

ENVIRONMENTAL PRODUCT DECLARATION

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

SANDWICH WALL PREFABMÄSTARNA SVERIGE AB



Programme:
The International EPD[®]
System, www.environdec.com

Programme operator:
EPD International AB

EPD registration
number:
S-P-05314

Publication
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Valid until:
2027-02-02

Geographical scope:
Sweden and Norway

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

MANUFACTURER INFORMATION

Manufacturer	Prefabmästarna Sverige AB
Address	Box 500, 943 28 Öjebyn
Contact details	info@prefabmastarna.se
Website	www.prefabmastarna.se

PRODUCT IDENTIFICATION

Product name	Sandwich wall
Additional label(s)	W
Product number / reference	-
Place(s) of production	Öjebyn, Sweden
CPC code	375 – Articles of concrete, cement and plaster

The International EPD System

EPDs within the same product category but from different programmes may not be comparable.

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program	The International EPD System
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021) is used. c-PCR-003 Concrete and concrete elements.
EPD author	Jörgen Malmström, Prefabmästarna Sverige AB, Gamla Älvsbyvägen 15, 943 31 Öjebyn
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
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EPD valid until	2027-02-02

PRODUCT INFORMATION

PRODUCT DESCRIPTION

The precast sandwich wall (w) is made of two layers of concrete with isolation in between and the sandwich wall is an exterior wall in buildings. The inner concrete layer is load-bearing while the outer concrete layer can resist moisture and mould. Every sandwich wall produced is tailored based on the customer's specific requirements, therefore the structure of the wall surfaces varies based on the orders placed.

All products are manufactured indoors, which ensure a high and even quality. Therefore, sandwich wall can have a life span up to 100 years. The maintenance required for the sandwich wall is low during its lifespan and also our product meets all the necessary requirements for moisture, acoustics and fire protection.

During the use phase, cementitious materials (hydration products in the concrete) present on the exterior surface of the wall chemically reacts with the atmospheric carbon dioxide due to carbonization and calcium carbonate is formed as the result. However, the carbonization is not taken into the account in this study. For more information about the product please see Produkter | Prefabmästarna (prefabmastarna.se)

This sandwich wall is a standard product, it can be changed from customer to customer or project and where in the country it is to be delivered to.

It can be anything from thicker to thinner insulation, size of outer and inner board, number of openings (windows and doors).

PRODUCT APPLICATION

This product can be used in constructions such as houses, apartments, industry or similar properties.

TECHNICAL SPECIFICATIONS

The strength class of the concrete in this product is C30/37. It contains, concrete, insulation, reinforcement mesh, reinforcement and castings.

PRODUCT STANDARDS

The product complies with SS-EN 206-1, SS137003:2015, SS137006:2012, SS13369:2018 and SS13705:2018

PHYSICAL PROPERTIES OF THE PRODUCT

<https://www.prefabmastarna.se/produkter/>

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at www.prefabmastarna.se.

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, kg	Post-consumer %	Renewable %	Country Region of origin
Aggregate, fine	397	-	-	SWE
Aggregate, coarse	353	-	-	SWE
Cement	136	-	-	SWE
Water	66	-	-	SWE
Additives	0,69	-	-	EU
Insulation, Rock	23		-	EU
Reinforcement steel	20	95	-	EU
Steel montage	3,1	95	-	EU

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

MANUFACTURING AND PACKAGING (A1-A3)

Raw materials are purchased and transported to factory. In the factory, the mould is prepared according to the customer requirements. The mould can be made of wood or steel and the mould are often reused between projects. The mould is cleaned, and form oil is applied. Reinforcing mesh, reinforcing bars, isolation and sometime montage goods implemented in the mould.

The production of concrete is made factory site. The recipe for the concrete varies between different products and projects. When the concrete is poured into the mould, the mould is vibrated to make sure that the concrete fills out the mould. The last step is to prepare the surface according to the customer's requirements. The mould is removed after one day and then the product is moved to the warehouse.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. Transportation, A4 and A5 Assembly is not included in the EPD.

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 the end of the service life, it is assumed that 100% of the waste in the demolition phase is collected as separate construction waste. The demolition process consumes energy in the form of diesel fuel used in construction machinery. The energy consumption for a demolition process is on average 10 kWh / m² (Bozdağ, Ö & Seçer, M., Energy consumption of RC buildings during their life cycle. Izmir, Dokuz University (2007). Based on a Level project, the average mass of a reinforced concrete building is approximately 1000 kg / m². Therefore, demolition of energy consumption is assumed to be 10 kWh / 1000 kg = 0.01 kWh / kg. The energy source is diesel fuel used by work machines (C1).

The dismantled sandwich wall is delivered to the nearest construction waste treatment plant. It is estimated that there is no mass loss when using the product, therefore the final product is assumed to have the same weight as the declared product. The transport distance to the nearest landfill is estimated at 50 km and the transport method is the most common truck (C2).

At the waste treatment plant, waste that can be reused, recycled, or recycled for energy is separated for further use. At the beginning of 2020, waste restrictions were tightened in Sweden and the amount

of waste that goes to landfill is limited compared to recent years, so it can be assumed that 100% of sandwich walls are transported to a waste treatment plant, where the walls are crushed, and steel is separated. About 95% of steel (World Steel Association. 2020) and 80% of concrete (Betoniteollisuus ry, 2020) are recycled. The process losses of the waste treatment plant are assumed to be negligible (C3). The remaining 20% concrete and 5% steel are assumed to be sent to the landfill (C4).

Due to the recycling potential of reinforcing steel and concrete, they can be used as a secondary raw material, which avoids the use of virgin raw materials, 80% concrete and 95% steel.

MANUFACTURING PROCESS

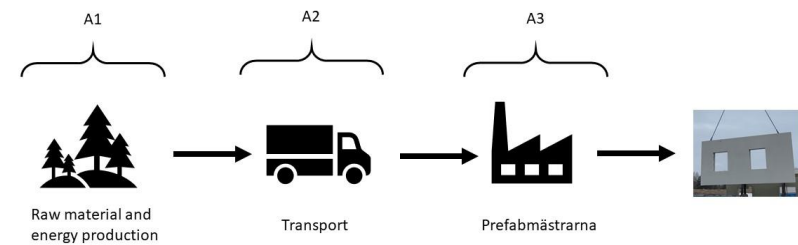


Figure 1. The process diagram.

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	Calendar year 2020
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DECLARED AND FUNCTIONAL UNIT

Declared unit	1 tonne
Mass per declared unit	1000 kg
Functional unit	-
Reference service life	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	N/A
Biogenic carbon content in packaging, kg C	N/A

SYSTEM BOUNDARY

This EPD covers the cradle to gate scope with following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

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	D	D
X	x	x	MN D	MN D	MN D	MN D	MN D	MN D	MN D	MN D	MN D	x	x	x	x	MN D	x	x
Geography, by two-letter ISO country code or regions. The International EPD System only.																		
EU	EU	EU	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

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

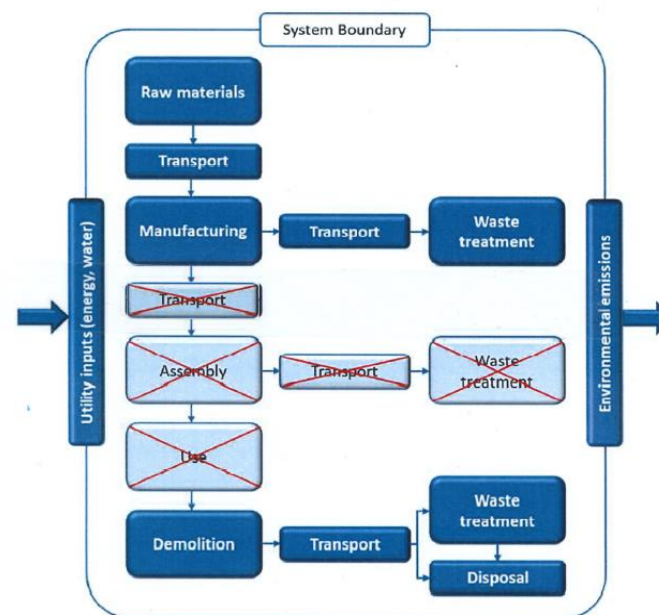


Figure 2. The LCA flow diagram.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and International EPD system 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 which data are available for are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do also not exceed 5% of energy usage or mass. The life cycle analysis includes all industrial processes from raw material acquisition to production, distribution, and end-of-life stages.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order:

1. Allocation should be avoided.

2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.

3. Allocation should be based on economic values.

It is impossible to collect raw material, ancillary material, energy consumption and waste production data separately for each product produced in the plant, data is allocated. Allocation is based on average annual production rate for the year 2019 and 2020.

The values for 1000 kg of element are calculated by considering the total product weight per annual production. In the factory, several kinds of concrete elements are produced; since the production processes of these products are similar, the annual weight of concrete production are taken into consideration for the allocation. According to the ratio of the total weight of annual production of concrete elements to the weight for the declared unit, 1000 kg energy consumption, and the generated waste per the declared product are allocated.

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

AVERAGES AND VARIABILITY

The International EPD System additional data requirements

Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

Supply-chain specific data for GWP-GHG	57 %
Variation in GWP-GHG between products	<10 %
Variation in GWP-GHG between sites	-

ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	1,52E2	5,37E0	7,15E0	1,64E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,3E0	8,34E0	3,57E0	1,13E0	-9,84E0
GWP – fossil	kg CO ₂ e	1,53E2	5,37E0	6,17E0	1,65E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,3E0	8,33E0	3,6E0	1,13E0	-9,78E0
GWP – biogenic	kg CO ₂ e	-1,42E0	3,9E-3	-5,21E-1	-1,94E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,17E-4	4,45E-3	-3,08E-2	2,24E-3	-5,22E-2
GWP – LULUC	kg CO ₂ e	6,5E-2	1,62E-3	1,5E0	1,56E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,79E-4	2,96E-3	8,85E-4	3,36E-4	-8,1E-3
Ozone depletion pot.	kg CFC-11e	6,01E-6	1,26E-6	1,21E-6	8,47E-6	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,12E-7	1,89E-6	7,38E-7	4,66E-7	-6,65E-7
Acidification potential	mol H ⁺ e	5,97E-1	2,25E-2	5,5E-2	6,75E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,45E-2	3,4E-2	3,86E-2	1,07E-2	-5,47E-2
EP-freshwater ²⁾	kg Pe	2,86E-3	4,37E-5	3,63E-4	3,27E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,33E-5	6,97E-5	5,04E-5	1,37E-5	-5,45E-4
EP-marine	kg Ne	6,49E-2	6,79E-3	2,02E-2	9,2E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,52E-2	1,01E-2	1,56E-2	3,7E-3	-1,13E-2
EP-terrestrial	mol Ne	1,43E0	7,5E-2	2,45E-1	1,75E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,67E-1	1,12E-1	1,72E-1	4,07E-2	-1,43E-1
POCP (“smog”)	kg NMVOCe	4,29E-1	2,41E-2	5,96E-2	5,13E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,59E-2	3,42E-2	4,72E-2	1,18E-2	-4,72E-2
ADP-minerals & metals	kg Sbe	1,58E-3	9,16E-5	2,1E-5	1,69E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,03E-6	2,25E-4	3,52E-5	1,03E-5	-6,99E-4
ADP-fossil resources	MJ	9,82E2	8,35E1	7,07E1	1,14E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,54E1	1,26E2	4,96E1	3,16E1	-1,16E2
Water use ¹⁾	m ³ e depr.	4,43E1	3,11E-1	-1,52E0	4,31E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,46E-2	4,05E-1	1,87E-1	1,46E0	-1,18E1

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) 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 experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	6,68E-6	4,86E-7	1,08E-6	8,25E-6	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,14E-7	5,81E-7	3,95E-6	2,09E-7	-7,29E-7
Ionizing radiation ³⁾	kBq U235e	5,96E3	3,65E-1	3,16E-1	5,96E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,94E-1	5,49E-1	2,18E-1	1,3E-1	-5,37E-1
Ecotoxicity (freshwater)	CTUe	1,41E3	6,38E1	2,23E2	1,7E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,66E1	9,7E1	5,72E1	2E1	-2,24E2
Human toxicity, cancer	CTUh	5,6E-7	1,63E-9	4,25E-9	5,66E-7	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,53E-10	2,82E-9	1,68E-9	4,73E-10	-6,84E-9
Human tox. non-cancer	CTUh	9,49E-6	7,56E-8	1,3E-7	9,69E-6	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,35E-8	1,1E-7	5,99E-8	1,46E-8	4,39E-7
SQP	-	1,72E3	1,26E2	1,75E1	1,87E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,16E0	1,05E2	2,98E0	5,38E1	-6,87E1

4) SQP = Land use related impacts/soil quality.5) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1,24E2	1,05E0	1,67E2	2,92E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,45E-1	1,77E0	1,43E0	2,56E-1	-7,41E0
Renew. PER as material	MJ	0E0	0E0	2,64E1	2,64E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,24E2	1,05E0	1,93E2	3,18E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,45E-1	1,77E0	1,43E0	2,56E-1	-7,41E0
Non-re. PER as energy	MJ	1,07E3	8,35E1	7,08E1	1,23E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,54E1	1,26E2	4,96E1	3,16E1	-1,16E2
Non-re. PER as material	MJ	8,31E0	0E0	0E0	8,31E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,08E3	8,35E1	7,08E1	1,24E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,54E1	1,26E2	4,96E1	3,16E1	-1,16E2
Secondary materials	kg	4,44E1	0E0	2,47E-7	4,44E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,58E0
Renew. secondary fuels	MJ	9,11E1	0E0	0E0	9,11E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	1,49E2	0E0	0E0	1,49E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m³	4,65E0	1,74E-2	2,06E-2	4,69E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,01E-3	2,15E-2	6,83E-3	3,46E-2	-9,22E-1

6) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	9,38E0	8,11E-2	1,59E-1	9,62E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,88E-2	1,28E-1	0E0	2,95E-2	-8,93E-1
Non-hazardous waste	kg	7,19E2	8,98E0	4,93E1	7,78E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,22E-1	8,76E0	0E0	2,15E2	-2,4E1
Radioactive waste	kg	2,3E-3	5,73E-4	4,94E-4	3,37E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,18E-4	8,61E-4	0E0	2,09E-4	-3,99E-4

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	3,3E0	3,3E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	2,24E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2,82E0	2,82E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ e	1,53E2	5,37E0	6,17E0	1,65E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,3E0	8,33E0	3,6E0	1,13E0	-9,78E0

8) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	97% Electricity production, hydro, reservoir, non-alpine region (Reference product: electricity, high voltage) Sweden and 3% Heat and power co-generation, wood chips, 6667 kw, state-of-the-art 2014 (Reference product: electricity, high voltage), Sweden
Electricity CO _{2e} / kWh	0,049
District heating data source and quality	Heat and power co-generation, wood chips, 6667 kw, state-of-the-art 2014 (Reference product: heat, district or industrial, other than natural gas), Sweden
District heating CO _{2e} / kWh	0.065

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Int'l EPD System PCR 2019:14 Construction products, version 1.11 (2021-02-05)

Sandwich wall LCA background report 2021-12-17

ABOUT THE MANUFACTURER

Prefabmästarna Sverige AB has its operations in Öjebyn north of Piteå in Norrbotten County, we employ about 100 people, 75 of whom are employed by the company. We also have an office in Strömsund with two project managers and a one-man office in Härnösand where we mainly work with project management.

Together with our wide product range, our design department, our project organization, and our partners, we have the opportunity to meet the changing needs of most customers and tailor the solutions they want.

Even though we are the small company far up in the north, we are not afraid of distances and are therefore used to working over large parts of Sweden and in the northern parts of Norway.

Our customers are in the construction industry, state and municipal administration, real estate companies, industries and also with the individual home builder.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	Prefabmästarna Sverige AB
EPD author	Jörgen Malmström, Prefabmästarna Sverige AB, Gamla Älvsbyvägen 15, 943 31 Öjebyn, www.prefabmastarna.se
EPD verifier	Bárbara M. Civit
EPD program operator	The International EPD System
Background data	This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for cement products.

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 compliancy with EN 15804, 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 background report (project report) for this EPD

Why does verification transparency matter? [Read more online.](#)

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Bárbara M. Civit
EPD verification started on	2022-01-07
EPD verification completed on	2022-01-31
Supply-chain specific data %	57
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Jörgen Malmström, Prefabmästarna Sverige AB, Gamla Älvsbyvägen 15, 943 31 Öjebyn,
EPD author training completion	2021-03-31
EPD Generator module	Cement products
Independent software verifier	Ugo Pretato, Studio Fieschi & soci Srl
Software verification date	2021-05-11

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 EN 15804:2012+A2:2019.

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.



BÁRBARA M. CIVIT

VERIFICATION AND REGISTRATION (ENVIRONDEC)

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.11
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:	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
Third party verifier	Bárbara M. Civit
	Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up during EPD validity involves third party verifier	☐ yes ☒ no



EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com