ENVIRONMENTAL PRODUCT DECLARATION

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

Wood pellets
Stenvalls Trä AB

EPD HUB, HUB-0368
Publishing date 4 April 2023, last updated date 4 April 2023, valid until 4 April 2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Stenvalls Trä AB
Address	Lövholmsvägen 1, 941 51 Piteå
Contact details	info@stenvalls.se
Website	https://www.stenvalls.se/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022 EN 16485 Round and sawn timber
Sector	Manufactured product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-B1, and modules C1-C4, D
EPD author	Daria Sas, iTid Tarinfo AB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	H.N, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Wood pellets
Place of production	Sweden, Sikfors
Period for data	2021
Averaging in EPD	Multiple factories
Variation in GWP-fossil for A1-A3	22 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	1,46E-1
GWP-total, A1-A3 (kgCO2e)	-4,5E0
Secondary material, inputs (%)	0.00328
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	3.63
Total water use, A1-A3 (m3e)	0.00367

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Stenvalls Trä AB is a family-owned company with roots in Sikfors since 1947. Today the company is owned and run by Anna Flink, Folke and Sven Stenvall who are the children of the founders Elof and Inger Stenvall. Stenvalls Trä currently has facilities in Sikfors, Piteå, Luleå, Örarna and Seskarö. The company has 270 employees and the annual turnover of 1.5 billion SEK. The annual production turnover is 480 000 m3 of sawn timber and large parts are further processed and delivered to customers. The customers are mainly based in Europe, with the Nordic region as the largest market, but wooden products are also shipped for instance to Japan.

PRODUCT DESCRIPTION

Large amounts of planer shavings and sawdust are produced during the production process in our planing mills. This dry raw material passes through a closed system directly into the production hall for pellets and bales of planer shavings. We supply pellets in both large 600 kg sacks and 16 kg sacks packed on pallets. Wood pellets have two main functions, as energy source and animal bedding, therefore the Declared unit has been used for the product's performance quantification. In concrete, out of these two, the function of energy source has been chosen.

The product is certified according to the following three organizations:

1) Forest Stewardship Council (FSC):

Certificate codes: DNV-COC-000005 and DNV-CW-000005. Valid until 31.10.2027.

2) Programme for the Endorsement of Forest Certification (PEFC)

Certificate code: 2020-SKM-PEFC-320. Valid until: 20.05.2025

Certificate code: DNVSE-PEFC-COC-70. Valid until: 06.03.2024

3) ISO 9001:2015

Certificate code: 2007-SKM-AQ-2429. Valid until: 31.12.2024

Further information can be found at https://www.stenvalls.se/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	0	-
Bio-based materials	100	Sweden

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	1.25
Biogenic carbon content in packaging, kg C	0.0019

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of wood pellet of 12-14% moisture content and 650 kg/m3, equivalent to 13,116.47 MJ energy delivered in form of heat and electricity
Mass per declared unit	1 kg

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

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

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		
x	x	x	x	x	x	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
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.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

For this EPD the overall company level data was considered. Stenvalls Trä has sawmill and further processing facilities. The share between total received timber to sawmills are 90% of pine and 10% of spruce. During the sawing and planning of timber a large amount of sawdust is produced, the part of which is further used for pellets production. The delivery target moisture content is approx. 12-14%.

The use of packaging film (PE) and wooden pallets were considered for this EPD. The used oil for production line and machinery are in high degree re-used on the site, for example, for the conveyor belt. The pellets-product composition: 99% is sawdust (from own sawing and planning processes); 0,4% is water; 0,6% is lignin- binder.

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. Stenvalls Trä has customers (suppliers of building material) around the world, for this EPD customers in Sweden and Norway are considered. The share of each customer is approximately 20% of total sales. The average transport distance on land (by lorry) were considered (A4). There is no installation waste, but packaging materials are sent for recycling (100km) at this stage (PE and pallets) (A5).

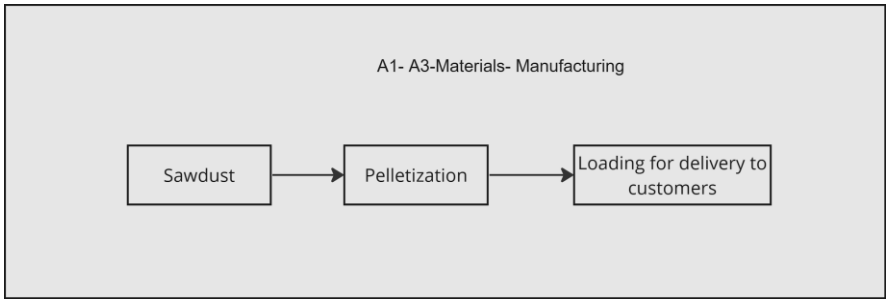
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD covers the use phase of wood pellets- B1. The pellets are incinerated in central or small-scale furnace with a consumption of 0.07624 kg/ MJ (Source: Boiler of average technology installed in CH in 2014, Ecoinvent 3.6). The boiler efficiency is 73%.

PRODUCT END OF LIFE (C1-c4, D)

Since the pellets have been incinerated to obtain energy in the Use stage, the End-of-life stage takes on the transport of the slag to a local waste manager (C2) and its disposal (C4). Module D claims the benefits and loads of packaging materials' recycling and the avoided production of energy in form of heat and electricity thanks to the combustion of pellets.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied 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, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Allocated by mass
Packaging materials	Allocated by revenue
Ancillary materials	Allocated by revenue
Manufacturing energy and waste	Allocated by revenue

AVERAGES AND VARIABILITY

Type of average	Multiple factories
Averaging method	Averaged by shares of total volume
Variation in GWP-fossil for A1-A3	22 %

The averaging has been done through multiple factories based on volume of the production.

The calculations of the variation in GWP fossil for modules A1-A3 based on GWP fossil (A1-A3) from all 4 sites.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

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[1]	kg CO_2e	-4,5E0	8,82E-4	-2,19E-3	-4,5E0	3,05E-2	1,09E-2	4,64E0	MND	MND	MND	MND	MND	MND	0E0	1,27E-5	0E0	1,04E-4	0E0
GWP – fossil	kg CO_2e	1,4E-1	8,81E-4	5,2E-3	1,46E-1	3,08E-2	3,69E-3	1,28E-3	MND	MND	MND	MND	MND	MND	0E0	1,27E-5	0E0	5,61E-5	-2,15E0
GWP – biogenic	kg CO_2e	-4,64E0	6,4E-7	-7,41E-3	-4,65E0	1,65E-5	7,22E-3	4,64E0	MND	MND	MND	MND	MND	MND	0E0	5,74E-9	0E0	4,84E-5	1,11E-2
GWP – LULUC	kg CO_2e	2,22E-3	2,65E-7	2,09E-5	2,24E-3	1,11E-5	6,61E-7	8,29E-5	MND	MND	MND	MND	MND	MND	0E0	4,66E-9	0E0	3,11E-8	-5,14E-3
Ozone depletion pot.	kg $CFC_{-11}e$	3E-8	2,07E-10	4,33E-10	3,06E-8	7E-9	7,57E-10	6,26E-10	MND	MND	MND	MND	MND	MND	0E0	2,78E-12	0E0	1,64E-11	-1,5E-7
Acidification potential	mol H^+e	1,73E-3	3,7E-6	2,71E-5	1,76E-3	8,83E-5	3,62E-5	8,31E-6	MND	MND	MND	MND	MND	MND	0E0	5,3E-8	0E0	8,44E-7	-1,79E-2
EP-freshwater[2]	kg Pe	3,88E-6	7,17E-9	1,99E-7	4,09E-6	2,62E-7	2,47E-8	1,11E-7	MND	MND	MND	MND	MND	MND	0E0	1,26E-10	0E0	4,8E-8	-9,91E-5
EP-marine	kg Ne	5,84E-4	1,12E-6	6,63E-6	5,92E-4	1,75E-5	1,57E-5	1,42E-6	MND	MND	MND	MND	MND	MND	0E0	1,54E-8	0E0	1,52E-7	-2,06E-3
EP-terrestrial	mol Ne	7,59E-3	1,23E-5	7,42E-5	7,68E-3	1,96E-4	1,72E-4	1,86E-5	MND	MND	MND	MND	MND	MND	0E0	1,7E-7	0E0	1,68E-6	-2,43E-2
POCP ("smog")[3]	kg NMVOCe	1,74E-3	3,96E-6	2,83E-5	1,78E-3	7,5E-5	4,76E-5	4,25E-6	MND	MND	MND	MND	MND	MND	0E0	5,31E-8	0E0	5,21E-7	-6,7E-3
ADP-minerals & metals[4]	kg Sbe	1,92E-6	1,5E-8	5,6E-8	1,99E-6	8,49E-7	1,12E-8	5,14E-8	MND	MND	MND	MND	MND	MND	0E0	3,08E-10	0E0	6,28E-10	-2,93E-6
ADP-fossil resources	MJ	2,18E0	1,37E-2	1,48E-1	2,34E0	4,65E-1	5,11E-2	1,5E-1	MND	MND	MND	MND	MND	MND	0E0	1,89E-4	0E0	1,27E-3	-2,81E1
Water use[5]	m^3e depr.	6,85E-2	5,1E-5	3,27E-3	7,18E-2	1,52E-3	1,87E-4	1,96E-3	MND	MND	MND	MND	MND	MND	0E0	7,82E-7	0E0	5,46E-5	-2,49E-1

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[8]	MJ	1,08E1	1,73E-4	3,47E-2	1,08E1	6,66E-3	5,71E-4	7,19E-2	MND	MND	MND	MND	MND	MND	0E0	2,17E-6	0E0	3,22E-5	-1,03E1
Renew. PER as material	MJ	4,93E1	0E0	7,05E-2	4,93E1	0E0	-6,78E-2	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	-1,69E-1
Total use of renew. PER	MJ	6,01E1	1,73E-4	1,05E-1	6,02E1	6,66E-3	-6,72E-2	7,19E-2	MND	MND	MND	MND	MND	MND	0E0	2,17E-6	0E0	3,22E-5	-1,04E1
Non-re. PER as energy	MJ	2,14E0	1,37E-2	9,32E-2	2,25E0	4,65E-1	5,11E-2	1,5E-1	MND	MND	MND	MND	MND	MND	0E0	1,89E-4	0E0	1,27E-3	-2,82E1
Non-re. PER as material	MJ	4,29E-2	0E0	5,5E-2	9,78E-2	0E0	-5,5E-2	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	3,02E-6
Total use of non-re. PER	MJ	2,18E0	1,37E-2	1,48E-1	2,34E0	4,65E-1	-3,86E-3	1,5E-1	MND	MND	MND	MND	MND	MND	0E0	1,89E-4	0E0	1,27E-3	-2,82E1
Secondary materials	kg	1,48E-5	0E0	1,8E-5	3,28E-5	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	-1,15E-3
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

Use of net fresh water	m^3	3,64E-3	2,85E-6	2,53E-5	0.00367	8,03E-5	5,45E-6	3,98E-5	MND	MND	MND	MND	MND	MND	0E0	3,61E-8	0E0	1,39E-6	-5,12E-3

8) 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	5,68E-3	1,33E-5	2,71E-4	5,96E-3	4,79E-4	7,45E-5	1,21E-4	MND	MND	MND	MND	MND	MND	0E0	2,49E-7	0E0	4,59E-6	-1,73E-1
Non-hazardous waste	kg	1,53E-1	1,47E-3	7,5E-3	1,62E-1	3,3E-2	1,34E-3	4,58E-3	MND	MND	MND	MND	MND	MND	0E0	1,69E-5	0E0	4,78E-3	-3,46E0
Radioactive waste	kg	1,54E-5	9,41E-8	5,5E-7	1,61E-5	3,18E-6	3,42E-7	2,1E-6	MND	MND	MND	MND	MND	MND	0E0	1,25E-9	0E0	7,52E-9	-1,72E-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	8,42E-5	0E0	8,48E-6	9,26E-5	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	1,11E-2	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	3,6E1	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,4E-1	8,74E-4	4,96E-3	1,46E-1	3,05E-2	3,66E-3	1,34E-3	MND	MND	MND	MND	MND	MND	0E0	1,25E-5	0E0	7,7E-5	-2,1E0
Ozone depletion Pot.	kg CFC_{-11}e	2,64E-8	1,65E-10	4,58E-10	2,71E-8	5,57E-9	6,01E-10	1,01E-9	MND	MND	MND	MND	MND	MND	0E0	2,21E-12	0E0	1,34E-11	-1,5E-7
Acidification	kg SO_2e	1,05E-3	1,79E-6	1,9E-5	1,07E-3	6,21E-5	6,24E-6	6,73E-6	MND	MND	MND	MND	MND	MND	0E0	3,85E-8	0E0	6,48E-6	-1,58E-2
Eutrophication	kg PO_4^3e	4,15E-4	3,62E-7	6,7E-6	4,22E-4	1,28E-5	2,96E-6	3,61E-6	MND	MND	MND	MND	MND	MND	0E0	8,83E-9	0E0	1,52E-6	-3,05E-3
POCP (“smog”)	kg C_2H_4e	8,7E-5	1,14E-7	2,31E-6	8,94E-5	3,71E-6	6,1E-7	2,87E-7	MND	MND	MND	MND	MND	MND	0E0	1,66E-9	0E0	3,56E-8	-6,47E-4
ADP-elements	kg Sbe	1,92E-6	1,5E-8	5,6E-8	1,99E-6	8,49E-7	1,12E-8	5,14E-8	MND	MND	MND	MND	MND	MND	0E0	3,08E-10	0E0	6,28E-10	-2,93E-6
ADP-fossil	MJ	2,18E0	1,37E-2	1,48E-1	2,34E0	4,65E-1	5,11E-2	1,5E-1	MND	MND	MND	MND	MND	MND	0E0	1,89E-4	0E0	1,27E-3	-2,81E1

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 reference standard, 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 digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

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 reference standard.

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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
04.04.2023

VERIFIED ISO 14025