

# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025, ISO 21930 and EN 15804+A2



## A specific EPD for

# Planed timber made of spruce or pine, u 16%



The Norwegian EPD Foundation

Owner of the declaration: J G Anderssons Söner AB Linneryd www.jga.se

Product category /PCR: Wood and wood-based products

#### **EPD Software:**

**Program holder and publisher** The Norwegian EPD Foundation

**Declaration number:** NEPD-4077-3107-SE

**Issue date:** 18.01.2023 **Valid to:** 18.01.2028

This EPD is based on IVL EPD Generator for the Sawmill products (NEPDT26) and follow the approved background database verification approach.



# **General information**

Product: Planed timber made of spruce or pine, u 16% (83% spruce and 17% pine)

Program Operator: The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway Phone: +47 23 08 80 00 Email: post@epd-norge.no

**Decleration Number:** NEPD-4077-3107-SE

This declaration is based on Product Category Rules: CEN Standard EN 15804 A2 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).

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, life cycle assessment data and evidences.

Declared unit:

Declared unit with option: 1 m<sup>3</sup> planed timber A1-A5, B1-B7, C1-C4 and D

Functional unit:

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Verification:

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

□ Internal

⊠ External

Third party verifier:

Indo Laibe

Linda Høibye, Life Cycle Assessment Consulting Independent verifier approved by EPD Norway Owner of the declarationand manufacturer: J G Anderssons Söner AB Contact person: Jonas Sandborg Phone: +46 470 76 11 74 Email: jonas.sandborg@jga.se

Place of production: Virkesvägen 8, S-362 58 Linneryd Sweden

Management system: ISO 9001, ISO 14001

**Organisation no:** 556059-6206

**Issue date:** 18.01.2023

Valid to: 18.01.2028

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.

The EPD has been worked out by: Martin Erlandsson, IVL

ARTIN RIXNOSSON

Approved by:

Hoto Hain

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 different size and the declared product is representative for the average planed timber produced by the sawmill and a mix of pine and spruce. Difference in the calculated GWP Fossil A1-A3 between a 100% single species and a mix of tree species respectively, is less than 4%."

Materials, product		kg/m <sup>3</sup>	%
Spruce/whitewood		392	83%
Pine/redwood		82	17%
	Sum	474	100%
Packaging materials		kg/m <sup>3</sup>	%
Wood		0.058	11%
Polyethene wrap		0.30	60%
Plastic strap		0.15	29%
Steel strip		0	0%
Cardboard		0	0%
	Sum	0.51	100%

# LCA: Calculation rules

Declared unit:

1 m3 planed timber

## Technical data:

Planed timber is delivered according to qualities and sizes specified by demands on different markets. For the European market, the European EN standards 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<sup>3</sup> and 420 kg/m<sup>3</sup> for pine as Swedish averages and used here to calculate biogenic carbon content and the delivery density including water according to the current moisture content.

#### Market:

Main markets are Sweden, Netherlands, Denmark and United Kingdom.

#### **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.

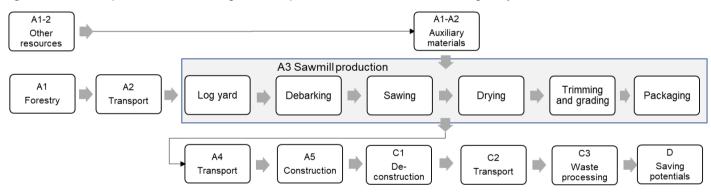


Use QR code for **fact sheet** on Swedish wood products.

#### System boundary:

Flow chart for the production (A3) of the declared product 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 Declared product manufacturing and transport to a customer and the remaing lifecycle.



## Data quality:

The sawmill process and transport use specific LCA data and national representative figures is used for the forestry. Generic upstream data for energy wares and small amount of auxiliary materials are mainly from Gabi (age 2017-2022).

#### Allocation:

The allocation is made in accordance with the provisions of EN15804. All impact from the planning of boards are allocated to the main product. The shaving are sold and only attributed to its upstream impact from its previously processes. The sawmill and its multiple co-products are allocated based on their different economic values, except the drying process that is attributed to the intermediate product on physical premises. The economic value of the different parts of the input round timber are attributed using the market value of its final products/co-products. A conservative approach is used for transport of round timber to the sawmill based on economic allocation factors (module A2). A conservative economic allocated to the tops and branches (GROT), except forestry operations aimed for GROT (forwarding and shipping). Indicator result on potential soil quality (SQP) is assessed based on national characterisation factors for Swedish forestry (Horn et al 2021).

#### 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 directly.

#### Calculation of biogenic carbon content:

Sequestration (module A1) and emissions of biogenic carbon are calculated according to EN16485:2014/EN15804+A2, 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 (less than 5 weight-%) are directly balanced out and therefore not visible in the environmental indicator 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)

Туре	Loaf factor, % (90+0%)	Type of vehicle	Distance km	Fuel	Fuel	
Semi-trailer	0.45	TT/AT 28-34 + 34-40t	100	0.027	l/tkm	2.7
$\Delta A$ . The transportation is report	ed as 100 km and shall be used as factor	to estimate the actual distance	e to the specific o	hiect		

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

#### Assembly (A5)

MND

	Unit	Value
Material loss	%	5
Crane, electricity consumption	kWh	2.8E-02
Front loader, diesel	kWh	2.7E-01

A5: At the construction site, 4 minutes of work with front loader is assumed (Erlandsson 2015) and an average lift with a crane (Lundström 2016). 5% material loss is assumed att construction site.

#### Maintenance (B2)/Repair (B3)

#### Use (B1)

	Unit	Value
MND		

## Replacement (B4)/Refurbishment (B5)

			Unit	Value			Unit	Value
						MND		
	1.4 1	1.4	 		-			

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

#### 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	0.52
C3: To material reuse	kg	0
C3: To material recycling	kg	0
C3: To energy recovery	kg	474
C3: Wood chipping (diesel)	kWh	2.8
C4: To landfill	kg	0

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)\*

Туре	Load factor, % (90+0%)	Type of vehicle	Distance km	Fuel	Value
Large lorry/truck	45%	TT/AT 14-20+20-28t	35	0.037	1.3

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

The transport assume empty return.

#### Benefits and loads beyond the system boundaries (D)\*

	Unit	Value
Chipped CLT that substitute fuel in a district heating plant	kg DM	409
Chipped discard product that substitute average used fuel in a district heating plant	MJ	-7845

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 for the declared unit defined on page 2 of the EPD document. EN 15804 exists in two versions listed below.

System boundaries: X=included, MND= module not declared, MNR=module not relevant.

P	roduct sta	ge		struction ss stage	Use stage End of life stage							Use stage End of life stage							
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		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D		
х	х	х	х	х	MND	MND	MND	MND	MND	MND	MND	х	х	х	Х		х		
SE	SE	SE	SE	SE	—	_	_	—	—	—	—	SE	SE	SE	SE		SE		

## Core environmental impact, version A2 – mandatory indicators $^{2)}$

Unit	A1-3	A4	A5	C1	C2	C3	C4	D
kg CO <sub>2</sub> e	-7.25E+02	2.97E+01	2.75E+00	1.21E-01	1.44E+00	7.50E+02	0.00E+00	1.02E+02
kg CO <sub>2</sub> e	2.36E+01	2.97E+01	2.76E+00	1.20E-01	1.42E+00	6.53E-01	0.00E+00	-1.91E+02
kg CO <sub>2</sub> e	-7.49E+02	0.00E+00	5.20E-02	3.74E-04	4.43E-03	7.49E+02	0.00E+00	2.94E+02
kg CO <sub>2</sub> e	2.01E-01	6.14E-07	1.88E-02	6.71E-04	7.95E-03	3.65E-03	0.00E+00	0.00E+00
kg CO <sub>2</sub> e	2.38E+01	3.05E+01	2.78E+00	1.21E-01	1.44E+00	7.50E+02	0.00E+00	-1.64E+02
kg CFC11 eq.	3.76E-07	6.81E-07	5.43E-08	2.71E-09	3.21E-08	1.47E-08	0.00E+00	-1.01E-06
mol H⁺ eq.	3.29E-01	3.40E-01	3.42E-02	1.35E-03	1.60E-02	7.35E-03	0.00E+00	-4.19E-01
kg P eq.	1.80E-03	1.56E-03	1.71E-04	6.21E-06	7.36E-05	3.38E-05	0.00E+00	-5.29E-04
kg N eq.	1.55E-01	1.83E-01	1.73E-02	7.28E-04	8.63E-03	3.96E-03	0.00E+00	-8.25E-03
mol N eq.	1.43E+00	1.74E+00	1.62E-01	6.92E-03	8.19E-02	3.76E-02	0.00E+00	7.39E-02
kg NMVOC eq.	2.94E-01	2.38E-01	2.71E-02	9.45E-04	1.12E-02	5.14E-03	0.00E+00	5.93E-01
kg NMVOC eq.	1.57E-05	1.63E-05	1.63E-06	6.47E-08	7.67E-07	3.52E-07	0.00E+00	-1.23E+03
kg NMVOC eq.	5.58E+02	4.60E+02	5.20E+01	1.83E+00	2.17E+01	9.94E+00	0.00E+00	-6.03E-01
kg NMVOC eq.	2.93E+02	5.42E+02	4.29E+01	2.15E+00	2.55E+01	1.17E+01	0.00E+00	-5.74E+00
	$kg CO_2 e$ $kg CFC11 eq.$ mol H <sup>+</sup> eq. kg P eq. $kg N eq.$ mol N eq. kg NMVOC eq. kg NMVOC eq. kg NMVOC eq. kg NMVOC eq.	$\begin{array}{llllllllllllllllllllllllllllllllllll$	$\begin{array}{llllllllllllllllllllllllllllllllllll$	kg CO2 e         -7.25E+02         2.97E+01         2.75E+00           kg CO2 e         2.36E+01         2.97E+01         2.76E+00           kg CO2 e         2.36E+01         2.97E+01         2.76E+00           kg CO2 e         -7.49E+02         0.00E+00         5.20E-02           kg CO2 e         2.01E-01         6.14E-07         1.88E-02           kg CO2 e         2.38E+01         3.05E+01         2.78E+00           kg CO2 e         2.38E+01         3.05E+01         2.78E+00           kg CFC11 eq.         3.76E-07         6.81E-07         5.43E-08           mol H* eq.         3.29E-01         3.40E-01         3.42E-02           kg P eq.         1.80E-03         1.56E-03         1.71E-04           kg N eq.         1.55E-01         1.83E-01         1.73E-02           mol N eq.         1.43E+00         1.74E+00         1.62E-01           kg NMVOC eq.         2.94E-01         2.38E-01         2.71E-02           kg NMVOC eq.         1.57E-05         1.63E-05         1.63E-06           kg NMVOC eq.         5.58E+02         4.60E+02         5.20E+01	kg $CO_2 e$ -7.25E+022.97E+012.75E+001.21E-01kg $CO_2 e$ 2.36E+012.97E+012.76E+001.20E-01kg $CO_2 e$ -7.49E+020.00E+005.20E-023.74E-04kg $CO_2 e$ 2.01E-016.14E-071.88E-026.71E-04kg $CO_2 e$ 2.38E+013.05E+012.78E+001.21E-01kg $CO_2 e$ 2.38E+013.05E+012.78E+001.21E-01kg $CO_2 e$ 3.76E-076.81E-075.43E-082.71E-09mol H <sup>+</sup> eq.3.29E-013.40E-013.42E-021.35E-03kg P eq.1.80E-031.56E-031.71E-046.21E-06kg N eq.1.55E-011.83E-011.73E-027.28E-04mol N eq.1.43E+001.74E+001.62E-016.92E-03kg NMVOC eq.2.94E-012.38E-012.71E-029.45E-04kg NMVOC eq.1.57E-051.63E-051.63E-066.47E-08kg NMVOC eq.5.58E+024.60E+025.20E+011.83E+00	kg CO2 e-7.25E+022.97E+012.75E+001.21E-011.44E+00kg CO2 e2.36E+012.97E+012.76E+001.20E-011.42E+00kg CO2 e-7.49E+020.00E+005.20E-023.74E-044.43E-03kg CO2 e2.01E-016.14E-071.88E-026.71E-047.95E-03kg CO2 e2.38E+013.05E+012.78E+001.21E-011.44E+00kg CO2 e2.38E+013.05E+012.78E+001.21E-011.44E+00kg CC1 eq.3.76E-076.81E-075.43E-082.71E-093.21E-08mol H* eq.3.29E-013.40E-013.42E-021.35E-031.60E-02kg P eq.1.80E-031.56E-031.71E-046.21E-067.36E-05kg N eq.1.55E-011.83E-011.73E-027.28E-048.63E-03mol N eq.1.43E+001.74E+001.62E-016.92E-038.19E-02kg NMVOC eq.2.94E-012.38E-012.71E-029.45E-041.12E-02kg NMVOC eq.5.58E+024.60E+025.20E+011.83E+002.17E+01	kg CO2 e-7.25E+022.97E+012.75E+001.21E-011.44E+007.50E+02kg CO2 e2.36E+012.97E+012.76E+001.20E-011.42E+006.53E-01kg CO2 e-7.49E+020.00E+005.20E-023.74E-044.43E-037.49E+02kg CO2 e2.01E-016.14E-071.88E-026.71E-047.95E-033.65E-03kg CO2 e2.38E+013.05E+012.78E+001.21E-011.44E+007.50E+02kg CO2 e2.38E+013.05E+012.78E+001.21E-011.44E+007.50E+02kg CC11 eq.3.76E-076.81E-075.43E-082.71E-093.21E-081.47E-08mol H* eq.3.29E-013.40E-013.42E-021.35E-031.60E-027.35E-03kg P eq.1.80E-031.56E-031.71E-046.21E-067.36E-053.38E-05kg N eq.1.55E-011.83E-011.73E-027.28E-048.63E-033.96E-03mol N eq.1.43E+001.74E+001.62E-016.92E-038.19E-023.76E-02kg NMVOC eq.2.94E-012.38E-012.71E-029.45E-041.12E-025.14E-03kg NMVOC eq.5.58E+024.60E+025.20E+011.83E+002.17E+019.94E+00	kg CO2 e-7.25E+022.97E+012.75E+001.21E-011.44E+007.50E+020.00E+00kg CO2 e2.36E+012.97E+012.76E+001.20E-011.42E+006.53E-010.00E+00kg CO2 e-7.49E+020.00E+005.20E-023.74E-044.43E-037.49E+020.00E+00kg CO2 e2.01E-016.14E-071.88E-026.71E-047.95E-033.65E-030.00E+00kg CO2 e2.38E+013.05E+012.78E+001.21E-011.44E+007.50E+020.00E+00kg CO2 e2.38E+013.05E+012.78E+001.21E-011.44E+007.50E+020.00E+00kg CO2 e2.38E+013.05E+012.78E+001.21E-011.44E+007.50E+020.00E+00kg CFC11 eq.3.76E-076.81E-075.43E-082.71E-093.21E-081.47E-080.00E+00mol H* eq.3.29E-013.40E-013.42E-021.35E-031.60E-027.35E-030.00E+00kg P eq.1.80E-031.56E-031.71E-046.21E-067.36E-053.38E-050.00E+00kg N eq.1.55E-011.83E-011.73E-027.28E-048.63E-033.96E-030.00E+00kg NMVOC eq.2.94E-012.38E-012.71E-029.45E-041.12E-025.14E-030.00E+00kg NMVOC eq.1.57E-051.63E-051.63E-066.47E-087.67E-073.52E-070.00E+00kg NMVOC eq.5.58E+024.60E+025.20E+011.83E+002.17E+019.94E+000.00E+

*GWP-total:* Global Warming Potential; *GWP-fossil:* Global Warming Potential fossil fuels; *GWP-biogenic:* Global Warming Potential biogenic; *GWP-LULUC:* Global Warming Potential land use and land use change; *ODP:* Depletion potential of the stratospheric ozone layer; *AP:* Acidification potential, Accumulated Exceedance; *EP-freshwater:* Eutrophication potential, fraction of nutrients reaching freshwater end compartment; *EP-marine:* Eutrophication potential, fraction of nutrients reaching freshwater end compartment; *P-terrestial:* Eutrophication potential, Accumulated Exceedance; *POCP:* Formation potential of tropospheric ozone; *ADP-m&m:* Abiotic depletion potential for non-fossil resources (*minerals and metals*); *ADP-fossil:* Abiotic depletion potential, deprivation weighted water counsumption

**Note 1** – This additional indicator **GWP-GHG/IOBC** is also referred to as **GWP-GHG** in context of Swedish and Finish legislation. **Disclaimer 2** – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Additional environmental impact, version A2 — addition of non-mandatory indicators with poor reliability											
Parameter	Unit	A1-3	A4	A5	C1	C2	C3	C4	D		
PM <sup>2)</sup>	Disease incidence	1.93E-06	1.82E-06	1.91E-07	7.25E-09	8.59E-08	3.94E-08	0.00E+00	-5.19E+01		
IRP <sup>1)</sup>	kBq U235 eq	1.11E+01	1.04E+00	6.12E-01	4.12E-03	4.88E-02	2.24E-02	0.00E+00	-2.57E-07		
ETP-fw <sup>2)</sup>	CTUe	5.78E+02	8.04E+02	7.09E+01	3.20E+00	3.79E+01	1.74E+01	0.00E+00	-1.91E+02		
HTP-c <sup>2)</sup>	CTUh	2.33E-08	1.61E-08	2.01E-09	6.40E-11	7.57E-10	3.48E-10	0.00E+00	-1.94E-01		
HTP-nc <sup>2)</sup>	CTUh	1.65E-06	9.82E-07	1.34E-07	3.91E-09	4.62E-08	2.12E-08	0.00E+00	-2.35E+00		
SQP <sup>2)</sup>	Dimensionless	6.33E+04	5.89E+02	3.20E+03	2.34E+00	2.77E+01	1.27E+01	0.00E+00	-3.02E+03		

# Additional environmental impact, version A2 – addition of non-mandatory indicators with poor reliability <sup>1) 2)</sup>

**PM:** Particulate matter emissions; **IRP:** Ionising radiation, human health; **ETP-fw:** Ecotoxicity (freshwater); **ETP-c:** Human toxicity, cancer effects; **HTP-nc:** Human toxicity, non-cancer effects; **SQP:** Land use related impacts / soil quality

**Disclaimer 1** – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator. **Disclaimer 2** – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

## Environmental impact, version A1

Parameter	Unit	A1-3	A4	A5	C1	C2	C3	C4	D
GWP-TOT	kg CO <sub>2</sub> e	-7.26E+02	2.97E+01	2.69E+00	1.18E-01	1.40E+00	7.69E+02	0.00E+00	-1.71E+02
GWP-IOBC*	kg CO <sub>2</sub> e	2.28E+01	2.97E+01	2.69E+00	1.18E-01	1.40E+00	2.01E+01	0.00E+00	-1.71E+02
ODP	kg CFC11 e	3.41E-07	6.14E-07	4.90E-08	2.44E-09	2.89E-08	1.33E-08	0.00E+00	-1.01E-06
POCP**	kg C <sub>2</sub> H <sub>4</sub> e	3.13E-03	-6.10E-02	-3.02E-03	-2.43E-04	-2.87E-03	-1.32E-03	0.00E+00	1.02E-02
AP	kg SO <sub>2</sub> e	2.28E-01	2.19E-01	2.28E-02	8.70E-04	1.03E-02	4.73E-03	0.00E+00	-3.98E-01
EP	kg PO <sub>4</sub> <sup>3-</sup> e	3.13E-03	-6.10E-02	8.17E-03	3.37E-04	3.99E-03	1.83E-03	0.00E+00	-3.12E-03
ADPM	kg Sb e	1.62E-05	1.63E-05	1.66E-06	6.48E-08	7.68E-07	3.52E-07	0.00E+00	-2.43E-05
ADPE	MJ	3.33E+02	4.47E+02	3.99E+01	1.78E+00	2.11E+01	9.66E+00	0.00E+00	-1.23E+03
**LCI origin from	GaBi database separate	es NOx into NO	and NO <sub>2,</sub> in co	ombination wit	h the applied o	characterizatio	n model with a	marginal appro	ach for POCP

**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 referred to as GWP-GHG in context of e.g. Swedish and Finish legislation.

## Resource use, version A1+2 — mandatory indicators

Parameter	Unit	A1-3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	1.20E+03	1.58E+02	6.82E+01	6.29E-01	7.44E+00	3.42E+00	0.00E+00	3.72E+03
RPEM	MJ	7.85E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.85E+03	0.00E+00	0.00E+00
TPE	MJ	9.05E+03	1.58E+02	6.82E+01	6.29E-01	7.44E+00	-7.85E+03	0.00E+00	3.72E+03
NRPE	MJ	5.58E+02	4.61E+02	5.20E+01	1.83E+00	2.17E+01	9.96E+00	0.00E+00	-1.83E+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	5.58E+02	4.61E+02	5.20E+01	1.83E+00	2.17E+01	9.96E+00	0.00E+00	-1.83E+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	-1.89E+03
W	m <sup>3</sup>	7.19E+00	1.26E+01	1.02E+00	5.02E-02	5.95E-01	2.73E-01	0.00E+00	-8.39E+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. 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, version A1+2 — mandatory indicators

Parameter	Unit	A1-3	A4	A5	C1	C2	C3	C4	D
HW	kg	6.33E-05	1.94E-09	3.16E-06	7.72E-12	9.14E-11	4.19E-11	0.00E+00	-2.58E-07
NHW	kg	9.74E-01	5.81E-02	5.18E-02	2.31E-04	2.74E-03	1.26E-03	0.00E+00	-3.55E+00
RW	kg	9.07E-02	4.99E-04	4.61E-03	1.99E-06	2.35E-05	1.08E-05	0.00E+00	-2.41E-01

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

#### End of life — Output flow, version A1+2 — mandatory indicators

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Parameter	Unit	A1-3	A4	A5	C1	C2	C3	C4	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	1.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.09E+02	0.00E+00	0.00E+00
MER	kg	8.83E-02	0.00E+00	5.07E-01	0.00E+00	0.00E+00	4.74E+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	3.63E-03	0.00E+00	1.81E-04	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

## Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Amount	Unit
Biogenic carbon content in product	204	kg C
Biogenic carbon content in the accompanying packaging	0	kg C

44/12 is the ratio between the molecular mass of  $CO_2$  and C molecules.

The carbon and its energy content stored in packaging materials is less tha 5% and therefore according to EN 15804 direct balanced out in the environmental indicator result.

# 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	0.042	kg CO <sub>2</sub> e/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 below.

Name	CAS no.	Amount
-	_	—

#### Indoor environment

Not relevant

#### **Carbon footprint**

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

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