epd-norge

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A1

SCA

The Norwegian
EPD Foundation

Owner of the declaration:
SCA Wood Scandinavia AB

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-3642-2588-EN

Registration Number:
NEPD-3642-2588-EN

Issue date: 20.07.2022
Valid to: 20.07.2027

Planed timber of Spruce and Pine

SCA Wood Scandinavia AB
Skepparplatsen 1

851 88 Sundsvall

Sweden

General information

Product:
Planed 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-3642-2588-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 planed 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

Owner of the declaration:
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Place of production:
This EPD is valid for the following production units located in Sweden:

SCA Wood Building & Supply Scandinavia; Bollsta, Stugun, Tunadal.

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:
556302-0667

Issue date:
20.07.2022

Valid to:
20.07.2027

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 buildng context.

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

Approved

Håkon Hauan
Manager of EPD Norway

Product

Product description:

Sawn, dried and planed timber of spruce and pine produced in three planing mills in Sweden The timber is sawn, dried, planed, packed and delivered in various dimensions. The planed timber products are delivered for use without further treatment or as raw material for further processsing. The data in this EPD represent a weighted average for the three planing mills (including saw mill process)

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 488 kg/m^3 and an average moisture content of 16%.

Materials	KG	%
Wood dry weight; spruce/pine	410	84%
Water content; spruce/pine	78	16%
Total product; spruce/pine	**488**	100%
Plastic Packaging	0,5	0,1%
Wooden packaging	4,7	1%
Total with packaging	**493**	

Technical data:

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

Planed dried timber of spruce/pine:	469/518 kg/m^3
Average density SCA planed wood (59% spruce and 41% pine):	**488 kg/m^3**

Market:

Main markets are Europe, Asia and North Africa

Reference service life, product:

The service life is euqal 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.

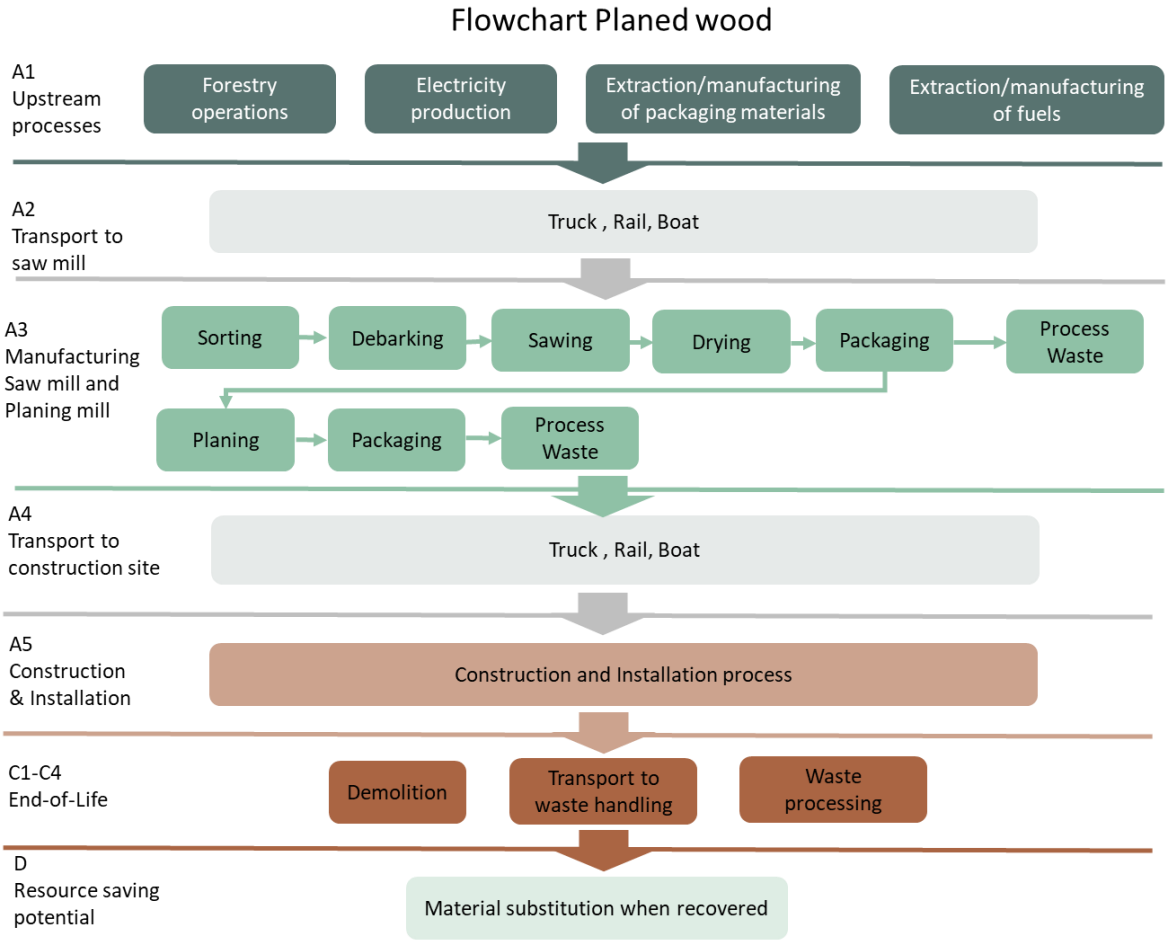
LCA: Calculation rules

Declared unit:

1m^3 planed and packed wood

System boundary:

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



Data quality:

Primary production data is collected from SCAs saw mills and three planing mills. Data for forestry operations are based on EcoInvent 3.6 data but modified with updated CO2 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 (Sphera solutions)

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 chops sold externally for use as biofuels.

Allocation of the environmental impact from the saw mill and planing mill processes has been allocated between sawn timber and by-products based on economic revenue in accordance with EN15804.

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 realtionship between them i.e. on a dry weight basis in accordance with EN 15804 and EN 16485. No allocation to by-procuts from the planing process have been made.

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 biogeninc carbon is zero i.e. carbon dioxide neutral. Carbon neutrality is assumed for the wooden packaging used.

The content of biogenic carbon stored in the product is calculated and reported in accordance with EN 15804 and EN 16485 using an average dry density for planed wood of 410 kg/m^3. This gives a biogenic carbon content of of **205 kg C/m^3** which corresponds to a storage of **751 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	2.93E-02
Diesel; front loader	kWh	2.83E-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	488
C3: Diesel for chipping machine	kWh	2.9
To landfill	Kg	0

Energy consumption for demolition (C1) and chipping of discarded wood (C3) before energy recovery. 100% energy recovery is assumed at end of life.

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

Assumed transport to local waste treatment site from where it is sold as fuel for energy generation. 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	7866

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	MND	MND	MND	MND	MND	MND	MND	SE	SE	SE	SE	SE

Environmental impact

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP fossil*	kg CO2 -eq.	3,56 E+01	3,17E+00	1,58E+00	1,28 E-01	1,48 E+01	6,99 E-01	0,00 E+00	-1,03 E+02
GWP bio	kg CO2 -eq.	-7,51 E+02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,51 E+02	0,00 E+00	0,00 E+00
ODP	kg CFC11-eq.	4,80 E-06	4,55 E-08	1,73 E-09	1,84 E-09	2,13 E-08	1,01 E-08	0,00 E+00	-1,03 E-06
POCP**	kg C2H4 -eq.	2,54 E-02	-6,15 E-03	-1,60 E-05	-2,49 E-04	-2,88 E-03	-1,36 E-03	0,00 E+00	-7,61 E-02
AP	kg SO2 -eq.	1,84 E-01	2,10 E-02	3,27 E-01	8,49 E-04	9,83 E-03	4,65 E-03	0,00 E+00	-6,71 E-01
EP	kg PO4-eq.	5,57 E-02	7,49 E-03	2,91 E-01	3,02 E-04	3,50 E-03	1,65 E-03	0,00 E+00	-2,97 E-02
ADPM	kg Sb-eq.	1,46 E-04	1,30 E-02	7,52 E-04	5,24 E-08	6,07 E-07	2,87 E-07	0,00 E+00	-7,51 E-05
ADPE	MJ	5,10 E+02	4,73 E+01	1,94 E+01	1,91 E+00	2,21 E+01	1,04 E+01	0,00 E+00	-2,31 E+02

** GWP fossil (A1-A3) varies bewteen 3,01E+01 to 4,02E+01 for the three planing mills*

**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	7,67 E+03	1,29 E+01	5,39 E+02	5,22 E-01	6,14 E+00	2,85 E+00	0,00 E+00	3,91 E+03
RPEM	MJ	7,87 E+03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	-7,86 E+03	0,00 E+00	0,00 E+00
TPE	MJ	1,55 E+04	1,29 E+01	5,39 E+02	5,22 E-01	6,14 E+00	-7,86 E+03	0,00 E+00	3,91 E+03
NRPE	MJ	9,24 E+03	5,13 E+01	3,69 E+01	2,08 E+00	2,44 E+01	1,13 E+01	0,00 E+00	-7,25 E+03
NRPM	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
TRPE	MJ	9,24 E+03	5,13 E+01	3,69 E+01	2,08 E+00	2,44 E+01	1,13 E+01	0,00 E+00	-7,25 E+03
SM	kg	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-1,90 E+03
W	m^3	1,53 E+03	9,37 E-01	3,64 E-01	3,79 E-02	4,38 E-01	2,07 E-01	0,00 E+00	7,00 E+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	1,21 E-05	2,31 E-06	9,19 E-04	9,36 E-08	1,09 E-06	5,12 E-07	0,00 E+00	2,20 E-06
NHW	KG	4,80 E-01	1,42E-02	2,15 E-01	5,72 E-04	6,63 E-03	3,13 E-03	0,00 E+00	-8,48 E-01
RW	KG	1,00 E-01	6,02 E-05	5,24 E-03	2,43 E-06	2,82 E-05	1,33 E-05	0,00 E+00	3,23 E+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	7,24 E-01	0,00 E+00	4,76 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MER	kg	3,86 E-01	0,00 E+00	4,69 E+00	0,00 E+00	0,00 E+00	4,88E+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	0,00 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 m^3 planed timber is caluclated and reported below

Impact Category	Unit	A1-A3
GWP fossil	kg CO2eq	**3,56 E+01**
GWP biogenic sequestrated in product	kg CO2eq	-7,51 E+02
GWP tot	kg CO2eq	-7,15 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	Wood and wood based products for use in contructtion
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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