epd-norge

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A1

Sawn dried timber of Spruce and Pine

The Norwegian
EPD Foundation

Owner of the declaration:
SCA Wood AB

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-3442-2053-EN

Registration Number:
NEPD-3442-2053-EN

Issue date: 23.05.2022
Valid to: 23.05.2027

Sawn dried timber of Spruce and Pine

SCA Wood AB
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851 88 Sundsvall

Sweden

General information

Product:
Sawn dried timber of Spruce and Pine with an average moisture content of 16%

Program Operator:
The Norwegian EPD Foudation
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Declaration Number:
NEPD-3442-2053-EN

This declaration is based on Product Category Rules:
EN 15804 A1 (Core PCR)
NPCR 015 v3.0
EN16485

Statements:
The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidences.

Declared unit:
1m^3 sawn dried timber

Declared unit with option:
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Functional unit:
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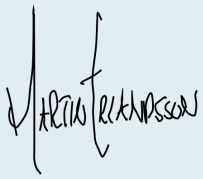
Verification:

Independent verification of the declaration and data, according to ISO14025:2010

Internal ☐ External ☒



Martin Erlandsson, IVL
Independent verifier approved by EPD Norway

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Place of production:
This EPD is valid for the following production units located in Sweden: *SCA Bollsta Sawmill, SCA Munksund Sawmill, SCA Rundvik Sawmill, SCA Tunadal Sawmill, Gällö Timber*

Management system:
ISO 14001 Certificate No: 2000-SKM-AE295
FSC Certificate No: SGSCH-COC-050156, SGCCH-CW-050156
FSC Certificate No: DNV-COC-001780
PEFC Certificate No: DE17/819943523
PEFC certificate: 2019-SKM-PEFC-303

Organisation no:
556047-8512

Issue date:
23.05.2022

Valid to:
23.05.2027

Year of study:
2019

Comparability:
EPDs for other construction products may not be comparable if not in compliance with EN 15804 and EN 16485 and seen in a builidng context.

The EPD has been worked out by:
Eva Lindström, SCA R&D Centre

Håkon Hauan (Manager of EPD Norway)

Product

Product description:

Sawn dried timber of spruce and pine produced in SCAs' five sawmills in Sweden. The timber is sawn, dried and delivered in various dimensions. The sawn timber products are delivered for use without further treatment or as raw material for planed products. The data in this EPD represent a weighted average for the five saw mills.

Product specification:

Densities of wood products varies depending on raw material species, moisture content etc. The calculations for this EPD is based on an average density of 491 kg/m^3 and an average moisture content of 16%.

Materials	KG	%
Wood dry weight; spruce/pine	412	84%
Water content; spruce/pine	79	16%
Total product; spruce/pine	**491**	
Plastic Packaging	0,4	0,1%
Wooden packaging	1,9	0,4%
Total with packaing	**493**	100%

Technical data:

Densities of sawn wood products varies depending on species, moisture content etc. The moisture content of sawn wood products varies between 8-18%. The calculations for this EPD is based on an average moisture content of 16% and the following densities:

Sawn dried timber of spruce/pine: 469/518 kg/m^3
Average density SCA sawn wood: 491 kg/m^3

Market:

Main markets are Europe, Asia and North Africa

Reference service life, product:

The service life is equal to the construction element which it is part of and is typically set to at least 50 - 60 years.

Reference service life, building:

Not included since this is a raw material

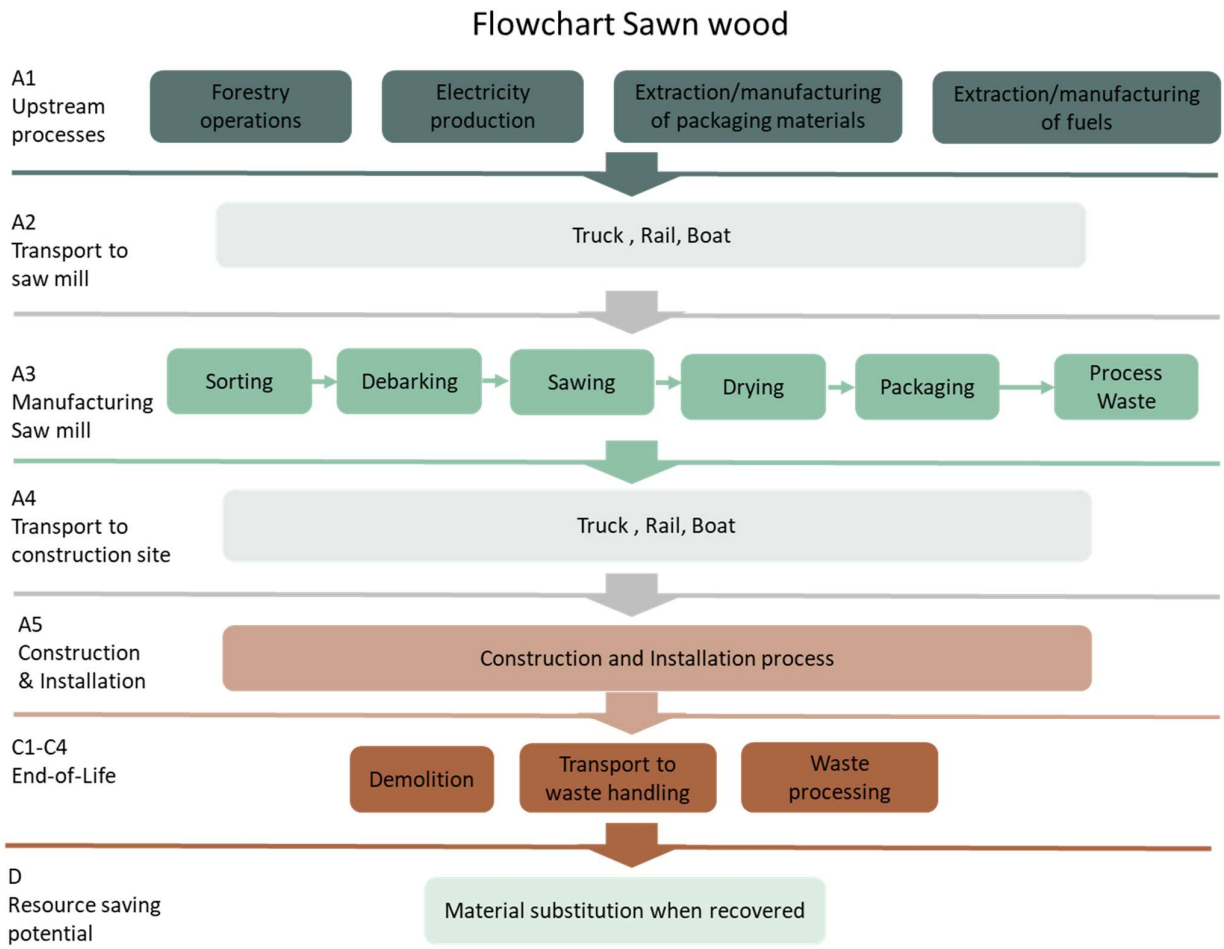
LCA: Calculation rules

Declared unit:

1m^3 sawn and packed wood

System boundary:

A flowchart showing the system boundary for the production of sawn wood is shown below.



Data quality:

Primary production data from the five saw mills was collected during 2020-2021 and represent production year 2019.

Data for forestry operations are based on EcoInvent 3.6 data but modified with updated CO_2 data for Swedish Forestry published by Ågren et.al (2021)

All other upstream data and data for production waste treatment is from EcoInvent v.3.6. and GaBi 10.0.0.7 database

GaBi Software System and databases for lifecycle engineering version 10.0.07 from Sphera Soultions has been utilised for modelling and calculations

Allocation:

Environmental impact from forestry operations is allocated to the roundwood only and nothing to forestry residues such as branches and tops.

The production of of sawn timber results in a number of valuable by-products i.e. raw wood chips used for cellulose pulp production as well as saw dust, bark and dry wood chips sold externally for use as biofuels.

Allocation of the environental impact from the saw mill processes has been allocated between sawn timber and by products based on economic revenue in accordance with EN 15804.

The environmental impact from forestry operations including transport of round wood to the saw mills has been allocated between by-products and sawn timber based on the physical relationship between them i.e. on a dry weight basis in accordance with EN 15804 and EN 16485.

Cut-off criteria:

All major raw materials and energy flows are included. The production processe for raw materials and energy flows that represent a very small amount (<1%) is not included. This cut-off rule does not apply to hazardous materials and dangerous substances.

Calculation of biogenic carbon content

Sequestration and emissions of biogenic carbon dioxide is calculated according to EN 16485: 2014 where the net biogenic carbon emissions is zero i.e. carbon dioxide neutral.

Carbon neutrality is assumed for the of wooden packaging material used.

The content of biogenic carbon stored in the product is calculated and reported in accordance with EN 15804 and EN 16485 using a dry density for wood of 394 kg/m^3 for spruce and 435 kg/m^3 for pine. This gives a biogenic carbon content of 197 kg C/m^3 for spruce and 218 kg C/m^3 for pine with a weighted average of **206 kg C/m^3** . This corresponds to a storage of **756 kg CO_2/m^3**

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to assembly/user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance KM	Fuel/Energy consumption	value (l/t)
Truck	45% (90%+0%)	TT/AT 28-34 + 34-40 t	100	0.027 l/tonkm	2.7

The transport distance is reported as 100 km and shall be used as a factor to estimate the impact for the actual distance to a specific location. The truck for delivering wood products to construction site is assumed to return empty.

Assembly (A5)

	Unit	Value
Electricity consumption,; crane	kWh	2.94E-02
Diesel; front loader	kWh	2.85E-01
Material loss	%	5

4 minutes of work with a front loader at the construction site (Erlandsson 2013) and an average lift with crane (Lundström 2016) is assumed . For material loss at the constrution site an assumption of 5% is used

Use (B1)

	Unit	Value
MND		

Maintenance (B2)/Repair (B3)

	Unit	Value
MND		

Replacement (B4)/Refurbishment (B5)

	Unit	Value
MND		

Operational energy (B6) and water consumption (B7)

	Unit	Value
MND	m3	

End of Life (C1, C3, C4)

	Unit	Value
C1 Demolition machine (diesel)	kWh	0.54
C3: Reuse	Kg	0
C3: Recycling	Kg	0
C3: Energy recovery	Kg	491
C3: Diesel for chipping machine	kWh	2.9
To landfill	Kg	0

Energy consumption for demolition (C1) and for chipping of discarded wood (C3) before energy recovery.

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance KM	Fuel/Energy consumption	value (l/t)
Truck	45% (90%+0%)	Large lorry/truck	35	0.037 l/tonkm	1.3

The truck for transporting waste is assumed to return empty

Benefits and loads beyond the system boundaries (D)

	Unit	Value
Discarded products substituting average fuel mix in district heating	MJ	7916

The discarded wood is chipped and assumed to be used as fuels in district heating and replacing the average fuel mix.

If the recycling rate is less than 100% the results from module C and D shall be recalculated to reflect the actual recycling rate. 100% is used to enable a modular approach when using these figures at building level.

Additional technical information

No additional technical information is given

LCA: Results

System boundaries (X=included, MND= module not declared, MNR=module not relevant)

Product stage			Assembly stage		Use stage							End of life stage				Beyond system boundary
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
SE	SE	SE	SE	SE	-	-	-	-	-	-	-	SE	SE	SE	SE	SE

Environmental impact

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP fossil	kg CO2 -eq.	2,89 E+01	3,18E+00	1,59E+00	1,29E-01	1,49E+00	7,03E-01	0,00E+0	-1,04+02
GWP bio	kg CO2 -eq.	-7,41 E+02	0,00E+00	0,00E+0	0,00E+0	0,00E+0	7,41 E+02	0,00E+0	0,00E+0
ODP	kg CFC11-eq.	2,87 E-06	4,57E-08	1,74E-08	1,85E-09	2,14E-08	1,01E-08	0,00E+0	-1,04E-06
POCP*	kg C2H4 -eq.	2,41 E-02	-6,18E-03	-1,61E-05	-2,50E-04	-2,90E-03	-1,37E-03	0,00E+0	-7,65E-02
AP	kg SO2 -eq.	1,45 E-01	2,11E-02	3,29E-01	8,54E-04	9,89E-03	4,67E-03	0,00E+0	-6,74E-01
EP	kg PO43--eq.	4,54 E-02	7,53E-03	2,93E-01	3,04E-04	3,52E-03	1,66E-03	0,00E+0	-2,99E-02
ADPM	kg Sb-eq.	1,51 E-04	1,31E-02	7,56E-04	5,27E-08	6,10E-07	2,89E-07	0,00E+0	-7,55E-05
ADPE	MJ	4,07 E+02	4,75E+01	1,95E+01	1,92E+00	2,22E+01	1,05E+01	0,00E+0	-2,33E+02

**GaBi separates NOx into NO and NO_2. Due to this the appplied characterisation model with a marginal aproach for POCP based on highly pollutes ambient air can result in a negative characterisation factor for nitric oxide*

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource use

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	7,11 E+03	1,29E+01	5,42E+02	5,25E-01	6,18E+00	2,86E+00	0,00E+00	3,94E+03
RPEM	MJ	7,92 E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-7,92E+03	0,00E+00	0,00E+00
TPE	MJ	1,50 E+04	1,29E+01	5,42E+02	5,25E-01	6,19E+00	-7,92E+03	0,00E+00	3,94E+03
NRPE	MJ	7,55 E+02	5,13E+01	3,71E+01	2,09E+00	2,46E+01	1,13E+01	0,00E+00	-7,34E+03
NRPM	MJ	0,00 E+00	0,00 E+00	0,00E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
TRPE	MJ	7,55 E+02	5,13E+01	3,71E+01	2,09E+00	2,46E+01	1,13E+01	0,00E+00	-7,34E+03
SM	kg	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-1,91E+03
W	m^3	1,14 E+00	9,43E-01	3,66E-01	3,82E-02	4,41E-01	2,08E-01	0,00E+00	-7,08E+01

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

End of life - Waste

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HW	kg	1,04 E-05	2,33E-06	9,24E-04	9,42E-08	1,09E-06	5,15E-07	0,00 E+00	2,21E-06
NHW	kg	3,69 E-01	1,43E-02	2,16E-01	5,75E-04	6,66E-03	3,15E-03	0,00 E+00	-8,53E-01
RW	kg	7,30 E-02	6,05E-05	5,275E-03	2,45E-06	2,84E-05	1,34E-05	0,00 E+00	3,24E+00

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

End of life – output flow

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CR	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MR	kg	5,90E-03	0,00 E+00	3,86E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MER	kg	2,39E-04	0,00 E+00	1,88E+00	0,00 E+00	0,00 E+00	4,91E+02	0,00 E+00	0,00 E+00
EEE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
ETE	MJ	1,02 E+01	0,00 E+00	0,00E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009

Additional Norwegian requirements

Greenhous gas emission from the use of electricity in the manufacturing phase

Swedish production mix representing the average country specific electricity supply for final consumers, including electricity own consumption, transmission/distribution losses of electricity supply and electricity imports from neighbouring countries is used for the applied electricity for the manufacturing process (A3)

Data Source	Amount	Unit
GaBi Database v 10.0.0.7	35,3	gram CO2eq /kWh

Dangerous substances

- ☑ The product contains no substances given by the REACH Candidate list or the Norwegian priority list

- ☐ The product contains substances given by the REACH candidate list or the Norwegian priority lits thar are less than 0.1% by weight
- ☐ The product contains dangerous substances, more than 0.1% by weight given by the REACH candidate list or the Norwegian priority, see table
- ☐ The product contains no substances,given by the REACH candidate list or the Norwegian priority. The product is classified as hazardous waste (Avfallsforskriften, Annex III), see table

Name	CAS No	Amount
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Indoor environment

The product meets the requirements for low emissions.

Carbon footprint

The climate impact from the products including direct and indirect emissions of fossil CO2 as well as the sequestration of biogenic carbon in product for 1 m3 sawn timber is caluclated and reported below

Impact Category	Unit	A1-A3
GWP fossil	kg CO2eq	**2,89 E+01**
GWP biogenic sequestrated in product	kg CO2eq	-7,56 E+02
Net climat impact	kg CO2eq	-7,27 E+02

Bibliography

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ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012+A1:2013	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
ISO 21930:2007	Sustainability in building construction - Environmental declaration of building products
NPCR-015 v. 3.0	Part B (10.04.2019) for wood and wood based products for use in construction
EN 16485	Round and sawn timber – Environmental Product Declarations – Product Category rules for wood and wood based products for use in construction.
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