

Environmental Product Declaration

EPD of multiple products, based on the average results of the product group

In accordance with:

ISO 14025:2006,

EN 15804:2012+A2:2019/AC:2021

EN 16485:2014

Programme:

National Environmental Labelling Program,
www.cenia.cz

Programme operator:

CENIA, Czech Environmental Information
Agency

Date of publication: 13.05.2025

Date of revision: -

Date of validity: 13.05.2030

Registration number: 25 0169 EPD



Natural wooden sleepers

Wood species:

European oak (*Quercus robur*, -*petraea*, -*pubescens*)

Beech (*Fagus sylvatica*)


Scots pine (*Pinus sylvestris*)

General information

Programme	National Environmental Labelling Program
Adress	CENIA, Czech Environmental Information Agency, Vršovická 1442/65, Prague 10, 100 10 Czech Republic
Website	www.cenia.cz



Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)
CEN standard EN 15804+A2 serve as the core Product Category Rules (PCR)
EN 16485:2014 Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction
Life Cycle Assessment (LCA)
LCA accountability: Lubos Nobilis, Nesuchyně 12, 270 07 Czech Republic, nobilis.lubos@gmail.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
<input checked="" type="checkbox"/> EPD verification by accredited certification body
Third-party verification: Institut pro testování a certifikaci, a.s. is an approved certification body accountable for the third-party verification

The certification body is accredited by: Czech Accreditation Institute (CAI) under no. 3048
Procedure for follow-up of data during EPD validity involves third party verifier:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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

For decades the FÜRSTENBERG-THP GMBH has been one of the leading partners of large infrastructure companies in sectors of rail traffic, telecommunication and energy supply in regard of equipping with impregnated wood. Especially in segments of wooden poles, wooden sleepers, wood for gardening and landscaping as well as noise protection systems, Fürstenberg-THP GmbH has been a major player for years. With around 50 employees and sites in Germany, the Czech Republic and Poland we are a solid partner for our customers in Germany, Europe and all over the world. Through our constant striving to improve our products and with the help of the latest technologies and innovative ideas, we make a significant contribution to reinforce wood as an almost CO2-neutral material in European industry. In addition to its excellent properties such as low weight, high stability and a natural look, wood is particularly characterized by its regional sustainability. Only by consistent further development of the existing methods - especially in wood preservation it is possible to apply wood in a sustainable and standard-compliant manner in its traditional application areas, even in the future. The continuous work in the area of research and development distinguishes us and our partners. This gives us the assurance to be able to supply our customers with cost-effective, reliable and ecologically balanced products, for many years to come.

Manufacturing company	Fürstenberg-THP GmbH
EPD owner	Fürstenberg-THP GmbH Hochstraße 2, 78183 Hüfingen
Production site and address	different producers, the product is purchased
Contacts	Person: Andreas Heidel Phone: +49 (0) 771/897 828 30 E-mail: a.heidel@fuerstenberg-thp.de Person: Jaroslav Podlaha Phone: +420 381 523 589 E-mail: jp@f-thp.cz Web: https://www.fuerstenberg-thp.de/



Product information

This product is a prism, most often made of hardwood (oak, beech), precisely defined in dimensions, not impregnated or otherwise treated. It is used as a support for tracks when making track superstructure.

Parameters

Cross railway sleeper:

Wood: oak, beech
Dimensions: 150 x 260 mm, length 2.60 m
160 x 260 mm, length 2.60 m

Railway sleeper switch:

Wood: oak
Dimensions: 150 x 260 mm, length 2.60 m to 5.0 m (10 cm increments)
160 x 260 mm length 2.60 m to 5.0 m (10 cm increments)

Bridge deck:

Wood: oak
Dimensions: 240 x 240 mm, length 2.40 / 2.50 and 2.60 m
240 x 260 mm, length 2.40 / 2.50 and 2.60 m



Content declaration

The composition corresponds to the average representation of materials in all products.

Product components	Weight [kg/m³]	Post-consumer material weight [%]	Biogenic material weight % and kg C/kg
Wood species (European oak / Beech / Scots pine)	650	0 %	100 % / 0,44 kg
Packaging materials	Weight [kg]	Weight - % (versus the product)	Weight biogenic carbon [kg C/kg]
Steel tapes	0,43	0,06 %	0

Note: There are no dangerous substances from the candidate list of SVHC for authorization in this product

UN CPC:

CPC 313 Wood, sawn or chipped lengthwise, sliced or peeled, of a thickness exceeding 6 mm; railway or tramway sleepers (cross-ties) of wood, not impregnated

Biogenic carbon content

Bionic carbon content per DU	
Biogenic carbon content in product	289 kg
Biogenic carbon content in accompanying packaging	0

LCA information

Declared unit

1 m³ of natural wooden sleepers defined as above (9,25 pieces of sleepers per 1 m³)

Reference service life

not exactly declared

Time representativeness

2023

Database(s) and LCA software used

Ecoinvent 3.10 (using the EN15804 proc/allocation model), Simapro v. 9.6
EN 15804 reference package based on EF 3.1 (<https://eplca.jrc.ec.europa.eu/LCDN/developerEF.html>)

Cut-off rules

Neglected flow in all modules is less than 1% of the energy use and total mass.

Allocation method

No allocation

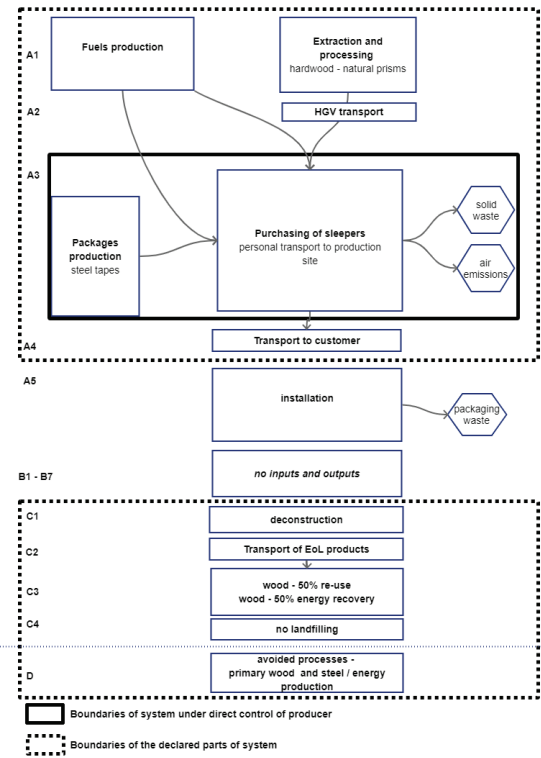
Description of system boundaries:

The type of EPD is Cradle to Gate with options, modules C1-C4 and module D (EPD Type B – Modules A1-A3, A4, B1-B7, C1-C4, and D)

Infrastructure/capital goods

Infrastructure is part of the genetic processes used for upstream and downstream.

System diagram



Production stage (A1-A3)

The A1 module contains primarily the production of already processed wood prisms. Phase A2 includes the transportation of the wood and products based on data for Fürstenberg-THP GmbH sleepers products. In production (A3), the wooden prisms are inspected and approved for purchase by Fürstenberg-THP GmbH. The products are then distributed directly to customers. Only steel tapes are used for packaging of products. Production generates waste and waste packaging.





Transport to construction stage (A4)

The A4 module represents transport scenario for 1 140 km of road (HGV) transport based on expert estimation.

Construction-Installation (A5)

Installation of sleepers can be done in various ways and using different mechanization and substrates. For this reason the A5 module is not taken into account.

Use stage (B1-B7)

Maintenance, repair, replacement, refurbishment and washing during the use phase is not expected. Using of sleepers does not require inputs and is not source of outputs.

End-of-Life stage (C1-C4)

In the C1 module, machine deconstruction (1 min of machine operation, diesel, < 18.64 kW, high load factor) and transport for processing at a distance of 50 km is considered.

Overall, the processing of 95% of the systems is modeled, contains subsequent 47,5% of product re-use (without processing) and 47,5% of incineration with energy recovery. The 5% of EOL product is modeled for landfill.

Benefits and loads (D) – Future Reuse, Recycling or Energy Recovery Potentials

Beyond the system boundary these avoiding products are considered as results of recycling and incineration with energy recovery: Sawnwood, hardwood, raw, dried; Electricity, high voltage (RER); Heat, district or industrial. The quantity of avoided products is provided in the Output flows tables.

Results information

	Product stage			Construction stage		Use stage				End of life stage				Benefits and loads beyond the system boundary	
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport		Waste processing
Module	A1	A2	A3	A4	A5	B1 - B7				C1	C2	C3	C4	D	
Modules declared	X	X	X	X	ND	X				X	X	X	X	X	
Geography	EU	EU	EU	EU	EU	EU				EU	EU	EU	EU	EU	
Specific data	≥ 90 %			-	-	-				-	-	-	-	-	
Variation - products	N/A			-	-	-				-	-	-	-	-	
Variation - sites	1-3%			-	-	-				-	-	-	-	-	

X: module declared
ND: module not declared

Environmental impacts

Notice: It is not recommended to use the results of modules A1-A3 without considering the results of module C. EN 15804 reference package based on EF 3.1 was used as LCIA method.

CORE ENVIRONMENTAL IMPACTS per 1 m³ of natural wooden sleepers

Impact category	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	D
Climate change	kg CO² eq	-8.24E+02	2.11E+02	0	1.15E-01	6.66E+00	1.07E+03	2.86E+00	-5.73E+02
Climate change - Fossil	kg CO² eq	2.38E+02	2.11E+02	0	1.15E-01	6.65E+00	4.23E+00	3.39E-01	-4.61E+01
Climate change – Biogenic	kg CO² eq	-1.06E+03	1.42E-01	0	1.24E-05	4.49E-03	1.06E+03	2.52E+00	-5.26E+02
Climate change - Land use and LU change	kg CO² eq	1.12E+00	7.01E-02	0	9.94E-06	2.21E-03	7.35E-04	6.45E-05	-1.05E+00
Ozone depletion	kg CFC11 eq	3.27E-06	4.19E-06	0	1.75E-09	1.32E-07	6.12E-08	1.09E-08	-2.92E-06
Acidification	mol H+ eq	8.19E-01	4.39E-01	0	5.97E-04	1.38E-02	4.86E-02	2.13E-03	-7.56E-01
Eutrophication, freshwater	kg P eq	4.47E-02	1.43E-02	0	3.33E-06	4.50E-04	1.55E-03	2.63E-04	-2.19E-02
Eutrophication, marine	kg N eq	2.51E-01	1.05E-01	0	2.68E-04	3.33E-03	2.60E-02	1.18E-02	-2.46E-01
Eutrophication, terrestrial	mol N eq	2.67E+00	1.14E+00	0	2.94E-03	3.59E-02	2.49E-01	9.69E-03	-3.49E+00
Photochemical ozone formation	kg NMVOC eq	1.38E+00	7.30E-01	0	9.45E-04	2.30E-02	6.24E-02	4.38E-03	-9.02E-01
Resource use, fossils*	MJ	1.26E-03	6.85E-04	0	3.98E-08	2.16E-05	7.32E-06	7.03E-07	-1.71E-04
Resource use, minerals and metals*	kg Sb eq	2.97E+03	2.97E+03	0	1.50E+00	9.35E+01	3.49E+01	7.59E+00	-7.74E+02
Water use*	m³ depriv.	3.25E+01	1.67E+01	0	4.38E-03	5.28E-01	2.91E+00	-6.28E+00	-1.47E+01

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
* 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 environmental impacts per 1 m³ of natural wooden sleepers

Impact category	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	D
Particulate matter	disease inc.	1.96E-05	1.55E-05	0	1.15E-08	4.90E-07	5.28E-07	5.25E-08	-1.80E-05
Ionising radiation**	kBq U-235 eq	9.81E+00	3.85E+00	0	6.69E-04	1.21E-01	7.77E-02	1.11E-02	-3.94E+01
Human toxicity, non-cancer*	CTUh	2.29E-06	1.92E-06	0	3.47E-10	6.05E-08	4.99E-07	5.92E-09	-1.93E-06
Human toxicity, cancer*	CTUh	1.80E-06	1.50E-06	0	5.49E-10	4.72E-08	1.13E-06	1.96E-09	-5.08E-07
Ecotoxicity, freshwater	CTUe	1.24E+03	8.08E+02	0	2.13E-01	2.55E+01	1.85E+02	1.38E+00	-4.09E+02
Land use*	Pt	9.84E+04	1.79E+03	0	1.05E-01	5.65E+01	9.97E+00	1.85E+01	-5.92E+04

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

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** Disclaimer: This impact category deals mainly with the eventual impact of low dose ionising 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 ionising radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

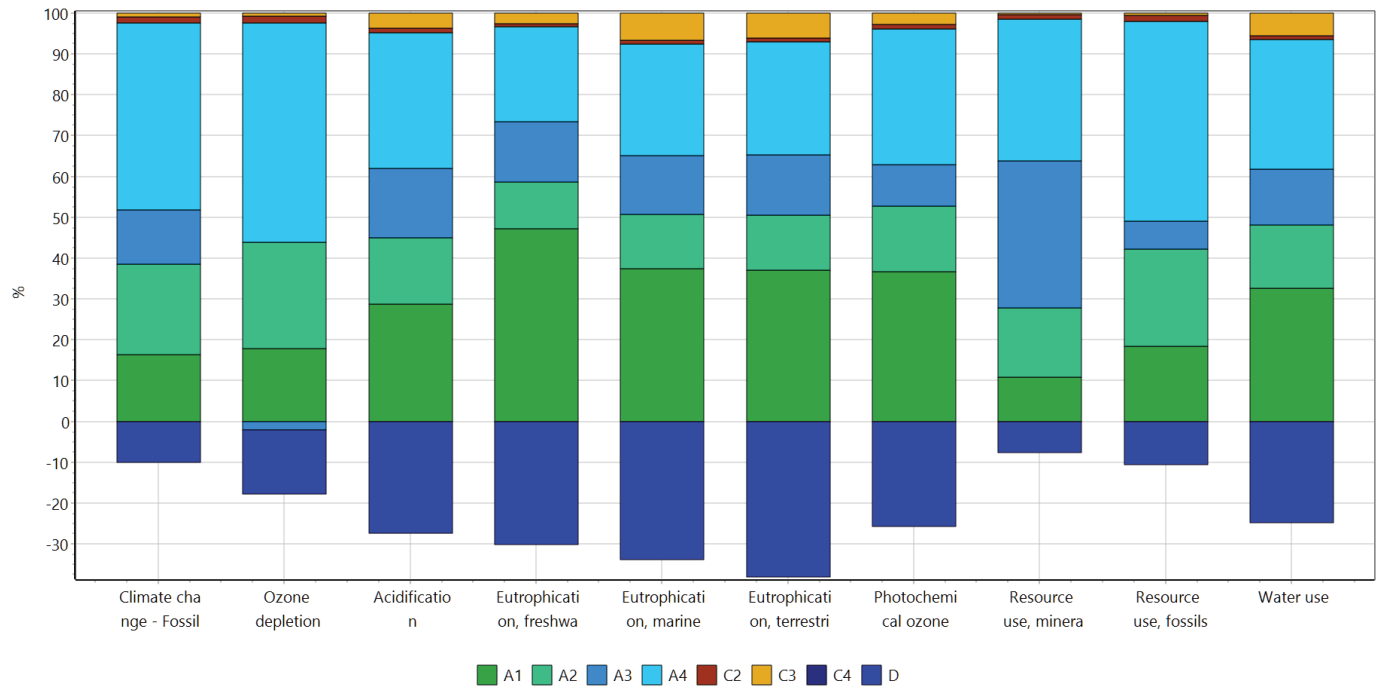
Use of resources per 1 m³ of natural wooden sleepers

Impact category	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value	1.92E+04	5.09E+01	0	9.15E-03	1.61E+00	1.31E+00	2.07E-01	-1.25E+04
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	1.92E+04	5.09E+01	0	9.15E-03	1.61E+00	1.31E+00	2.07E-01	-1.25E+04
Use of non- renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	2.98E+03	2.97E+03	0	1.50E+00	9.35E+01	3.49E+01	7.59E+00	-7.75E+02
Use of non- renewable primary energy resources used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	2.98E+03	2.97E+03	0	1.50E+00	9.35E+01	3.49E+01	7.59E+00	-7.75E+02
Use of secondary material	kg	2.22E+00	1.38E+00		6.21E-04	4.34E-02	9.95E-02	3.02E-03	-5.73E-01
Use of renewable secondary fuels	MJ, net calorific value	3.17E-02	1.74E-02		1.62E-06	5.49E-04	1.87E-04	5.13E-05	-9.22E-03
Use of non-renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m³	8.04E-01	4.12E-01		1.07E-04	1.30E-02	6.84E-02	-1.46E-01	-8.19E-01

Waste production and output flows per 1 m³ of natural wooden sleepers with fastening system

Impact category	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	8.05E+00	4.33E+00	0	1.67E-03	1.36E-01	2.50E+00	1.12E-02	-2.43E+00
Non-hazardous waste disposed	kg	1.89E+02	9.14E+01	0	2.28E-02	2.88E+00	3.24E+02	1.88E+02	-8.11E+01
Radioactive waste disposed/stored	kg	2.48E-03	9.56E-04	0	1.64E-07	3.01E-05	1.95E-05	2.61E-06	-1.43E-03
Components for re-use	kg	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.99E+00	2.25E-02	0	4.04E-06	7.11E-04	1.93E-01	1.77E-04	-1.91E-02
Materials for energy recovery	kg	1.84E-04	1.91E-04	0	2.05E-08	6.02E-06	2.45E-06	2.01E-07	-4.22E-05
Exported energy - electricity	MJ per energy carrier	1.41E+00	5.10E-01	0	6.77E-05	1.61E-02	1.44E-02	1.51E-03	-9.19E-01
Exported energy - heat	MJ per energy carrier	8.42E-01	7.39E-01	0	3.57E-05	2.33E-02	3.12E-02	4.99E-02	-2.38E-01

Chart of LCA results in life cycle phases



Method: EN 15804 +A2 LCIA & LCI indicators V1.00 / EN 15804 official / Characterization
Analyzing 1 p 'natural sleepers';

References

ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

ISO 14044:2006-10, Environmental Management – Life Cycle Assessment – Requirements and Instructions (ISO 14044:2006); EN ISO 14044:2006

EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works – Environmental Product Declarations – Core rules for the construction products product category

ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations – Principles and procedures

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

/Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

Other Environmental Performance Indicators

None included

Additional Environmental Information

None included

Additional Social and Economic Information

None included

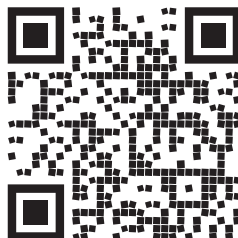
Information Related to Sector EPD

Not applicable



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