ENVIRONMENTAL PRODUCT DECLARATION

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

Roof truss
Sepa Oy

EPD HUB, HUB-0945
Published on 06.02.2024, last updated on 06.02.2024, valid until 06.02.2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Sepa Oy
Address	Vesannontie 7 72600, Keitele, Finland
Contact details	sepa@sepa.fi
Website	www.sepa.fi

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
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Jaakko Uusimaa Reforest Finland Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Elma Avdyli, 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	Roof truss
Additional labels	All products with 30-50 kg of metal per m3 of timber
Product reference	
Place of production	Keitele, Finland
Period for data	01/01/2022-31/12/2022
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	-17/+20 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	5,87E-01
GWP-total, A1-A3 (kgCO2e)	-5,48E-01
Secondary material, inputs (%)	0.881
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	3.56
Total water use, A1-A3 (m3e)	6,67E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Sepa Oy is a family-owned company founded in 1982, which has grown to become the most significant and modern roof truss manufacturer in Finland. As a result of this, we are also one of the largest in the industry in the whole of Europe. The company's factory is located in Keitele.

In addition to various types of roof trusses, Sepa Ltd manufactures intermediate floor beams, fire trusses, frame structures, bridge molds, noise barriers, and weather protection. Our customers include Finlands largest house factories and infrastructure builders, construction and wholesale companies, as well as private customers.

We aim to maintain trustworthiness in the future as well. We adhere to proven practices, while continuously developing new ones. In this work, long-term responsible development is permanently at the core of our operations: It can be counted on for many things. The cornerstone of our high-quality operations is a skilled and motivated staff, an in-house design department, and state-of-the-art production equipment.

PRODUCT DESCRIPTION

We manufacture all roof trusses based on the truss diagram provided by the structural designer or the customers dimensional specifications. To streamline on-site operations, we complete any additional work at the factory, such as notches, holes, and painting.

Further information can be found at www.sepa.fi.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	8	World
Minerals		
Fossil materials		
Bio-based materials	92	Finland

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.312
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	kg
Mass per declared unit	1 kg
Functional unit	
Reference service life	

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		End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	C1	C2	C3	C4	D		
X	X	X	X	X	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	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.

The production phase includes planning and strength sorting, finger jointing, cutting timber to the appropriate size, and assembly. The use of packaging materials is minimal, only packaging straps accompany the product to the customer.

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.

The transport distance is based on the company's calculations of the average transport distance for delivered products. The typical transport distance is estimated to be 380 km.

The installation includes only the recycling of packaging materials.

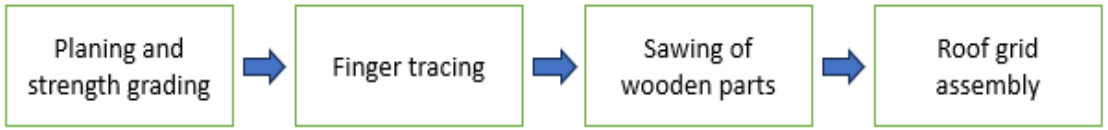
PRODUCT USE AND MAINTENANCE (B1-B7)

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)

The energy consumption in the demolition process is 0.01 kWh/kg. The energy source is the diesel fuel used by the machinery. The calculation of C- and D-modules for materials is based on the information provided by Statistics Finland regarding the handling methods of construction waste. In the scenario, all metal has been recycled. Of the wood, 54 % is sent for recycling, and 46 % is incinerated. The benefits of recycling steel and incinerating wood have been taken into account in the calculation.

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 or volume
Packaging materials	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	-17/+20 %

The calculation considers roof trusses with a steel-to-timber ratio ranging from 30 to 50 kg per cubic meter of timber. A comparison has been made between different structures, one with the highest amount of steel and the other with the lowest. The variation in production energy consumption is very small, so it has not been taken into account in the calculation.

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 v3.8 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	-7,26E-01	8,04E-02	9,74E-02	-5,48E-01	3,57E-02	3,38E-03	MND	MND	MND	MND	MND	MND	MND	-5,94E-01	7,96E-04	1,15E+00	0,00E+00	-6,46E-01
GWP – fossil	kg CO_2e	4,17E-01	8,04E-02	9,00E-02	5,87E-01	3,57E-02	3,37E-03	MND	MND	MND	MND	MND	MND	MND	3,33E-02	7,96E-04	1,86E-03	0,00E+00	-6,46E-01
GWP – biogenic	kg CO_2e	-1,14E+00	7,49E-09	7,36E-03	-1,14E+00	0,00E+00	6,06E-07	MND	MND	MND	MND	MND	MND	MND	-6,27E-01	0,00E+00	1,14E+00	0,00E+00	1,61E-04
GWP – LULUC	kg CO_2e	9,49E-04	2,97E-05	4,51E-05	1,02E-03	1,32E-05	3,96E-07	MND	MND	MND	MND	MND	MND	MND	1,22E-04	2,93E-07	2,43E-06	0,00E+00	-6,23E-04
Ozone depletion pot.	kg CFC_{-11}e	2,50E-08	1,85E-08	9,69E-09	5,31E-08	8,22E-09	7,18E-10	MND	MND	MND	MND	MND	MND	MND	4,56E-09	1,83E-10	2,30E-10	0,00E+00	-2,74E-08
Acidification potential	mol H^+e	2,05E-03	3,40E-04	7,05E-04	3,10E-03	1,51E-04	3,50E-05	MND	MND	MND	MND	MND	MND	MND	2,43E-04	3,37E-06	2,36E-05	0,00E+00	-3,83E-03
EP-freshwater[2)]	kg Pe	1,72E-05	6,58E-07	2,46E-06	2,03E-05	2,93E-07	1,36E-08	MND	MND	MND	MND	MND	MND	MND	7,28E-07	6,51E-09	9,96E-08	0,00E+00	-2,56E-05
EP-marine	kg Ne	6,25E-04	1,01E-04	1,97E-04	9,24E-04	4,50E-05	1,54E-05	MND	MND	MND	MND	MND	MND	MND	9,21E-05	1,00E-06	4,98E-06	0,00E+00	-5,43E-04
EP-terrestrial	mol Ne	6,55E-03	1,12E-03	2,39E-03	1,01E-02	4,96E-04	1,69E-04	MND	MND	MND	MND	MND	MND	MND	9,97E-04	1,10E-05	5,76E-05	0,00E+00	-6,33E-03
POCP ("smog")[3)]	kg NMVOCe	1,79E-03	3,57E-04	5,87E-04	2,73E-03	1,59E-04	4,64E-05	MND	MND	MND	MND	MND	MND	MND	2,67E-04	3,53E-06	1,58E-05	0,00E+00	-2,38E-03
ADP-minerals & metals[4)]	kg Sbe	9,97E-06	1,88E-07	8,32E-08	1,02E-05	8,38E-08	7,83E-09	MND	MND	MND	MND	MND	MND	MND	9,35E-08	1,87E-09	2,50E-07	0,00E+00	-4,76E-06
ADP-fossil resources	MJ	5,88E+00	1,21E+00	5,45E-01	7,63E+00	5,37E-01	4,54E-02	MND	MND	MND	MND	MND	MND	MND	4,31E-01	1,19E-02	2,52E-02	0,00E+00	-6,87E+00
Water use[5)]	m^3e depr.	1,39E-01	5,40E-03	3,63E-01	5,08E-01	2,40E-03	1,33E-04	MND	MND	MND	MND	MND	MND	MND	3,31E-02	5,35E-05	4,88E-04	0,00E+00	-1,20E-01

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	2,51E+00	1,36E-02	7,07E-01	3,23E+00	6,05E-03	3,67E-04	MND	MND	MND	MND	MND	MND	MND	1,90E-02	1,35E-04	4,46E-03	0,00E+00	-1,18E+00
Renew. PER as material	MJ	1,66E+01	0,00E+00	7,54E-03	1,66E+01	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,66E+01	0,00E+00	9,32E-03
Total use of renew. PER	MJ	1,91E+01	1,36E-02	7,15E-01	1,98E+01	6,05E-03	3,67E-04	MND	MND	MND	MND	MND	MND	MND	1,90E-02	1,35E-04	-1,66E+01	0,00E+00	-1,17E+00
Non-re. PER as energy	MJ	4,77E+00	1,21E+00	3,61E+00	9,59E+00	5,37E-01	4,54E-02	MND	MND	MND	MND	MND	MND	MND	4,31E-01	1,19E-02	2,52E-02	0,00E+00	-6,87E+00
Non-re. PER as material	MJ	6,55E-02	0,00E+00	4,28E-04	6,59E-02	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-6,55E-02	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	4,84E+00	1,21E+00	3,61E+00	9,66E+00	5,37E-01	4,54E-02	MND	MND	MND	MND	MND	MND	MND	4,31E-01	1,19E-02	-4,03E-02	0,00E+00	-6,87E+00
Secondary materials	kg	8,81E-03	3,35E-04	3,86E-04	9,53E-03	1,49E-04	1,82E-05	MND	MND	MND	MND	MND	MND	MND	3,31E-04	3,32E-06	2,80E-05	0,00E+00	1,08E-01

Renew. secondary fuels	MJ	7,83E-05	3,38E-06	1,39E-04	2,20E-04	1,50E-06	9,33E-08	MND	MND	MND	MND	MND	MND	MND	2,58E-06	3,35E-08	1,46E-06	0,00E+00	-4,43E-05
Non-ren. secondary fuels	MJ	1,91E-03	0,00E+00	0,00E+00	1,91E-03	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,65E-03	1,56E-04	6,49E-02	6,67E-02	6,95E-05	3,10E-06	MND	MND	MND	MND	MND	MND	MND	-1,75E-05	1,55E-06	1,48E-05	0,00E+00	-5,40E-03

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	2,70E-02	1,60E-03	3,27E-03	3,19E-02	7,12E-04	6,41E-05	MND	MND	MND	MND	MND	MND	MND	1,23E-03	1,58E-05	1,71E-04	0,00E+00	-1,66E-01
Non-hazardous waste	kg	3,12E-01	2,63E-02	7,59E-02	4,14E-01	1,17E-02	5,58E-04	MND	MND	MND	MND	MND	MND	MND	4,66E-01	2,60E-04	5,46E-03	0,00E+00	-1,57E+00
Radioactive waste	kg	3,66E-05	8,08E-06	5,45E-05	9,92E-05	3,59E-06	3,19E-07	MND	MND	MND	MND	MND	MND	MND	2,20E-06	7,99E-08	1,47E-07	0,00E+00	-2,57E-05

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,67E-03	0,00E+00	2,15E-03	3,82E-03	0,00E+00	2,07E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	2,64E-04	0,00E+00	0,00E+00	2,64E-04	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	5,09E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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.

Elma Avdyli, as an authorized verifier acting for EPD Hub Limited
06.02.2024