

Environmental Product Declaration



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

Particle board products P3, P5 and P7

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
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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): Product Category Rules Wood and Wood-based Products for Use in Construction C-PCR-006 (to PCR 2019:14 v1.2.5) 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

Life Cycle Assessment (LCA)

LCA accountability: Kelly Brandt & Isak Eklöv, Sweco

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third-party verifier: David Althoff Palm, Dalemarken AB

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 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: Byggelit AB, Östersundsvägen 59, 830 30 Lit

Contact: Kent Ögren

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.

Name and location of production site(s): Lit, Sweden.

Product information

Product name: Particle board P3, P5 and P7.

Product identification and description: Particle board P3 and P5 are products that are used indoors and can be used in humid conditions. Particle board P7 is used for indoor floorings and can be used in humid conditions.

UN CPC code: UN CPC 314

Geographical scope: Sweden

LCA information

Functional unit / declared unit: The declared unit is 1 m³ of particle board.

Time representativeness: 2022

Database(s) and LCA software used: Simapro 9.5, Ecoinvent 3.9

Description of system boundaries:

Cradle to gate (A1-A3) with options, modules C1–C4, module D and with optional module A5.



This EPD is representative for multiple (three) products and the results presented in this document are based on the worst-case product P7. The variation between the environmental impact between the products is presented in Table 1.

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.

The following procedure is followed for the exclusion of inputs and output:

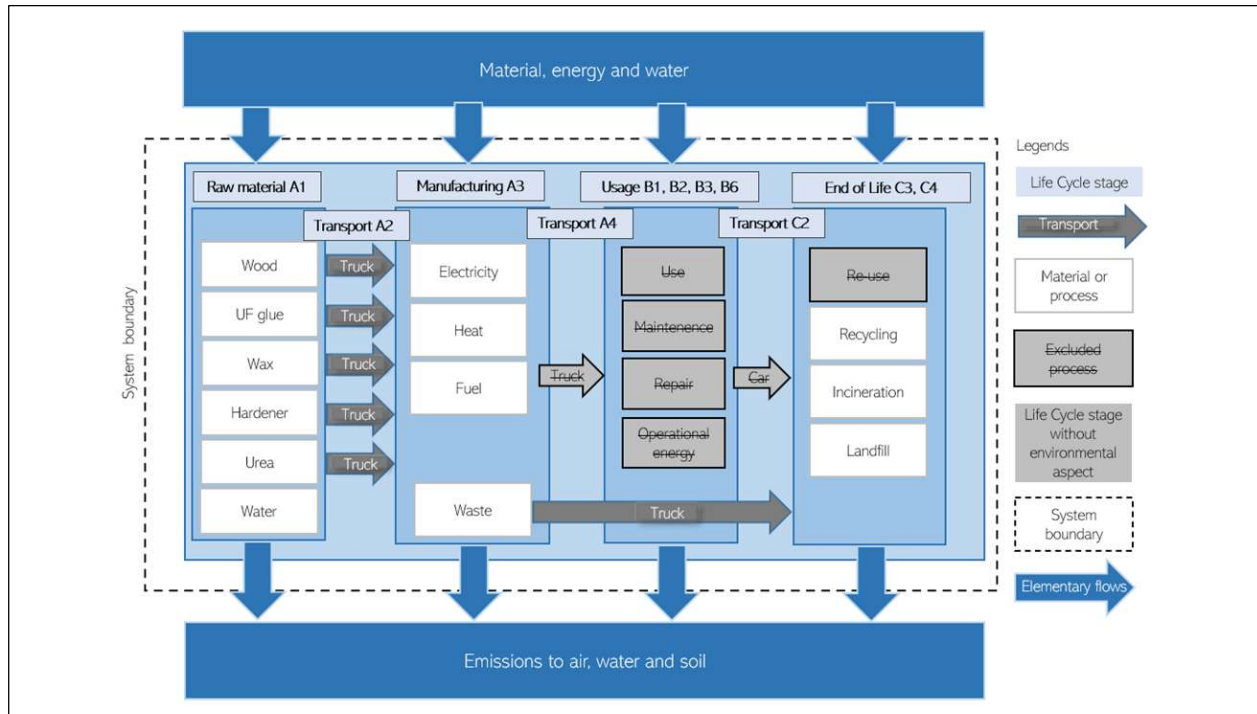
- In the case of insufficient input data or data gaps for a unit process, the cut-off criterion is 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input to that unit process.
- The maximum neglected input flows per declared module (A1- A3) is 5 % of energy usage and mass. No cut-offs of input material have been made.

Impact categories, units, and parameters used for describing the environmental impact were chosen according to EN15804+A2 2019 with characterization factors based on EF 3.0

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 3.9 are from 2016-2022.

Allocation for processes in manufacturing has been done based on volume of the total product output. Datasets for sawdust, roundwood and wood chips currently use physical allocation based on mass. The impacts from the updated datasets in line with EN15804+A2 are based on an economic allocation. However, the updated dataset has not yet been published for usage in SimaPro. However, the use of the current datasets is likely conservative resulting in a higher environmental impact than with the use of the updated datasets.

System diagram: System diagram for the particle boards showing what is included in each module declared in the EPD.



More information:

A1: Raw material extraction and supply

Module A1 includes the impacts from extraction and processing of raw materials used for the manufacturing of the particle boards. The packaging for the particle boards is also included in the module, which includes the raw materials and production of the packaging materials. The production of purchased electricity, district heating and hydraulic oil is also accounted for in module A1.

A2: Transport of materials to the production site

Module A2 includes impacts linked to the transportation from raw material extraction to the production site. This includes the production of fuels and the combustion of the fuels during transport.

A3: Manufacturing of the particle boards

Manufacturing, module A3, includes the production of the particle boards. The particle boards are made of several raw materials, including mainly wood chips, sawdust and round wood. The wooden material is chipped to different fractions. Then, it is dried and mixed with glue before it is layered out in a mattress form and pressed in a day open press. After this step, the boards are cut to size, processed, packed and shipped to customer. The electricity consumption in the A3 module is modelled with a Swedish residual energy mix due to lack of supplier-specific data.

A5: Installation

Module A5 includes the waste management of the packaging materials connected to the final product. The impacts for the waste management processes are included in the module and the benefits (energy recovery) are reported in module D.

C1: Deconstruction / demolition

In module C3, the dismantling of the particle boards is accounted for. The process of removing the particle boards does not require any energy or fuels and no processes for module C1 is included in the EPD.

C2: Transport to waste treatment

Module C2 includes the transport of materials to waste treatment facilities estimated to 50km. This module includes the impacts from the extraction of fuels and the combustion of the fuels during the transport.

At end-of-life the particle boards are sent to incineration with energy recovery. However, an assumption is made that 5% of the particle boards will not reach incineration and are instead disposed.

C3: Waste management

The generated waste is included in module C until the "end-of-waste"-state or disposal is reached. 95% of the particle boards are sent to incineration in a CHP plant with an efficiency higher than 60%.

C4: Disposal

Module C4 includes the disposal and 5% of the particle boards are assumed being disposed within the system.

Recycling, reuse, and recovery potential (D) includes:

Module D includes the recycling, reuse and recovery potential expressed as net impact and benefits due to incineration of materials. In the system, the particle board is incinerated which produces a share of 78% heat and 22% electricity.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

Table 1 The modules declared, geographical scope and share of specific data for the particle boards P1, P2, P4 and P6.

	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	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X		
Geography	SE	SE	SE	-	SE	-	-	-	-	-	-	-	SE	SE	SE	SE	SE		
Specific data used	56 %					-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – products	15 %					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0 %					-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Table 2 presents information regarding the content of particle boards P3, P5 and P7. The particle boards do not contain any dangerous substances from the candidate list of SVHC for Authorization. The post-consumer material and biogenic material are presented for the worst-case product, P7.

Table 2 Content information of particle boards P3, P5 and P7.

Product components	P3 Weight, kg	P5 Weight, kg	P7 Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Wood	549	543	544	0%	100% resp. 0,47
UF glue	73,7	81,6	81,6	0%	0
Wax	4,15	4,08	4,08	0%	0
Hardener, NH ₃ CL	1,34	1,36	1,36	0%	0
Urea	2,41	2,72	2,72	0%	0
Water	39,0	46,9	45,6	0%	0
Alkyd paint	0,67	0,68	0,68	0%	0
TOTAL	670	680	680	0%	80% resp. 0,38
Packaging materials	P1 Weight, kg	P2 Weight, kg	P4 Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Lath	4	4	4	0,6%	0,47
Cardboard	1,01	1,01	1,01	0,2%	0,47
Plastics	0,03	0,03	0,03	0,004%	0
TOTAL	5,04	5,04	5,04	0,7%	0,003

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	2,67 E+02	ND	1,58 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	6,57 E+00	5,65 E+01	7,99 E-01	-1,89 E+01
GWP-biogenic	kg CO ₂ eq.	-9,34 E+02	ND	8,20 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,67 E-02	8,88 E+02	4,67 E+01	-1,22 E+01
GWP-luluc	kg CO ₂ eq.	2,47 E+00	ND	1,36 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,13 E-03	2,39 E-03	1,01 E-04	-1,84 E+00
GWP-total	kg CO ₂ eq.	-6,65 E+02	ND	8,36 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	6,59 E+00	9,44 E+02	4,75 E+01	-3,29 E+01
ODP	kg CFC 11 eq.	2,07 E-05	ND	1,57 E-09	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,39 E-07	2,97 E-07	1,27 E-08	-6,17 E-07
AP	mol H ⁺ eq.	1,65 E+00	ND	7,84 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,09 E-02	1,06 E-01	3,21 E-03	-1,09 E-01
EP-freshwater	kg P eq.	5,63 E-02	ND	2,41 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	4,48 E-04	6,07 E-03	1,51 E-04	-8,46 E-03
EP-marine	kg N eq.	4,05 E-01	ND	4,25 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	7,18 E-03	5,77 E-02	2,71 E-02	-3,35 E-02
EP-terrestrial	mol N eq.	5,50 E+00	ND	4,08 E-03	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	7,58 E-02	5,34 E-01	1,32 E-02	-3,15 E-01
POCP	kg NMVOC eq.	1,66 E+00	ND	1,03 E-03	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,12 E-02	1,37 E-01	7,41 E-03	-7,64 E-02
ADP-minerals&metals*	kg Sb eq.	2,55 E-03	ND	1,04 E-07	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,06 E-05	1,64 E-05	1,15 E-06	-3,28 E-04
ADP-fossil*	MJ	8,00 E+03	ND	5,23 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	9,08 E+01	8,35 E+01	9,94 E+00	-3,22 E+03
WDP*	m ³	3,09 E+02	ND	7,17 E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,62E-01	6,73 E+00	4,52 E-02	-3,90 E+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

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	2,69 E+02	ND	1,58 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	6,57 E+00	5,65 E+01	7,99 E-01	-2,07 E+01

Resource use indicators

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	4,95 E+03	ND	1,86 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,41 E+00	2,91 E+00	6,49 E-01	-1,43 E+03
PERM	MJ	1,04 E+04	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT	MJ	1,54 E+04	ND	1,86 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,41 E+00	2,91 E+00	6,49 E-01	-1,43 E+03
PENRE	MJ	8,42 E+03	ND	5,67 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	9,65 E+01	3,76 E+00	6,89 E-01	-3,23 E+03
PENRM	MJ	2,80 E+01	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PENRT	MJ	8,45 E+03	ND	5,67 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	9,65 E+01	3,76 E+00	6,89 E-01	-3,23 E+03
SM	kg	0,00 E+00	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RSF	MJ	0,00 E+00	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NRSF	MJ	0,00 E+00	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW	m ³	0,00 E+00	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+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 indicators

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.

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,87 E-02	ND	1,12 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	5,78 E-04	1,32 E-03	5,15 E-05	-7,80 E-04
Non-hazardous waste disposed	kg	5,48 E+01	ND	8,49 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	4,43 E+00	3,46 E+01	4,16 E+01	-7,25 E+00
Radioactive waste disposed	kg	4,38 E-02	ND	2,76 E-07	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,95 E-05	4,64 E-05	8,63 E-06	-4,97 E-02

Output flow indicators

Results per declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00 E+00	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Material for recycling	kg	0,00 E+00	ND	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Materials for energy recovery	kg	0,00 E+00	ND	5,01 E+00	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Exported energy, electricity	MJ	0,00 E+00	ND	1,90 E+01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	1,96 E+03	0,00 E+00	0,00 E+00
Exported energy, thermal	MJ	0,00 E+00	ND	6,75 E+01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	6,96 E+03	0,00 E+00	0,00 E+00

References

- General Programme Instructions of the International EPD® System. Version 4.0.
- EN ISO 14025:2014-02 Environmental labels and declarations - Type III environmental declarations - Principles and procedures, Edited in 2020
- 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 1.2.5 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 Sustainability, "SimaPro 9.5" (PRé Sustainability, 2023),
- Ecoinvent, 'Ecoinvent' <https://www.ecoinvent.org/database/database.html>
- LCA-report, Sweco (*Life Cycle Assessment of Particle Boards*), 2023-06-05

