

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

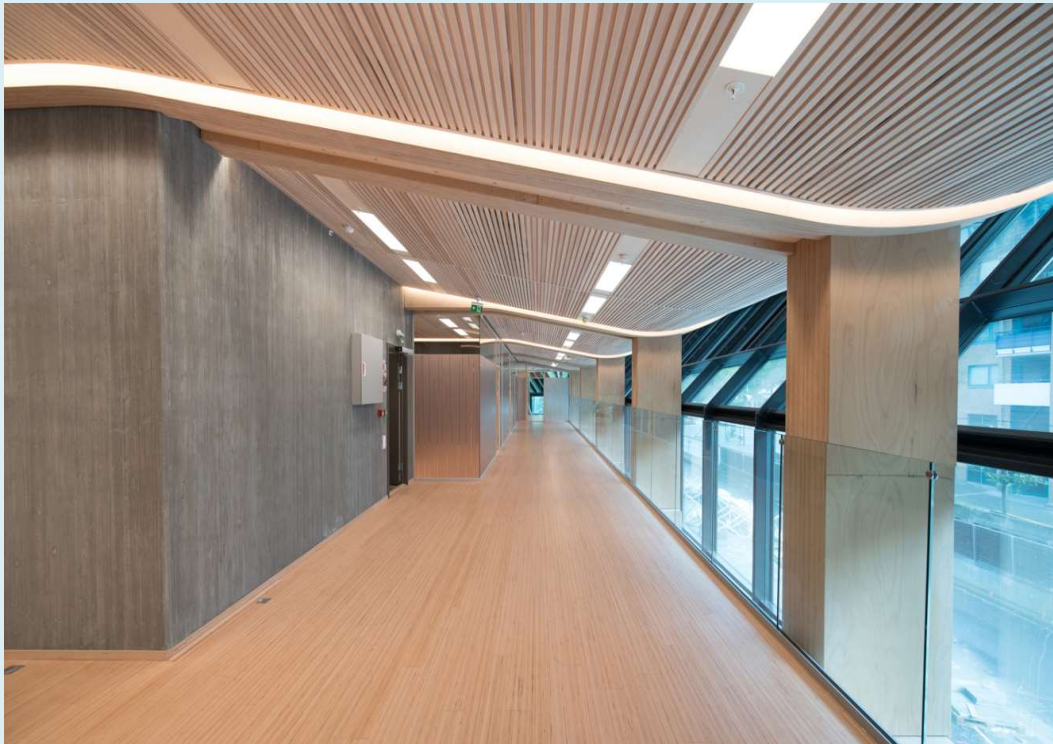
Owner of the declaration:	Moelven Modus AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-1938-859-EN
Registration number:	NEPD-1938-859-EN
ECO Platform reference number:	-
Issue date:	27.11.2019
Valid to:	27.11.2024

Eco Panel

Moelven Modus AS



www.epd-norge.no



General information

Product

Eco Panel

Program operator:

The Norwegian EPD Foundation
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Declaration number

NEPD-1938-859-EN

ECO Platform reference number:

This declaration is based on Product Category Rules

CEN Standard EN 15804 serve as core PCR
 PCR for wood and wood-based products for use in construction developed by EPD Norge (NPCR 015 version 3.0).

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.

Declared unit

1 m² of the Eco Panel of ash/oak/birch/pine/spruce

Functional unit:

No Functional Unit is specified as not all modules are declared (no use scenarios are specified).

Verification:

The CEN Norm EN 15804 serves as the core PCR. Independent verification of the declaration and data, according to ISO 14025:2010

internal

external

Third party verifier:



PhD Andreas Brekke
 (Independent verifier approved by EPD Norway)

Owner of the declaration

Moelven Modus AS
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Manufacturer

Moelven Modus AS
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Place of production

Jessheim (Norway)

Management system:

ISO 9001
 ISO 14001

Organisation no.:

951 269 778

Issue date:

27.11.2019

Valid to:

27.11.2024

Year of study

2017-2019

Comparability:

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

The EPD has been worked out by:

Isak Eklöv, Andreas Asker, Martyna Mikusinska & Veronica Sund




Approved



Håkon Hauan
 Managing Director of EPD-Norway

Product

Product description

The Eco Panel is built as a modular lining system with locked joints between modules. It can be used for indoor lining of ceilings or walls.

The declaration represents cradle to gate with options which includes raw material extraction, material treatment, manufacturing of components, production of Eco Panel and End-of-life.

Materials	Eco Panel ash	Eco Panel oak	Eco Panel birch	Eco Panel pine	Eco Panel spruce
	weight %	weight %	weight %	weight %	weight %
Ash wood	82.5%	82.5%	81.3%	76.2%	75.0%
Aspen wood	10.2%	10.2%	10.8%	13.8%	14.5%
Polyester fabric	5.8%	5.8%	6.2%	7.8%	8.3%
Varnish	1.5%	1.5%	1.6%	2.1%	2.2%
Steel	0.04%	0.04%	0.04%	0.05%	0.05%
Paint	0 %	0 %	0 %	0 %	0 %
Total weight (kg)	11.2	11.2	10.5	8.2	7.8
Total	100 %	100 %	100 %	100 %	100 %

Reference service life, product

Based on many years of experience within the indoor construction business, Moelven has declared the RSL of the Eco Panel to be at least 50 years.

Market

Nordic

Product specification

The declaration represents Eco Panel with an outer layer of ash, oak, birch, pine or spruce. For each module, the outer layer of the lining consists of solid wooden panel boards. Behind the lining, an acoustic fabric is used for sound absorption. The rear side of the panel consists regardless of type of Eco Panel of a wooden frame made of aspen.

Technical data

Dimensions and weight of a standard module:

Parameter	Eco Panel ash
Height (mm)	2400
Width (mm)	600
Floor area (m2)	1.44
Weight (kg)	16
Parameter	Eco Panel oak
Height (mm)	2400
Width (mm)	600
Floor area (m2)	1.44
Weight (kg)	16
Parameter	Eco Panel birch
Height (mm)	2400
Width (mm)	600
Floor area (m2)	1.44
Weight (kg)	15
Parameter	Eco Panel pine
Height (mm)	2400
Width (mm)	600
Floor area (m2)	1.44
Weight (kg)	12
Parameter	Eco Panel spruce
Height (mm)	2400
Width (mm)	600
Floor area (m2)	1.44
Weight (kg)	11

LCA: Calculation rules

Declared unit

1 m² of the Eco Panel, including the associated fixing components at the interfaces with the stationary wall or ceiling.

System boundary

Cradle to gate with options - the following stages have been declared: A1-3, A4-5, C1-4. See flowsheet to the right. A4 is declared separately for transport in Norway and Sweden, A4-1 and A4-2.

Cut-off criteria

All major raw materials and all the essential energy is included. Production processes for raw materials and energy flows which represent very small amounts (<1 %) have been excluded. This cut-off rule does not apply for hazardous substances.

Allocation

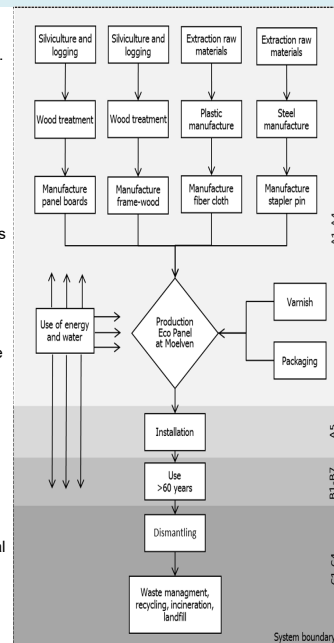
The allocation is made in accordance with the provisions of EN 15804. Principally, allocation is avoided by subdivision of included processes. When sub-division is no option, incoming energy and material flows are allocated among all products made in the given process-based on physical relationships between them. Energy and water use in Moelven Modus factory, which could not be subdivided (lights, computers, heating etc.), were allocated based on the area of space (m²) used to produce each product.

Data quality

Specific data have been collected through relevant documentation from the production sites of Moelven and its suppliers. Previously collected data documented in environmental product declarations have been used as a foundation for the calculations. Direct e-mail contact with company representatives was used to acquire complementary data in case of gaps in existing documentation.

Specific data for usage of energy and materials has been used for ~50 % of the product's mass and specific material composition modeled with database data has been used for remaining ~50%. Upstream processes have been modelled with generic data from the Ecoinvent database. The data is representative according to temporal, geographical and technological requirements. Background datasets are from 2003 or later, and updated within the last 5 years for specific data and within the last 10 years for generic data.

For assessment of paint and varnish a verified EPD was used as datasource (see full references in bibliography at the end of this EPD). Specific processes were assessed with average data for one year of production (principally year 2017).



LCA: Scenarios and additional technical information

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

Reference service life

Based on many years of experience within the indoor construction business, Moelven has declared the RSL of the Eco Panel to be at least 50 years. The RSL is defined for a scenario with standard use in an indoor environment, which could involve moving of the wall panelling to conform to changes in the building. Accidents or other types of unexpected changes of environment are not taken into account for the RSL.

Production of Eco Panel at Moelven Modus (A3)

The manufacture of Eco Panel at Moelven Modus comprises material assembly and stapling of the polyester fabric between the panel boards and frame-wood. When the panel wall is manufactured it is packed on wooden pallets for transport to the distribution warehouse. All of the components are transported to the building site (A4).

Transport from production place to user (A4)

The estimation of an average distance between the production unit and construction site is based on actual distances between the production unit and main cities within Sweden and Norway. Module A4 has been divided into two values depending on whether the Eco Panel is used in Norway (A4-1) or Sweden (A4-2).

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance (km)	Fuel consumption
Lorry, A4-1	50 %	Diesel, >32 tonnes, Euro 5 engine	370	0.023 l/tkm
Lorry, A4-2	50 %	Diesel, >32 tonnes, Euro 5 engine	540	0.023 l/tkm

Installation in the building (A5)

The installation of the Eco Panel does not require any use of materials or energy. The wall panels are fitted and installed manually with the use of basic building tools. Usage of manual tools have not been included in this assessment. During the installation of the components, packagings are sorted and disposed. The environmental impact of module A5 derives from the transports of used packaging materials to waste treatment.

Use phase (B1-B7)

The usage of the Eco Panel does generally not entail any specific maintenance. Modules B1 and B5-B7 have been assessed as non-relevant as the wall panel does not require any materials or energy for usage or refurbishment. Cleaning and maintenance (modules B2-B4) have been excluded from the study due to uncertainties and inability to control how the product is managed by the final user.

End of Life (C1, C3, C4)

After disassembly, the polyester fabric is separated from wood and metal staples. The polyester fabric is sorted for recycling, and remaining materials are collected for incineration.

Waste type	Unit	Eco Panel ash/DU	Eco Panel oak/DU	Eco Panel birch/DU	Eco Panel pine/DU	Eco Panel spruce/DU
Hazardous waste disposed	kg	6.6E-04	6.4E-04	6.2E-04	5.9E-04	5.9E-04
Collected as mixed construction waste	kg	-	-	-	-	-
Reuse	kg	-	-	-	-	-
Recycling	kg	6.5E-01	6.5E-01	6.5E-01	6.5E-01	6.5E-01
Energy recovery (incineration)	kg	1.05E+01	1.05E+01	9.7E+00	7.4E+00	7.0E+00

Transport to waste processing (C2)

The distance to disposal site is assumed to be 50 km.

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel consumption
Lorry, Euro 5 engine	50 %	Diesel, >32 tonnes	50	0.02 l/tkm

Reuse-Recovery-Recycling-Potential (D)

By request of Moelven Modus, module D has not been included.

LCA:Results

Key environmental indicators	Unit	Cradle to gate, A1-A3				
		Eco Panel ash	Eco Panel Oak	Eco Panel birch	Eco Panel Pine	Eco Panel Spruce
Global warming	kg CO ₂	1.06E+01	8.38E+00	8.13E+00	7.58E+00	7.55E+00
Energy use	MJ	7.29E+02	7.27E+02	7.27E+02	5.34E+02	5.34E+02
Dangerous substances	%	0	0	0	0	0
Share of energy used from renewable sources	%	66 %	70 %	70 %	67 %	65 %

The software used for modelling the life cycle and assessment of the environmental impacts is SimaPro 8.5. For calculation of environmental impacts the LCIA method CML-IA baseline was applied, with certain modification of characterisation factors according to EN 15804.

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

Product stage		Assembly stage			Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal		
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	MNR	MNR	x	x	x	x	MND	

Environmental impact

1 DU of Eco Panel ash

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
GWP	kg CO ₂ -eq	-7.27E+0	2.47E+00	3.17E-01	7.49E-01	1.09E+00	8.10E-03	9.32E-02	1.54E+01	2.07E-03
<i>Biogenic CO₂</i>		-1.51E+1	-	-	-	-	-	-	1.51E+01	-
<i>Fossil CO₂</i>		7.83E+00	2.47E+00	3.17E-01	7.49E-01	1.09E+00	8.10E-03	9.32E-02	3.15E-01	2.07E-03
ODP	kg CFC11-eq	7.64E-07	4.47E-07	1.81E-08	1.36E-07	1.98E-07	1.47E-09	1.69E-08	1.43E-08	4.69E-10
POCP	kg C2H4-eq	3.48E-03	4.18E-04	8.14E-05	1.24E-04	1.81E-04	1.34E-06	1.54E-05	9.33E-05	6.18E-07
AP	kg SO ₂ -eq	4.33E-02	8.34E-03	1.29E-03	2.43E-03	3.55E-03	2.63E-05	3.03E-04	2.34E-03	1.40E-05
EP	kg PO43-eq	1.19E-02	1.82E-03	3.85E-04	5.46E-04	7.97E-04	5.91E-06	6.79E-05	3.13E-03	2.29E-05
ADPM	kg Sb-eq	3.06E-05	7.28E-06	4.68E-07	2.23E-06	3.25E-06	2.41E-08	2.77E-07	1.96E-07	2.06E-09
ADPE	MJ	1.21E+02	3.68E+01	6.14E+00	1.12E+01	1.63E+01	1.21E-01	1.39E+00	1.69E+00	3.97E-02

Reading example: 9.0 E-03 = 9.0*10⁻³ = 0.009

GWP Global warming potential (biogenic and fossil flows of CO₂ declared separately in *italic*); **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

In the GWP-category, module A1 shows a negative environmental impact due to consideration of uptake of biogenic CO₂ in wood-based components. The biogenic CO₂ is modelled to be released in module C3, which explains the high impact within GWP for this module.

1 DU of Eco Panel oak

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
GWP	kg CO ₂ -eq	-7.27E+0	2.61E-01	3.17E-01	7.49E-01	1.09E+00	8.10E-03	9.32E-02	1.54E+01	2.07E-03
<i>Biogenic CO₂</i>		-1.51E+1	-	-	-	-	-	-	1.51E+01	-
<i>Fossil CO₂</i>		7.83E+00	2.61E-01	3.17E-01	7.49E-01	1.09E+00	8.10E-03	9.32E-02	3.15E-01	2.07E-03
ODP	kg CFC11-eq	7.64E-07	4.71E-08	1.81E-08	1.36E-07	1.98E-07	1.47E-09	1.69E-08	1.43E-08	4.69E-10
POCP	kg C2H4-eq	3.48E-03	4.63E-05	8.14E-05	1.24E-04	1.81E-04	1.34E-06	1.54E-05	9.33E-05	6.18E-07
AP	kg SO ₂ -eq	4.33E-02	9.55E-04	1.29E-03	2.43E-03	3.55E-03	2.63E-05	3.03E-04	2.34E-03	1.40E-05
EP	kg PO43-eq	1.19E-02	1.99E-04	3.85E-04	5.46E-04	7.97E-04	5.91E-06	6.79E-05	3.13E-03	2.29E-05
ADPM	kg Sb-eq	3.06E-05	7.59E-07	4.68E-07	2.23E-06	3.25E-06	2.41E-08	2.77E-07	1.96E-07	2.06E-09
ADPE	MJ	1.21E+02	3.89E+00	6.14E+00	1.12E+01	1.63E+01	1.21E-01	1.39E+00	1.69E+00	3.97E-02

1 DU of Eco Panel birch

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
GWP	kg CO ₂ -eq	-7.53E+0	2.57E-01	2.99E-01	7.06E-01	1.03E+00	8.10E-03	8.73E-02	3.05E-01	1.87E-03
<i>Biogenic CO₂</i>		-1.51E+1	-	-	-	-	-	-	1.51E+01	-
<i>Fossil CO₂</i>		7.57E+00	2.57E-01	2.99E-01	7.06E-01	1.03E+00	8.10E-03	8.73E-02	3.05E-01	1.87E-03
ODP	kg CFC11-eq	7.59E-07	4.65E-08	1.66E-08	1.28E-07	1.87E-07	1.47E-09	1.58E-08	1.35E-08	4.34E-10
POCP	kg C2H4-eq	2.97E-03	4.50E-05	7.85E-05	1.17E-04	1.70E-04	1.34E-06	1.44E-05	8.74E-05	5.44E-07
AP	kg SO ₂ -eq	4.23E-02	9.19E-04	1.22E-03	2.29E-03	3.34E-03	2.63E-05	2.83E-04	2.19E-03	1.25E-05
EP	kg PO43-eq	1.09E-02	1.94E-04	3.51E-04	5.14E-04	7.51E-04	5.91E-06	6.36E-05	2.92E-03	1.95E-05
ADPM	kg Sb-eq	3.03E-05	7.52E-07	3.74E-07	2.10E-06	3.07E-06	2.41E-08	2.60E-07	1.88E-07	1.87E-09
ADPE	MJ	1.18E+02	3.83E+00	6.18E+00	1.05E+01	1.54E+01	1.21E-01	1.30E+00	1.59E+00	3.67E-02

1 DU of Eco Panel pine

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
GWP	kg CO ₂ -eq	-4.67E+0	2.53E-01	2.98E-01	7.49E-01	1.09E+00	8.10E-03	6.87E-02	1.20E+01	1.61E-03
<i>Biogenic CO₂</i>		-1.17E+1	-	-	-	-	-	-	1.17E+01	-
<i>Fossil CO₂</i>		7.03E+00	2.53E-01	2.98E-01	7.49E-01	1.09E+00	8.10E-03	6.87E-02	2.79E-01	1.61E-03
ODP	kg CFC11-eq	6.70E-07	4.57E-08	1.64E-08	1.36E-07	1.98E-07	1.47E-09	1.25E-08	1.08E-08	3.91E-10
POCP	kg C2H4-eq	2.79E-03	4.50E-05	7.78E-05	1.24E-04	1.81E-04	1.34E-06	1.14E-05	6.89E-05	4.52E-07
AP	kg SO ₂ -eq	3.94E-02	9.31E-04	1.21E-03	2.43E-03	3.55E-03	2.63E-05	2.23E-04	1.71E-03	1.06E-05
EP	kg PO43-eq	1.01E-02	1.93E-04	3.30E-04	5.46E-04	7.97E-04	5.91E-06	5.00E-05	2.27E-03	1.53E-05
ADPM	kg Sb-eq	2.86E-05	7.35E-07	3.71E-07	2.23E-06	3.25E-06	2.41E-08	2.04E-07	1.63E-07	1.63E-09
ADPE	MJ	1.11E+02	3.77E+00	6.16E+00	1.12E+01	1.63E+01	1.21E-01	1.02E+00	1.28E+00	3.30E-02

1 DU of Eco Panel spruce

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
GWP	kg CO2 -eq	-4.00E+0	2.52E-01	2.98E-01	5.43E-01	7.93E-01	8.10E-03	6.53E-02	1.13E+01	1.57E-03
<i>Biogenic CO2</i>		-1.10E+1	-	-	-	-	-	-	1.10E+01	-
<i>Fossil CO2</i>		7.00E+00	2.52E-01	2.98E-01	5.43E-01	7.93E-01	8.10E-03	6.53E-02	2.74E-01	1.57E-03
ODP	kg CFC11-eq	6.65E-07	4.56E-08	1.64E-08	9.85E-08	1.44E-07	1.47E-09	1.18E-08	1.03E-08	3.83E-10
POCP	kg C2H4 -eq	2.69E-03	4.49E-05	7.77E-05	8.99E-05	1.31E-04	1.34E-06	1.08E-05	6.51E-05	4.36E-07
AP	kg SO2 -eq	3.92E-02	9.29E-04	1.20E-03	1.76E-03	2.57E-03	2.63E-05	2.12E-04	1.62E-03	1.03E-05
EP	kg PO43--eq	1.01E-02	1.93E-04	3.27E-04	3.96E-04	5.78E-04	5.91E-06	4.76E-05	2.15E-03	1.46E-05
ADPM	kg Sb-eq	2.86E-05	7.33E-07	3.71E-07	1.62E-06	2.36E-06	2.41E-08	1.94E-07	1.59E-07	1.59E-09
ADPE	MJ	1.10E+02	3.76E+00	6.16E+00	8.11E+00	1.18E+01	1.21E-01	9.75E-01	1.23E+00	3.23E-02

Resource use
1 DU of Eco Panel ash

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
RPEE	MJ	2.49E+02	4.78E-01	4.20E+00	1.44E-01	2.11E-01	1.56E-03	1.80E-02	5.27E-02	5.40E-04
RPEM	MJ	1.86E+02	-	1.60E+00	-	-	-	-	-	-
TPE	MJ	4.35E+02	4.78E-01	5.90E+00	1.44E-01	2.11E-01	1.56E-03	1.80E-02	5.27E-02	5.40E-04
NRPE	MJ	1.48E+02	3.97E+01	6.88E+00	1.21E+01	1.76E+01	1.31E-01	1.50E+00	2.08E+00	4.49E-02
NRPM	MJ	9.35E-01	-	1.70E+00	-	-	-	-	-	-
TRPE	MJ	1.48E+02	3.97E+01	7.93E+00	1.21E+01	1.76E+01	1.31E-01	1.50E+00	2.08E+00	4.49E-02
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	3.54E+00	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
W	m ³	2.48E-04	-	-	-	-	-	-	-	-

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

1 DU of Eco Panel oak

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
RPEE	MJ	2.49E+02	5.11E-02	4.20E+00	1.44E-01	2.11E-01	1.56E-03	1.80E-02	5.27E-02	5.40E-04
RPEM	MJ	1.86E+02	-	1.60E+00	-	-	-	-	-	-
TPE	MJ	4.35E+02	5.11E-02	5.90E+00	1.44E-01	2.11E-01	1.56E-03	1.80E-02	5.27E-02	5.40E-04
NRPE	MJ	1.48E+02	4.20E+00	6.88E+00	1.21E+01	1.76E+01	1.31E-01	1.50E+00	2.08E+00	4.49E-02
NRPM	MJ	9.35E-01	-	1.70E+00	-	-	-	-	-	-
TRPE	MJ	1.48E+02	4.20E+00	7.93E+00	1.21E+01	1.76E+01	1.31E-01	1.50E+00	2.08E+00	4.49E-02
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	3.54E+00	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
W	m ³	2.48E-04	-	-	-	-	-	-	-	-

1 DU of Eco Panel birch

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
RPEE	MJ	2.56E+02	5.02E-02	4.20E+00	1.44E-01	2.11E-01	1.56E-03	1.68E-02	5.08E-02	4.78E-04
RPEM	MJ	1.79E+02	-	1.60E+00	-	-	-	-	-	-
TPE	MJ	4.35E+02	5.02E-02	5.90E+00	1.44E-01	2.11E-01	1.56E-03	1.68E-02	5.08E-02	4.78E-04
NRPE	MJ	1.45E+02	4.14E+00	6.88E+00	1.21E+01	1.76E+01	1.31E-01	1.41E+00	1.97E+00	4.13E-02
NRPM	MJ	9.35E-01	-	1.70E+00	-	-	-	-	-	-
TRPE	MJ	1.46E+02	4.14E+00	7.26E+00	1.21E+01	1.76E+01	1.31E-01	1.41E+00	1.97E+00	4.13E-02
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	3.54E+00	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
W	m ³	2.48E-04	-	-	-	-	-	-	-	-

1 DU of Eco Panel pine

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
RPEE	MJ	2.60E+02	4.96E-02	4.20E+00	1.44E-01	2.11E-01	1.56E-03	1.32E-02	4.49E-02	4.01E-04
RPEM	MJ	1.44E+02	-	1.60E+00	-	-	-	-	-	-
TPE	MJ	3.61E+02	4.96E-02	5.90E+00	1.44E-01	2.11E-01	1.56E-03	1.32E-02	4.49E-02	4.01E-04
NRPE	MJ	1.36E+02	4.07E+00	6.88E+00	1.21E+01	1.76E+01	1.31E-01	1.11E+00	1.61E+00	3.70E-02
NRPM	MJ	9.35E-01	-	1.70E+00	-	-	-	-	-	-
TRPE	MJ	1.37E+02	4.07E+00	7.26E+00	1.21E+01	1.76E+01	1.31E-01	1.11E+00	1.61E+00	3.70E-02
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	2.00E+00	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
W	m ³	2.48E-04	-	-	-	-	-	-	-	-

1 DU of Eco Panel spruce

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
RPEE	MJ	1.97E+02	4.94E-02	4.20E+00	1.44E-01	2.11E-01	1.56E-03	1.26E-02	4.38E-02	3.88E-04
RPEM	MJ	1.35E+02	-	1.60E+00	-	-	-	-	-	-
TPE	MJ	3.32E+02	4.94E-02	5.90E+00	1.44E-01	2.11E-01	1.56E-03	1.26E-02	4.38E-02	3.88E-04
NRPE	MJ	1.35E+02	4.06E+00	6.88E+00	1.21E+01	1.76E+01	1.31E-01	1.05E+00	1.54E+00	3.63E-02
NRPM	MJ	9.35E-01	-	1.70E+00	-	-	-	-	-	-
TRPE	MJ	1.36E+02	4.06E+00	7.26E+00	1.21E+01	1.76E+01	1.31E-01	1.05E+00	1.54E+00	3.63E-02
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	2.00E+00	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
W	m ³	2.48E-04	-	-	-	-	-	-	-	-

End of life - Waste
1 DU of Eco Panel ash

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
HW	kg	6.06E-04	2.29E-05	4.37E-06	6.98E-06	1.02E-05	7.56E-08	8.68E-07	-	5.02E-06
NHW	kg	1.56E+00	1.75E+00	7.49E-02	5.36E-01	7.83E-01	5.80E-03	6.67E-02	-	2.74E-01
RW	kg	4.88E-04	2.52E-04	1.51E-05	7.66E-05	1.12E-04	8.29E-07	9.53E-06	-	3.46E-06

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

1 DU of Eco Panel oak

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
HW	kg	6.06E-04	2.42E-06	4.37E-06	6.98E-06	1.02E-05	7.56E-08	8.68E-07	-	5.02E-06
NHW	kg	1.56E+00	1.82E-01	7.49E-02	5.36E-01	7.83E-01	5.80E-03	6.67E-02	-	2.74E-01
RW	kg	4.88E-04	2.66E-05	1.51E-05	7.66E-05	1.12E-04	8.29E-07	9.53E-06	-	3.46E-06

1 DU of Eco Panel birch

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
HW	kg	6.06E-04	2.29E-05	3.63E-06	6.57E-06	9.59E-06	7.55E-08	8.13E-07	-	4.80E-06
NHW	kg	1.56E+00	1.75E+00	6.91E-02	5.05E-01	7.37E-01	5.80E-03	6.25E-02	-	2.64E-01
RW	kg	4.88E-04	2.52E-04	9.62E-06	7.22E-05	1.05E-04	8.29E-07	8.93E-06	-	3.35E-06

1 DU of Eco Panel pine

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
HW	kg	5.62E-04	2.35E-06	3.62E-06	6.98E-06	1.02E-05	7.55E-08	6.39E-07	-	4.11E-06
NHW	kg	1.15E+00	1.77E-01	6.83E-02	5.36E-01	7.83E-01	5.80E-03	4.91E-02	-	2.35E-01
RW	kg	4.29E-04	2.58E-05	9.58E-06	7.66E-05	1.12E-04	8.29E-07	7.02E-06	-	3.01E-06

1 DU of Eco Panel spruce

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
HW	kg	5.62E-04	2.34E-06	3.62E-06	5.06E-06	7.38E-06	7.55E-08	6.08E-07	-	3.98E-06
NHW	kg	1.15E+00	1.76E-01	6.83E-02	3.89E-01	5.68E-01	5.80E-03	4.68E-02	-	2.30E-01
RW	kg	4.29E-04	2.57E-05	9.58E-06	5.56E-05	8.11E-05	8.29E-07	6.68E-06	-	2.95E-06

End of life - Output flow
1 FU of Eco Panel ash

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
CR	kg	-	-	-	-	-	-	-	-	-
MR	kg	-	-	-	-	-	-	-	6.50E-01	-
MER	kg	-	-	-	-	-	-	-	1.10E+01	-
EEE	MJ	-	-	-	-	-	-	-	1.80E+03	-
ETE	MJ	-	-	-	-	-	-	-	-	-

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

1 FU of Eco Panel oak

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
CR	kg	-	-	-	-	-	-	-	-	-
MR	kg	-	-	-	-	-	-	-	6.50E-01	-
MER	kg	-	-	-	-	-	-	-	1.10E+01	-
EEE	MJ	-	-	-	-	-	-	-	1.80E+03	-
ETE	MJ	-	-	-	-	-	-	-	-	-

1 FU of Eco Panel birch

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
CR	kg	-	-	-	-	-	-	-	-	-
MR	kg	-	-	-	-	-	-	-	6.50E-01	-
MER	kg	-	-	-	-	-	-	-	1.05E+01	-
EEE	MJ	-	-	-	-	-	-	-	1.79E+03	-
ETE	MJ	-	-	-	-	-	-	-	-	-

1 FU of Eco Panel pine

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
CR	kg	-	-	-	-	-	-	-	-	-
MR	kg	-	-	-	-	-	-	-	6.50E-01	-
MER	kg	-	-	-	-	-	-	-	8.26E+00	-
EEE	MJ	-	-	-	-	-	-	-	1.44E+03	-
ETE	MJ	-	-	-	-	-	-	-	-	-

1 FU of Eco Panel spruce

Parameter	Unit	A1	A2	A3	A4-1	A4-2	A5	C2	C3	C4
CR	kg	-	-	-	-	-	-	-	-	-
MR	kg	-	-	-	-	-	-	-	6.50E-01	-
MER	kg	-	-	-	-	-	-	-	7.86E+00	-
EEE	MJ	-	-	-	-	-	-	-	1.35E+03	-
ETE	MJ	-	-	-	-	-	-	-	-	-

Additional Norwegian requirements

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

National production mix, medium 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
Norwegian electricity consumption from Econinvent v.3 2014	0.03	kg CO2-eq/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 (Avfallsforkiften, Annex III), see table.

Emission tests have been performed on the ash board (which is the component of Eco Panel which most likely could affect the indoor climate) and a declaration of the results can be found in Appendix 6 of the LCA-report (LCA-report Sweco 2019-04). Performed tests on the ash board indicate that the component meets the requirements for very low emissions of volatile organic compounds according to ISO 16000-9:2006. The product also fulfills requirements for M1 within Byggvarubedomningen.

Bibliography

ISO 14025:2010	<i>Environmental labels and declarations - Type III environmental declarations - Principles and procedures</i>
ISO 14044:2006	<i>Environmental management - Life cycle assessment - Requirements and guidelines</i>
EN 15804:2012+A1:2013	<i>Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products</i>
ISO 21930:2007	<i>Sustainability in building construction - Environmental declaration of building products</i>
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LCI/LCA Report	<i>Background report for Eco Panel. Report number: LCA-report Sweco 2019-05</i>
ECHA, 2018	<i>ECHA: "Candidate List of Substances of Very High Concern for authorisation". Available at http://www.echa.europa.eu/web/guest/candidate-list-table Last update: April 2018</i>
Norwegian Environment Agency, 2018	<i>List of Priority Substances Available at: http://www.environment.no/List-of-Priority-Substances/ Updated: 15 January 2018</i>
Environmental Product Declaration	<i>Sherwood® Water-Based Acrylic Varnish, declaration number: EPD10113, program operator: NSF International, Owner of the declaration: The Sherwin-Williams Company</i>

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