Environmental Product Declaration

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

Particle board P2 and P6

from

Byggelit Sverige AB

Programme:	The International EPD® System, www.environdec.com
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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
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): Product Category Rules Wood and Wood-based Products for Use in Construction C-PCR-006 (to PCR 2019:14) version 2019-12-20 valid until 2024-12-20 UN CPC 314
PCR review was conducted by: Martin Erlandsson, IVL Swedish Environmental Research Institute, martin.erlandsson@ivl.se
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Hüdai Kara, at Metsims. Individual verifier approved by The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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

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.

Company information

Owner of the EPD: Byggelit AB
Contact: Yannick Spruijt
Description of the organisation: Byggelit, a company well known for its product quality, started up chipboard production in Sweden in the early 1960s and it is still owned by the same family as founded it.

The factory is situated in Lit nearby Östersund in the middle of Sweden. It has a highly flexible machine line and Byggelit often work closely together with our customers to develop new products for new demands.

Byggelit has a wide range of products within floors, walls and ceilings, all with the same high quality. The timber and wood residues come from nearby forests.

Product-related or management system-related certifications: Particle board P6 is Nordic Swan Ecolabelled.

Product information

Product name: Particle board standard quality, P2.
Also Called Stabil
Product description: The standard particle board, P2, is used for building and furniture and can be used for walls, ceilings and flooring, but also as packaging material.

Figure 1 Picture of particle board P2

Product name: Particle board floor, P6
Product description: Byggelit's particle board P6, also called Contifloor, is used for floors and can for example be used as an underflooring.

Figure 2 Picture of particle board P6.

LCA information

Functional Unit	The functional unit is 1 m^3 of particle board.
Goal and Scope	The result will be used to understand where the environmental burden for the products occurs during the life cycle. The result will be communicated by the International EPD system. The audience is resellers and end-clients.
Manufacturing Site	Lit, Sweden.
Geographical Area	Europe
Compliant with	This EPD follow the "Book-keeping" LCA approach which is defined as attributional LCA in the ISO 14040 standard. In accordance with ISO 14025, ISO 14040 – ISO 140 44. This EPD follow the Product Category Rules Construction Products PCR 2019:14 version 1.0 valid until: 2024-12-20 Product Category Rules Wood and Wood-based Products for Use in Construction C-PCR-006 (to PCR 2019:14) version 2019-12-20 valid until 2024-12-20
Cut-Off Rules	The following procedure is followed for the exclusion of inputs and output: - In the case of insufficient input data or data gaps for a unit process, the cut-off criterion is 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input to that unit process. - The maximum neglected input flows per declared module (A1 - A3) is 5 % of energy usage and mass. No cut-offs of input material have been made.
Background Data	The data quality is considered good. All site-specific data for raw materials, auxiliary materials as well as energy and emissions in the manufacturing process is from 2019 and have been represented with ecoinvent datasets. All other relevant environmental aspects have been represented by generic ecoinvent data. ecoinvent is the world's biggest LCI (Life cycle inventory) data library and the latest and most updates version was used. ecoinvent contain data for the specific geographical regions relevant for this study. The background data from ecoinvent 3.6 are from 2016-2020
Electricity data	The electricity consumption in the A3 module comes from GoO (Guarantee of Origin) certified renewable energy represented by hydro power.
Allocations	Polluter Pays / Allocation by Classification Two allocation rules are applied: 1) the raw material necessary for the manufacture is allocated by mass of the declared unit 2) the energy necessary for the manufacture is allocated in MJ by production of the declared unit
Impact Assessment methods	Potential environmental impacts are calculated with the EN 15804 + A2 method and the IPCC 2013 GWP 100a method as implemented in SimaPro 9.1. Resource use values are calculated with the method Cumulative Energy Demand V1.11.
Based on LCA Report	Miljögiraff LCA Report 805 Byggelit.
LCA Practitioner	Pär Lindman & Annie Johansson, Miljögiraff AB
Software	SimaPro 9.1

System Boundary

The system boundary of the EPD follows the Cradle to gate (A1–A3) with module C and D boundaries. The modules declared, geographical scope and share of specific data can be seen in Table 1. A system diagram that specifies what is covered in each module can be seen in Figure 3.

Table 1 The modules declared, geographical scope and share of specific data for the particle boards.

	Product stage		Construction process stage			Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X
Geography	SE	SE	SE	ND	ND	ND	ND	ND	ND	ND	ND	ND			SE	SE	SE
Specific data	>90%					-	-	-	-	-	-	-	-	-	-	-	-

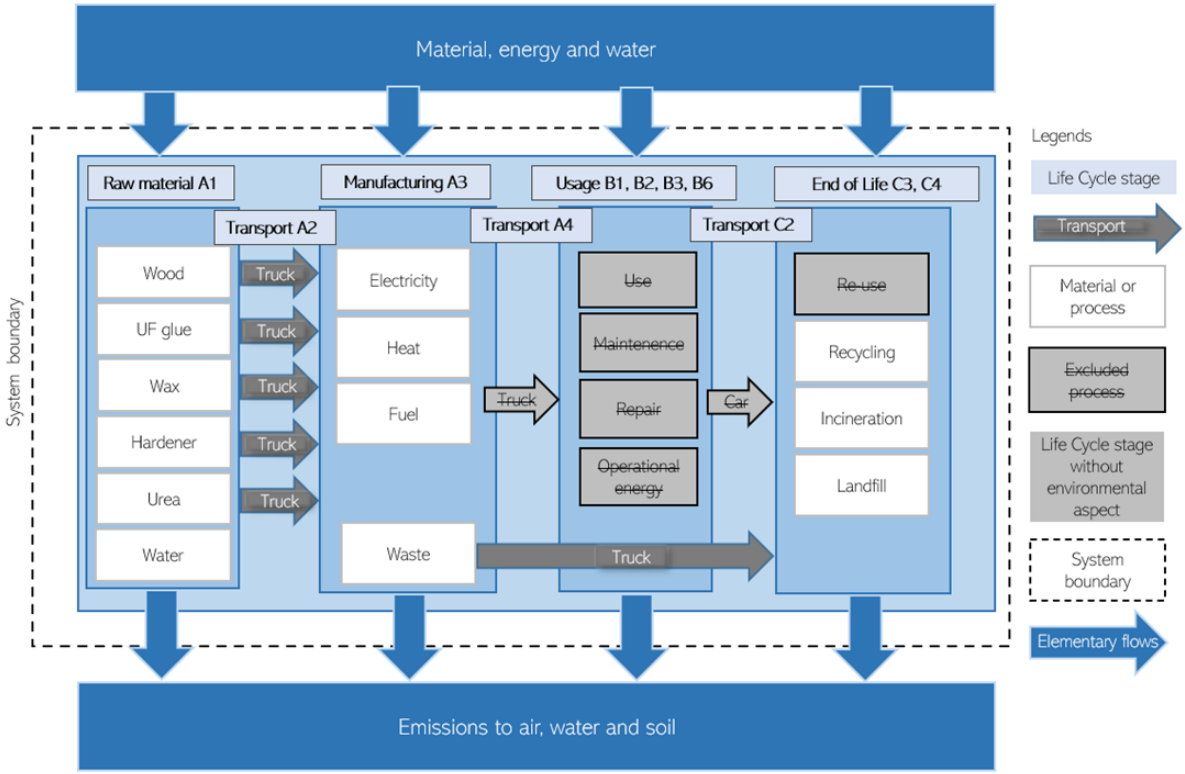

Figure 3 System diagram for P2 and P6 showing what is included in each module declared in the EPD.

Content information

Table 2 and Table 3 presents information regarding the content of particle board P2 and P6 respectively. The particle boards do not contain any Dangerous substances from the candidate list of SVHC for Authorization.

Table 2 Content information of particle board P2.

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Wood	513	0	100
UF glue	68.8	0	0
Wax	3.75	0	0
Hardener, NH3Cl	1.25	0	0
Urea	2.25	0	0
Water	36.3	0	100
TOTAL	625	0	88
Packaging materials	Weight, kg	Weight-% (versus the product)	
Lath	4	0.64	
Cardboard	1.01	0.16	
Plastic	0.03	0.0048	
TOTAL	5.04	0.81	

Table 3 Content information of particle board P6.

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Wood	544	0	100
UF glue	81.6	0	0
Wax	4.08	0	0
Hardener, NH3Cl	1.36	0	0
Urea	2.45	0	0
Water	46.9	0	100
TOTAL	680	0	87
Packaging materials	Weight, kg	Weight-% (versus the product)	
Lath	4	0,59	
Cardboard	1.01	0,15	
Plastic	0.03	4.4E-05	
TOTAL	5.04	0.74	

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Table 4 Results per functional or declared unit for P2.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
GWP-fossil	kg CO_2 eq.	2.00E+02	1.42E+01	2.43E+01	2.38E+02	3.96E+01	-5.44E+01
GWP-biogenic	kg CO_2 eq.	-7.34E+02	7.58E-03	7.14E+01	-6.63E+02	6.41E+02	-2.20E+00
GWP-luluc	kg CO_2 eq.	8.68E-01	4.97E-03	3.35E-01	1.21E+00	1.37E-03	-3.67E+00
GWP-total	kg CO_2 eq.	-5.34E+02	1.42E+01	9.61E+01	-4.24E+02	6.81E+02	-6.02E+01
ODP	kg CFC 11 eq.	3.38E-05	3.23E-06	4.75E-06	4.18E-05	8.04E-07	-2.75E-05
AP	mol H^+ eq.	1.36E+00	5.81E-02	4.54E-01	1.87E+00	8.60E-02	-2.59E-01
EP-freshwater	kg P eq.	4.24E-02	1.04E-03	7.74E-03	5.11E-02	4.64E-03	-2.73E-02
EP-marine	kg N eq.	1.85E-01	1.74E-02	1.94E-01	3.97E-01	6.36E-02	-7.66E-02
EP-terrestrial	mol N eq.	3.66E+00	1.90E-01	2.20E+00	6.05E+00	4.21E-01	-7.42E-01
POCP	kg NMVOC eq.	7.64E-01	5.83E-02	6.80E-01	1.50E+00	1.06E-01	-1.64E-01
ADP-minerals&metals*	kg Sb eq.	4.73E-03	3.84E-04	3.76E-04	5.49E-03	4.25E-05	-8.95E-04
ADP-fossil*	MJ	3.88E+03	2.14E+02	4.00E+02	4.49E+03	6.96E+01	-6.62E+03
WDP	m^3	3.47E+02	5.96E-01	5.21E+00	3.53E+02	5.44E+00	-8.21E+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.*

Table 5 Results per functional or declared unit for P6.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
GWP-fossil	kg CO_2 eq.	2.35E+02	1.59E+01	2.43E+01	2.75E+02	4.63E+01	-5.77E+01
GWP-biogenic	kg CO_2 eq.	-8.22E+02	8.49E-03	7.14E+01	-7.51E+02	6.72E+02	-2.33E+00
GWP-luluc	kg CO_2 eq.	9.72E-01	5.56E-03	3.35E-01	1.31E+00	1.50E-03	-3.90E+00
GWP-total	kg CO_2 eq.	-5.87E+02	1.59E+01	9.61E+01	-4.75E+02	7.19E+02	-6.40E+01
ODP	kg CFC 11 eq.	3.98E-05	3.61E-06	4.75E-06	4.81E-05	8.79E-07	-2.92E-05
AP	mol H^+ eq.	1.60E+00	6.50E-02	4.54E-01	2.12E+00	9.23E-02	-2.75E-01
EP-freshwater	kg P eq.	4.96E-02	1.16E-03	7.74E-03	5.85E-02	5.20E-03	-2.90E-02
EP-marine	kg N eq.	2.16E-01	1.95E-02	1.94E-01	4.30E-01	6.95E-02	-8.13E-02
EP-terrestrial	mol N eq.	4.30E+00	2.13E-01	2.20E+00	6.71E+00	4.50E-01	-7.88E-01
POCP	kg NMVOC eq.	8.85E-01	6.53E-02	6.80E-01	1.63E+00	1.13E-01	-1.74E-01
ADP-minerals&metals*	kg Sb eq.	5.56E-03	4.30E-04	3.76E-04	6.37E-03	4.70E-05	-9.50E-04
ADP-fossil*	MJ	4.55E+03	2.40E+02	4.00E+02	5.19E+03	7.57E+01	-7.03E+03
WDP	m^3	4.09E+02	6.67E-01	5.21E+00	4.15E+02	6.30E+00	-8.72E+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.*

Potential environmental impact – additional mandatory and voluntary indicators

Table 6 Results per functional or declared unit for P2. Calculated with IPCC 2013 GWP 100a

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
GWP-GHG1	kg CO_2 eq.	1.96E+02	1.41E+01	2.47E+01	2.35E+02	4.40E+01	-5.75E+01

Table 7 Results per functional or declared unit for P6. Calculated with IPCC 2013 GWP 100a

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
GWP-GHG1	kg CO_2 eq.	2.30E+02	1.58E+01	2.47E+01	2.71E+02	5.14E+01	-6.11E+01

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Use of resources

Table 8 Results per functional or declared unit for P2.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
PERE	MJ	1.88E+03	3.02E+00	4.67E+03	6.55E+03	2.52E+00	-3.17E+03
PERM	MJ	9.84E+03	0.00E+00	1.84E+02	1.00E+04	0.00E+00	0.00E+00
PERT	MJ	1.17E+04	3.02E+00	4.85E+03	1.66E+04	2.52E+00	-3.17E+03
PENRE	MJ	4.18E+03	2.27E+02	4.21E+02	4.83E+03	7.51E+01	-6.65E+03
PENRM	MJ.	3.28E+01	0.00E+00	1.05E+00	3.38E+01	0.00E+00	0.00E+00
PENRT	MJ	4.22E+03	2.27E+02	4.22E+02	4.86E+03	7.51E+01	-6.65E+03
SM	kg	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	1.24E+02	1.24E+02	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	7.29E+01	7.29E+01	0.00E+00	0.00E+00
FW	m^3	8.01E-01	3.66E-02	1.97E-01	1.03E+00	2.10E-01	-1.72E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

Table 9 Results per functional or declared unit for P6.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
PERE	MJ	2.14E+03	3.38E+00	4.67E+03	6.81E+03	2.75E+00	-3.37E+03
PERM	MJ	1.04E+04	0.00E+00	1.84E+02	1.06E+04	0.00E+00	0.00E+00
PERT	MJ	1.26E+04	3.38E+00	4.85E+03	1.74E+04	2.75E+00	-3.37E+03
PENRE	MJ	4.91E+03	2.55E+02	4.21E+02	5.59E+03	8.17E+01	-7.06E+03
PENRM	MJ.	3.89E+01	0.00E+00	1.05E+00	4.00E+01	0.00E+00	0.00E+00
PENRT	MJ	4.95E+03	2.55E+02	4.22E+02	5.63E+03	8.17E+01	-7.06E+03
SM	kg	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	1.24E+02	1.24E+02	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	7.29E+01	7.29E+01	0.00E+00	0.00E+00
FW	m^3	9.36E-01	4.10E-02	1.97E-01	1.17E+00	2.34E-01	-1.82E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

Waste production and output flows

Waste production

Table 10 Results per functional or declared unit for P2.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	4.41E-01	4.41E-01	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	1.85E+00	1.85E+00	6.26E+02	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 11 Results per functional or declared unit for P6.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	4.41E-01	4.41E-01	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	1.85E+00	1.85E+00	6.81E+02	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Output flows

Table 12 Results per functional or declared unit for P2.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.24E+02	1.24E+02	5.94E+02	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
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 13 Results per functional or declared unit for P6.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.24E+02	1.24E+02	6.46E+02	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
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Information on biogenic carbon content

Table 14 Biogenic content in particle board P2.

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	2.00E+02
Biogenic carbon content in packaging	kg C	1.95E+01

Table 15 Biogenic content in particle board P6.

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	2.24E+02
Biogenic carbon content in packaging	kg C	1.95E+01

Differences versus previous versions

Table 6 and 7 have been updated due an error in the numbers. The numbers did not correspond to the correct module(A1-A3).

References

- General Programme Instructions of the International EPD® System. Version 3.01
- EN ISO 14025:2014-02 Environmental labels and declarations - Type III environmental declarations - Principles and procedures, Edited in 2010
- EN ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework, 2006
- EN ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines, 2006
- ILCD International guide for life-cycle data system. General guide for life cycle assessment – Detailed guidance, 2010
- Product Category Rules Construction Products PCR 2019:14 version 1.0 valid until: 2024-12-20
- Product Category Rules Wood and Wood-based Products for Use in Construction C-PCR-006 (to PCR 2019:14) version 2019-12-20 valid until 2024-12-20
- PRé Consultants, "SimaPro 9.0" (PRé Consultants, 2019), http://www.pre-sustainability.com/simapro
- Ecoinvent, 'Ecoinvent' https://www.ecoinvent.org/database/database.html
- Lindman, Pär & Johansson, Annie, Miljögiraff AB, LCA Ballingslöv Report 805, 2020-07-03
- Spruijt, Yannick, Miljö- och kvalitetsansvarig Byggelit AB

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