

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A2



The Norwegian
EPD Foundation

Owner of the declaration:
Superwood A/S

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-3703-2649-EN

Registration number:
NEPD-3703-2649-EN

Issue date: 14.09.2022
Valid to: 14.09.2027

PRODUCT NAME:
Exterior cladding of
Superwood, Fully
impregnated

MANUFACTURER:
Superwood A/S

General information

Product:

Exterior cladding of Superwood, Fully impregnated

Program Operator:

The Norwegian EPD Foundation
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Declaration Number:

NEPD-3703-2649-EN

This declaration is based on Product

Category Rules:

NPCR Part A:2021 Construction products and services Ver 2

NPCR 015 Part B for wood and wood-based products 4.0

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:

1 m² produced exterior cladding of Superwood, fully impregnated, untreated surface

Functional unit:

1 m² exterior cladding of Superwood, fully impregnated, untreated surface, cradle to grave, reference service life 60 years

Verification:

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

Internal ☐

External ☒

Independent verifier approved by EPD Norway

Owner of the declaration:

Superwood A/S
Contact person: Sofie Mora Kristensen
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e-mail: smk@superwood.dk

Manufacturer:

Superwood A/S, Palsgaardvej 3, DK-7362 Hampen, Denmark

Place of production:

Hampen, Denmark

Management system:

FSC (SA-COC-007725) valid 11.09.20-10.09.25,
PEFC (SA-PEFC/COC-007725) valid 11.09.20-10.09.25

Organisation no:

26434602

Issue date:

14.09.2022

Valid to:

14.09.2027

Year of study:

Consumption data: 2021. LCA spring 2022.

Comparability:

EPD of construction products may not be comparable if they do not comply with EN 15804:A2 and seen in a building context.

The EPD has been worked out by:

Oddbjørn Dahlstrøm Andvik
Asplan Viak AS

asplan
viak



Approved (Manager of EPD Norway)

Product

Product description:

Fully impregnated, planed wood from FSC and PEFC certified spruce (*Picea abies*), from Norway, Sweden and Finland, for outdoor use above the ground. The wood is impregnated without the use of heavy metals and organic solvents. The impregnation protects the tree completely into the core so that the tree is protected against rot and fungus. The process takes place without the use of water, so the wood is dry and can be used immediately after impregnation.

Product specification:

Main application area is outdoor cladding (in all known cladding profiles), but noise barriers, windscreens, railings, roofing tables and more are other natural applications. The cladding boards can be delivered with and without surface treatment from the factory. This EPD yields for impregnated cladding without surface treatment.

The EPD encompasses all dimensions and profiles of the exterior of Superwood, with an untreated surface.

Materials	kg/m ²	%
Woody of spruce, dry weight	7,77	84,7 %
Water, in wood, 18%	1,40	15,2 %
Impregnating, SC200	0,0079	0,086 %
Surface treatment (paint)	0,00	0,0%
Total, without surface treatment	9,18	100 %
Packaging, plastic 0,02 kg / m ²	0,02	

Technical data:

Superwood has a density of 436,8 kg / m³, with moisture content of 16-20% (18% standard).

Superwood is protected from rotting, fungus and blue mold according to DS / EN 335, user class 3: above ground contact. For Declaration of Performance (DoP), FSC certificate and complementary information, see www.superwood.dk.

Standard dimension is 21 mm * 145 mm. Thickness of 21 mm is used in calculations. For 1 m² of covering cladding, 6,90 running meters of Superwood (dimension 0,145 m) is consumed.

Market:

The EPD includes transport to and sales in Denmark, Norway, Sweden and Germany.

Reference service life, product:

Reference service life is 60 years according to PCR. The actual service life depends on climatic conditions and external impacts, such as construction and maintenance.

Reference service life, building:

Reference service life is 60 years according to PCR. The actual service life depends on climatic conditions and external impacts.

LCA: Calculation rules

Declared unit:

1 m² produced exterior cladding of Superwood, fully impregnated, untreated surface

Data quality:

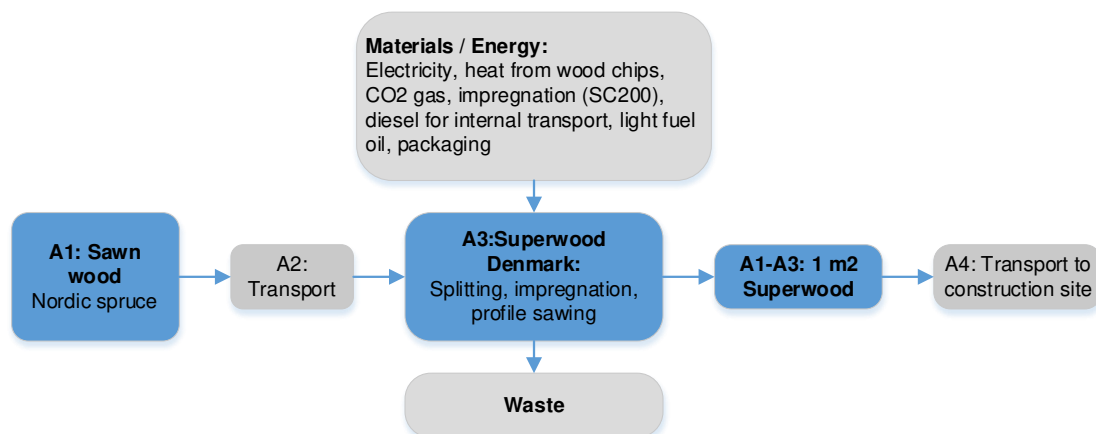
Production data is based on consumption data from 2021. Wood is splitted, impregnated and profiled in Denmark. For sawn wood A1-A3 LCA impacts (GWP fossil and resource use) are based on EPD of Finnish sawn and planed timber (RTS_124_21), EPD of Stora Enso Classic Sawn (S-P-02150) and EPD Moelven (NEPD-2546-1284-NO). Remaining data is based on Ecoinvent v3.8, allocation, cut-off by classification (Nov 2021) and SimaPro v 9.3.0.3. Characterization factors have been used from EN15804:2012 + A2: 2019. Ecoinvent processes are adjusted to improve representativeness (change of electricity mix).

Allocation:

Allocation has been made according to EN15804:2012 + A2: 2019. For sawn wood, economic allocation has been used. For the production of Superwood, all consumption and waste are mass-allocated for the production of impregnated wood. Primary production of recycled materials is allocated to the main product where the material was used.

System boundary:

Flow sheet for manufacturing (A1-A3) and transport (A4) of Superwood is shown below.



Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials or substances.

Calculation of biogenic carbon content:

Sequestration and emissions of biogenic carbon is calculated according to NS-EN 16485: 2014. This approach is based on the modularity principle of EN 15804: emissions should be counted in the module in which it actually occurs. The calculation of biogenic carbon content and conversion to

carbon dioxide is done according to the NS-EN 16449: 2014. The contribution to GWP from biogenic carbon is shown for each module under *core environmental impact indicators* GWP-biogenic.

370 kg / m³ dry weight for Superwood has a carbon content converted to carbon dioxide of 678,6 kg CO₂ per m³ wood or 14,25 kg CO₂ per m² wood (21 mm thickness). The wood is from sustainable forestry and is FSC and PEFC certified.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD. All numbers are pr m² Superwood.

Transport from production place to assembly/user (A4)

All production normally takes place directly from Hampen to construction site or via retail. It is considered a scenario of 200 km on a truck > 32 t. The A4 distance is calculated as average distance for the Danish market. Additional distances estimated for other markets are given in the table below.

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance KM	Fuel/Energy consumption	value (l/t)
Truck	53%	Lorry, >32t, EURO 6	200	0,017 l/tkm	3,4 l/t

Type	Distance truck	Distance boat	A4, GWP fossil, kg CO ₂ -eq/m ²
Denmark	200	0	0,132
Norway (Oslo)	340	160	0,238
Sweeden (Örebro)	590	160	0,402
Germany (Berlin)	500	0	0,329

Assembly (A5)

It is assumed 5% spill at installation and 0,021 MJ/m² energy consumption (1 MJ/m³) at construction site. Waste treatment of the packaging is included in A5.

	Unit	Value
Auxiliary (paint)	Kg	0
Water consumption	m ³	0
Electricity consumption	kWh	0,00583
Other energy carriers	MJ	0
Material loss	Kg	5%: 0,459
Plastic packaging	Kg	0,02
Dust in the air	kg	0

Use (B1)

This stage includes no activities or emissions related to the product.

Maintenance (B2)/Repair (B3)

For untreated Superwood there is a minimal need for maintenance besides regular cleaning (B2) during the building reference service life. The frequency of maintenance can be different and should always be considered in relation to the intended use, construction and climatic conditions.

10% replacement of cladding for repair (B3) is assumed during the building reference service life.

	Unit	Value
Maintenance cycle	year	7
Paint	kg	0
Detergent	kg	0,018
Water consumption	litre	0,378
Electricity consumption	MJ	0
Other energy carriers	MJ	0
Material loss	Kg	10%: 0,917

Replacement (B4)/Refurbishment (B5)

Reference service life is 60 years according to PCR. The actual service life depends on climatic conditions and external impacts, such as construction and maintenance. B4 and B5 includes no activities or impacts related to the product.

Operational energy (B6) and water consumption (B7)

When used as an external cladding, the product has no operational energy or water use.

End of Life (C1, C3, C4)

The product is without heavy metals. The waste processing is assumed as wood waste treated with incineration with energy recovery.

	Unit	Value
Hazardous waste disposed	Kg	0
Collected as mixed construction waste	Kg	9,18
Reuse	Kg	0
Recycling	Kg	0
Energy recovery	Kg	9,18
To landfill	Kg	0

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance KM	Fuel/Energy consumption	value (l/t)
Truck	36,67 % (Ecoinvent)	Lorry 16-32t, Euro 5	50	0,045 l/tkm	2,3 l/t

The average distance for transport of wood waste is assumed to be 50 km.

Benefits and loads beyond the system boundaries (D)

The benefits of exported energy from energy recovery in a treatment facility is calculated with substitution of Norwegian electricity market mix and Norwegian district heating mix (SSB 2020). Conversion factors for efficiencies and losses from waste to delivered energy are included.

	Unit	Value
Substitution of electrical energy	MJ	3,95
Substitution of thermal energy	MJ	121,8
Substitution of raw materials	kg	0

LCA: Results



For the manufacturing process (A3 Superwood) 100% renewable electricity from Danish wind power is used in calculations (Guarantee of Origin certificates). LCA results (GWP) calculated without the use of Guarantee of Origin is provided under *Additional Norwegian requirements*.

There have been two different interpretations of the allocation method in the forestry and wood industry: <https://www.epd-norge.no/nyhetsarkiv/important-notice-concerning-epds-for-wood-and-wood-based-products-based-on-npcr-015-and-en-16485> The choice of allocation method means that the most conservative interpretation results in significantly higher values in A1-A3. To make existing EPDs for solid wood construction products more comparable, the Norwegian Institute of Wood Technology has developed a methodology for recalculating the indicators GWP, ODP, EP-fw, ADP-fossil, IRP, SQP, NRPE, TRPE, NHW, and RW. Other indicators cannot be recalculated, but they are less affected by the choice of method. The change has been third-party verified..

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

Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads 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	X	X	X	X	X	X	X	X	X	X	X	X

Core environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	-1.24E+01	1,32E-01	9,81E-02	2,39E-03	2,02E-01	2,13E-03	7,49E-02	1,43E+01	4,23E-04	-1,03E+00
GWP-fossil	kg CO2 eq.	1.85E+00	1,32E-01	1,48E-01	7,53E-04	3,07E-01	1,66E-03	7,47E-02	8,76E-02	4,18E-04	-6,36E-01
GWP-biogenic	kg CO2 eq.	-1,43E+01	3,58E-04	-5,13E-02	4,73E-04	-1,09E-01	4,70E-04	2,01E-04	1,43E+01	4,18E-06	-3,90E-01
GWP-LULUC	kg CO2 eq.	2,99E-02	5,83E-05	1,50E-03	1,16E-03	3,15E-03	3,42E-06	2,99E-05	3,10E-05	1,30E-07	-2,20E-03
ODP	kg CFC11 eq.	2.82E-07	3,16E-08	2,31E-08	1,17E-10	4,83E-08	4,54E-11	1,73E-08	1,01E-08	1,99E-10	-6,89E-08

AP	mol H ⁺ eq.	2,15E-02	4,47E-04	1,26E-03	9,21E-06	2,63E-03	6,69E-06	2,12E-04	2,85E-03	3,74E-06	-6,07E-03
EP-freshwater	kg P eq.	7.11E-04	1,00E-05	5,55E-05	6,85E-06	1,14E-04	1,28E-06	4,89E-06	5,58E-05	3,46E-08	-1,80E-04
EP-marine	kg N eq.	6,92E-03	1,06E-04	4,26E-04	9,58E-06	8,92E-04	1,47E-06	4,31E-05	1,41E-03	1,33E-06	-2,21E-03
EP-terrestrial	mol N eq.	7,38E-02	1,16E-03	4,55E-03	3,22E-05	9,53E-03	1,63E-05	4,70E-04	1,53E-02	1,46E-05	-2,49E-02
POCP	kg NMVOC eq.	2,58E-02	4,56E-04	1,53E-03	5,25E-06	3,20E-03	3,72E-06	1,81E-04	4,00E-03	4,26E-06	-6,43E-03
ADP-M&M	kg Sb eq.	3,70E-05	3,75E-07	1,92E-06	1,56E-08	3,99E-06	2,26E-08	2,65E-07	3,28E-07	1,15E-09	-1,74E-05
ADP-fossil	MJ	2.87E+01	2,10E+00	2,27E+00	7,84E-03	4,72E+00	2,38E-02	1,13E+00	8,71E-01	1,44E-02	-9,37E+00
WDP	m ³	5,44E-01	8,57E-03	2,91E-02	4,84E-03	6,05E-02	2,82E-04	3,34E-03	2,00E-02	7,50E-05	-1,99E-01

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; See “additional Norwegian requirements” for indicator given as PO4 eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:** 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 for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption

Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
PM	Disease incidence	9,32E-07	1 , 3 6 E - 0 8	4 , 8 7 E - 0 8	1 , 3 1 E - 0 7	1 , 0 2 E - 1 1	3 , 8 4 E - 9 8	4 , 7 3 E - 8 1	2 , 2 3 E - 0 1	7 , 5 6 E - 1 1	- , 1 5 E - 0 7
IRP	kBq U235 eq.	2.90E-01	1 , 0 9 E -	2 , 2 1 E -	5 , 6 5 E -	4 , 5 5 E -	4 , 1 5 E -	5 , 8 3 E -	3 , 4 6 E -	6 , 8 8 E -	- , 4 4 E

			0 2	0 2	0 5	0 2	0 4	0 3	0 3	0 5	- 0 1
ETP-fw	CTUe	8,98E+01	1 , 7 7 E + 0 0	4 , 7 9 E + 0 0	1 , 1 6 E - 0 0	9 , 9 7 E + 0 0	4 , 0 7 E - 0 2	8 , 0 9 E - 0 1	2 , 8 9 E + 0 0	7 , 3 8 E - 0 3	- 5 , 1 8 E + 0 1
HTP-c	CTUh	1,03E-08	5 , 3 1 E - 1 1	2 , 3 0 E - 0 9	2 , 1 8 E - 1 3	4 , 8 3 E - 0 3	9 , 4 7 E - 1 1	2 , 8 6 E - 0 8	3 , 5 6 E - 0 3	1 , 9 3 E - 0 9	- 1 , 0 8 E - 0 9
HTP-nc	CTUh	1,16E-07	2 , 0 7 E - 0 9	6 , 3 8 E - 0 9	4 , 4 6 E - 1 8	1 , 3 3 E - 0 1	2 , 7 2 E - 0 1	8 , 9 8 E - 0 9	8 , 1 4 E - 0 2	3 , 7 7 E - 0 8	- 3 , 7 2 E - 0 8
SQP	Dimensionless	1.70E+03	2 , 9 1 E + 0 0	1 , 2 0 E + 0 2	7 , 2 8 E - 0 2	2 , 5 3 E + 0 2	2 , 9 0 E - 0 2	7 , 8 9 E - 0 1	2 , 4 8 E - 0 2	4 , 1 4 E + 0 2	- 1 , 7 5 E + 0 2

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

Classification of disclaimers to the declaration of core and additional environmental impact indicators

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
	Acidification potential, Accumulated Exceedance (AP)	None
ILCD type / level 2	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2
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

Resource use

Parameter	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
RPEE	MJ	4,69E+02	3,16E-02	2,35E+01	3,45E-02	4,93E+01	2,04E-02	1,62E-02	4,09E-02	3,72E-04	-6,26E+01
RPEM	MJ	1,77E+02	0,00E+00	8,85E+00	0,00E+00	1,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	4,69E+02	3,16E-02	2,35E+01	3,45E-02	4,93E+01	2,04E-02	1,62E-02	4,09E-02	3,72E-04	-6,26E+01
NRPE	MJ	2,87E+01	2,10E+00	2,27E+00	9,26E-03	4,72E+00	2,38E-02	1,13E+00	8,71E-01	1,44E-02	-9,37E+00
NRPM	MJ	3,46E+01	0,00E+00	1,73E+00	0,00E+00	3,64E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	6,33E+01	2,10E+00	2,27E+00	9,26E-03	4,72E+00	2,38E-02	1,13E+00	8,71E-01	1,44E-02	-9,37E+00
SM	kg	1,37E-03	0,00E+00	6,86E-05	0,00E+00	1,44E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	1,28E+01	0,00E+00	6,39E-01	0,00E+00	1,34E+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	0,00E+00	0,00E+00	0,00E+00
W	m ³	2,56E-02	2,79E-04	1,58E-03	1,48E-04	3,20E-03	6,25E-05	1,20E-04	4,32E-03	1,87E-05	-1,89E-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	B2	B3	C1	C2	C3	C4	D
HW	KG	2,54E-02	1,34E-04	3,79E-03	1,25E-04	7,95E-03	3,90E-06	5,82E-05	8,06E-04	4,94E-02	-6,09E-03
NHW	KG	8,94E-01	2,43E-01	8,31E-02	3,38E-04	1,74E-01	1,59E-04	5,93E-02	5,52E-02	2,53E-02	-2,41E-01
RW	KG	1,59E-04	1,41E-05	1,26E-05	2,83E-08	2,63E-05	1,04E-07	7,65E-06	2,05E-06	8,83E-08	-4,60E-05

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

End of life – output flow

Parameter	Unit	A1-A3	A4	A5	B2	B3	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	0,00E+00	0,00E+00
MR	kg	2,01E-03	0,00E+00	2,01E-02	0,00E+00	2,21E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	4,59E-01	0,00E+00	9,63E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,82E-03	0,00E+00	1,41E-04	0,00E+00	2,96E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	2,40E-02	0,00E+00	1,20E-03	0,00E+00	2,52E-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

Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3}$ = 0,009

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit	Value
Biogenic carbon content in product	kg C	3,89
Biogenic carbon content in the accompanying packaging	kg C	0

Additional Norwegian requirements

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

For the manufacturing process (A3 Superwood) 100% renewable electricity from Danish wind power is used in calculations. The renewable sources of electricity are evidenced by Guarantee of Origin certificates (Miljøvenlig El, Energi Danmark).

Guarantee of Origin is valid throughout the validity period of the EPD. Documentation on certificate is provided upon request to Superwood A/S.

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) for wind power electricity production.

For assembly (A5) and de-construction (C1) national market mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) is used.

National electricity grid	Unit	Value
Electricity, low voltage {DK, Guarantee of Origin: wind power, KlimaEl wind } market for Cut-off, U – Ecoinvent (A3 Superwood)	kg CO2 -eq/kWh	0,022
Electricity, low voltage {DK} market for Cut-off, U – Ecoinvent (A5, C1)	kg CO2 -eq/kWh	0,246

Additional GWP results calculations using the physical national electricity grid mix (energy sources without a Guarantee of Origin)

Production (A3) of Superwood is calculated without the use of Guarantee of Origin (used DK market mix).

National electricity grid	Unit	Value
Electricity, low voltage {DK} market for Cut-off, U – Ecoinvent (A5, C1)	kg CO2 -eq/kWh	0,246

Indicator	Unit	A1-A3
GWP-total	kg CO2 eq.	-1,07E+01
GWP-fossil	kg CO2 eq.	3,49E+00
GWP-biogenic	kg CO2 eq.	-1,43E+01
GWP-LULUC	kg CO2 eq.	3,17E-02

Additional environmental impact indicators required in NPCR Part A for construction products

In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator for GWP has been sub-divided into the following:

GWP-IOBC Climate impacts calculated according to the principle of instantaneous oxidation

GWP-BC Climate impacts from the net uptake and emission of biogenic carbon from each module.

In addition, EP-freshwater shall also be declared as PO4 eq.

Indicator	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
EP-freshwater*	kg PO4 eq.	6,60E-03	7,93E-05	4,75E-04	0,00E+00	9,89E-04	4,60E-06	3,65E-05	2,70E-03	6,23E-07	-1,69E-03
GWP-IOBC	kg CO2 eq.	1.85E+00	1,32E-01	1,48E-01	0,00E+00	3,07E-01	1,66E-03	7,47E-02	8,76E-02	4,18E-04	-6,82E-01
GWP-BC	kg CO2 eq.	-1,43E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,43E+01	0,00E+00	0,00E+00
GWP	kg CO2 eq.	-1,16E+01	1,32E-01	1,48E-01	0,00E+00	3,07E-01	1,66E-03	7,47E-02	1,43E+01	4,18E-04	-6,82E-01

EP-freshwater* Eutrophication potential, fraction of nutrients reaching freshwater end compartment. Declared as PO4 eq. **GWP-IOBC** Global warming potential calculated according to the principle of instantaneous oxidation. **GWP-BC** Global warming potential from net uptake and emissions of biogenic carbon from the materials in each module. **GWP** Global warming potential

Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- ☒ 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 (Avfallsforskriften, Annex III), see table.

Name	CAS no.	Amount

Indoor environment

Superwood is intended for external use and will not affect indoor environment.

Bibliography

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012+A2:2019	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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EPD-Norge 2021	NPCR Part A:2021 Construction products and services Ver 2
EPD-Norge 2021	NPCR 015 Part B for wood and wood-based products 4.0
DS/EN 335:2013	Durability of wood and wood-based products - Use classes: definitions, application to solid wood and wood-based products
RTS_124_21	EPD Finnish sawn and planed timber
S-P-02150	EPD of Stora Enso Classic Sawn
NEPD-2546-1284-NO	EPD Moelven sawn timber
NS-EN 16449:2014	Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide
NS-EN 16485:2014	Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction
SSB (2020) Table 04727	District Heating Balance (GWh)
SSB (2020) Table 04730	Consumption of fuel for gross production of district heating, by source of energy
SSB (2020) Table 09469	Net production of district heating, by heating system

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