

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



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

Stainless steel sink

from

LAVABO A/S



Programme:

The International EPD® System, www.environdec.com

Programme operator:

EPD International AB

EPD registration number:

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2029-09-30

*EPD of multiple products, based on average product.
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
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Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 – Construction Products (EN 15804+A2) – version 1.3.4 the UN CPC code “429 Other fabricated metal products”
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com 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 .
Life Cycle Assessment (LCA)
LCA accountability: Urtė Misiūnaitė & Sigita Židonienė, UAB “Vesta Consulting”, info@vestaconsulting.lt
Third-party verification
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: Prof. Ing. Vladimír Kočí, PhD., vladimir.koci@lca.cz 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: Lavabo A/S

Contact: Søren Clausen, info@lavabo.dk, +4575558866

Description of the organisation: Lavabo A/S is manufacture and distributor of high quality products for kitchen and bath. Located in Denmark and distribute to whole Europe, mostly Northern Europe and Scandinavia. B2B only.

Name and location of production site(s): Facility Lavabo producer 443, China

Product information

Product name: Stainless steel sink

Product description: A stainless steel kitchen sink is a vital fixture in any kitchen, offering durability, hygiene, and a sleek, modern aesthetic. These stainless steel sinks are manufactured in China and distributed in Denmark. Stainless steel kitchen sinks are made from high-grade stainless steel (SUS304) and accessories (manganese steel installation clips), which are corrosion-resistant and easy to clean. This material is also heat-resistant, ensuring that hot pots and pans can be safely placed in the sink without damaging the surface. Sinks are available in different sizes and designs, therefore weigh different amounts. Overall size is 480x500x160mm or 530x500*160mm, bowl size is 440x380mm or 490x380mm. The assessment focuses on the average product resulting from the total mass.

The manufacturing company is in compliance with EN 13310:2015+A1:2018 standard. The manufacturing company is ISO certified with certification for ISO 9001 and ISO 14001:2015.

Products application: Stainless steel sinks can be applied in various areas, for example residential or commercial kitchens, hospitality industry, healthcare facilities, laboratories and cleanrooms.

UN CPC code: 429 Other fabricated metal products

Geographical scope: The geographical scope of A1-A3 modules has been modelled for the global market, as the product is manufactured in China. Modules A4, C1-C4 and D are modelled for the market in Europe, as the product is distributed by company in Denmark.

LCA information

Functional unit / declared unit: The declared unit of the study is 1 kg of the product supplied to the client.

Reference service life: The reference service life has not been declared as the use phase has not been included in the study.

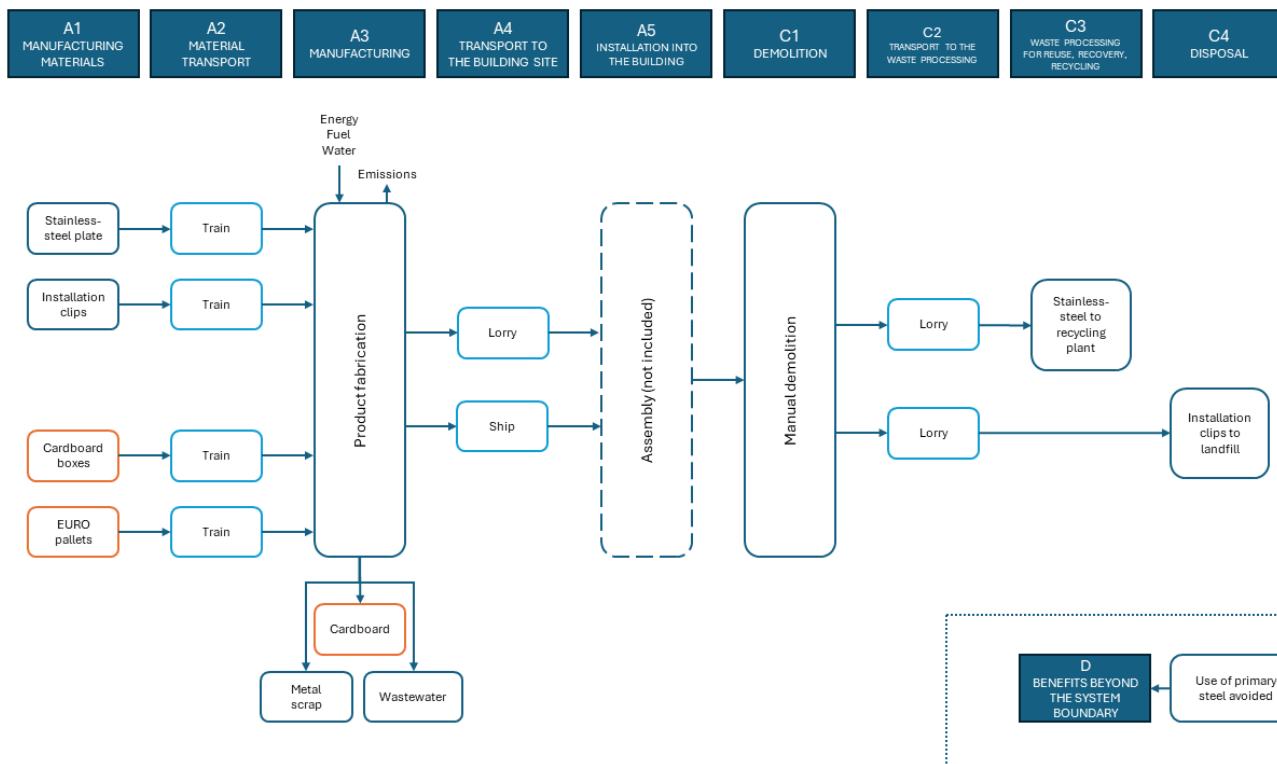
Time representativeness: Primary data was collected internally. The production data refers to the average of the year 2023.

Database(s) and LCA software used: The Ecoinvent database provides the life cycle inventory data for the raw and processed materials obtained from the background system. The used database is Ecoinvent 3.10. The LCA software used is One Click LCA. The EN 15804 reference package used is based on EF 3.1.

Data quality: The foreground data collected internally is based on yearly production amounts and extrapolations of measurements on specific machines and plants. Overall, the data quality can be described as good. The primary data collection has been done thoroughly.

Description of system boundaries: Cradle to gate with options (A1-A4), modules C1-C4, module D. Module A5 is declared for "balancing-out reporting".

System diagram:



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	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x
Geography	GLO	GLO	GLO	EU	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	6.35%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Description of the system boundary (X = Included in LCA; MND = Modules not declared; MNR = Modules not relevant). GLO = global; EU = European Union

Product life cycle

Product stage (A1-A3)

A1: This module considers the extraction and processing of raw materials.

A2: The raw materials are transported to the manufacturing plant. In this case the model includes road transportation of each raw material.

A3: This module includes the manufacture of products and packaging. It has considered all the energy consumption and waste generated in the production plant.

Manufacturing process

The manufacturing process begins with stainless steel raw material in the form of plates, which are prepared for further processing. The raw material plate undergoes a rounding process to form it into a desired circular shape or rounded edges for subsequent steps. Small holes are punched into the plate where clips or other fastening mechanisms might be attached. The plate is shaped into its preliminary form and additional holes are punched as per the design requirements. The next step in the manufacturing process could be done in two ways depending on if the sink is pressed or welded. For the pressed sink, the first deep drawing process takes place, where the stainless-steel plate is stretched and formed into a deeper shape using a punch. A second deep drawing process is applied, further refining the shape and depth of the material. The material is annealed, meaning it is heated to a specific temperature and then slowly cooled. This process helps relieve internal stress and improve the material's ductility. The edges of the material are cut to precise dimensions, ensuring smoothness and accuracy in the final product. Additional holes are punched into the material, for attachments or design features. A surface treatment (polishing and cleaning) and PVD process can be applied to the final product to enhance durability and appearance. The completed sink is then ready for packaging and distribution. For the welded sink, the next step after rounding the edges and punching clip holes involves punching a hole for the bowl of the sink, followed by pressing the drainboard, which forms the area around the sink's basin. In the next phase, the first deep draw is performed to shape the bowl, followed by a second deep draw to give it its final depth. Afterward, the edges of the bowl are cut, and waste holes are punched into the bowl to allow for water drainage. Finally, the drainboard and bowl are welded together, and the surface undergoes polishing, cleaning and PVD can be applied to the final product to enhance durability and appearance. The completed sink is then ready for packaging and distribution.

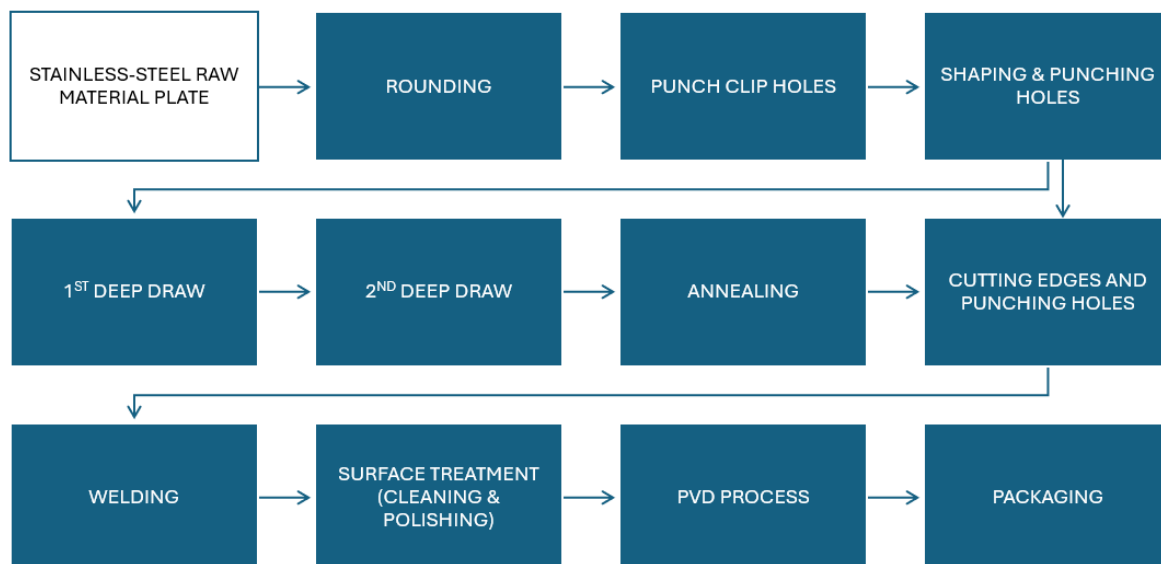


Figure 1. The manufacturing process diagram of product.

Construction process stage (A4-A5)

A4: This module includes average transportation from the manufacturing plant (China) to the distributor (Denmark) and to the construction site where the product shall be installed. The transportation doesn't cause losses as products are packaged properly.

A5: This module should be declared for "balancing-out reporting" since part of the packaging of products contains more than 5% biogenic carbon. The uptake of this biogenic carbon, as biogenic CO₂, in module A1 shall be balanced out by an equal amount of emission of biogenic CO₂ in module A5.

Use stage (B1-B7)

This EPD does not cover Use stage.

Product end of life (C1-C4, D)

C1: Deconstruction, dismantling, demolition

This stage assumes a manual removal of the sink, so no energy or material consumption has been considered in this stage.

C2: Transport of the discarded product to the processing site

It is estimated that there is no mass loss during the use of the product. Therefore, the end-of-life product is assumed to have the same weight as the declared product. It is assumed that the stainless steel is collected separately in whole and sent to recycling facilities. It is assumed that the accessories (installation clips) are collected with construction waste and sent to disposal in landfills. Transportation distance to the closest facility is estimated as 50 km, and the transportation method is lorry, which is the most common.

C3: Waste processing for reuse, recovery and/or recycling

Stainless steel is collected separately in whole. It is considered that 100 % of stainless steel input is transformed into secondary material in a recycling plant without any quality loss.

C4: Discharge (disposal)

It is considered that accessories (installation clips) are collected and sent to landfill.

Benefits and loads beyond the system boundary (D):

Benefits of recyclable waste generated in phase C3 are considered in the phase D. The recycled steel has been modelled to avoid use of primary materials. The scrap content in the studied product has been acknowledged and only the mass of primary steel in the product provides the benefit to avoid double counting. The amount of recycled material used in production is 100%.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Stainless steel roll	0.99	0	0
Accessories	0.01	0	0
TOTAL	1.00	0	0
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Carboard	0.11	11 %	0.044
Euro pallets	0.05	5 %	0.098
TOTAL	0.16	16 %	0.142

Stainless steel kitchen sinks comply with Regulation (EC) No 1907/2006 requirements regarding registration, evaluation, authorization and restriction of chemicals (REACH).

Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Note: it is discouraged to use the results of modules A1-A3 without considering the results of module C when module C is declared.

Mandatory impact category indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	6,18E+00	1,73E-01	1,59E-01	0,00E+00	5,39E-03	2,24E-02	6,26E-05	-1,67E+00
GWP-fossil	kg CO ₂ eq.	6,33E+00	1,73E-01	0,00E+00	0,00E+00	5,39E-03	2,24E-02	6,25E-05	-1,67E+00
GWP-biogenic	kg CO ₂ eq.	-1,59E-01	0,00E+00	1,59E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO ₂ eq.	7,93E-03	8,39E-05	0,00E+00	0,00E+00	2,16E-06	2,65E-05	3,25E-08	-9,98E-05
ODP	kg CFC 11 eq.	4,54E-08	2,50E-09	0,00E+00	0,00E+00	7,94E-11	3,01E-10	1,81E-12	-5,49E-09
AP	mol H ⁺ eq.	4,23E-02	3,68E-03	0,00E+00	0,00E+00	1,84E-05	2,66E-04	4,43E-07	-6,62E-03
EP-freshwater	kg P eq.	4,45E-04	9,48E-07	0,00E+00	0,00E+00	4,92E-08	1,09E-06	6,14E-10	-7,18E-05
EP-marine	kg N eq.	1,00E-02	9,28E-04	0,00E+00	0,00E+00	5,96E-06	5,75E-05	1,68E-07	-1,36E-03
EP-terrestrial	mol N eq.	1,10E-01	1,03E-02	0,00E+00	0,00E+00	6,57E-05	6,66E-04	1,84E-06	-1,61E-02
POCP	kg NMVOC eq.	3,11E-02	2,88E-03	0,00E+00	0,00E+00	2,71E-05	1,97E-04	6,60E-07	-5,48E-03
ADP-minerals&metals*	kg Sb eq.	1,29E-04	2,65E-07	0,00E+00	0,00E+00	1,50E-08	1,59E-06	9,92E-11	-1,62E-05
ADP-fossil*	MJ	6,76E+01	2,23E+00	0,00E+00	0,00E+00	7,82E-02	3,01E-01	1,53E-03	-1,52E+01
WDP*	m ³	1,91E+00	7,72E-03	0,00E+00	0,00E+00	3,76E-04	5,35E-03	4,29E-06	-2,75E-01
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.

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	6,33E+00	1,73E-01	0,00E+00	0,00E+00	5,39E-03	2,24E-02	6,25E-05	-1,67E+00

Resource use indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1,73E+01	2,10E-02	0,00E+00	0,00E+00	1,03E-03	5,58E-02	1,42E-05	-1,03E+00
PERM	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
PERT	MJ	1,73E+01	2,10E-02	0,00E+00	0,00E+00	1,03E-03	5,58E-02	1,42E-05	-1,03E+00
PENRE	MJ	6,74E+01	2,23E+00	0,00E+00	0,00E+00	7,82E-02	3,01E-01	1,53E-03	-1,52E+01
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
PENRT	MJ	6,74E+01	2,23E+00	0,00E+00	0,00E+00	7,82E-02	3,01E-01	1,53E-03	-1,52E+01
SM	kg	6,76E-01	1,02E-03	0,00E+00	0,00E+00	3,33E-05	3,66E-04	3,85E-07	9,21E-01
RSF	MJ	9,65E-02	5,71E-06	0,00E+00	0,00E+00	4,22E-07	1,70E-05	7,97E-09	-1,38E-04
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
FW	m ³	4,40E-02	2,10E-04	0,00E+00	0,00E+00	1,13E-05	1,58E-04	1,59E-06	-3,58E-03
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								

Waste indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5,18E+00	3,26E-03	0,00E+00	0,00E+00	1,33E-04	1,97E-03	1,70E-06	-5,52E-01
Non-hazardous waste disposed	kg	1,66E+01	5,07E-02	0,00E+00	0,00E+00	2,47E-03	7,10E-02	3,90E-05	-4,30E+00
Radioactive waste disposed	kg	9,21E-05	3,30E-07	0,00E+00	0,00E+00	1,69E-08	6,53E-07	2,38E-10	1,62E-05

¹ 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 CO₂ is set to zero.

Output flow indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	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
Material for recycling	kg	6,35E-02	1,80E-04	0,00E+00	0,00E+00	5,84E-07	1,98E+00	6,68E-09	-7,32E-05
Materials for energy recovery	kg	9,18E-05	6,14E-08	0,00E+00	0,00E+00	3,47E-09	4,86E-08	3,00E-11	-9,91E-06
Exported energy, electricity	MJ	1,12E-01	2,56E-04	0,00E+00	0,00E+00	1,43E-05	4,43E-04	1,53E-07	-1,37E-03
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

Additional environmental information

Module A3: Manufacturing energy scenario documentation

Scenario parameter	Data source	Value
Electricity, China (specific electricity mixes based on IEA)	LCA study for country specific electricity mixes based on IEA, OneClickLCA 2024. Upstream database: One Click LCA.	0.81 kg CO ₂ e / kWh
Market for diesel, burned in building machine	ecoinvent 3.10	0.0919 kg CO ₂ e / MJ

Module A4: Transport scenario

Parameter	Value/Description
Vehicle type used for transport	EURO 5 truck with a trailer with an average load of >32 ton Freight sea, ferry.
Distance	100 % of production: Truck – 430 km. Ferry – 10000 km
Capacity utilization	100 % of the capacity in volume (truck) 100 % of the capacity in volume (ferry)

Module C3-C4: End of life scenario (EOL)

EOL	Parameter	Value/Description
Collection	Collected separately	0.99 kg
	Collected with mixed waste	0.01 kg
Recovery	Re-Use	0 kg
	Recycling	0.99 kg
	Energy recovery	0 kg
Disposal	Final deposition	0.01 kg
	Transportation scenario	Product is transported 50 km

References

Standards and PCR

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804+A2 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

Product Category Rules (PCR): PCR 2019:14 – Construction Products (EN 15804+A2) – version 1.3.4 the UN CPC code 429 Other fabricated metal products

General Programme Instructions of the international EPD® system. Version 4.0.

Data references:

One Click LCA tool

Ecoinvent 3.10 database

