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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Sandåsa Timber AB
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-3342-1980-EN
Registration number:	NEPD-3342-1980-EN
ECO Platform reference number:	-
Issue date:	25.02.2022
Valid to:	25.02.2027

A specific EPD for

Planed timber made of spruce or pine, u 16%

Sandåsa Timber AB

SE-645 94 Strängnäs, Sweden

www.epd-norge.no

General information

Product:

Planed timber made of spruce or pine, u 16%

Owner of the declaration:

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Declaration number:

NEPD-3342-1980-EN

Place of production:

Strängnäs, Sweden

ECO Platform reference number:

—

Management system:

PEFC ST 2002, FSC-STD-40-004

This declaration is based on Product Category Rules:

CEN Standard EN 15804 A1 serves as core PCR and PCR Part B for wood and wood-based products for use in construction (NPCR 015 version 3.0, 10.04.2019).

Organisation no:

SE 556189-3800

Statement of liability:

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

Issue date:

25.02.2022

Valid to:

25.02.2027

Declared unit:

1 m^3 planed wood with a moisture content (u) of 16%

Year of study:

2020

Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

Declared unit with option:

1 m^3 including information modules
A1-3, A4, A5, C1-4 and D

EPD tool used:

This EPD is based on IVL EPD Generator for the Sawmill products (V1.0) developed for Swedish Wood's (Svenskt Trä) members and follow the approved background database verification approach.

Functional unit:

—

The EPD has been worked out by:

Martin Erlandsson

Swedish Environmental Research Institute

Verification:

The CEN Norm EN 15804 serves as the core PCR.
Independent verification of the declaration and data, according to ISO14025:2010

☐ internal ☑ external

Third party verifier:

Linda Høibye, Life Cycle Assessment Consulting
(Independent verifier approved by EPD Norway)

Approved

Håkon Hauan
(Managing Director EPD-Norway)

Product

Product description:

Planed timber is used for structural purposes, cladding and as component in wood based products. The average moisture ratio of the declared products is 16 % (EN 14298). On request, timber with a different moisture content can be delivered.

Product specification:

Planed timber is produced in defferent size and the decalared product is represenatative for the avarage planed timber produced by the sawmill and a mix of pine and spruce. Difference on GWP-Fossil A1-3 caused by a mix of tree species is less than 4% compared to individual specie.

Materials, product	kg/m^3	%
Spruce/whitewood	321	67%
Pine/redwood	160	33%
Sum	481	100%
Packaging materials	kg/m^3	%
Wood	0.50	61%
Nylon strap	0.07	9%
Polyethene folio	0.25	30%
Steel strip	0	0%
Cardboard	0	0%
Sum	0.82	100%

Technical data:

Planed timber is delivered accourding to qualities and sizes specified by demandson differents markets. For the European market, the European EN standard and the Swedish publication Appearance grading of softwoods – European spruces, firs, pines, Douglas fir and larches are typically applicable.

The raw dry mass for spruce is 384 kg/m^3 as a Swedish avarage and used here to calulate biogenic carbon content and the delivery density including water accourding to the current moisture

Market:

Main markets are Sweden and Northen Europe.

Reference service life:

Reference service life is normally the same as the building when not exposed for weathering, which is typically set to 50 or 60 years.

Use QR code for **fact sheet** on sawn timber.

LCA: Calculation rules

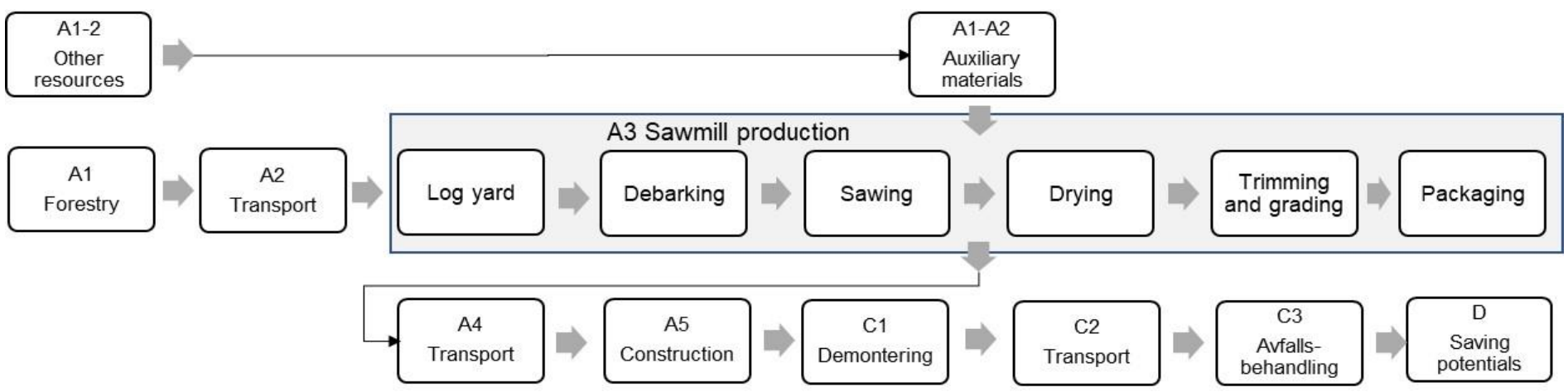
Declared unit:

1 m3 planed wood with a moisture content (u) of 16%

System boundary:

Flow chart for the production (A3) of I-beams are shown below, while the rest of the modules are shown on page 5. Module A4 to D is further explained in the scenario section.

Figure 1 *Beam manufacturing and transport to a customer and the remaing lifecycle.*



Data quality:

For the sawmill, specific LCA data is used l and for the forestry national representative figures. Upstream data for energy wares and small amount of auxiliary materials are mainly from Gabi (age 2017-2020).

Allocation:

All impact from the planing of timber is allocated to the main product. The shaving is sold and only attributed to its upstream impact from its previously processes. For the sawmill and its multiple co-products with different economic values, impact is allocated in provisions to EN 15804. A conservative approach is used for transport of round timber (module A2) to the sawmill based on economic allocation factors. The economic value of the different parts of the stock is attributed using the market value for the of the part final products/co-products. An exception to this is the drying process that is attributed to the intermediate product on physical premises. The approach is conservative for sawn timber compared to if an intermediate value was set on the products flows that goes to the next process step in the sawmill. A conservative economic allocation approach is used for forestry products, where no impact is allocated to the tops and branches (GROT), except forestry operations aimed for GROT (forwarding and shipping).

Cut-off criteria:

All major raw materials and all the essential energy used are included. All production process are included, hence the few limited cut off that occurs (<<1%) related to packaging materials that is not substituted in module D. This cut-off rule does not apply for hazardous materials and substances. Inherent biogenic carbon and stored energy in packaging material is balanced out direct.

Calculation of biogenic carbon content:

Sequestration (module A1) and emissions of biogenic carbon are calculated according to EN16485:2014, where the net biogenic carbon cycle A to C is zero (i.e. carbon dioxide neutral). In this EPD, the amount of biogenic carbon stored in the product (module A3) is reported additionally (according to EN 15804 A2) as biogenic carbon stored in the product (see table 'Resource use'). For biogenic carbon in all other modules after A3, the carbon in the products is assigned to the module where the emission occurs in order to support the modularity principle in EN15804, so the net result is zero. Biogenic carbon and energy stored in packaging materials are directly balanced out and therefore not visible in the result.

LCA: Scenarios and additional technical information

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

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) % (90+0%)	Type of vehicle	Distance km	Fuel consumption (l/t·km)	Value (l/t)
Semi-trailer	0.45	TT/AT 28-34 + 34-40t	100	0.027 l/tkm	2.7

A4: The transportation is reported as 100 km and shall be used as faktor to estimate the actual distance to the specific object.

Assembly (A5)

	Unit	Value
Material loss	%	5
Crane, electricity consumption	kWh	2.9E-02
Front loader, diesel	kWh	2.8E-01

A5: At the construction site, 4 minutes of work with front loader is assumed (Erlandsson 2013) and an average lift with a crane (Lundström 2016). 5% material loss is assumed att construction site.

Use (B1)

	Unit	Value
MND		

Maintenance (B2)/Repair (B3)

	Unit	Value
MND		

The declared product is not assumed to be exposed for wether and for that reason no mainatance is needed during the service life.

Replacement (B4)/Refurbishment (B5)

	Unit	Value
MND		

Operational energy (B6) and water consumption (B7)

	Unit	Value
MND		

No operational energy used during service life.

End of Life (C1, C3, C4)*

	Unit	Value
C1: Demolision machine (diesel)	kWh	0.53
C3: To material reuse	kg	0
C3: To material recycling	kg	0
C3: To energy recovery	kg	480.7
C3: Wood chipping (diesel)	kWh	2.9
C4: To landfill	kg	0

C2: Assumed tranport from demolition site to local waste treatment site, from where it is then sold.

Energy need for demolition (C1) and chipping (C3) of the wooden discard products is found in according to Erlandsson et el (2015). The scenario accounts for 100%* energy recovery and end of waste is reached in C3. No statistics exist in Sweden on recycling of demolition wood but will likely be at least 90%.

Transport to waste processing (C2)*

Type	Capacity utilisation (incl. return) % (90+0%)	Type of vehicle	Distance km	Fuel consumption (l/t·km)	Value (l/t)
Large lorry/truck	45%	TT/AT 14-20+20-28t	35	0.037	1.3

The transport assume empty return.

Benefits and loads beyond the system boundaries (D)*

	Unit	Value
Chipped discard product that substitute average used fuel in a district heating plant	MJ	-7959

D: The chipped product is assumed to be used as fuel in a district heating and then replaces the average energy mix.

* If less recycling rate than 100% is asked for shall the result from module C and D be multiplied by such factor that takes the actual number into account. 100% is used here to support the modular approach of using these figures on the buildings level.

Additional technical information

No additional information given.

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

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

Product stage			Construction process stage		Use stage							End of life stage				Beyond the system boundary
Raw materials	Transport	Manufacturing	Transport	Construction, installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-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	A1-3	A4	A5	C1	C2	C3	C4	D
GWP-TOT	kg CO_2 e	-7.31E+02	3.12E+00	1.56E+00	1.26E-01	1.46E+00	7.60E+02	0.00E+00	-1.02E+02
GWP-IOBC*	kg CO_2 e	2.82E+01	3.12E+00	1.56E+00	1.26E-01	1.46E+00	6.89E-01	0.00E+00	-1.02E+02
ODP	kg CFC11 e	2.96E-07	4.48E-08	1.71E-08	1.81E-09	2.10E-08	9.91E-09	0.00E+00	-1.02E-06
POCP**	kg C_2H_4 e	6.30E-03	-6.06E-03	-1.58E-05	-2.45E-04	-2.84E-03	-1.34E-03	0.00E+00	-7.50E-02
AP	kg SO_2 e	6.42E+00	2.07E-02	3.22E-01	8.37E-04	9.69E-03	4.58E-03	0.00E+00	-6.61E-01
EP	kg PO_4^{3-} e	5.73E+00	7.38E-03	2.87E-01	2.98E-04	3.45E-03	1.63E-03	0.00E+00	-2.93E-02
ADPM	kg Sb e	1.48E-02	1.28E-06	7.41E-04	5.16E-08	5.98E-07	2.83E-07	0.00E+00	7.40E-05
ADPE	MJ	3.35E+02	4.66E+01	1.91E+01	1.88E+00	2.18E+01	1.03E+01	0.00E+00	-2.28E+02

**LCI origin from GaBi database separates NOx into NO and NO_2, in combination with the applied characterization model with a marginal approach for POCP based on highly polluted ambient air, can result in a negative characterization 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.
***** Also refered as **GWP-GHG** in context to Swedish legislation and public procurement.

Resource use

Parameter	Unit	A1-3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	1.06E+04	1.20E+01	5.31E+02	4.87E-01	5.63E+00	5.63E+00	0.00E+00	3.96E+03
RPEM	MJ	7.97E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.97E+03	0.00E+00	0.00E+00
TPE	MJ	1.86E+04	1.20E+01	5.31E+02	4.87E-01	5.63E+00	-7.97E+03	0.00E+00	3.96E+03
NRPE	MJ	6.85E+02	5.09E+01	3.68E+01	2.06E+00	2.38E+01	2.38E+01	0.00E+00	7.38E+03
NRPM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TRPE	MJ	6.85E+02	5.09E+01	3.68E+01	2.06E+00	2.38E+01	2.38E+01	0.00E+00	7.38E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.92E+03
W	m^3	6.36E+00	9.24E-01	3.64E-01	3.74E-02	4.32E-01	4.32E-01	0.00E+00	-7.12E+01

Biogenic carbon stored in the product (A1-3), [kg C]	2.07E+02

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.
Energy stored as material in the packaging materials is direct balanced out in the module it arrise and stored in the product is balanced out over the life cycle, exactly the same as stored biogenic carbon is reported in GWP.

End of life - Waste

Parameter	Unit	A1-3	A4	A5	C1	C2	C3	C4	D
HW	kg	1.81E-02	2.28E-06	9.06E-04	9.23E-08	1.07E-06	5.05E-07	0.00E+00	2.17E-06
NHW	kg	4.23E+00	1.40E-02	2.12E-01	5.64E-04	6.53E-03	3.09E-03	0.00E+00	-8.36E-01
RW	kg	1.04E-01	5.93E-05	5.18E-03	2.40E-06	2.78E-05	1.31E-05	0.00E+00	3.18E+00

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

End of life - Output flow

Parameter	Unit	A1-3	A4	A5	C1	C2	C3	Cy	D
CR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	3.52E-03	0.00E+00	1.76E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	2.35E-03	0.00E+00	1.17E-04	0.00E+00	0.00E+00	4.81E+02	0.00E+00	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	MJ	3.02E-02	0.00E+00	1.51E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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

Additional Norwegian requirements

Greenhous gas emission from the use of electricity in the manufacturing phase
Swedish national production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Data source	Amount	Unit
Energywares Gabi and end energymix ENSTO-E 2016	42	g CO_2-eqv/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 list that are less than 0,1 % by weight.

☐ The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.

☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

Name	CAS no.	Amount
—	—	—

Indoor environment
Not relevant

Carbon footprint
Carbon footprint according to ISO 14067 has not been worked out for the product.

Bibliography

ISO 14025:2006	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006+A1:2017+A2:2020	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
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