

Owner: Frøslev Træ A/S
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3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Frøslev Træ A/S
Jens P. L. Petersens Vej 1, 6330
Padborg
VAT no. 14248331



Issued:

26-10-2022

Valid to:

26-10-2027

Programme

EPD Danmark
www.epddanmark.dk



- Industry EPD
- Product EPD

Declared product

Sature

Basis of calculation

This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

Number of declared datasets/product variations: 1

Production site

Jens P. L. Petersens Vej 1, 6330, Padborg, Denmark

Wind electricity is used in A3 (production)

EPD type

- Cradle-to-gate with modules C1-C4 and D
- Cradle-to-gate with options, modules C1-C4 and D
- Cradle-to-grave and module D
- Cradle-to-gate
- Cradle-to-gate with options

Product use

Wood product for outdoor facades, balconies, walking bridges and similar. It may also be used for visible load-bearing structures such as pergolas, car ports, out living rooms etc. The product may not be in permanent contact with water or earth/dirt.

Declared/ functional unit

1 m³ of Sature wood in various dimensions

Year of production site data (A3)

2021

EPD version

1

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

- internal
- external

Third party verifier:

Ninkie Bendtsen

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)

| Product | | | Construction process | | Use | | | | | | | | End of life | | | | Beyond the system boundary |
|---------------------|-----------|---------------|----------------------|----------------------|-----|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-------------|------------------|----------|--|----------------------------|
| Raw material supply | Transport | Manufacturing | Transport | Installation process | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Re-use, recovery and recycling potential | |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | |
| X | X | X | MND | MND | MND | MND | MND | MND | MND | MND | MND | X | X | X | X | X | |

Product information

Product description

The main product components are shown in the table below.

| Material | Weight-% of declared product |
|----------|------------------------------|
| Wood | 88-90 |
| Additive | <2 |
| Water | 10 |

The wood species are pine and spruce.

Product packaging:

The only sales and transport packaging used is small quantities of wood joists and a recycled plastic band.

| Packaging | Weight (kg) |
|----------------|-------------|
| Polyester band | 0,16 |

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of Sature from the production site located in Padborg. Product specific data are based on average values collected in the period 2019 with the exception of the wood input and output, which is based on the first six months of 2022. Background data are based on published EPD's and on GaBi database version 2022.1 and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Picture of product(s)



Hazardous substances

Sature does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

(<http://echa.europa.eu/candidate-list-table>)

Essential characteristics

The product is covered by harmonised technical specification EN 547/2014. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

Further technical information can be obtained by contacting the manufacturer or on the manufacturers website:

<https://froeslev.dk/da/vores-trae/Froeslev-Sature>

Reference Service Life (RSL)

No RSL is declared. This EPD does not include the use stage.

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to one cubic meter of Sature:

| Name | Value | Unit |
|----------------------------|-----------|-------------------|
| Declared unit | 1 | m ³ |
| Density | 500 - 550 | kg/m ³ |
| Conversion factor to 1 kg. | 0.002 | - |

Functional unit

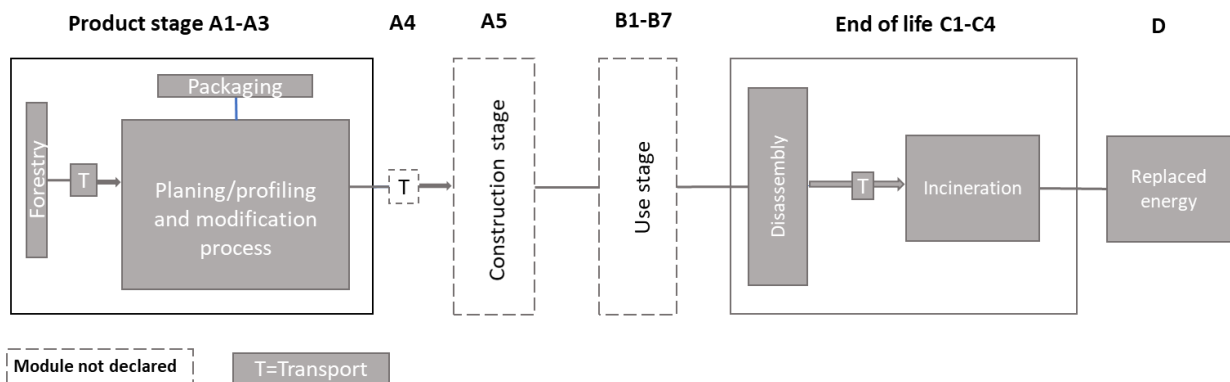
Not defined

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804, and EN 16485.

Guarantee of Origin – certificates

Flowdiagram



Foreground system:

The product is produced using electricity covered by GO in production.

Background system:

Upstream and downstream processes are modelled using the electricity sources, which the applied datasets are based on. This information is rarely specified in the background documentation of the Sphera and eco-invent datasets. However, it is typically based on national electricity grid mix.

System boundary

This EPD is based on a cradle-to-gate with modules C1-C4 and D LCA, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the “end-of-waste” state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

At the production site the wood is planed/profiled and silicate impregnated with an impregnating liquid. Finally, the wood is packed for shipping.

End of Life (C1-C4) includes:

The end of life scenario is for Denmark. The calculations are based on a transport distance of 100 km to waste processing.

The end-of-life scenario for treatment of the products after the end of their useful life is by incineration with energy recovery. This is a common treatment method in Denmark, although the products can also be recycled and recycling is also a common treatment method for wood waste.

There is no waste to landfill in module C4.

Re-use, recovery and recycling potential (D) includes:

This module includes net impacts and benefits from avoided Danish average electricity production and thermal energy recovery.

LCA results

| ENVIRONMENTAL IMPACTS PER M ³ | | | | | | | |
|--|--|-----------|----------|----------|----------|----------|-----------|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| GWP-total | [kg CO2 eq.] | -7,49E+02 | 0,00E+00 | 3,14E+00 | 8,67E+02 | 0,00E+00 | -4,43E+02 |
| GWP-fossil | [kg CO2 eq.] | 9,93E+01 | 0,00E+00 | 3,09E+00 | 1,52E+01 | 0,00E+00 | -4,42E+02 |
| GWP-biogenic* | [kg CO2 eq.] | -8,52E+02 | 0,00E+00 | 3,29E-02 | 8,52E+02 | 0,00E+00 | -4,89E-01 |
| GWP-luluc* | [kg CO2 eq.] | 6,99E-01 | 0,00E+00 | 1,73E-02 | 3,18E-03 | 0,00E+00 | -3,72E-02 |
| ODP | [kg CFC 11 eq.] | 7,55E-06 | 0,00E+00 | 1,86E-13 | 7,68E-11 | 0,00E+00 | -1,64E-09 |
| AP* | [mol H+ eq.] | 1,11E+00 | 0,00E+00 | 1,00E-02 | 1,72E-01 | 0,00E+00 | -3,33E-01 |
| EP-freshwater | [kg P eq.] | 5,96E-03 | 0,00E+00 | 9,26E-06 | 2,75E-05 | 0,00E+00 | -5,37E-04 |
| EP-marine* | [kg N eq.] | 5,08E-01 | 0,00E+00 | 4,64E-03 | 4,32E-02 | 0,00E+00 | -1,28E-01 |
| EP-terrestrial* | [mol N eq.] | 5,63E+00 | 0,00E+00 | 5,18E-02 | 7,37E-01 | 0,00E+00 | -1,36E+00 |
| POCP* | [kg NMVOC eq.] | 1,32E+00 | 0,00E+00 | 9,07E-03 | 1,14E-01 | 0,00E+00 | -3,47E-01 |
| ADPm ^{1*} | [kg Sb eq.] | 4,32E-04 | 0,00E+00 | 2,59E-07 | 2,36E-06 | 0,00E+00 | -5,06E-05 |
| ADPf ¹ | [MJ] | 1,64E+03 | 0,00E+00 | 4,14E+01 | 1,89E+02 | 0,00E+00 | -6,90E+03 |
| WDP ¹ | [m3 world eq. deprived] | 2,50E+00 | 0,00E+00 | 2,78E-02 | 9,35E+01 | 0,00E+00 | -8,75E+00 |
| Caption | GWP-total = Global Warming Potential - total; 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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use | | | | | | |
| | The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112. | | | | | | |
| Disclaimer | ¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. | | | | | | |

Additional environmental impacts are not declared (ND), because values are not available for module A1.

| ADDITIONAL ENVIRONMENTAL IMPACTS PER M ³ | | | | | | | |
|---|--|-------|----|----|----|----|----|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| PM | [Disease incidence] | ND | ND | ND | ND | ND | ND |
| IRP ² | [kBq U235 eq.] | ND | ND | ND | ND | ND | ND |
| ETP-fw ¹ | [CTUe] | ND | ND | ND | ND | ND | ND |
| HTP-c ¹ | [CTUh] | ND | ND | ND | ND | ND | ND |
| HTP-nc ¹ | [CTUh] | ND | ND | ND | ND | ND | ND |
| SQP ¹ | - | ND | ND | ND | ND | ND | ND |
| Caption | PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) | | | | | | |
| | The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112. | | | | | | |
| Disclaimers | ¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. | | | | | | |
| | ² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator. | | | | | | |

| RESOURCE USE PER M ³ | | | | | | | |
|---------------------------------|---|----------|----------|----------|-----------|----------|-----------|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| PERE | [MJ] | 5,47E+03 | 0,00E+00 | 2,36E+00 | 8,19E+01 | 0,00E+00 | -2,39E+03 |
| PERM | [MJ] | 8,77E+03 | 0,00E+00 | 0,00E+00 | -8,77E+03 | 0,00E+00 | 0,00E+00 |
| PERT | [MJ] | 1,42E+04 | 0,00E+00 | 2,36E+00 | -8,69E+03 | 0,00E+00 | -2,39E+03 |
| PENRE | [MJ] | 1,65E+03 | 0,00E+00 | 4,15E+01 | 1,89E+02 | 0,00E+00 | -6,90E+03 |
| PENRM | [MJ] | 2,91E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PENRT | [MJ] | 1,68E+03 | 0,00E+00 | 4,15E+01 | 1,89E+02 | 0,00E+00 | -6,90E+03 |
| SM | [kg] | 2,66E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | [MJ] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | [MJ] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | [m ³] | 9,59E-01 | 0,00E+00 | 2,66E-03 | 2,20E+00 | 0,00E+00 | -8,52E-01 |
| Caption | 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water | | | | | | |
| | The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112. | | | | | | |

| WASTE CATEGORIES AND OUTPUT FLOWS PER M ³ | | | | | | | |
|--|------|----------|----------|----------|----------|----------|-----------|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| HWD | [kg] | 5,76E-02 | 0,00E+00 | 1,99E-10 | 1,77E-08 | 0,00E+00 | -6,93E-07 |
| NHWD | [kg] | 9,35E+00 | 0,00E+00 | 5,95E-03 | 1,24E+01 | 0,00E+00 | -4,74E+00 |
| RWD | [kg] | 5,60E-03 | 0,00E+00 | 5,12E-05 | 4,24E-03 | 0,00E+00 | -9,43E-02 |

| | | | | | | | |
|---------|--|----------|----------|----------|----------|----------|----------|
| CRU | [kg] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MFR | [kg] | 1,99E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MER | [kg] | 9,84E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EEE | [MJ] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,28E+03 | 0,00E+00 | 0,00E+00 |
| EET | [MJ] | 1,13E+01 | 0,00E+00 | 0,00E+00 | 5,64E+03 | 0,00E+00 | 0,00E+00 |
| Caption | HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Eksporteret elektrisk energi; EET = Eksporteret termisk energi | | | | | | |
| | The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112. | | | | | | |

| BIOGENIC CARBON CONTENT PER M ³ | | |
|---|---|---------------------|
| Parameter | Unit | At the factory gate |
| Biogenic carbon content in product | [kg C] | 232 |
| Biogenic carbon content in accompanying packaging | [kg C] | 0 |
| Note | 1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂ | |

Additional information

LCA interpretation

The majority of environmental impacts occur in the product stage (A1-A3). Here the raw wood input and transportation to Denmark is decisive.

The biogenic carbon in the wood is in balance across the life cycle, as carbon incorporated in the wood is released again, when the wood is incinerated. The benefits of using the wood for energy production in incineration plants are material, because the wood replaces other sources of electricity and heat.

Technical information on scenarios

Installation (A5)

| Scenario information | Value | Unit |
|------------------------------------|-------|------|
| Plastic packaging for incineration | 0.16 | kg |

End of life (C1-C4)

| Scenario information | Value | Unit |
|----------------------------|-------|------|
| Collected with mixed waste | 525 | kg |
| For energy recovery | 525 | kg |

Re-use, recovery and recycling potential (D)

| Scenario information/Materiel | Value | Unit |
|---------------------------------------|-------|------|
| No materials are replaced in module D | 0 | kg |

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

| | |
|--------------------------------------|---|
| Publisher |  www.epddanmark.dk |
| Programme operator | Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk |
| LCA-practitioner |  FORCE Technology Applied Environmental Assessment Park Allé 345 DK-2605 Brøndby https://forcetechnology.com/da |
| LCA software /background data | GaBi ts incl. database version 2022.1 + Ecoinvent 3.8 |
| 3rd party verifier | Ninkie Bendtsen NIRAS A/S Sortemosevej 19 3450 Allerød |

General programme instructions

General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804

DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 16485

DS/EN 16485:2014 – "Round and sawn timber – Environmental Product Declarations – Product category rules for wood and wood-based products for use in construction"

EN 15942

DS/EN 15942:2011 – "Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 – “ Environmental labels and declarations – Type III environmental declarations – Principles and procedures”

ISO 14040

DS/EN ISO 14040:2008 – “ Environmental management – Life cycle assessment – Principles and framework”

ISO 14044

DS/EN ISO 14044:2008 – “ Environmental management – Life cycle assessment – Requirements and guidelines”