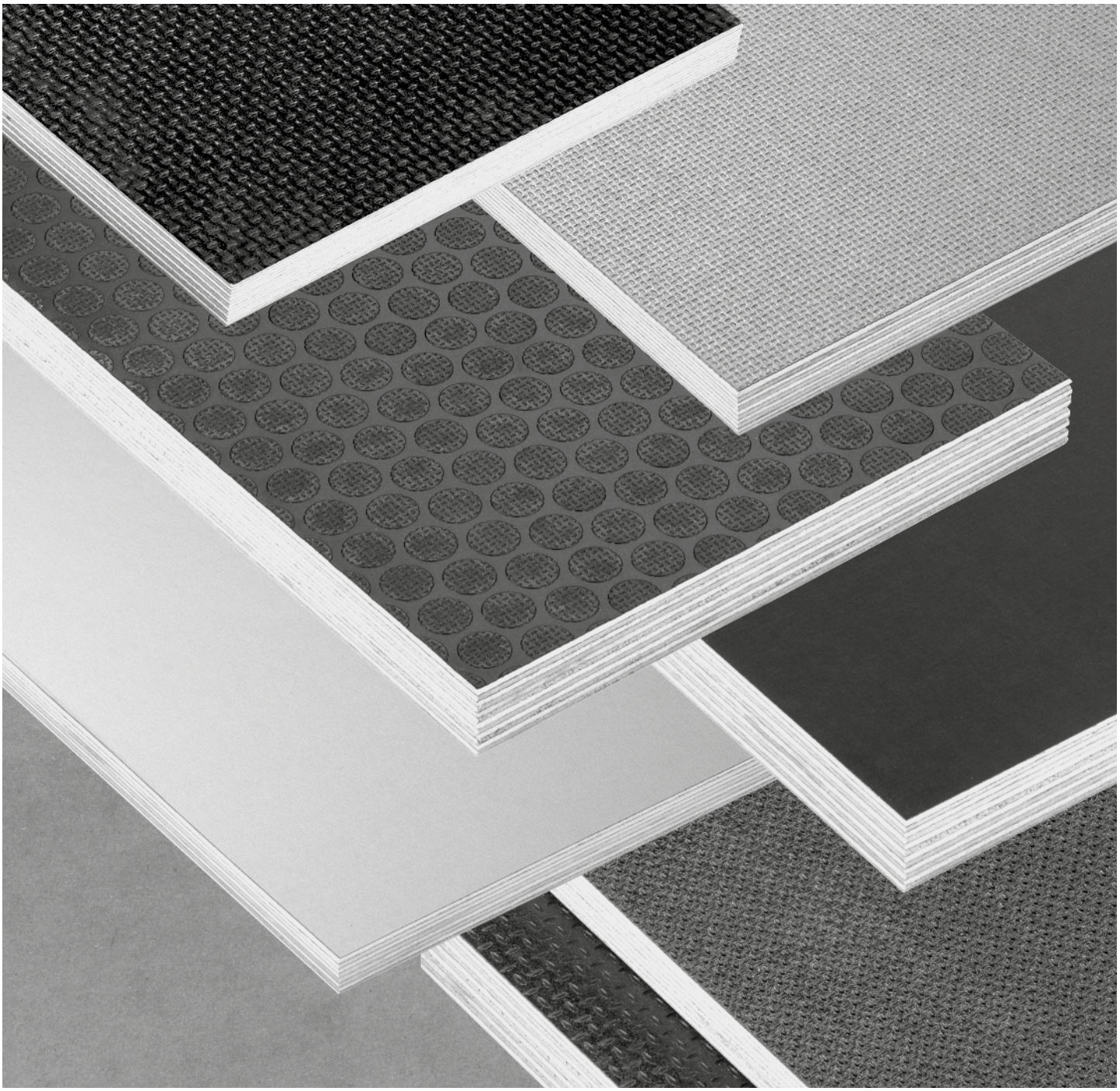
Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021.
EPD of multiple products, based on the average results of the product group.

Birch Ply

Overlaid birch plywood



Programme: The International EPD® System
Programme operator: EPD International AB
EPD registration number: S-P-03018

Publication date: 2024-10-11
Valid until: 2029-10-11

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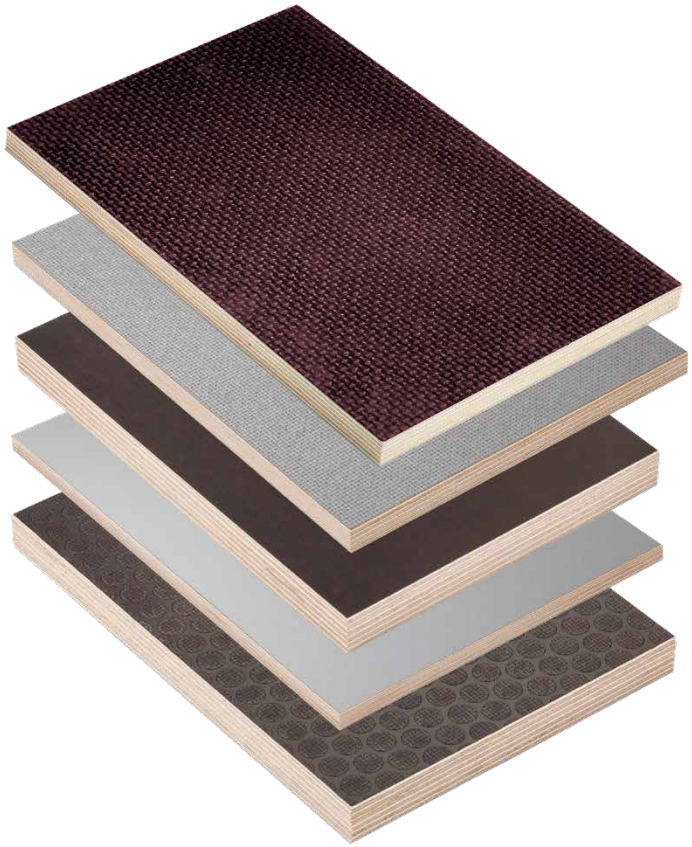
An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.



General information

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

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR):	PCR 2019:14 Construction products, Version 1.3.4 (2024-04-30) C-PCR-006 (To PCR 2019:14) Version: 2024-04-30
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC 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

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third party verifier:	Andrew Norton, Renuables Ltd

In case of recognised individual verifiers:

Approved by:	The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

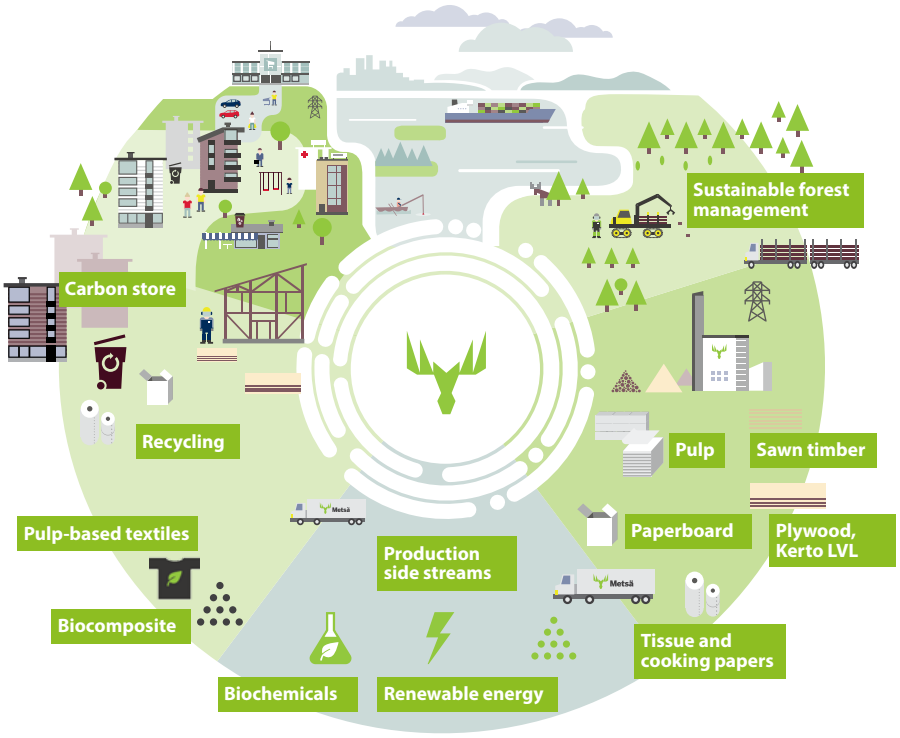
☐ Yes ☒ No

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

Owner of the EPD:	Metsäliitto Cooperative, Metsä Wood P.O. Box 50, 02020 METSÄ Revontulenpuisto 2, 02100 ESPOO Finland https://www.metsagroup.com/metsawood/
Description of the organisation:	Metsä Wood is one of Europe's leading manufacturers of engineered wood products. We process valuable log wood into products for the construction and transport industries, which are both megatrend-driven businesses of the future. Our main products are Kerto® LVL, birch plywood and spruce plywood. Material-efficient wood products store carbon and play an important role in combating climate change. More information about the carbon storage can be found in additional information. Metsä Group leads the way in the bioeconomy. Metsä Group invests in growth, developing bioproducts and a fossil free future. The raw material for our products is renewable wood from sustainably managed Nordic forests. Metsä Group focuses on the growth sectors of the forest industry: wood supply and forest services, wood products, pulp, fresh fibre paperboards, and tissue and greaseproof papers. Metsä Group consists of Metsäliitto Cooperative, its two businesses Metsä Wood and Metsä Forest, and its subsidiaries Metsä Tissue, Metsä Board and Metsä Fibre. Metsäliitto Cooperative is the parent company of Metsä Group. It is owned by around 90,000 forest owners. Metsä Group stands out from the competition because of its ownership base and business structure, which also give its operations a long-term perspective. Through Metsäliitto Cooperative's owner-members, Metsä Group has access to a considerable reserve of premium-quality raw material, which provides a stable, long-term foundation for the development of its operations and production plants.
Product-related or management system-related certifications:	Metsä Forest, part of Metsä Group, is the only wood supplier for Metsä Wood mills in Finland. Metsä Forest, as well as Metsä Wood's Suolahti plywood mill, has PEFC and FSC® Chain of Custody certificates. Metsä Wood mills have certified management system including ISO 9001 quality management, ISO 14001 environmental management, ISO 45001 health and safety management and ISO 50001 energy management system. Metsä Forest fulfils the obligations of European Union Regulation No. 995/2010 (EU Timber Regulation), UK Timber Regulation, US Lacey Act and Australian Illegal Logging Prohibition Act, which all prohibit placing on market and trading of illegally harvested timber and timber products. As all the wood raw material is covered by Chain of Custody certification, all the used wood is traceable and comes from certified or controlled forests. The PEFC logo on the product ensures that 100% of the wood raw material is legally harvested, and at least 70% is sourced from certified forests. Metsäliitto Cooperative, Metsä Forest, PEFC Logo Licence Registration number: PEFC/02-31-03 Metsäliitto Cooperative, Metsä Forest, FSC Licence Code: FSC-C014476 Metsäliitto Cooperative, Metsä Wood, PEFC Logo Licence Registration number: PEFC/02-31-381 Metsäliitto Cooperative, Metsä Wood FSC Licence Code: FSC-C209093
Name and location of production sites:	Metsä Wood Suolahti birch plywood mill Vaneritehtaankatu 1 44200 Suolahti Finland Metsä Wood Punkaharju birch plywood mill Tehtaantie 18 58500 Punkaharju Finland



Product information

Product name:	Metsä Wood Form Metsä Wood Deck Metsä Wood Floor Metsä Wood Granit	Metsä Wood Top Metsä Wood Integra Metsä Wood SP Metsä Wood FormPlus
Product identification:	Overlaid birch plywood	
Product description:	The EPDs covers multiple phenol film overlaid products and represents the average composition and production of multiple plywood products. Phenol film overlaid birch plywood products are multipurpose panels for different uses requiring strong and rigid panels. Phenol film overlay offers a ready-to-use surface. The panels can act simultaneously as a load-bearing construction and stiffening element. The wood raw material for Metsä Wood birch plywood originates from sustainable Nordic forests. Birch plywood structures in construction act as long-term carbon storage. The service life of birch plywood is considered to be as long as the lifetime of the building, providing the product is installed according to instructions. For a numerical service life value, 100 years can be used. The base plywood for phenol film overlaid panel products is Metsä Wood Birch. Metsä Wood Birch is made of 1.4 mm thick rotary peeled birch veneers. The veneers are cross-bonded with weather-and boil-resistant phenol formaldehyde adhesive. The phenol film overlay is hot pressed to one or both sides of the panel. During hot pressing, the adhesive cures. Cured adhesive is inert, and non-hazardous to humans and animals. Depending on the product, the phenol film surface may be smooth or patterned. Panel edges are sealed against moisture absorption with acrylic edge sealing paint. Even though edge sealing slows down the absorption of moisture into the wood, it does not eliminate it completely. Phenol film overlaid plywood products are CE marked and UK CA marked according to the EN 13986 standard. The hard surface of phenol film overlaid plywood withstands abrasion, is moisture-resistant and can tolerate commonly used chemicals, as well as diluted acids and alkalis. The surface is easy to clean with water or steam. Metsä Wood birch plywood panels have a high strength-to-weight ratio, and are easy to work with and install using conventional wood-working tools and fasteners. UN CPC Code: 31600 - Plywood consisting solely of sheets of wood, except of bamboo.	
Use:	Phenol film overlaid birch plywood with smooth surface is used in concrete formwork, agricultural structures and specific building applications, for example. Panels with a patterned surface are used in loading docks and pedestrian bridges, for example. In addition to building applications, phenol film overlaid products are ideal for use in the transport industry.	
Technical information:	• Mean density of Metsä Wood overlaid birch plywood products: 680 kg/m³ (RH 65%, 20°C) • Moisture content (delivered from the mill): 7–9% • Water vapour permeability: - Wet cup, μ= 95 - Dry cup, μ= 3240 • Thermal conductivity: λ = 0.17 W/(mK) (EN ISO 10456) • Specific thermal capacity: c_p= 1,600 J/(kgK) (EN ISO 10456) • Service classes: 1 and 2 (EN 1995-1-1)	
Formaldehyde emissions:	Determined according to EN 717-1, the formaldehyde emitted by Metsä Wood's phenol film overlaid plywood falls far below the Class E1 requirement of ≤ 0.100 ppm and fulfils the most stringent requirements in the world (≤ 0.030 ppm). The formaldehyde emission of Metsä Wood's phenol film overlaid plywood is approximately 0.017 ppm.	
Other information	Metsä Wood plywood products do not contain more than 0.1% of any the Substances of Very High Concern (SVHC) listed on the Candidate List of the ECHA, as these substances have not been intentionally added to the products.	

Product composition*

	%	kg**	
Birch (Betula spp)	90.4	614.5	veneers
Phenol formaldehyde adhesive	6.8	46.3	veneer bonding
Phenol film overlay* **	2.8	19.3	overlay

* The product composition represents the average phenol film overlaid birch plywood product manufactured by Metsä Wood during the year of data collection.
Product composition depends on the thickness of the product and the amount of overlay. The base plywood for all phenol film overlaid products is Metsä Wood Birch.
** The weight has been calculated for 1 m³ of Metsä Wood birch plywood, using the average product density during the year of data collection.
***The amount of overlay varies between 0.8%<x<10% of weight according to the panel and overlay thicknesses during the data collection year.

Product dimensions *

	mm
Thickness range	6.5 - 50
Maximum width	4,110
Maximum length	1,525

* Product dimensions are dependent on the product, please check the product data sheet in questionthe year of data collection

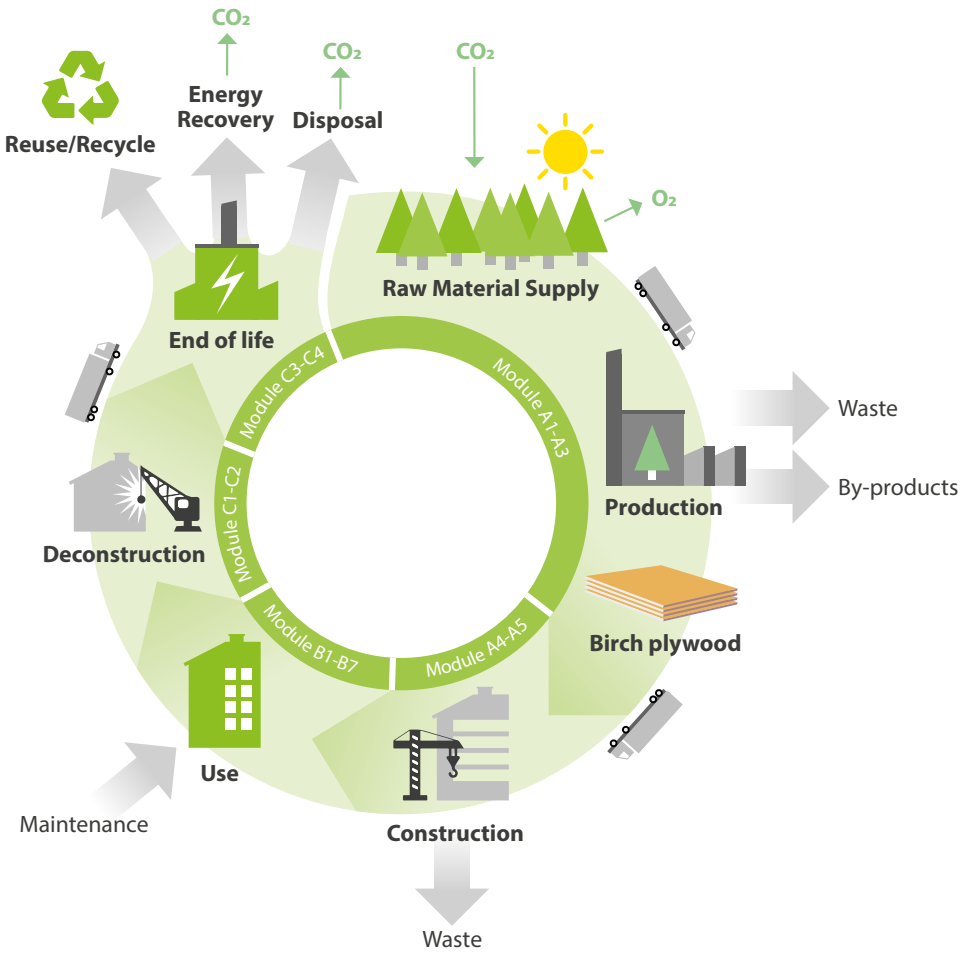
Packaging

	kg*
Wood	3.53
Plastic	1.00
Cardboard	0.21

* Average amount of packing material used to pack 1 m³ of birch plywood during the year of data collection

LCA information

Declared unit:	1 m³ of Metsä Wood's phenol film overlaid birch plywood
Time representativeness:	The data for this EPD is collected from the year 2022 and covers Suolahti and Punkaharju birch plywood mills (Finland). An average product according to the production volumes of both mills has been declared. The data includes raw materials, energy consumption, water consumption, packaging, uncoated birch plywood, by-products, wastes and all the related transportation. Generic data has been modelled using SimaPro 9.5.0.2. The applied allocation (physical, economic and energy) follow EN 15804 requirements.
Database and LCA software used:	The LCA model is created using the LCIA methodology EF 3.1, and SimaPro 9.5.0.2.
Other information:	All relevant raw materials and energy carriers used in manufacturing have been covered in the LCA calculations. Only some label adhesives representing less than 1% in mass and environmental results shares haven't been considered (cut-off approach).
Description of system boundaries:	Cradle to gate with options, modules C1-C4, module D and modules A4 and A5 as optional have been covered.
LCA Author:	WeLOOP 254 rue du Bourg 59130 Lambersart France



MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION:

	Product stage		Construction process stage			Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Geography	EU-28	EU-28	FI	EU-28	EU-28	ND	ND	ND	ND	ND	ND	ND	EU-28	EU-28	EU-28	EU-28	EU-28
Specific data used	>90% for A1-A3					-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	between -17% and 32%					-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	<10% for A1-A3					-	-	-	-	-	-	-	-	-	-	-	-

☑: declared module
ND: modules not declared

Product stage

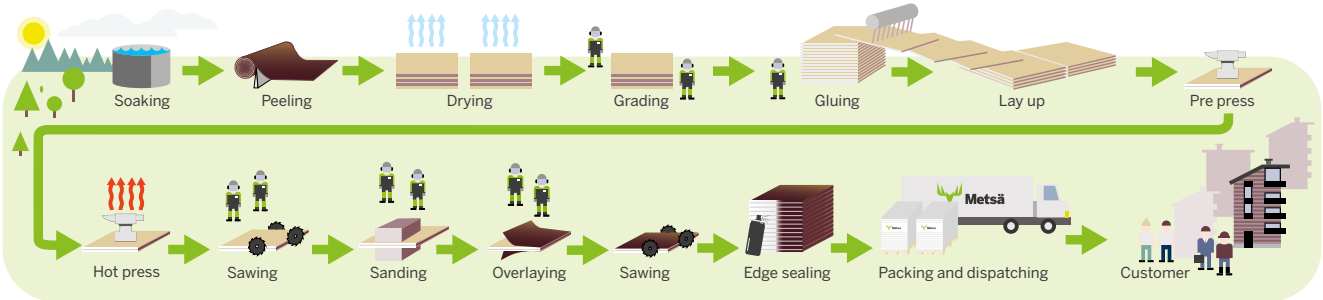
A1: The raw material and supply stage covers the forestry operations, processing of raw materials, glue production, generation of electricity, steam and heat from primary resources. Metsä Wood has only one roundwood supplier, Metsä Forest, also a part of Metsä Group.
All the used wood comes from certified or controlled forests. Sustainable forest use is ensured by third-party certification. Suolahti and Punkaharju birch plywood mills has certified PEFC and FSC Chain of Custody. Sustainably managed forests as such have no carbon emissions associated with land use change. Loss of carbon from the soil may be assumed to be negligible with no erosion.

A2: The transport includes the transportation of the raw material to birch plywood mills in Suolahti and Punkaharju.

A3: The manufacturing stage covers the production of phenol film overlaid birch plywood, by-products, packaging materials and wastes of the production process.

The electricity used is based on Ecoinvent, for Finland region, and is composed at 42% of non-renewable energy (nuclear, coal, oil, etc.) and 27% from renewable energy (wind, hydro, etc.). The rest is imported from other countries.

The climate impact is 0.221 kg CO_2 eq./kWh (using the GWP-GHG indicator).



Construction process stage

A4: The transport stage of the construction process includes the average transportation of phenol film overlaid birch plywood to European customers. The distance used in this EPD has been determined as a weighted average according to delivered volumes for certain market areas on the year of data collection.

A5: The construction installation phase includes the manufacturing, packaging and transportation of the installation losses, as well as the used energy and auxiliary materials (metallic screws) to install the product. The end-of-life treatment of the losses, the product packaging and the installation auxiliary materials related to installation are also accounted for under this module.

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Use stage

B1-B7: Birch plywood structures are designed to last for the whole life time of the building. There are no environmental impacts caused during this time.

End of life stages

C1-C4: Phenol film overlaid birch plywood can have several end of life scenarios options. The alternatives for end of life options may vary according to available technologies, market specific waste legislation, local waste handling systems and consumer behaviour.

In this EPD, the product is considered a secondary fuel for a next system. Energy consumed for removing auxiliary installation materials (e.g. screws) in module C1, as well as the transportation of the product to the end-of-life processing sites (50 km) in module C2 have been considered. In addition to the main environmental performance results, recycling scenario for end-of-life is presented in additional information.

The emission of biogenic CO_2 bound in the product is accounted for Module C3 for both scenarios, where the end-of-waste status is reached.
At this stage also energy consumption to prepare the products for their processing by the next system is included.

D: This module covers any credits and/or loads beyond the system boundaries. Credits from the burning of packaging materials during their waste treatment in module A5 are accounted for this module. For end-of-life as secondary fuel, both emissions of the incineration process where the product is used as a secondary fuel as well as the potential credits (energy substitution) are declared in module D. In additional information end-of-life as recycling the virgin material substitution of reusing the product in a next system is accounted for this module as well.

Environmental Information

The results are shown the average birch plywood product. Where the quantity of overlay per cubic meter is less than 0.8% or more than 10%, the total of the A1 to C4 modules will differ in the indicators shown by more than 10% from the average impact presented.

CORE ENVIRONMENTAL IMPACT INDICATORS - 1 m³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Global Warming Potential - total (GWP-total)	kg CO_2 eq.	-4,43E+02	1,13E+02	5,90E+01
Global Warming Potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	6,01E+02	1,13E+02	4,64E+01
Global Warming Potential - biogenic (GWP-biogenic)	kg CO_2 eq.	-1,05E+03	3,19E-02	1,24E+01
Global Warming Potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	2,62E+00	5,69E-02	1,42E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	3,44E-05	2,42E-06	1,96E-06
Acidification potential, Accumulated Exceedance (AP)	mol H^+ eq.	3,40E+00	5,44E-01	2,45E-01
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	3,66E-02	8,80E-04	2,21E-03
Eutrophication potential - marine (EP-marine)	kg N eq.	7,04E-01	1,67E-01	5,46E-02
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	6,36E+00	1,81E+00	5,23E-01
Photochemical Ozone Creation Potential (POCP)	kg NMVOC eq.	3,21E+00	6,66E-01	2,32E-01
Abiotic depletion potential - fossil resources (ADPF)	MJ	1,37E+04	1,59E+03	8,65E+02
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	3,80E-03	3,49E-04	3,72E-04
Water (user) deprivation potential (WDP)	m³ world equiv.	3,08E+02	6,35E+00	1,70E+01

* A1: biogenic carbon storage in wood: -1038 kg CO_2 eq

END-OF-LIFE - INCINERATION AS SECONDARY FUEL

Indicator	Unit	C1	C2	C3	C4	D
Global Warming Potential - total (GWP-total)	kg CO_2 eq.	6,34E-02	1,29E+01	1,14E+03	0,00E+00	-3,33E+02
Global Warming Potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	6,30E-02	1,29E+01	1,03E+02	0,00E+00	-3,32E+02
Global Warming Potential - biogenic (GWP-biogenic)	kg CO_2 eq.	3,20E-04	3,72E-03	1,03E+03	0,00E+00	-8,19E-01
Global Warming Potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	1,57E-04	6,27E-03	2,22E-03	0,00E+00	-4,08E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	1,20E-09	2,81E-07	3,31E-07	0,00E+00	-1,09E-05
Acidification potential, Accumulated Exceedance (AP)	mol H^+ eq.	3,61E-04	4,21E-02	2,18E-01	0,00E+00	-1,04E+00
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	6,22E-06	1,03E-04	1,26E-04	0,00E+00	-1,60E-02
Eutrophication potential - marine (EP-marine)	kg N eq.	4,53E-05	1,43E-02	1,04E-01	0,00E+00	-1,62E-01
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	5,29E-04	1,53E-01	1,18E+00	0,00E+00	-1,86E+00
Photochemical Ozone Creation Potential (POCP)	kg NMVOC eq.	1,70E-04	6,29E-02	3,12E-01	0,00E+00	-7,51E-01
Abiotic depletion potential - fossil resources (ADPF)	MJ	1,43E+00	1,83E+02	6,51E+01	0,00E+00	-6,15E+03
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	7,64E-07	4,15E-05	1,57E-05	0,00E+00	-1,97E-03
Water (user) deprivation potential (WDP)	m³ world equiv.	1,61E-02	7,46E-01	1,81E+00	0,00E+00	-4,65E+01

GWP-GHG INDICATOR - 1 M³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Global Warming Potential - GWP GHG	kg CO_2 eq.	6,05E+02	1,13E+02	4,78E+01

Indicator	Unit	C1	C2	C3	C4	D
Global Warming Potential - GWP GHG	kg CO_2 eq.	6,34E-02	1,29E+01	1,03E+02	0,00E+00	-3,33E+02

Environmental Information

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS - 1 M³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

The results of this environmental impact indicator should be used with caution because the uncertainties of these results are high or because experience with this indicator is limited.

Indicator	Unit	A1-A3	A4	A5
Particulate matter	disease inc.	2,80E-05	8,66E-06	2,49E-06
Ionising radiation	kBq U235 éq	1,06E+02	7,75E-01	5,59E+00
Ecotoxicity, freshwater	CTUe	1,16E+04	7,87E+02	6,59E+02
Human toxicity, cancer	CTUh	1,44E-06	5,13E-08	1,18E-07
Human toxicity, non-cancer	CTUh	6,48E-06	1,09E-06	6,03E-07
Land use	Pt	1,39E+05	9,07E+02	7,07E+03

END-OF-LIFE - INCINERATION AS SECONDARY FUEL

Indicator	Unit	C1	C2	C3	C4	D
Particulate matter	disease inc.	1,15E-09	1,02E-06	1,73E-06	0,00E+00	-3,60E-06
Ionising radiation	kBq U235 éq	1,29E-02	9,18E-02	7,19E-02	0,00E+00	-3,27E+01
Ecotoxicity, freshwater	CTUe	2,41E-01	9,03E+01	1,31E+02	0,00E+00	-7,17E+02
Human toxicity, cancer	CTUh	2,96E-11	5,86E-09	2,04E-07	0,00E+00	-9,88E-08
Human toxicity, non-cancer	CTUh	1,18E-09	1,29E-07	5,68E-07	0,00E+00	-3,17E-06
Land use	Pt	2,79E-01	1,09E+02	1,89E+01	0,00E+00	-7,39E+02

INDICATORS DESCRIBING RESOURCE USE - 1 M³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Use of renewable primary energy as energy carrier (PERE)	MJ	4,06E+04	2,41E+01	2,14E+03
Use of renewable primary energy resources used as raw materials (PERM)	MJ	1,11E+04	0,00E+00	-9,11E+01
Total use of renewable primary energy (PERT)	MJ	5,17E+04	2,41E+01	2,05E+03
Use of non-renewable primary energy as energy carrier (PENRE)	MJ	1,51E+04	1,62E+03	9,93E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	2,00E+03	0,00E+00	-3,18E+01
Total use of non-renewable primary energy resource (PENRT)	MJ	1,71E+04	1,62E+03	9,61E+02
Use of secondary material (SM)	kg	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water (FW)	m³	-1,51E+01	-5,81E-01	-1,13E+00

END-OF-LIFE - INCINERATION AS SECONDARY FUEL

Indicator	Unit	C1	C2	C3	C4	D
Use of renewable primary energy as energy carrier (PERE)	MJ	3,21E-01	2,84E+00	1,10E+04	0,00E+00	-8,14E+02
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0,00E+00	0,00E+00	-1,10E+04	0,00E+00	0,00E+00
Total use of renewable primary energy (PERT)	MJ	3,21E-01	2,84E+00	3,03E+00	0,00E+00	-8,14E+02
Use of non-renewable primary energy as energy carrier (PENRE)	MJ	1,67E+00	1,86E+02	2,02E+03	0,00E+00	-7,08E+03
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0,00E+00	0,00E+00	-1,94E+03	0,00E+00	0,00E+00
Total use of non-renewable primary energy resource (PENRT)	MJ	1,67E+00	1,86E+02	7,67E+01	0,00E+00	-7,08E+03
Use of secondary material (SM)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water (FW)	m³	-8,59E-03	-6,91E-02	-3,40E-01	0,00E+00	1,00E+02

Environmental Information

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES AND OUTPUT FLOWS - 1 m³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Hazardous waste disposed (HWD)	kg	3,24E+01	1,52E+00	7,98E+00
Non-hazardous waste disposed (NHWD)	kg	4,28E+02	8,65E+01	5,01E+01
Radioactive waste disposed (RWD)	kg	5,28E-02	5,01E-04	2,85E-03
Components for re-use (CRU)	kg	0,00E+00	0,00E+00	0,00E+00
Materials for recycling (MFR)	kg	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery (MER)	kg	0,00E+00	0,00E+00	0,00E+00
Exported electrical energy (EEE)	MJ	0,00E+00	0,00E+00	0,00E+00
Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	0,00E+00

END-OF-LIFE - INCINERATION AS SECONDARY FUEL

Indicator	Unit	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	1,50E-03	1,74E-01	7,26E+00	0,00E+00	-4,72E+00
Non-hazardous waste disposed (NHWD)	kg	3,35E-02	1,04E+01	3,18E+00	0,00E+00	-9,08E+01
Radioactive waste disposed (RWD)	kg	1,03E-05	5,95E-05	4,63E-05	0,00E+00	-2,61E-02
Components for re-use (CRU)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling (MFR)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery (MER)	kg	0,00E+00	0,00E+00	6,85E+02	0,00E+00	0,00E+00
Exported electrical energy (EEE)	MJ	0,00E+00	0,00E+00	1,60E+03	0,00E+00	0,00E+00
Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	3,15E+03	0,00E+00	0,00E+00

BIOGENIC CARBON CONTENT OF PRODUCT AND PACKAGING - 1 M³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

Indicator	Unit	A1-A3
Biogenic carbon content in accompanying packaging	kg	3.24
Biogenic carbon content in product	kg	282

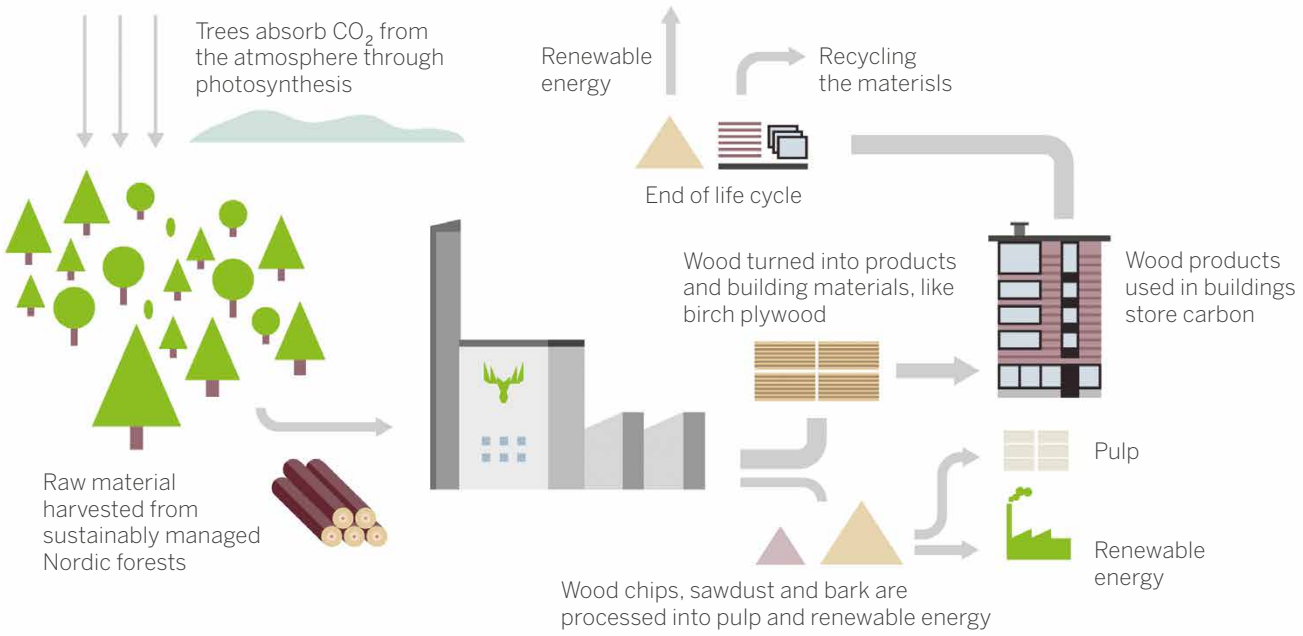
Additional Information

CARBON STORAGE

One of the most important ways to mitigate climate change is to reduce dependence on fossil resources. Wood is a renewable, recyclable and reusable building material. Above all, wood stores carbon. As the building sector contributes up to 30% of global annual greenhouse gas emissions, it plays a vital role in combatting climate change. Wood construction is a part of the solution. The long service life of Metsä Wood Phenol film overlaid birch plywood ensures long carbon storage times. Carbon stored in Metsä Wood Phenol film overlaid birch plywood is 1038 kg CO2 eq/m³. As long as Phenol film overlaid birch plywood product is used, carbon stays stored. Reuse and recycling ensure prolonged carbon storage. When energy recovery is used as the final disposal method for Phenol film overlaid birch plywood material, renewable wood material is substituting fossil fuels in energy production. Once the material is disposed, biogenic carbon is released back to the atmosphere.

The key to sustainable wood products is to use only wood from sustainable sources. Most of the wood Metsä Group uses comes from family-owned forests. All the used wood is traceable and originates from certified or controlled forests. Metsä Group's wood tracing systems are certified and verified according to PEFC and FSC Chain of Custody requirements. Metsä Group's forest management doesn't cause deforestation.

Efficient carbon sink forests are achieved by sustainable forest and nature management. In Finland, forests grow more than they are used and the amount of wood in forests increases every year. Good forest management ensures the health and good growth of forests. In addition, thinnings make room for the highest quality trees to grow stouter. These best quality trees are raw material for engineered wood products. Sustainable forestry always includes forest regeneration – each felled tree is replaced with four seedlings. By ensuring sustainable forest management, wood products are part of carbon's natural cycle.



Environmental Information

LCA RESULTS FOR RECYCLING AT THE END-OF-LIFE
CORE ENVIRONMENTAL IMPACT INDICATORS - 1 M³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

END-OF-LIFE - RECYCLING

Indicator	Unit	C1	C2	C3	C4	D
Global Warming Potential - total (GWP-total)	kg CO_2 eq.	6,34E-02	6,46E+00	1,08E+03	0,00E+00	-1,05E+03
Global Warming Potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	6,30E-02	6,46E+00	4,85E+01	0,00E+00	-1,81E+01
Global Warming Potential - biogenic (GWP-biogenic)	kg CO_2 eq.	3,20E-04	1,86E-03	1,03E+03	0,00E+00	-1,04E+03
Global Warming Potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	1,57E-04	3,14E-03	1,71E-02	0,00E+00	-2,66E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	1,20E-09	1,40E-07	6,71E-07	0,00E+00	-4,19E-07
Acidification potential, Accumulated Exceedance (AP)	mol H^+ eq.	3,61E-04	2,11E-02	2,24E-01	0,00E+00	-2,11E-01
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	6,22E-06	5,17E-05	6,11E-04	0,00E+00	-4,30E-03
Eutrophication potential - marine (EP-marine)	kg N eq.	4,53E-05	7,16E-03	8,70E-02	0,00E+00	-7,53E-02
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	5,29E-04	7,65E-02	9,07E-01	0,00E+00	-8,52E-01
Photochemical Ozone Creation Potential (POCP)	kg NMVOC eq.	1,70E-04	3,15E-02	3,38E-01	0,00E+00	-2,82E-01
Abiotic depletion potential - fossil resources (ADPF)	MJ	1,43E+00	9,16E+01	5,30E+02	0,00E+00	-3,53E+02
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	7,64E-07	2,07E-05	1,96E-04	0,00E+00	-1,16E-04
Water (user) deprivation potential (WDP)	m^3 world equiv.	1,61E-02	3,73E-01	3,24E+00	0,00E+00	-2,44E+01

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS - 1 M³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

The results of this environmental impact indicator should be used with caution because the uncertainties of these results are high or because experience with this indicator is limited.

END-OF-LIFE - RECYCLING

Indicator	Unit	C1	C2	C3	C4	D
Particulate matter	disease inc.	1,15E-09	5,12E-07	4,70E-06	0,00E+00	-1,02E-05
Ionising radiation	kBq U235 éq	1,29E-02	4,59E-02	6,49E-01	0,00E+00	-1,73E+00
Ecotoxicity, freshwater	CTUe	2,41E-01	4,52E+01	2,90E+02	0,00E+00	-1,20E+02
Human toxicity, cancer	CTUh	2,96E-11	2,93E-09	3,45E-08	0,00E+00	-1,43E-07
Human toxicity, non-cancer	CTUh	1,18E-09	6,45E-08	3,87E-07	0,00E+00	-3,54E-07
Land use	Pt	2,79E-01	5,45E+01	1,89E+02	0,00E+00	-2,31E+04

INDICATORS DESCRIBING RESOURCE USE - 1 M³ OF PHENOL FILM OVERLAID BIRCH PLYWOOD

END-OF-LIFE - RECYCLING

Indicator	Unit	C1	C2	C3	C4	D
Use of renewable primary energy as energy carrier (PERE)	MJ	3,21E-01	1,42E+00	1,86E+01	0,00E+00	-4,24E+03
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0,00E+00	0,00E+00	-1,10E+04	0,00E+00	1,10E+04
Total use of renewable primary energy (PERT)	MJ	3,21E-01	1,42E+00	-1,10E+04	0,00E+00	6,73E+03
Use of non-renewable primary energy as energy carrier (PENRE)	MJ	1,67E+00	9,32E+01	5,56E+02	0,00E+00	-4,22E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0,00E+00	0,00E+00	-1,94E+03	0,00E+00	1,94E+03
Total use of non-renewable primary energy resource (PENRT)	MJ	1,67E+00	9,32E+01	-1,39E+03	0,00E+00	1,52E+03
Use of secondary material (SM)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water (FW)	m^3	-8,59E-03	-3,45E-02	-4,84E-01	0,00E+00	2,60E+00

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END-OF-LIFE - RECYCLING

Indicator	Unit	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	1,50E-03	8,72E-02	1,99E+00	0,00E+00	-1,16E+00
Non-hazardous waste disposed (NHWD)	kg	3,35E-02	5,20E+00	2,32E+01	0,00E+00	-8,07E+00
Radioactive waste disposed (RWD)	kg	1,03E-05	2,97E-05	4,88E-04	0,00E+00	-1,37E-03
Components for re-use (CRU)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling (MFR)	kg	0,00E+00	0,00E+00	6,86E+02	0,00E+00	0,00E+00
Materials for energy recovery (MER)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported electrical energy (EEE)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

References

EN ISO 14025	EN ISO 14025:2011 Environmental labels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025:2006)
EN ISO 14040	EN ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006 + Amd 1:2020)
EN 15804+A2	EN 15804:2012 + A2:2019 Sustainability of construction works –Sustainability of construction works –Core rules for the product category of construction products.
EN 15942	EN 15942:2012 Sustainability of construction works - Environmental product declarations - Communication format business-to-business
EN 16485	EN 16485:2014 Round and sawn timber. Environmental product declarations. Product category rules for wood and wood-based products for use in construction.
EPD® SYSTEM 2024	The International EPD System. Product Category Rules (PCR): Construction Products (PCR 2019:14 Construction products, Version 1.3.4 (2024-04-30). The International EPD System.

EPD® SYSTEM 2024

General Programme Instructions (GPI) For International EPD system, version 5.0.0 (19/06/2024)