

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.



Spruce Ply

Metsä Wood Spruce plywood



Programme: The International EPD® System,
www.environdec.com

Programme operator: EPD International AB

EPD registration number: S-P-04904

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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. The review panel may be contacted via info@environdec.com.

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.

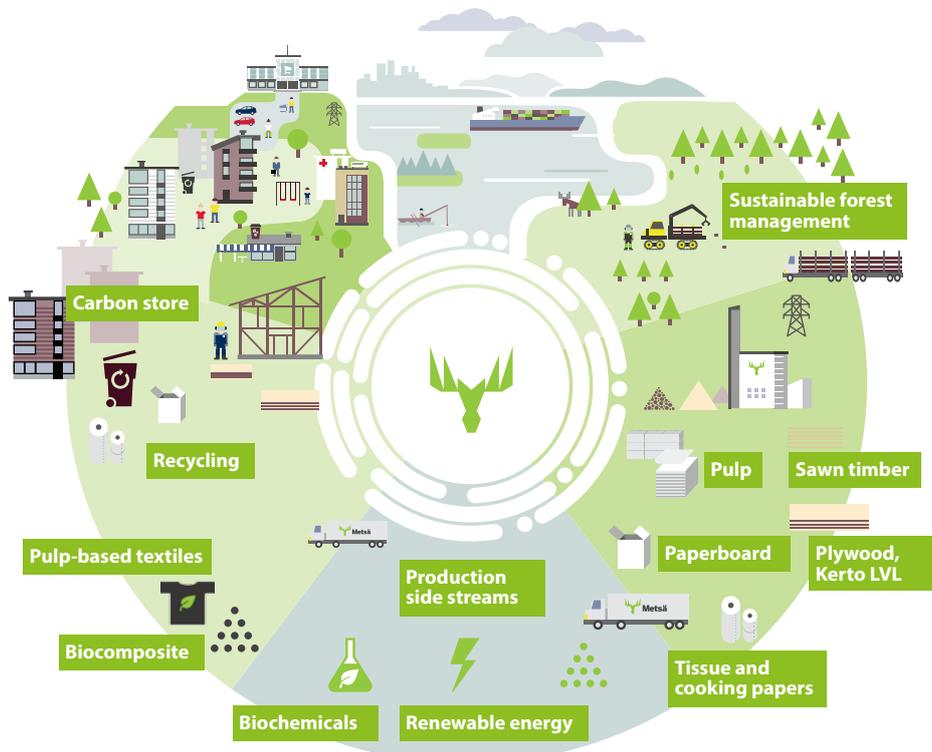
Metsäliitto Cooperative, Metsä Forest, PEFC Logo Licence Registration number: PEFC/02-31-03

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 site: Metsä Wood
 Suolahti spruce plywood mill
 Vaneritehtaankatu 1
 44200 Suolahti
 Finland



Product information

Product name:	Metsä Wood Spruce	Metsä Wood MouldGuard	Metsä Wood FireResist	Metsä Wood WeatherGuard
Product identification:	Uncoated, untreated and treated spruce plywood.			
Product description:	<p>Metsä Wood Spruce plywood is an excellent construction panel. It is ideal for both interior and exterior construction work (service classes 1 and 2) and any other application which requires strength, dimensional stability and light-weight versatility. The panels can act simultaneously as a load-bearing construction and stiffening element. The wood raw material for Metsä Wood Spruce originates from sustainable Nordic forests. Spruce plywood structures in construction act as long-term carbon storage. The service life of spruce 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.</p> <p>Metsä Wood Spruce plywood is made of 3 mm thick rotary peeled softwood veneers. The veneers are cross-bonded with weather- and boil-resistant phenol formaldehyde adhesive. Metsä Wood Spruce plywood is CE marked and UK CA marked according to the EN 13986 standard. The base plywood of treated Metsä Wood Spruce plywood products is Metsä Wood Spruce and the surface treated products are; Metsä Wood Spruce WeatherGuard with a hydrophobic surface, Metsä Wood Spruce MouldGuard with a wood preservative and Metsä Wood Spruce FireResist with a fire retardant.</p> <p>Metsä Wood Spruce plywood panels are light, easy to work with and easy to install using conventional wood-working tools and fasteners. The panels are available with square edges and tongue-and-groove profiles.</p> <p>The EPD covers multiple products and represents the average composition and production of multiple plywood products. The Metsä Wood Spruce product is considered representative, as it represents most of the volume being sold, and the variability study shows low variation in the results. Variability between average product and uncoated product is between 1% and 4% in GWP-GHG at manufacturing process level.</p> <p>There's no restrictions of the information use within the product group, and representativeness of the EPDs of multiple products.</p>			
Use	<p>Metsä Wood Spruce plywood is an excellent general purpose construction panel for applications which require strength, dimensional stability and light weight. It is ideal for use in roof, wall and floor structures, or in construction platforms, for example. Metsä Wood Spruce WeatherGuard is rainwater-repellent multipurpose construction plywood with a hydrophobic surface. Suitable for applications which require temporary protection against rainwater. Metsä Wood Spruce MouldGuard is an all-purpose construction panel for conditions where relative humidity may temporarily exceed 75%. Metsä Wood Spruce FireResist is a high-quality surface impregnated panel for internal and protected external applications in dry and humid conditions where enhanced fire performance is required.</p>			
Technical description:	<ul style="list-style-type: none"> • Mean density of Metsä Wood Spruce: 460 kg/m³ (RH 65%, 20°C) • Moisture content (delivered from the mill): 7–9% • Water vapour permeability: <ul style="list-style-type: none"> - Wet cup, $\mu=45$ - Dry cup, $\mu=500$ • Thermal conductivity: $\lambda = 0.12 \text{ W/(mK)}$ (EN ISO 10456) • Specific thermal capacity: $c_p = 1600 \text{ J/(kgK)}$ (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 Spruce 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 Spruce is approximately 0.018 ppm.			
Other information:	Metsä Wood plywood products do not contain more than 0.1% of any of 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*	
Nordic softwood **	95	437	veneers
Phenol formaldehyde adhesive ***	5	23	veneer bonding
Surface treatment ****	1.0	4.6	

* The weight is determined for 1 m³ of Metsä Wood Spruce plywood using the mean density of the product.

** Metsä Wood Spruce is made of spruce (Picea abies). The product may also contain small amounts of pine (Pinus sylvestris).

*** During hot pressing, the adhesive cures. Cured adhesive is inert and non-hazardous to humans and animals.

****The amount of surface treatment varies between 0,06<x<2,9% of weight according to the panel thicknesses and surface treatment type.

The declared amount of surface treatment represents the most typical amount of treatment in the ready product. Applicable to surface treated products only.

Product dimensions

	mm
Thickness range	9 - 30
Maximum width	1,250
Maximum length	2,500

Packaging

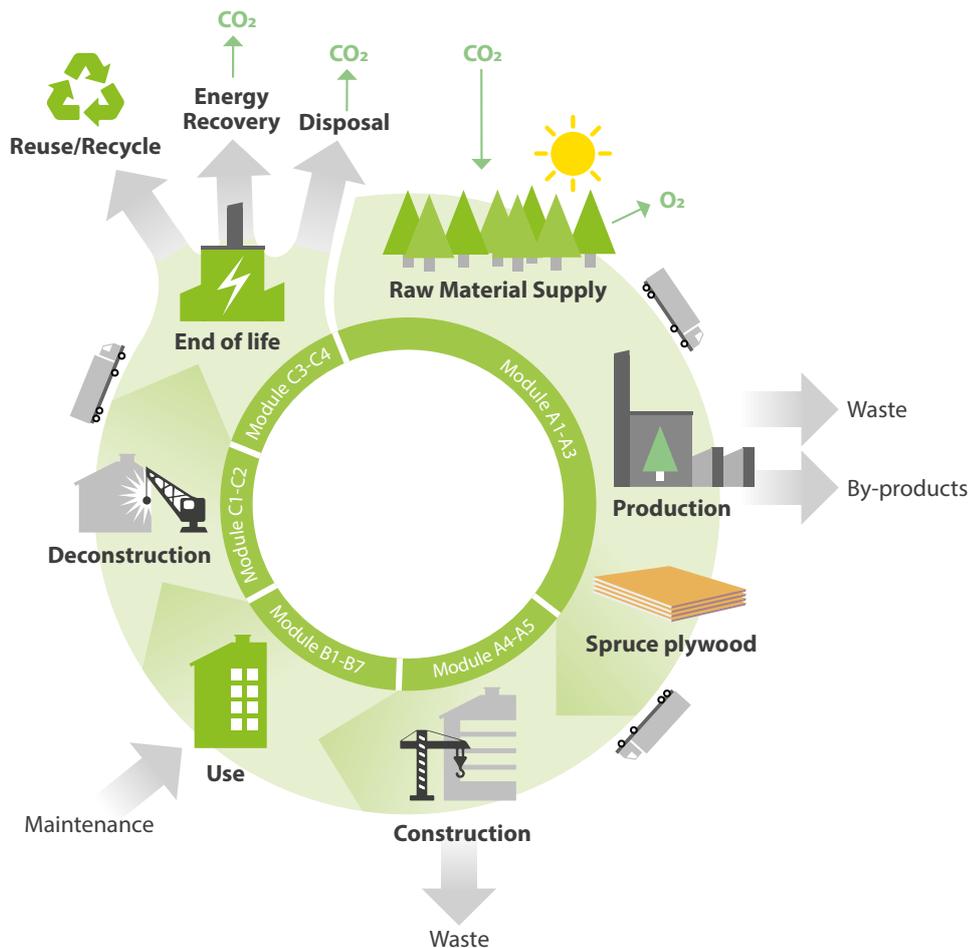
	kg*
Wood	3.53
Plastic	1.0
Cardboard	0.21

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



LCA information

Declared unit:	1 m ³ of Metsä Wood Spruce plywood
Time representativeness:	The data for this EPD is collected from the year 2022 and covers Suolahti spruce plywood mill (Finland). The data includes raw materials, energy consumption, water consumption, packaging, spruce 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). Sensitivity analysis was conducted to ensure that treated Spruce plywood products can be included in the scope of the study.
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



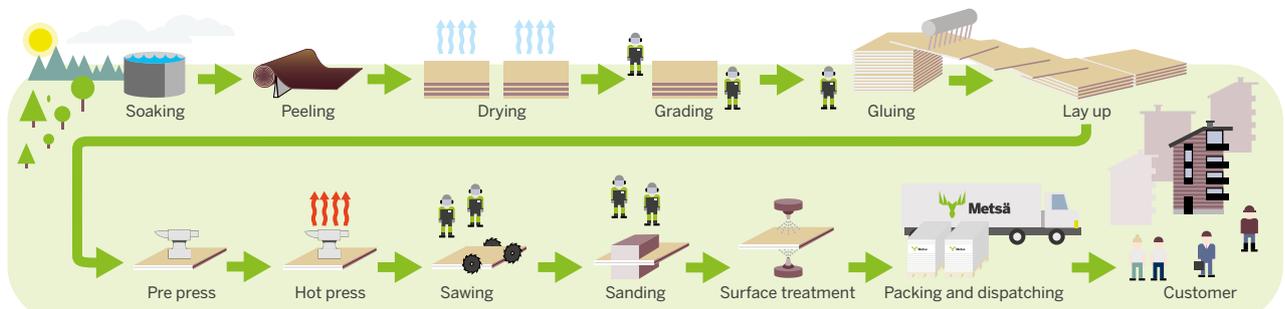
MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION:

Module	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	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Geography	EU-28	EU-28	FI	EU-28	EU-28	ND	EU-28	EU-28	EU-28	EU-28	EU-28						
Specific data used	>90% for A1-A3					-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	<10% for A1-A3					-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	Not relevant (as only one production site)					-	-	-	-	-	-	-	-	-	-	-	-

: 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 spruce plywood mill 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 spruce plywood mill in Suolahti.
- A3:** The manufacturing stage covers the production of Metsä Wood Spruce 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 CO2 eq./kWh (using the GWP-GHG indicator).



Construction process stage

- A4:** The transport stage of the construction process includes the average transportation of spruce 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.

Use stage

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

End of life stages

C1-C4: Spruce 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 CO₂ 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 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.

CORE ENVIRONMENTAL IMPACT INDICATORS - 1 M³ OF METSÄ WOOD SPRUCE PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Global Warming Potential - total (GWP-total)*	kg CO ₂ eq.	-5,19E+02	5,67E+01	2,81E+01
Global Warming Potential - fossil fuels (GWP-fossil)	kg CO ₂ eq.	2,02E+02	5,67E+01	2,26E+01
Global Warming Potential - biogenic (GWP-biogenic)*	kg CO ₂ eq.	-7,24E+02	1,57E-02	5,32E+00
Global Warming Potential - land use and land use change (GWP-luluc)	kg CO ₂ eq.	3,24E+00	2,91E-02	1,72E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	8,82E-06	1,20E-06	6,06E-07
Acidification potential, Accumulated Exceedance (AP)	mol H ⁺ eq.	9,41E-01	3,29E-01	1,08E-01
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	2,96E-02	4,31E-04	1,84E-03
Eutrophication potential - marine (EP-marine)	kg N eq.	4,52E-01	9,71E-02	3,70E-02
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	2,94E+00	1,05E+00	3,00E-01
Photochemical Ozone Creation Potential (POCP)	kg NMVOC eq.	2,04E+00	3,70E-01	1,54E-01
Abiotic depletion potential - fossil resources (ADPF)	MJ	4,61E+03	7,93E+02	3,66E+02
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	1,10E-03	1,70E-04	2,26E-04
Water (user) deprivation potential (WDP)	m ³ world equiv.	8,00E+01	3,11E+00	5,48E+00

* A1: biogenic carbon storage in wood: -719 kg CO₂ 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	8,42E+00	7,86E+02	0,00E+00	-2,17E+02
Global Warming Potential - fossil fuels (GWP-fossil)	kg CO ₂ eq.	6,30E-02	8,42E+00	6,72E+01	0,00E+00	-2,16E+02
Global Warming Potential - biogenic (GWP-biogenic)	kg CO ₂ eq.	3,20E-04	2,43E-03	7,19E+02	0,00E+00	-5,33E-01
Global Warming Potential - land use and land use change (GWP-luluc)	kg CO ₂ eq.	1,57E-04	4,09E-03	1,44E-03	0,00E+00	-2,66E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	1,20E-09	1,83E-07	2,16E-07	0,00E+00	-7,12E-06
Acidification potential, Accumulated Exceedance (AP)	mol H ⁺ eq.	3,61E-04	2,74E-02	1,42E-01	0,00E+00	-6,78E-01
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	6,22E-06	6,73E-05	8,19E-05	0,00E+00	-1,04E-02
Eutrophication potential - marine (EP-marine)	kg N eq.	4,53E-05	9,33E-03	6,76E-02	0,00E+00	-1,06E-01
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	5,29E-04	9,97E-02	7,70E-01	0,00E+00	-1,21E+00
Photochemical Ozone Creation Potential (POCP)	kg NMVOC eq.	1,70E-04	4,10E-02	2,03E-01	0,00E+00	-4,89E-01
Abiotic depletion potential - fossil resources (ADPF)	MJ	1,43E+00	1,19E+02	4,24E+01	0,00E+00	-4,00E+03
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	7,64E-07	2,70E-05	1,02E-05	0,00E+00	-1,28E-03
Water (user) deprivation potential (WDP)	m ³ world equiv.	1,61E-02	4,86E-01	1,18E+00	0,00E+00	-3,02E+01

GWP-GHG INDICATOR - 1 M³ OF METSÄ WOOD SPRUCE PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Global Warming Potential - GWP GHG	kg CO ₂ eq.	2,06E+02	5,67E+01	2,37E+01

Indicator	Unit	C1	C2	C3	C4	D
Global Warming Potential - GWP GHG	kg CO ₂ eq.	6,34E-02	8,42E+00	6,72E+01	0,00E+00	-2,17E+02

Environmental Information

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS - 1 M³ OF METSÄ WOOD SPRUCE 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.	1,00E-05	4,22E-06	1,32E-06
Ionising radiation	kBq U235 éq	4,22E+01	3,78E-01	2,39E+00
Ecotoxicity, freshwater	CTUe	3,29E+03	3,91E+02	2,23E+02
Human toxicity, cancer	CTUh	4,85E-07	2,56E-08	6,88E-08
Human toxicity, non-cancer	CTUh	1,95E-06	5,31E-07	3,25E-07
Land use	Pt	7,78E+04	4,37E+02	3,96E+03

END-OF-LIFE - INCINERATION AS SECONDARY FUEL

Indicator	Unit	C1	C2	C3	C4	D
Particulate matter	disease inc.	1,15E-09	6,67E-07	1,13E-06	0,00E+00	-2,35E-06
Ionising radiation	kBq U235 éq	1,29E-02	5,98E-02	4,69E-02	0,00E+00	-2,13E+01
Ecotoxicity, freshwater	CTUe	2,41E-01	5,89E+01	8,54E+01	0,00E+00	-4,67E+02
Human toxicity, cancer	CTUh	2,96E-11	3,82E-09	1,33E-07	0,00E+00	-6,43E-08
Human toxicity, non-cancer	CTUh	1,18E-09	8,40E-08	3,70E-07	0,00E+00	-2,07E-06
Land use	Pt	2,79E-01	7,10E+01	1,24E+01	0,00E+00	-4,81E+02

INDICATORS DESCRIBING RESOURCE USE - 1 M³ OF METSÄ WOOD SPRUCE PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Use of renewable primary energy as energy carrier (PERE)	MJ	1,88E+04	1,17E+01	1,00E+03
Use of renewable primary energy resources used as raw materials (PERM)	MJ	7,69E+03	0,00E+00	-3,91E+01
Total use of renewable primary energy (PERT)	MJ	2,65E+04	1,17E+01	9,61E+02
Use of non-renewable primary energy as energy carrier (PENRE)	MJ	5,02E+03	8,06E+02	4,39E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	6,20E+02	0,00E+00	-2,77E+01
Total use of non-renewable primary energy resource (PENRT)	MJ	5,64E+03	8,06E+02	4,11E+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)	m ³	-2,88E+00	-2,82E-01	-4,94E-01

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	1,85E+00	7,63E+03	0,00E+00	-5,30E+02
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0,00E+00	0,00E+00	-7,63E+03	0,00E+00	0,00E+00
Total use of renewable primary energy (PERT)	MJ	3,21E-01	1,85E+00	1,97E+00	0,00E+00	-5,30E+02
Use of non-renewable primary energy as energy carrier (PENRE)	MJ	1,67E+00	1,21E+02	6,25E+02	0,00E+00	-4,61E+03
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0,00E+00	0,00E+00	-5,75E+02	0,00E+00	0,00E+00
Total use of non-renewable primary energy resource (PENRT)	MJ	1,67E+00	1,21E+02	5,00E+01	0,00E+00	-4,61E+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	-4,50E-02	-2,21E-01	0,00E+00	6,52E+01

Environmental Information

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES AND OUTPUT FLOWS - 1 M³ OF METSÄ WOOD SPRUCE PLYWOOD

Indicator	Unit	A1-A3	A4	A5
Hazardous waste disposed (HWD)	kg	8,59E+00	7,59E-01	6,62E+00
Non-hazardous waste disposed (NHWD)	kg	1,08E+02	4,17E+01	2,51E+01
Radioactive waste disposed (RWD)	kg	2,01E-02	2,43E-04	1,20E-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	1,14E-01	4,91E+00	0,00E+00	-3,07E+00
Non-hazardous waste disposed (NHWD)	kg	3,35E-02	6,78E+00	2,07E+00	0,00E+00	-5,91E+01
Radioactive waste disposed (RWD)	kg	1,03E-05	3,88E-05	3,02E-05	0,00E+00	-1,70E-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	4,46E+02	0,00E+00	0,00E+00
Exported electrical energy (EEE)	MJ	0,00E+00	0,00E+00	1,04E+03	0,00E+00	0,00E+00
Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	2,05E+03	0,00E+00	0,00E+00

BIOGENIC CARBON CONTENT OF PRODUCT AND PACKAGING - 1 M³ OF METSÄ WOOD SPRUCE PLYWOOD

Indicator	Unit	A1-A3
Biogenic carbon content in accompanying packaging	kg	1.39
Biogenic carbon content in product	kg	196

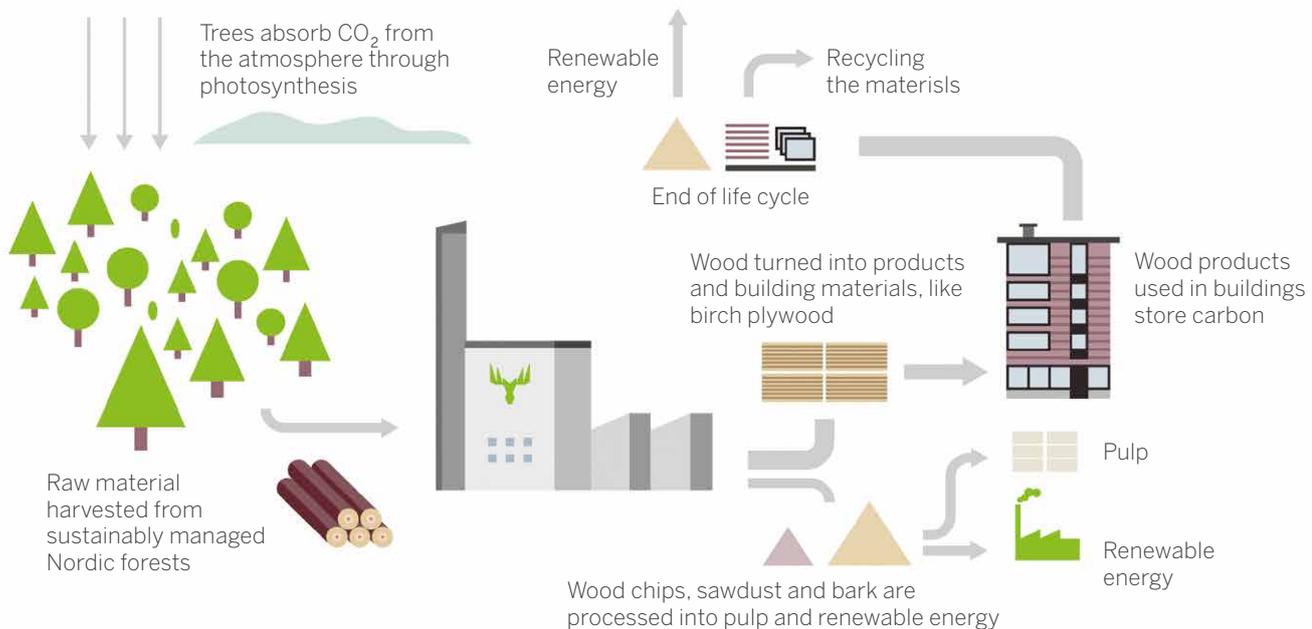
Additional Information

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 Spruce plywood ensures long carbon storage times. Carbon stored in Metsä Wood Spruce plywood is 719 kg CO₂ eq/m³. As long as spruce 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 spruce 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 METSÄ WOOD SPRUCE 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	4,21E+00	7,51E+02	0,00E+00	-7,32E+02
Global Warming Potential - fossil fuels (GWP-fossil)	kg CO ₂ eq.	6,30E-02	4,21E+00	3,16E+01	0,00E+00	-1,23E+01
Global Warming Potential - biogenic (GWP-biogenic)	kg CO ₂ eq.	3,20E-04	1,21E-03	7,19E+02	0,00E+00	-7,19E+02
Global Warming Potential - land use and land use change (GWP-luluc)	kg CO ₂ eq.	1,57E-04	2,04E-03	1,12E-02	0,00E+00	-1,73E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	1,20E-09	9,15E-08	4,37E-07	0,00E+00	-2,84E-07
Acidification potential, Accumulated Exceedance (AP)	mol H ⁺ eq.	3,61E-04	1,37E-02	1,46E-01	0,00E+00	-1,39E-01
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	6,22E-06	3,37E-05	3,98E-04	0,00E+00	-2,82E-03
Eutrophication potential - marine (EP-marine)	kg N eq.	4,53E-05	4,66E-03	5,67E-02	0,00E+00	-4,95E-02
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	5,29E-04	4,98E-02	5,91E-01	0,00E+00	-5,60E-01
Photochemical Ozone Creation Potential (POCP)	kg NMVOC eq.	1,70E-04	2,05E-02	2,20E-01	0,00E+00	-1,86E-01
Abiotic depletion potential - fossil resources (ADPF)	MJ	1,43E+00	5,97E+01	3,45E+02	0,00E+00	-2,34E+02
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	7,64E-07	1,35E-05	1,28E-04	0,00E+00	-8,05E-05
Water (user) deprivation potential (WDP)	m ³ world equiv.	1,61E-02	2,43E-01	2,11E+00	0,00E+00	-1,59E+01

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS - 1 M³ OF METSÄ WOOD SPRUCE 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	3,34E-07	3,06E-06	0,00E+00	-6,70E-06
Ionising radiation	kBq U235 eq	1,29E-02	2,99E-02	4,23E-01	0,00E+00	-1,12E+00
Ecotoxicity, freshwater	CTUe	2,41E-01	2,94E+01	1,89E+02	0,00E+00	-7,86E+01
Human toxicity, cancer	CTUh	2,96E-11	1,91E-09	2,25E-08	0,00E+00	-8,82E-08
Human toxicity, non-cancer	CTUh	1,18E-09	4,20E-08	2,53E-07	0,00E+00	-2,34E-07
Land use	Pt	2,79E-01	3,55E+01	1,24E+02	0,00E+00	-1,50E+04

INDICATORS DESCRIBING RESOURCE USE - 1 M³ OF METSÄ WOOD SPRUCE 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	9,25E-01	1,21E+01	0,00E+00	-2,76E+03
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0,00E+00	0,00E+00	-7,63E+03	0,00E+00	7,63E+03
Total use of renewable primary energy (PERT)	MJ	3,21E-01	9,25E-01	-7,61E+03	0,00E+00	4,86E+03
Use of non-renewable primary energy as energy carrier (PENRE)	MJ	1,67E+00	6,07E+01	3,62E+02	0,00E+00	-2,82E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0,00E+00	0,00E+00	-5,75E+02	0,00E+00	5,75E+02
Total use of non-renewable primary energy resource (PENRT)	MJ	1,67E+00	6,07E+01	-2,13E+02	0,00E+00	2,93E+02
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	-2,25E-02	-3,16E-01	0,00E+00	1,69E+00

Environmental Information

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES AND OUTPUT FLOWS - 1 M³ OF METSÄ WOOD SPRUCE PLYWOOD

END-OF-LIFE - RECYCLING

Indicator	Unit	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	1,50E-03	5,68E-02	1,30E+00	0,00E+00	-9,00E-01
Non-hazardous waste disposed (NHWD)	kg	3,35E-02	3,39E+00	1,51E+01	0,00E+00	-5,82E+00
Radioactive waste disposed (RWD)	kg	1,03E-05	1,94E-05	3,18E-04	0,00E+00	-8,85E-04
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	4,47E+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+A1	EN ISO 14040:2006 + A1:2020 Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006 + Amd 1:2020)
EN ISO 14044+A1+A2	EN ISO 14044:2006 + A1:2018 + A2:2020 Environmental management - Life cycle assessment - Requirements and guidelines (ISO 14044:2006 + Amd 1:2017 + Amd 2:2020)
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)