

Environmental Product Declaration



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

Wood Tube Studs

From Wood Tube Sweden AB



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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Valid until:	2024-09-13

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
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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): Construction products, 2019:14, Version 1.3.0

PCR review was conducted by: *The Technical Committee of the International EPD® System*. Claudia A. Peña. Contact via info@environdec.com

Life Cycle Assessment (LCA)

LCA accountability: *Amy Stockwell, CarbonZero AB*

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: *Vladimír Kočí, LCA Studio, Czech Republic*

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: Wood Tube Sweden AB

Contact: Tobias Söderbom Olsson

Description of the organisation: Wood Tube is a manufacturer of studs made out of recycled paper, enabling construction of climate smart interior walls.

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

Product information

Product name: Wood Tube stud

Application: Studs in interior walls.

Product description:

Wood Tube studs are used for construction of interior walls, replacing traditional steel- or wooden studs. The Wood Tube stud is light weight, making it easy to carry, and it's non-sharp edges reduces risks for cutting wounds. Gypsum and chipboard are screwed into the stud as usual during assembly.

LCA information

Functional unit / declared unit: 1 m of wood tube. It weighs 0.685 kg.

Reference service life: Is assumed to be 50 years.

Time representativeness: Data was obtained during 1 day's production run in June 2023, as the factory has not been running for 1 year. The EPD will be updated in 2024.

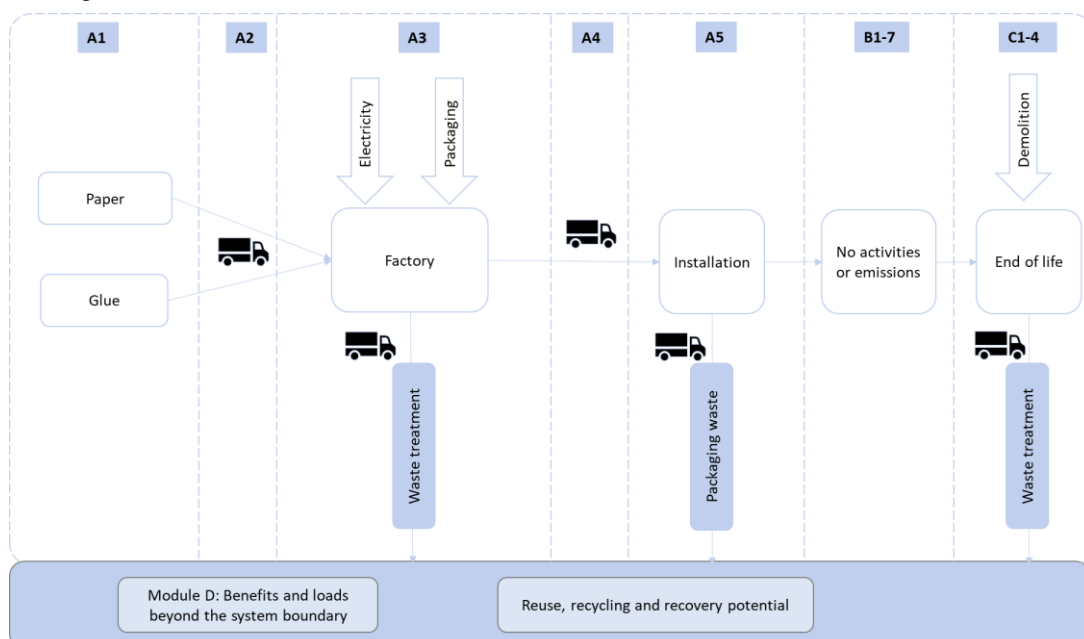
Database(s) and LCA software used:

LCA for Experts v 10.7.0.183 (previously called GaBi) with an integrated Ecoinvent database 3.8.

Description of system boundaries:

Cradle to gate with options, modules A1-A5, B, C1-C4, D.

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	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	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	EU	EU	SE	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	
Specific data used	Specific data used in modules A1-A3			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – products	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – sites	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-	

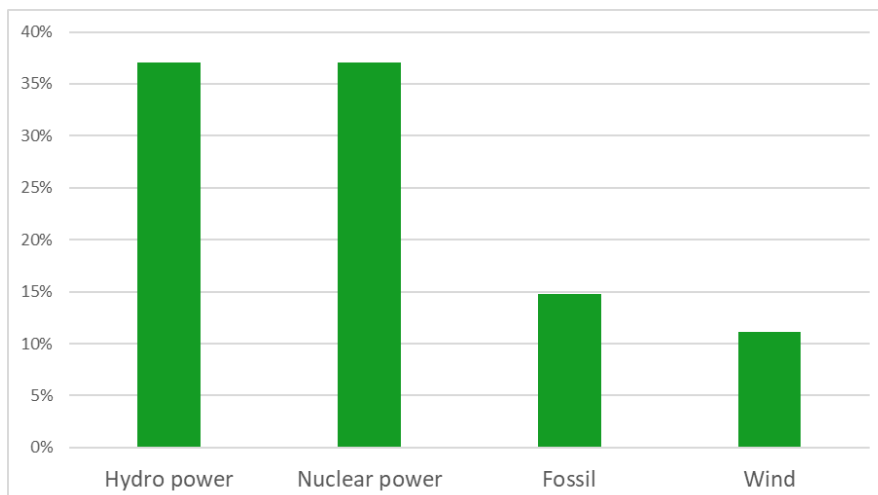
LCA: additional technical information

The following information describes the different modules of the EPD.

Production stage (A1-A3).

The tubes are produced by moulding recycled paper and glue into a tube shape. Note that A3 data was obtained for less than 1 year.

The electricity grid mix is shown below and total climate change is calculated as 0.084 kg CO₂e per kWh.



Transport to user (A4)

The transport scenario is based on an average distance from Sweden across the Nordics.

Type	Capacity utilisation	Type of vehicle	Distance	Fuel consumption
Truck	61%	Average truck trailer with a 27 t payload	500 km	0.0159 kg/tkm

Installation (A5)

Installation is done with hand tools and so the impact was assumed to be negligible.

Use stage (B1-B7)

This stage includes no activities or emissions related to the product.

End of life (C1-C4)

It is recommended that Wood Tube is recycled, so that scenario was chosen. However the virtual emission of biogenic carbon from the product is included in C3.

Benefits beyond the system boundary (D)

Here credits for producing recycled materials in C3 are included. A 10% loss was assumed.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material	
			weight-%	kg C/m ²
Paper	0.625	100 %	44 %	0.275
Glue	0.060	0 %	0 %	0
Total product	0.685	91 %	40 %	0.275
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/ m ²	
Pallet	0.010	0 %	42 %	
Plastic	0.002	100 %	0 %	
Total packaging	0.012	14 %	36 %	

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	-8.98E-01	2.49E-02	2.01E-02	0	4.16E-04	4.88E-03	1.11E+00	0	7.18E-01
GWP-fossil	kg CO ₂ eq.	1.68E-01	2.50E-02	2.68E-03	0	4.18E-04	4.91E-03	0	0	-2.46E-01
GWP-biogenic	kg CO ₂ eq.	-1.07E+00	-3.70E-04	1.74E-02	0	-5.68E-06	-7.25E-05	1.11E+00	0	9.65E-01
GWP-luluc	kg CO ₂ eq.	3.56E-04	2.31E-04	2.15E-07	0	3.80E-06	4.54E-05	0	0	-9.12E-04
ODP	kg CFC 11 eq.	6.94E-09	2.20E-15	5.63E-16	0	5.34E-17	4.44E-16	0	0	-1.12E-12
AP	mol H ⁺ eq.	5.83E-04	4.72E-05	4.27E-07	0	2.14E-06	9.26E-06	0	0	-1.45E-03
EP-freshwater	kg P eq.	2.27E-05	9.11E-08	5.30E-09	0	1.50E-09	1.79E-08	0	0	-1.12E-05
EP-marine	kg N eq.	1.27E-04	1.95E-05	1.14E-07	0	1.01E-06	3.83E-06	0	0	-6.27E-04
EP-terrestrial	mol N eq.	1.36E-03	2.23E-04	1.79E-06	0	1.11E-05	4.37E-05	0	0	-5.99E-03
POCP	kg NMVOC eq.	5.10E-04	4.20E-05	3.31E-07	0	2.81E-06	8.25E-06	0	0	-1.68E-03
ADP-minerals & metals*	kg Sb eq.	1.19E-06	1.62E-09	6.34E-12	0	2.72E-11	3.19E-10	0	0	-8.44E-08
ADP-fossil*	MJ	5.24E+00	3.40E-01	1.80E-03	0	5.59E-03	6.67E-02	0	0	-3.67E+00
WDP*	m ³	1.05E-01	2.88E-04	2.51E-04	0	4.96E-06	5.71E-05	0	0	-5.40E-02
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.

Resource use indicators

Indicator	Unit	A1-A3	A4	A5	B	C1	C2	C3	C4	D
PERE	MJ	-1.06E+01	2.41E-02	3.34E-04	0	4.07E-04	4.79E-03	0	0	-9.02E+00
PERM	MJ	1.11E+01	0	0	0	0	0	0	0	-1.05E+01
PERT	MJ	5.80E-01	2.41E-02	3.34E-04	0	4.07E-04	4.79E-03	0	0	-1.95E+01
PENRE	MJ	4.02E+00	3.40E-01	1.80E-03	0	5.61E-03	6.69E-02	0	0	-3.67E+00
PENRM	MJ	1.22E+00	0	0	0	0	0	0	0	0
PENRT	MJ	5.24E+00	3.40E-01	1.80E-03	0	5.61E-03	6.69E-02	0	0	-3.67E+00
SM	kg	6.44E-01	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m ³	2.75E-03	2.66E-05	5.99E-06	0	4.46E-07	5.31E-06	0	0	-2.53E-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	B	C1	C2	C3	C4	D
Hazardous waste disposed	kg	-3.85E-11	1.24E-12	4.35E-14	0	1.74E-14	2.31E-13	0	0	-1.38E-07
Non-hazardous waste disposed	kg	2.03E-04	4.92E-05	6.24E-04	0	8.56E-07	9.72E-06	0	0	-2.13E-02
Radioactive waste disposed	kg	8.71E-05	4.70E-07	4.72E-08	0	1.05E-08	1.16E-07	0	0	-1.88E-04

Output flow indicators

Indicator	Unit	A1-A3	A4	A5	B	C1	C2	C3	C4	D
Components for re-use	kg	1.56E-02	0	1.15E-02	0	0	0	0	0	0
Material for recycling	kg	3.14E-02	0	8.28E-04	0	0	0	6.84E-01	0	0
Materials for energy recovery	kg	0.00E+00	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	1.98E-03	0	4.80E-03	0	0	0	0	0	0
Exported energy, thermal	MJ	3.55E-03	0	8.59E-03	0	0	0	0	0	0

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A4	A5	B	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	-9.02E-01	2.45E-02	2.01E-02	0	4.10E-04	4.81E-03	1.11E+00	0	7.21E-01

¹ This indicator allows for comparison with EPDs which follow the EN15804+A1 method.

Additional environmental information

Biogenic carbon

When a tree grows it absorbs biogenic carbon. This is stored in the paper and emitted at the end of life when it rots or is burnt.




But what if the paper is recycled? Technically the carbon remains within the paper, so there should be no carbon emissions. But this gives us the strange conclusion that the more paper we use and therefore the more trees we cut down, the better it is for the environment. Therefore the EPD rules tell us that we must assume that the biogenic carbon in the paper is emitted when it is disposed of, even if it is recycled. This was included in C3.

We also get a strange result in the biogenic carbon impact of module D. Because we are recycling paper, we credit making more paper. But paper has a negative biogenic carbon content, so we end up with the surprising situation that negative x negative = positive.

References

EN 15804:2012+A2	Sustainability of construction works – Environmental product declaration – Core rules for the product category of constructions products
EPD International (2021)	General Programme Instructions of the International EPD® System, version 4.0
ISO 14025:2006	International Standard ISO 14025 – Environmental labels and declarations — Type III environmental declarations — Principles and procedures
ISO 14040:2006	International Standard ISO 14040: Environmental Management – Life cycle assessment – Principles and framework. Second edition 2006-07-01.
ISO 14044:2006	International Standard ISO 14044: Environmental Management – Life cycle assessment – Requirements and Guidelines.
PCR 2019:14	PCR 2019:14. v1.3.0 Construction products.

Contact information

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