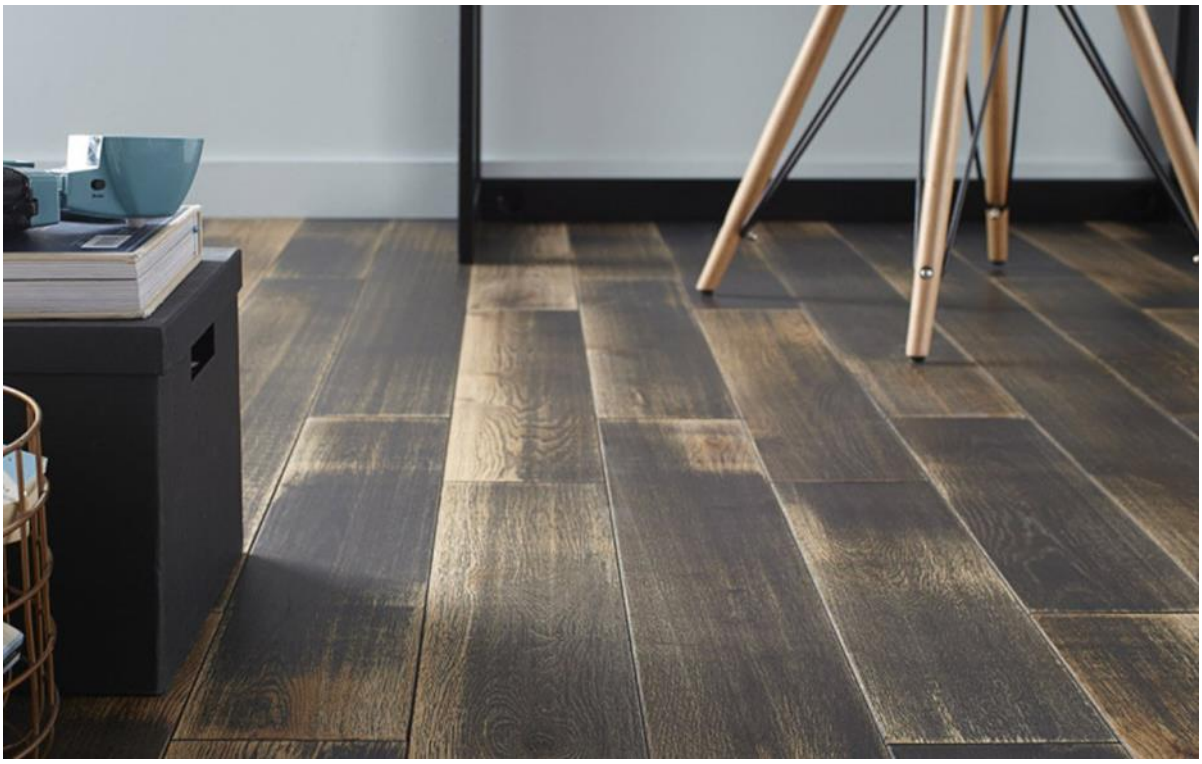
Environmental Product Declaration

In accordance with ISO 14025:2006,
EN 15804:2012+A2:2019/AC:2021 and EN 16485:2014

Morava Wood solid oak floor

14, 15, 18, 19, 20 mm thickness; Tongue and Groove and Click system
untreated surface / varnished surface / oiled surface

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



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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	The International EPD® System
Adress	EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden
Website E-mail	www.environdec.com info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serve as the core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction products, version 1.3.2
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
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, ECO trend s.r.o., Na Dolinach 128, 140 00 Prague 4, Czech Republic, nobilis@ecotrend.cz
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: *Jan Weinzettel, http://www.fernconsulting.cz, weinzettel@seznam.cz* 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

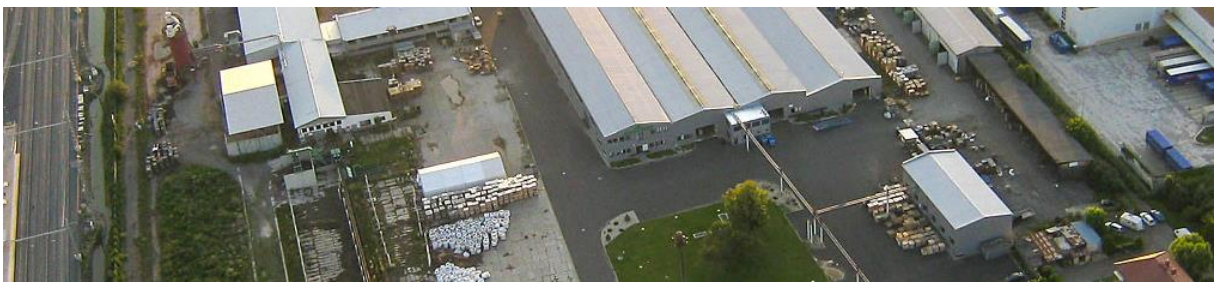
Manufacturing company	Morava Wood Products s.r.o.
EPD owner	Morava Wood Products s.r.o. Registration №: 26835894 VAT №: CZ26835894
Production site and address	U Pily 1530, 783 91 Uničov, Czech Republic
Contacts	Phone: +420 585 002 989 E-mail: info@moravawood.eu Web: https://www.moravawood.eu/en

Morava Wood Products, European leader in production of solid oak flooring was founded in 2004. Since 2016 owned by Lamett Europe, the european leader in flooring business Morava Wood became the world top producer of solid wood flooring products.

All manufacturing processes, including timber cutting and drying, as well as the production process itself, take place at one single facility in Czech Republic. Fast and continuous wood processing facilitates the manufacture of a high quality product at a competitive price.

Strict controls are maintained through each production operation. Quality is monitored from calibration through profiling, sealing, sanding, optimizing, trimming, to the final product packaging. Our quality control team, records every process during production.

More information could be found on our website https://www.moravawood.eu/en.



Product information

EPD applies to hardwood boards with untreated surface / varnished surface / oiled surface with thicknesses of 14/15/18/19/20 mm.

Oak is a very popular tree for its cardinality, old age which may be achieved, and its resistance. Providing very hard and heavy wood has always been highly evaluated and has a wide application potential. Oak tree has always been a symbol of strength, longevity and durability. All these aspects can be found in the Morava Wood products.

Many years of experience with floor production Morava Wood gain position of leading solid oak flooring specialist. Floor is produced in Czech Republic exclusively from Czech PEFC oak forests.

Each year we make substantial investments in machinery upgrades. Our aims include increasing product quality, expanding our product line and improving our production efficiency.

Click locking systems (Click) is hardly available on solid wood flooring in recent years. Morava Wood brings you the advantages of click system also on solid oak floor.

Tongue & Groove (T&G) has been the accepted standard in solid wood flooring for many years. This system requires a more skills for installation, but does add some flexibility to the installation options.

Morava Wood is finished with natural UV oil with long term protection. Together with perfect protection of surface you get also the feeling of real wood every time you touch it. Having the modern oiling line Morava Wood can be treated by 2 or more layers of oils. However 1-layer oiling gives the floor sufficient protection, multilayer oiling can bring more intensive colors for floor or special effect when combining more colors on surface.

Content declaration

Product components	Weight (kg)	Post-consumer recycled material, weight-%	Biogenic material, weight-% and kg C/DU
Hardwood	**646,25**	**0**	**45% / 288,5 kg**
Oil / varnish	**2,71**	**0**	**0**
Wood putty	**1,05**	**0**	**0,08% / 0,24 kg**
Packaging materials	**Weight (kg)**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/DU**
PE foils, PET tapes	**6,24**	**0,96**	**0**
Wood spacers and pallets and cardboard	**18,29**	**2,81**	**8,29**

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

UN CPC: 314 Products of wood, cork, straw and plaiting materials - Boards and panels

Biogenic carbon content

BIOGENIC CARBON CONTENT ***per 1 m³ of Morava Wood solid oak floor***	
Biogenic carbon content in product	288,74 kg
Biogenic carbon content in accompanying packaging	8,29 kg (cardboard and packaging wood)
NOTE 1 kg biogenic carbon is equivalent 44/12 kg CO_2	

LCA information

Declared unit:	1 m^3 of Morava Wood solid oak floor (1 m^3 = 650 kg)
Reference service life:	not declared
Time representativeness:	2022
Database(s) and LCA software used:	Ecoinvent 3.9 (using the Cut-off processes/allocation model), Simapro v. 9.5 EN 15804 reference package based on EF 3.0
Cut-off rules:	Neglected flow in all modules is less than 1% of the energy use and total mass.
Allocation method:	Mass and weight allocations: A3 energy/material inputs and waste outputs are allocated by total products manufactured over 1 year Economic allocation: byproduct fuel briquettes from pressed sawdust
Description of system boundaries:	The type of EPD is Cradle to Gate with Options (EPD Type b - Modules A1-A3, C1-C4, and D)
Infrastructure/capital goods:	Infrastructure is part of the genetic processes used for upstream and downstream. for the Core phase, infrastructure was not considered.

Production stage (A1-A3)

Wood (mostly oak, some ash and beech) for production is purchased in the Czech Republic (47%), Poland (21%), Ukraine (19%) and Slovakia (13%) in the form of lumber (thick boards). Lacquer and oil for surface treatment and putty for repairing minor wood defects also enter the production.

Manufacturing includes the processing of imported lumber - formatting, planning, grinding and possible repairs of small defects with sealant. Most products are surface treated with varnish or oil. The products are then packed and transported to customers.

GWP-GHG from the production of electricity: 0.656 kgCO2eq/kWh
(Czech residual mix, contains: 53,6 % of fossil fuels, 41 % of nuclear, 5,4 % of renewable sources)

Construction stage (A4-A5) – not declared

Production is to a large extent custom-made, and transport in the A4 phase is therefore significantly variable from year to year. Installation can be done by gluing, screwing, or without fixing. For this reason, the construction stage is not declared.

Use stage (B1-B7) – not declared

Maintenance and repair during the use phase is not mandatory, but it is not excluded either (e.g. surface treatment may be renewed). For this reason, the use stage phase is not declared.

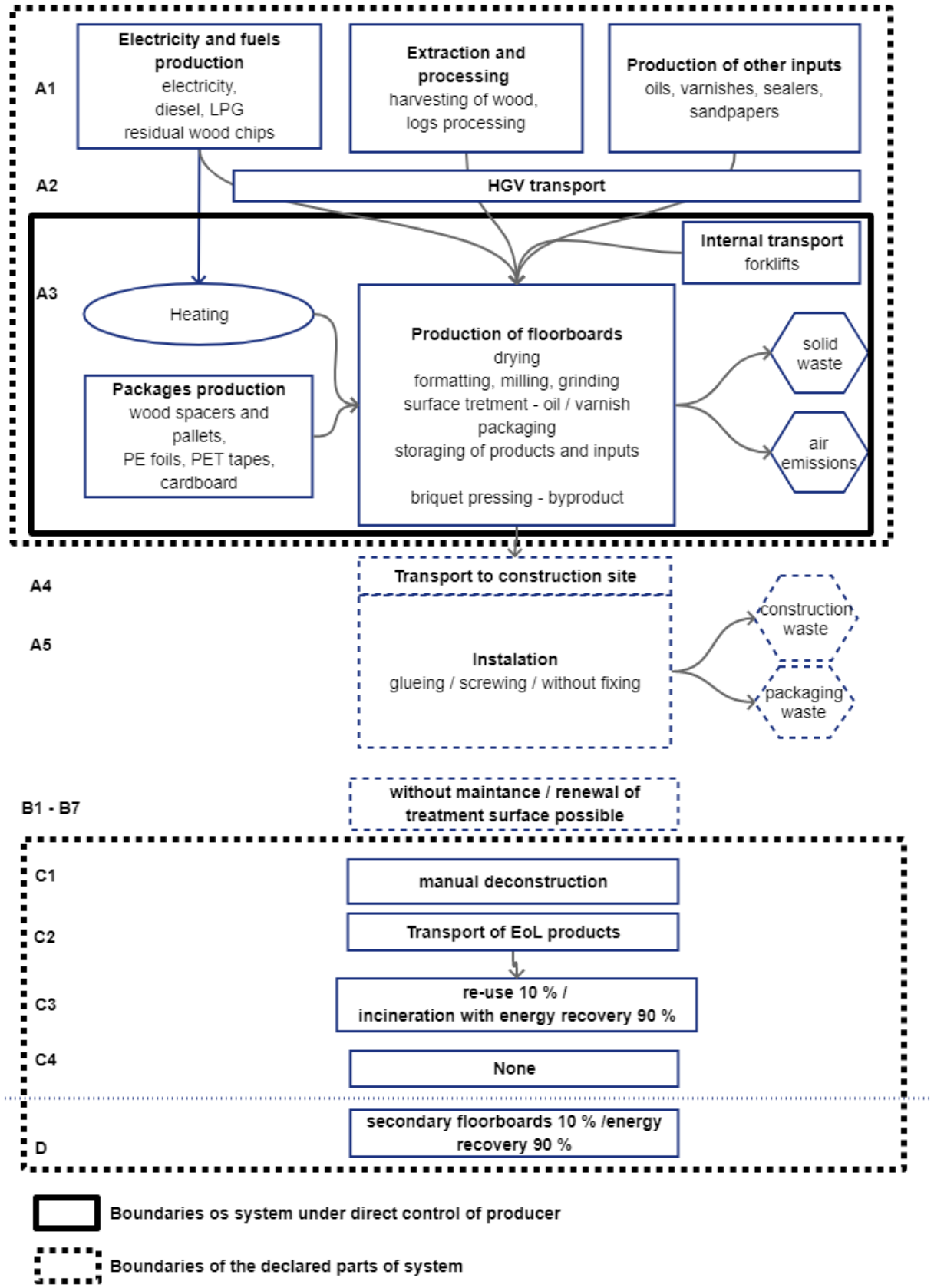
End-of-Life stage (C1-C4)

In the C1 module, manual deconstruction, transport for processing at a distance of 50 km and subsequent incineration with energy recovery (90%) and reuse (10%) are considered.

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

Beyond the system boundary, heat from energy use in the C3 phase (90%) and reusable product (10%) are modeled.

System diagram



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	Disposal	Reuse-recovery
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1 - B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	**X**	**X**	**X**	**ND**	**ND**	**ND**	**X**	**X**	**X**	**X**	**X**
Geography	**EU**	**EU**	**EU**	**-**	**-**	**-**	**EU**	**EU**	**EU**	**EU**	**EU**
Specific data	**12,7 %***			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Variation - products	**0,33 % ****			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Variation - sites	**N/A**			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	X – module declared ***ND – module not declared***										

** Based on GWP-GHG of Stage A3 divided by GWP-GHG for stages A1-A3. Data for A3 is specific to Morava Wood facilities.*

*** Results in EPD are weighted average for 3 variants of surface finish of product (natural / oil / varnish). The sensitivity analysis of differences between the results of individual variants is 0.33% on average and 1,65 % as maximum (for Ozone depletion category).*

Environmental impacts

EN 15804 reference package based on EF 3.1 was used as LCIA method.

Notice: It si not recommended to use the results of modules A1-A3 without considering the results of module C.

CORE ENVIRONMENTAL IMPACTS ***per 1 m³ of Morava Wood solid oak floor***

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Climate change	kg CO2 eq	-2.23E+03	0	6.26E+00	2.78E+03	0	-8.10E+01
Climate change - Fossil	kg CO2 eq	5.32E+02	0	6.28E+00	5.06E+00	0	-7.66E+01
Climate change – Biogenic*	kg CO2 eq	-2.76E+03	0	-2.66E-02	2.77E+03	0	-2.99E+00
Climate change - Land use and LU change	kg CO2 eq	2.09E+00	0	2.99E-03	2.09E-03	0	-1.43E+00
GWP-GHG**	kg CO2 eq	4.99E+02	0	5.67E+00	4.61E+00	0	-6.60E+01
Ozone depletion	kg CFC11 eq	1.65E-05	0	1.33E-07	6.35E-07	0	-7.97E-06
Acidification	mol H+ eq	2.13E+02	0	2.00E-02	1.79E-01	0	-1.29E+00
Eutrophication, freshwater***	kg P eq	5.50E-01	0	4.28E-04	3.49E-03	0	-1.90E-02
Eutrophication, marine	kg N eq	9.48E-01	0	6.86E-03	8.88E-02	0	-5.70E-01
Eutrophication, terrestrial	mol N eq	9.04E+00	0	7.25E-02	9.59E-01	0	-6.50E+00
Photochemical ozone formation	kg NMVOC eq	2.33E+00	0	1.83E-02	2.50E-01	0	-8.24E+00
Resource use, fossils***	MJ	8.18E+03	0	8.68E+01	4.97E+01	0	-6.13E+02
Resource use, minerals and metals***	kg Sb eq	2.54E-03	0	1.96E-05	3.94E-05	0	-8.43E-04
Water use***	m3 depriv.	1.03E+02	0	3.46E-01	1.86E+00	0	-8.12E+00

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.

** the impact category Climate change – biogenic was calculated based on Annex 2 PCR 2019:14 Construction products*

*** The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013*

**** 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 CORE ENVIRONMENTAL IMPACTS *per 1 m³ of Morava Wood solid oak floor*

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	disease inc.	1.17E-04	0	3.94E-07	1.45E-06	0	-3.34E-04
Ionising radiation**	kBq U-235 eq	1.42E+02	0	1.16E-01	2.30E-01	0	-4.00E+00
Ecotoxicity, freshwater	CTUe	2.03E+03	0	3.69E+01	1.25E+02	0	-2.64E+04
Human toxicity, cancer*	CTUh	1.70E-07	0	1.47E-09	1.68E-07	0	-2.54E-07
Human toxicity, non-cancer*	CTUh	5.46E-06	0	2.58E-08	5.32E-07	0	-5.85E-05
Land use*	Pt	1.42E+05	0	5.37E+01	4.47E+01	0	-4.26E+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.

** 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.*

*** 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 Morava Wood solid oak floor*

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value	4.55E+03	0	7.23E-01	2.36E+00	0	-1.83E+04
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	2.56E+04	0	0.00E+00	0.00E+00	0	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	3.01E+04	0	7.23E-01	2.36E+00	0	-1.83E+04
Use of non- renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	8.68E+03	0	5.25E+01	5.36E+01	0	-6.50E+02
Use of non- renewable primary energy resources used as raw materials	MJ, net calorific value	0.00E+00	0	0.00E+00	0.00E+00	0	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	8.68E+03	0	5.25E+01	5.36E+01	0	-6.50E+02
Use of secondary material	kg	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00
Use of renewable secondary fuels	MJ, net calorific value	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00
Use of non renewable secondary fuels	MJ, net calorific value	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00
Use of net fresh water	m^3	8.55E+02	0	2.94E+00	1.29E+01	0	-1.17E+02

WASTE PRODUCTION ***per 1 m³ of Morava Wood solid oak floor***

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	1.14E+00	0	1.38E-03	2.43E+00	0	-5.07E+00
Non-hazardous waste disposed	kg	1.35E+02	0	4.33E+00	3.74E+00	0	-1.01E+01
Radioactive waste disposed/stored	kg	3.53E-02	0	1.51E-05	1.54E-04	0	-3.74E-03

OUTPUT FLOWS ***per 1 m³ of Morava Wood solid oak floor***

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	64	0	0
Materials for recycling	kg	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0
Exported energy, electricity	MJ per energy carrier	0	0	0	0	0	0
Exported energy, thermal	MJ per energy carrier	0	0	0	7 603	0	0

Other Environmental Performance Indicators

None included

Additional Environmental Information

To increase user comfort, the factors for converting to m^2 of floor types according to thickness (14/15/18/19/20 mm) are added:

Thickness (mm)	14	15	18	19	20
Converting factor (m^2 per m^3)	71.4	66.7	55.6	52.6	50.0

To obtain results per m^2, it is necessary to divide the result by DU (m^3) given in the EPD, by the number of m^2 that fall per m^3 of boards of a given thickness.

Additional Social and Economic Information

None included

Information Related to Sector EPD

Not applicable

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 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

General Programme Instructions of the International EPD System®, Version 4.0

PCR 2019:14 Version 1.3.2, 2024-12-20, Construction Products and CPC 54 Construction Services

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

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