02	0.00E+00	-8.59E-02
EP-terrestrial	[mol N eq.]	9.25E+00	1.53E-01	1.69E-02	0.00E+00	1.69E-02	1.54E-01	8.10E-01	0.00E+00	-8.39E-01
POCP	[kg NMVOC eq.]	2.63E+00	2.67E-02	4.29E-03	0.00E+00	4.29E-03	2.70E-02	2.19E-01	0.00E+00	-4.36E-01
ADPm <sup>1</sup>	[kg Sb eq.]	1.46E-04	6.73E-07	7.61E-08	0.00E+00	7.61E-08	6.80E-07	1.37E-03	0.00E+00	-6.87E-04
ADPf <sup>1</sup>	[MJ, net calorific value]	1.18E+04	1.11E+02	1.26E+01	0.00E+00	1.26E+01	1.12E+02	3.79E+02	0.00E+00	-2.78E+03
WDP <sup>1</sup>	[m <sup>3</sup> world eq. deprived]	-3.12E+01	8.12E-02	9.18E-03	0.00E+00	9.18E-03	8.20E-02	9.34E+00	0.00E+00	-6.21E+01
Caption	GWP-total = Global Warming Potential - total; 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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
Disclaimer	<sup>1</sup> The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

Additional environmental impacts as declared in the project report of this EPD are declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER TON										
Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	3.75E-05	1.72E-07	3.76E-08	0.00E+00	3.76E-08	1.74E-07	3.85E-06	0.00E+00	-9.59E-06
IRP <sup>2</sup>	[kBq U235 eq.]	2.79E+01	3.03E-02	3.43E-03	0.00E+00	3.43E-03	3.06E-02	3.58E+00	0.00E+00	8.20E+00
ETP-fw <sup>1</sup>	[CTUe]	3.12E+03	8.31E+01	9.40E+00	0.00E+00	9.40E+00	8.39E+01	1.70E+03	0.00E+00	-4.16E+00
HTP-c <sup>1</sup>	[CTUh]	7.51E-07	1.72E-09	1.94E-10	0.00E+00	1.94E-10	1.73E-09	3.65E-08	0.00E+00	1.06E-07
HTP-nc <sup>1</sup>	[CTUh]	1.85E-05	1.00E-07	1.08E-08	0.00E+00	1.08E-08	1.01E-07	1.74E-06	0.00E+00	-4.31E-06
SQP <sup>1</sup>	-	2.27E+03	3.90E+01	4.41E+00	0.00E+00	4.41E+00	3.94E+01	7.00E+02	0.00E+00	5.99E+01
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	<sup>1</sup> The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									
	<sup>2</sup> 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.									

RESOURCE USE PER TON										
Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	2.18E+03	6.42E+00	7.26E-01	0.00E+00	7.26E-01	6.49E+00	5.52E+01	0.00E+00	2.25E+02
PERM	[MJ]	5.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.18E+03	6.42E+00	7.26E-01	0.00E+00	7.26E-01	6.49E+00	5.52E+01	0.00E+00	2.25E+02
PENRE	[MJ]	1.18E+04	1.11E+02	1.26E+01	0.00E+00	1.26E+01	1.13E+02	3.79E+02	0.00E+00	-2.78E+03
PENRM	[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
PENRT	[MJ]	1.18E+04	1.11E+02	1.26E+01	0.00E+00	1.26E+01	1.13E+02	3.79E+02	0.00E+00	-2.78E+03
SM	[kg]	7.84E+02	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	[m³]	2.05E+00	7.48E-03	8.46E-04	0.00E+00	8.46E-04	7.56E-03	2.18E-01	0.00E+00	-1.40E+00
Caption	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 = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER TON										
Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
HWD	[kg]	9.64E-05	5.16E-06	5.83E-07	0.00E+00	5.83E-07	5.21E-06	3.32E-08	0.00E+00	7.21E-07
NHWD	[kg]	1.15E+01	1.77E-02	2.00E-03	0.00E+00	2.00E-03	1.78E-02	2.59E+00	0.00E+00	3.29E+01
RWD	[kg]	3.03E-01	2.06E-04	2.32E-05	0.00E+00	2.32E-05	2.08E-04	3.95E-04	0.00E+00	-6.71E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.86E+02	0.00E+00	0.00E+00
MER	[kg]	6.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+01	0.00E+00	0.00E+00
EE	[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
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Exported energy									

BIOGENIC CARBON CONTENT PER TON		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	0.012
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

## LCA results for 1 ton galvanized structural steel

ENVIRONMENTAL IMPACTS PER TON										
Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> eq.]	1.04E+03	8.39E+00	6.58E-01	0.00E+00	6.58E-01	8.47E+00	2.33E+01	0.00E+00	-3.16E+02
GWP-fossil	[kg CO <sub>2</sub> eq.]	1.03E+03	8.23E+00	6.93E-01	0.00E+00	6.93E-01	8.32E+00	2.47E+01	0.00E+00	-3.15E+02
GWP-biogenic	[kg CO <sub>2</sub> eq.]	2.94E+00	8.95E-02	0.00E+00	0.00E+00	0.00E+00	9.04E-02	0.00E+00	0.00E+00	-2.04E-01
GWP-luluc	[kg CO <sub>2</sub> eq.]	1.26E+00	6.74E-02	7.62E-03	0.00E+00	7.62E-03	6.80E-02	2.81E-02	0.00E+00	4.56E-02
ODP	[kg CFC 11 eq.]	8.63E-12	1.53E-15	1.73E-16	0.00E+00	1.73E-16	1.54E-15	3.54E-06	0.00E+00	-5.26E-13
AP	[mol H <sup>+</sup> eq.]	2.99E+00	3.00E-02	3.41E-03	0.00E+00	3.41E-03	3.03E-02	2.99E-01	0.00E+00	-5.66E-01

EP-freshwater	[kg PO <sub>4</sub> eq.]	1.66E-03	2.54E-05	2.87E-06	0.00E+00	2.87E-06	2.56E-05	2.09E-02	0.00E+00	-6.45E-05
EP-marine	[kg N eq.]	8.43E-01	1.37E-02	1.52E-03	0.00E+00	1.52E-03	1.38E-02	6.79E-02	0.00E+00	-8.44E-02
EP-terrestrial	[mol N eq.]	9.17E+00	1.53E-01	1.69E-02	0.00E+00	1.69E-02	1.54E-01	7.66E-01	0.00E+00	-8.23E-01
POCP	[kg NMVOC eq.]	2.56E+00	2.67E-02	4.29E-03	0.00E+00	4.29E-03	2.70E-02	2.09E-01	0.00E+00	-4.32E-01
ADPm <sup>1</sup>	[kg Sb eq.]	2.94E-04	6.73E-07	7.61E-08	0.00E+00	7.61E-08	6.80E-07	1.37E-03	0.00E+00	-6.86E-04
ADPf <sup>1</sup>	[MJ]	1.12E+04	1.11E+02	1.26E+01	0.00E+00	1.26E+01	1.12E+02	3.70E+02	0.00E+00	-2.74E+03
WDP <sup>1</sup>	[m <sup>3</sup> ]	-1.46E+01	8.12E-02	9.18E-03	0.00E+00	9.18E-03	8.20E-02	6.97E+00	0.00E+00	-6.19E+01
Caption	GWP-total = Globale Warming Potential - total; 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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use									
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PM	[Disease incidence]	3.74E-05	1.72E-07	3.76E-08	0.00E+00	3.76E-08	1.74E-07	3.78E-06	0.00E+00	3.21E-05
IRP <sup>2</sup>	[kBq U235 eq.]	2.66E+01	3.03E-02	3.43E-03	0.00E+00	3.43E-03	3.06E-02	3.52E+00	0.00E+00	3.85E+01
ETP-fw <sup>1</sup>	[CTUe]	2.69E+03	8.31E+01	9.40E+00	0.00E+00	9.40E+00	8.39E+01	1.70E+03	0.00E+00	4.57E+03
HTP-c <sup>1</sup>	[CTUh]	7.46E-07	1.72E-09	1.94E-10	0.00E+00	1.94E-10	1.73E-09	3.61E-08	0.00E+00	8.92E-07
HTP-nc <sup>1</sup>	[CTUh]	1.79E-05	1.00E-07	1.08E-08	0.00E+00	1.08E-08	1.01E-07	1.71E-06	0.00E+00	1.56E-05
SQP <sup>1</sup>	-	2.24E+03	3.90E+01	4.41E+00	0.00E+00	4.41E+00	3.94E+01	6.98E+02	0.00E+00	3.13E+03
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	<sup>1</sup> The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									
	<sup>2</sup> 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.									

RESOURCE USE PER TON										
Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	2.14E+03	6.42E+00	7.26E-01	0.00E+00	7.26E-01	6.49E+00	5.37E+01	0.00E+00	2.52E+02
PERM	[MJ]	5.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.14E+03	6.42E+00	7.26E-01	0.00E+00	7.26E-01	6.49E+00	5.37E+01	0.00E+00	2.52E+02
PENRE	[MJ]	1.13E+04	1.11E+02	1.26E+01	0.00E+00	1.26E+01	1.13E+02	3.70E+02	0.00E+00	-2.75E+03
PENRM	[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
PENRT	[MJ]	1.13E+04	1.11E+02	1.26E+01	0.00E+00	1.26E+01	1.13E+02	3.70E+02	0.00E+00	-2.75E+03
SM	[kg]	7.84E+02	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> ]	2.14E+00	7.48E-03	8.46E-04	0.00E+00	8.46E-04	7.56E-03	1.62E-01	0.00E+00	-1.39E+00
Caption	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 = Net use of fresh water									

### WASTE CATEGORIES AND OUTPUT FLOWS PER TON

Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
HWD	[kg]	3.85E-05	5.16E-06	5.83E-07	0.00E+00	5.83E-07	5.21E-06	0.00E+00	0.00E+00	7.66E-07
NHWD	[kg]	1.09E+01	1.77E-02	2.00E-03	0.00E+00	2.00E-03	1.78E-02	0.00E+00	0.00E+00	3.30E+01
RWD	[kg]	2.96E-01	2.06E-04	2.32E-05	0.00E+00	2.32E-05	2.08E-04	0.00E+00	0.00E+00	9.95E-05
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.86E+02	0.00E+00	0.00E+00
MER	[kg]	6.11E+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	[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
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Exported energy									

### BIOGENIC CARBON CONTENT PER TON

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	0.012
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

# Additional information

## Technical information on scenarios

### Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type and consumption	2.7	L diesel
Transport distance	300	km
Capacity utilisation (including empty runs)	85%	%
Gross density of products transported	7850	kg/m <sup>3</sup>
Capacity utilisation volume factor	0.55	-

### Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	0	kg
Water use	0	m <sup>3</sup>
Other resource use	0	kg
Energy type and consumption (diesel fuel)	0.31	L
Waste materials	0	kg
Output materials	0	kg
Direct emissions to air, soil or water	0	kg

### Reference service life

RSL information	Unit
Reference service Life	Depend on application

### Use (B1-B7)

Modules not relevant

### End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1000	kg
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	980	kg
For energy recovery	10	kg
For final disposal	0	kg

### Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Credit for recycling of steel scrap	186	kg

#### Indoor air

*The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.*

#### Soil and water

*The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.*

## References

<b>Publisher</b>	 epddanmark <a href="http://www.epddanmark.dk">www.epddanmark.dk</a>
<b>Programme operator</b>	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup <a href="http://www.teknologisk.dk">www.teknologisk.dk</a>
<b>LCA-practitioner</b>	Julie Rønholt and Linda Høibye COWI A/S Parallelvej 2 2800 Kgs. Lyngby
<b>LCA software /background data</b>	GaBi Professional 2020 and EcoInvent 3.6
<b>3<sup>rd</sup> party verifier</b>	David Althoff Palm Ramboll Sweden AB

### General programme instructions

Version 2.0

[www.epddanmark.dk](http://www.epddanmark.dk)

### NPCR 013

NPCR 013 – "Part B for steel and aluminium construction products". version 3.0.

### EN 15804

DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

### EN 15942

DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

### ISO 14025

DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

### ISO 14040

DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

### ISO 14044

DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"