

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC2021 for:



Steel gate Rambyggd

from

AJAB SMIDE AB

Lisslarp Industriområde, 512 95 Håcksvik



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-06194
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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

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

CEN standard EN 15804:2012+A2:2019/AC2021 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction products Version 1.11; 2021-02-05 C-PCR-007 (To PCR 2019:14) Windows and doors version: 2020-04-09 UN CPC: 4212
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact
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: Carolina Scarinci Approved by: The International EPD® System , supported by the Secretariat.
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.

Contact information

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<p>Programme Operator</p>	 <p>EPD International AB info@environdec.com</p>

DESCRIPTION OF THE ORGANISATION:

AJAB Smide AB is a company located in the Västergötland region, in Sweden, a couple of miles southeast of Svenljunga. Since the start of the company over 30 years ago, we have specialized in the manufacturing of various forms of doors, gates and stairs that we provide to industry, agriculture, and private individuals.

We are best known for our doors, especially folding doors, which are our main product. However, in the forging workshop, we also manufacture stairs, railings, gates, entrance sections and ground anchors. Despite the variety of products, there are two common denominators in our range - steel and forging.

Product information

PRODUCT NAME:

Rambyggd

PRODUCT IDENTIFICATION:

Foldable steel gate for allowing passage of vehicles, people, and goods

Product description:

Property	Value
Size	18 m ²
Dimensions	4x4,5 m
Weight	423 kg
Weight per m ²	23,49 kg
Reference Service Life (RSL)	30 years
Thermal transmittance (U-value)	3,0 W/m ² K
Air permeability (EN 12426)	Class 3
Water penetration resistance (EN 12425)	Class 3, 110 Pa
Wind load resistance with espagnolette (EN 12424)	Class 5
Wind load resistance with two side mounted operators (EN 12424)	Class 5
Wind load resistance with one centre mounted operator (EN 12424)	Class 3
Other standards	CE Mark EN 13241-1 EN 12605

UN CPC CODE:

421

CONTENT INFORMATION

Product components	Amount (kg/m²)	Post-consumer material weight-%	Biogenic material weight-% and kg C
Steel (low-alloyed)	20,2	-	-
Aluminium	0,28	-	-
Glass	2,13	-	-
Rubber	0,40	-	-
Polymers (EPS)	0,48	-	-
Total	23,49 kg/m²	-	-

Packaging materials	Amount (kg/m²)	Weight-% (versus the product)	Biogenic carbon weight (kg C)
Steel cage	0,83	3,53 %	-
Cardboard	0,056	0,24 %	0,028
Plastic	0,006	0,026 %	-
Total	0,89 kg/m²	3,80 %	0,028

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

LCA information

DECLARED UNIT:

The declared unit is 1 m². The declared unit is size specific and only applies to these gates in the specific sizes (4000x4500 mm) and not for the standard sizes given in EN 17213 (3000x2180 mm). This size specific EPD shall not be used as a proxy for any other size of doors.

REFERENCE SERVICE LIFE:

30 years

TIME REPRESENTATIVENESS:

Specific data collected for production taking place in 2021. All used datasets are currently valid.

DATABASE(S) AND LCA SOFTWARE USED:

LCA software: SimaPro 9.3.0.3

Database: Ecoinvent 3.8

The following EPD has been used as background data in the LCA:

Name: Precision Tubes

EPD Owner: SSAB Europe Oy

LCA Author: Ecobio Oy

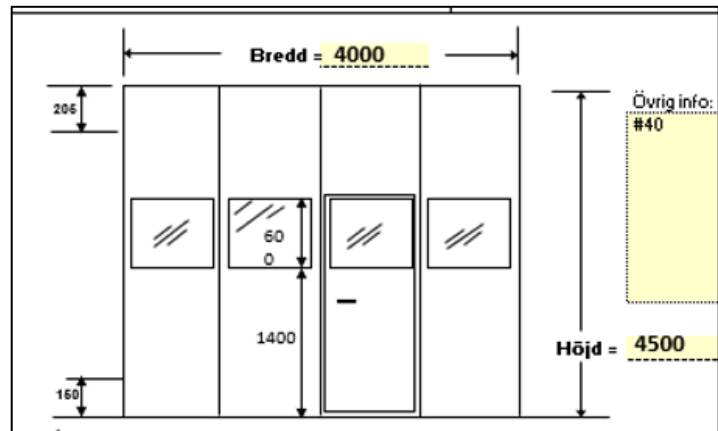
EPD Programme: EPD International

EPD Number: S-P-02242 Version 1.0

Publish Date: 2020-09-14

Revision Date: 2021-02-26

Valid Until: 2025-08-28



DESCRIPTION OF SYSTEM BOUNDARIES:

The studied system is a cradle-to-grave with options (type b in PCR 2019:14). Optional modules are A4, A5, and B2. Modules that are not declared can be seen in the table below:

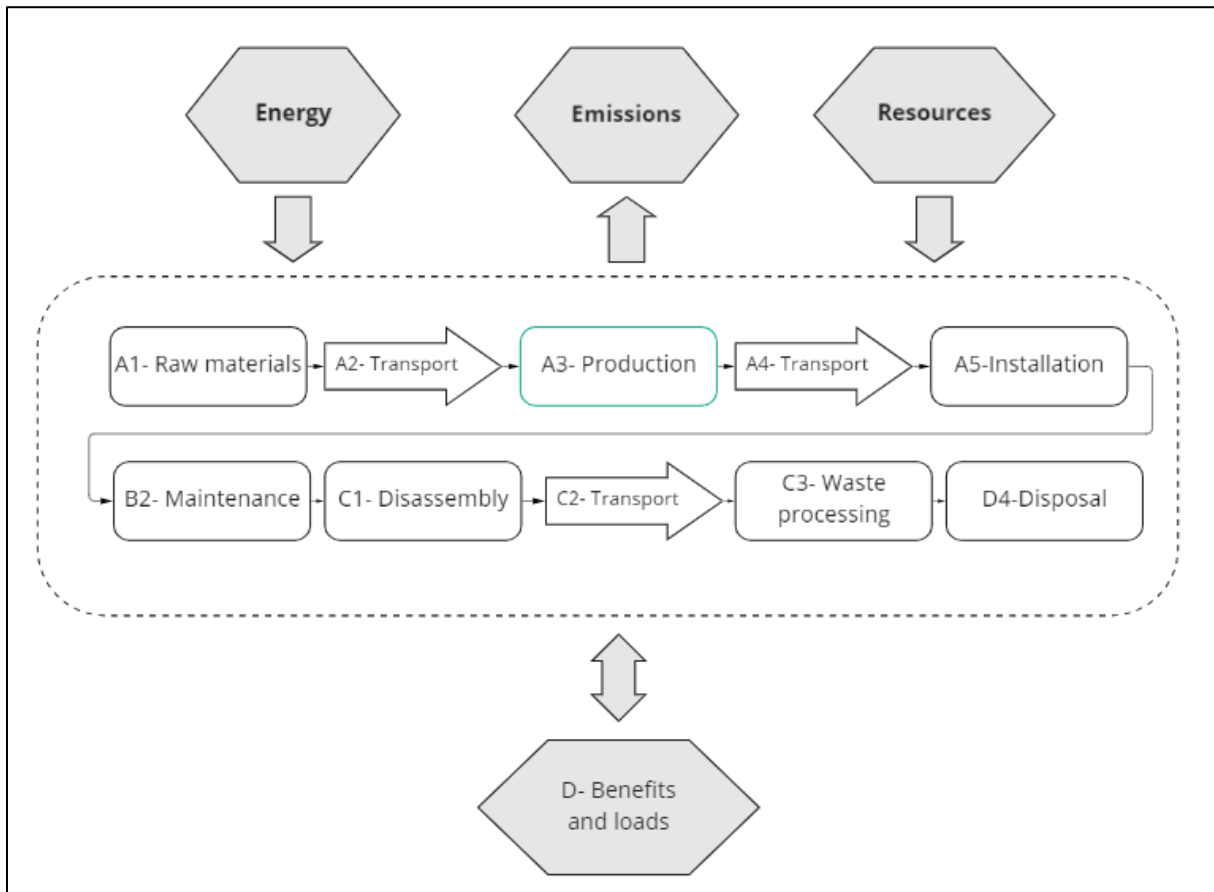
	Product stage			Construction process stage		Use Stage							End of life stage				Resource recovery stage
	Raw Material Supply	Transport to manufacturing	Manufacturing	Transport to customer	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction / Demolition	Transport to waste management	Waste processing	Final 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	X	ND	X	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	SE	SE	EU	EU	ND	EU	ND	ND	ND	ND	ND	EU	EU	EU	SE	EU
Specific data used	21%	>90%	>90%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant																
Variation – Sites	Not relevant																

X = Module declared

ND = Module not declared

Specific data for A1 is calculated by comparing the GWP-GHG from EPDs used as input data compared to the total GWP-GHG in A1. One EPD is used as input data (Precision Tubes). The share of specific data in module A1 was calculated from the share of GWP-GHG from this EPD multiplied with the factor 0,9 to match >90% specific data.

SYSTEM DIAGRAM:



A detailed system diagram for activities taking place in module A3 is presented further down in the EPD.

ASSUMPTIONS

- Transports are assumed to be performed by Euro 5 class vehicles.
- Waste resulting from unexpected processes such as reception of faulty material, accidents, mishandling, etc, are assumed to be 5%.
- Waste treatment and disposal is assumed to occur according to average Swedish waste treatment methods

CUT-OFF RULES

The cut-off criteria are in accordance with the EN 15804 standard, meaning that max 1% of the renewable and non-renewable primary energy use and max 1% of the total mass input of a specific unit process are allowed to be cut-off (excluded).

The total of neglected input flows per module , e.g. per module A1-A3, A4-A5, B2, C1-C4 and module D is maximum 5% of energy usage and mass.

DATA QUALITY

The data quality assessment is based on the criteria of the UN Environment Global Guidance on LCA database development.

Data Quality	Data Quality Assessment
Time related coverage	<p>Upstream: Very Good as all datasets are currently valid, and the collected quantities are from 2021.</p> <p>Core: Very Good as all datasets are currently valid, and the collected quantities are from 2021.</p> <p>Downstream: Good as most datasets are currently valid, sources for waste treatment are more than 3 years old but less than 6.</p>
Geographical coverage	<p>Upstream: Fair, datasets are from SE or the European region which can be consider similar to Swedish conditions.</p> <p>Core: Fair, datasets are from SE or the European region which can be consider similar to Swedish conditions.</p> <p>Downstream: Fair, datasets are from SE or the European region which can be consider similar to Swedish conditions.</p>
Technology coverage	<p>Upstream: Good, all datasets are taken from the latest ecoinvent version (3.8). Datasets have been chosen to closely relate to the actual conditions.</p> <p>Core: Good, all datasets are taken from the latest ecoinvent version (3.8) or from valid EPDs. Datasets have been chosen to closely relate to the actual conditions.</p> <p>Downstream: Good, all datasets are taken from the latest ecoinvent version (3.8) or from valid EPDs. Datasets have been chosen to closely relate to the actual conditions.</p>
Other Data Qualities	
Precision	The variance is shown in the uncertainty analysis presented in the background report.
Completeness	All known flows are accounted for.
Representativeness	The data has been chosen to specifically reflect the true conditions; it is not within the scope of the project to verify the upstream value chain, but the chosen datasets should reflect this as accurately as possible within the scope of the project.
Consistency	The same methodology has been uniformly used (100% cut-off system library and step 1 allocation has been used consistently).
Reproducibility	The LCA is reproducible with all data reported in the background report.
Data sources	Data collection method is thoroughly described in the background report and all datasets are referenced.
Data uncertainty	Uncertainty has been assessed through a sensitivity analysis for the most relevant assumptions and an uncertainty analysis for the variance of the datasets.

ALLOCATION.

Allocation in this LCA is performed according to ISO 14044, which is done in the following order of priority:

Step 1 – Avoid allocation by dividing the unit processes into sub-processes or expanding the product system to include additional functions.

Step 2 – Partitioning the inputs and outputs of the system between its different products or functions in a way that reflects the underlying physical relationships between them. Examples of this is mass or energy.

Step 3 – Partitioning the inputs and outputs of the system between its different products or functions in a way that reflects other relationships between them. Examples of this is economic value.

Due to the nature of Ajab's operations, it was possible to avoid allocation by dividing the unit processes into subprocesses, as recommended in ISO 14044 for step 1 type of allocation. In this way, specific operations for the manufacturing of this door were considered to account for material and electricity consumption, as well as waste generation.

DESCRIPTION OF PRODUCTION ACTIVITIES

The metal pipes arrive by truck at the facility where they are cut into the proper lengths. The pipes are then welded with welding thread into a frame. The gate frame is then transported to an external facility for hot dip galvanization and then transported back after treatment. After this, the metal sheets are cut into size and assembled into the frame.

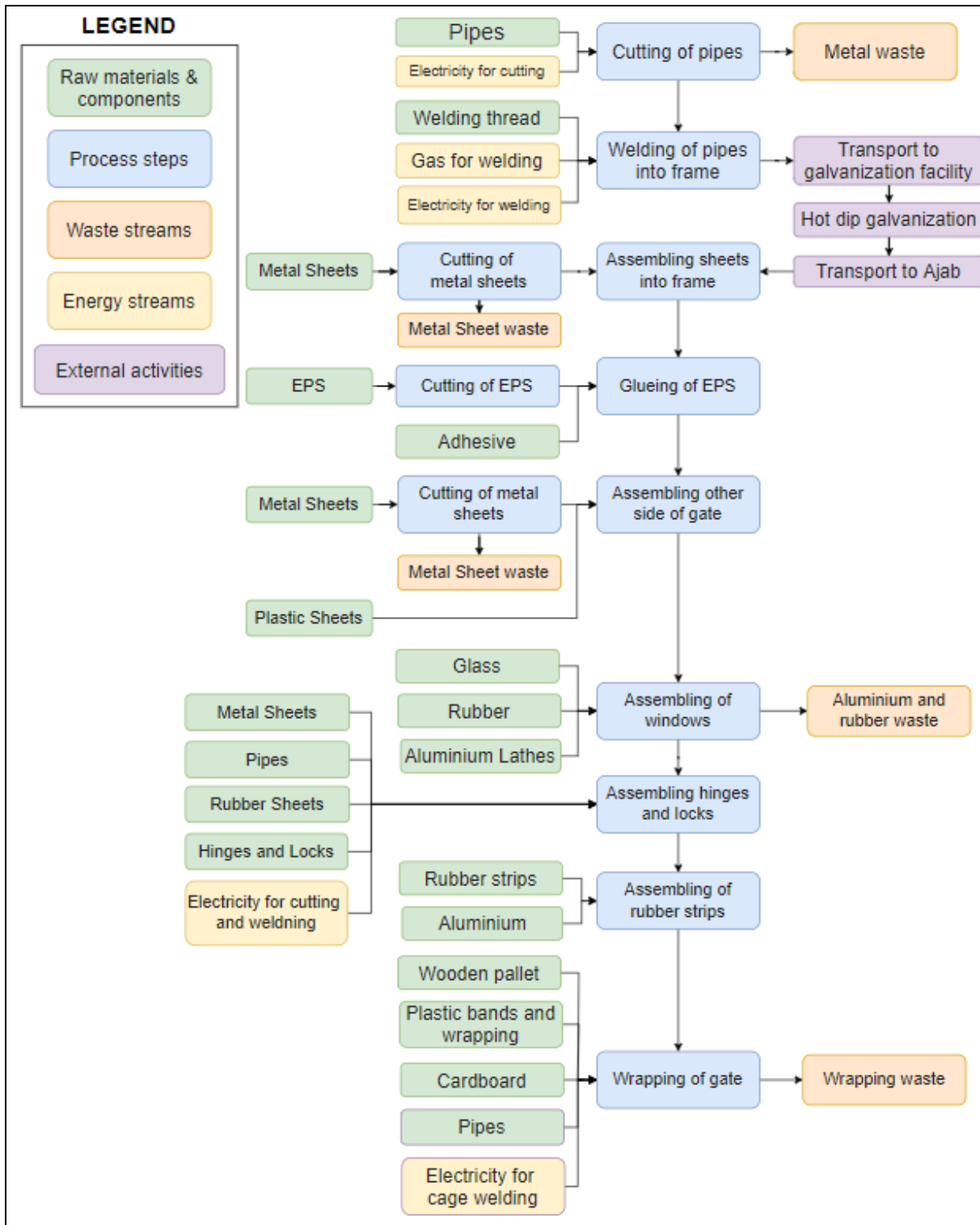
The insulation material (EPS) is cut into shape and unfastened put against the metal sheets. Metal sheets together for the other side of the gate are cut into size and fastened with bolts on the opposite side of the gate (encapsulating the insulation) and sealed with latex.

Holes for windows are already in place after the welding. 4 mm glass panes are then inserted into the window frames alongside rubber and aluminium laths. The gate is then equipped with hinges and locks before a rubber strip is adhered to it. The finished gate is then wrapped with plastic wrapping and cardboard. Rambyggd is transported in a steel cage (made from pipes).

The production waste is collected and sent to a waste treatment facility where it's sorted and recycled according to general Swedish conditions.

A3 Electricity dataset

Electricity type	GWP-GHG in g CO ₂ /kWh (IPCC 2013)
Low voltage, open ground photovoltaic installation	77,4



Environmental Information

The LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Potential environmental impact – mandatory indicators according to EN 15804

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	6,59E+01	2,49E+00	8,51E+00	7,69E+01	1,56E+00	9,31E+00	1,80E+00	8,64E-01	7,80E-01	3,29E-01	1,96E+00	-4,12E+01
Climate change - Biogenic	kg CO2 eq	4,80E-01	1,52E-03	3,26E-01	8,08E-01	1,33E-03	8,39E-02	8,90E-03	3,05E-04	6,65E-04	-4,52E-04	8,61E-03	1,05E-01
Climate change - Land use and LU change	kg CO2 eq	8,40E-02	1,15E-03	1,54E-02	1,01E-01	6,12E-04	1,79E-01	9,65E-02	8,63E-05	3,06E-04	3,97E-05	2,21E-05	-6,06E-02
Climate change - Total	kg CO2 eq	6,64E+01	2,50E+00	8,86E+00	7,78E+01	1,56E+00	9,57E+00	1,91E+00	8,65E-01	7,81E-01	3,29E-01	1,97E+00	-4,12E+01
Ozone depletion	kg CFC11 eq	2,37E-06	5,56E-07	9,37E-07	3,86E-06	3,61E-07	8,87E-07	4,25E-07	1,85E-07	1,80E-07	1,87E-08	7,31E-09	-1,85E-06
Acidification	mol H+ eq	2,66E-01	2,88E-02	6,93E-02	3,65E-01	6,33E-03	5,66E-02	1,24E-02	8,98E-03	3,16E-03	8,53E-04	4,11E-04	-1,67E-01
Eutrophication, freshwater	kg P eq	1,86E-02	1,38E-04	6,39E-03	2,51E-02	1,00E-04	5,16E-03	5,98E-04	2,68E-05	5,02E-05	1,21E-04	2,42E-05	-1,62E-02
Eutrophication, marine	kg N eq	5,68E-02	7,58E-03	1,26E-02	7,69E-02	1,91E-03	8,28E-03	3,27E-03	3,98E-03	9,53E-04	2,02E-04	1,77E-04	-3,69E-02
Eutrophication, terrestrial	mol N eq	6,06E-01	8,37E-02	1,40E-01	8,30E-01	2,08E-02	7,74E-02	2,52E-02	4,36E-02	1,04E-02	1,95E-03	1,78E-03	-3,90E-01
Photochemical ozone formation	kg NMVOC eq	2,20E-01	2,28E-02	3,56E-02	2,79E-01	6,38E-03	3,08E-02	1,33E-02	1,20E-02	3,19E-03	5,10E-04	4,81E-04	-2,02E-01
Depletion of abiotic resources – Minerals and metals*	kg Sb eq	1,03E-03	7,21E-06	1,99E-03	3,03E-03	5,42E-06	2,14E-05	2,90E-05	4,45E-07	2,71E-06	3,28E-07	1,52E-07	-3,50E-05
Depletion of abiotic resources – Fossil fuels*	MJ	8,01E+02	3,62E+01	1,19E+02	9,56E+02	2,36E+01	1,38E+02	4,10E+01	1,19E+01	1,18E+01	7,41E+00	5,53E-01	-4,24E+02
Water use*	m3 world eq. deprived	1,32E+01	9,64E-02	4,59E+00	1,79E+01	7,06E-02	9,28E-01	8,06E+00	1,86E-02	3,53E-02	1,02E-01	-4,14E-03	-2,71E+00

* 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 – voluntary indicators

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Particulate matter	disease inc.	2,69E-06	1,79E-07	5,27E-07	3,40E-06	1,35E-07	6,72E-07	1,22E-07	2,41E-07	6,73E-08	3,47E-09	6,35E-09	-2,84E-06
Ionising radiation, human health^	kBq U-235 eq	3,72E+00	1,81E-01	1,40E+00	5,31E+00	1,21E-01	2,33E+00	2,12E-01	5,34E-02	6,06E-02	2,05E-01	2,49E-03	-1,02E+00
Ecotoxicity, freshwater*	CTUe	1,18E+03	2,67E+01	8,60E+02	2,07E+03	1,84E+01	1,81E+02	6,61E+01	6,94E+00	9,20E+00	4,46E+00	3,56E+00	-1,20E+03
Human toxicity, cancer*	CTUh	1,87E-07	1,07E-09	5,46E-08	2,43E-07	5,96E-10	3,21E-08	1,78E-09	2,68E-10	2,98E-10	4,50E-11	2,14E-10	-2,05E-07
Human toxicity, non-cancer*	CTUh	9,63E-07	2,60E-08	8,26E-07	1,82E-06	1,93E-08	3,59E-07	4,64E-08	5,03E-09	9,65E-09	1,68E-09	2,07E-09	-8,81E-07
Land use related impacts/soil quality*	Pt	1,32E+02	2,02E+01	7,07E+01	2,23E+02	1,62E+01	1,51E+01	2,13E+01	1,51E+00	8,10E+00	8,31E-01	5,59E-01	-9,32E+01

* 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.

Disclaimer: 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.

Potential environmental impact – GWP-GHG

This table present global warming potential according to IPCC 2013 without any biogenic uptake.

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Climate change - GHG	kg CO2 eq	6,47E+01	2,47E+00	8,48E+00	7,57E+01	1,55E+00	9,21E+00	1,78E+00	8,56E-01	7,73E-01	3,25E-01	1,97E+00	-3,95E+01

Use of resources

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	
Primary Energy Resources - Renewable	Use as energy carrier	MJ	5,55E+01	4,45E-01	1,66E+01	7,26E+01	3,32E-01	4,85E+01	8,09E+00	6,67E-02	1,66E-01	2,71E-01	1,77E-02	-2,22E+01
	Used as raw materials	MJ	0,00E+00	0,00E+00	8,87E-01	8,87E-01	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	MJ	5,55E+01	4,45E-01	1,75E+01	7,35E+01	3,32E-01	4,85E+01	8,09E+00	6,67E-02	1,66E-01	2,71E-01	1,77E-02	-2,22E+01
Primary Energy Resources - Non-Renewable	Use as energy carrier	MJ	5,17E+02	3,84E+01	1,27E+02	6,82E+02	2,50E+01	1,47E+02	4,39E+01	1,26E+01	1,25E+01	7,75E+00	5,92E-01	-4,47E+02
	Used as raw materials	MJ	2,36E+01	0,00E+00	1,21E+00	2,48E+01	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	MJ	5,40E+02	3,84E+01	1,28E+02	7,07E+02	2,50E+01	1,47E+02	4,39E+01	1,26E+01	1,25E+01	7,75E+00	5,92E-01	-4,47E+02
Secondary Material	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	0,00E+00	0,00E+00	0,00E+00	
Renewable 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	0,00E+00	
Non-Renewable 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	0,00E+00	
Net Use of Fresh Water	m ³	2,61E-01	5,42E-03	3,85E-01	6,51E-01	3,95E-03	5,96E-02	2,42E-01	1,06E-03	1,97E-03	1,73E-03	2,48E-03	-1,42E-01	

Waste production and output flows

Waste production

This chapter presents all the waste that is generated in the product system. Since ecoinvent is used as the main database, treatment processes of all wastes generated in the system are considered within the system boundaries and modelled in the LCA following Swedish common treatment practices. Thus, no wastes are declared as outflows in any module.

Waste production	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Hazardous Waste Disposed	MJ	7,28E-01	0,00E+00	0,00E+00	7,28E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-Hazardous Waste Disposed	kg	8,99E-01	0,00E+00	0,00E+00	8,99E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive Waste Disposed	MJ	4,30E-03	0,00E+00	0,00E+00	4,30E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Output flows

Waste production	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Components for reuse	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	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,46E-01	0,00E+00	1,32E+00	1,66E+00	0,00E+00	7,66E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,97E+01	0,00E+00
Materials for energy recovery	kg	2,76E-03	0,00E+00	6,05E-02	6,33E-02	0,00E+00	1,11E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,47E-01	0,00E+00
Exported energy, electricity	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	0,00E+00
Exported energy, thermal	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	0,00E+00

Results for biogenic carbon in product & packaging are omitted as it is less than 5% of the mass of the product.

Scenarios

Only one scenario is presented in the EPD. The specifications around module A4, A5, B2 and C1-C4 are presented below:

Transports to building site

Scenario information	Value
Fuel type, consumption, and vehicle type	0,048 l Diesel per tkm, Euro 5 16-32t freighter
Distance	400 km
Capacity utilization (empty returns included)	50% ¹

Installation of the product in the building

Part, or component	Material	Kg/m ²
C-Profile 50/54/12x3	Steel	0,989
Iron sheet 5mm	Iron	0,467
Iron pipe 33,7x3,2	Iron	0,0111
Iron 12x12	Iron	0,085
Taptite M10x40 screw	Steel	0,0053
Taptite M8x25 screw	Steel	0,0053
Iron sheet 8mm	Iron	0,078
Cardboard	Cardboard	0,0278
Roller bearings 42x15x13	Steel	0,011

Use stage related consumption (B2)

Description	Unit (per m ²)
Maintenance description	Cleaning and lubrication of hinges
Maintenance cycle	1 per year
Lubricating oil	0,01 kg per cycle
Cleaning fluid	0,1 kg per cycle
Water	5 litres per cycle

¹ 20% of trips are expected to be empty as per specifications in EcoTransit 2010.
https://www.ecotransit.org/download/EcoTransIT_World_Methodology_Data_100521.pdf

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