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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:	Huntonit AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2585-1312-EN
Registration number:	NEPD-2585-1312-EN
ECO Platform reference number:	-
Issue date:	10.12.2020
Valid to:	10.12.2025

Huntonit building boards

Huntonit AS

www.epd-norge.no



General information**Product:**

Huntonit building boards

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-2585-1312-EN

ECO Platform reference number:**This declaration is based on Product Category Rules:**

CEN Standard EN 15804 serves as core PCR
NPCR010 v3.0 Building boards (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 information, life cycle assessment data and evidences.

Declared unit:**Declared unit with option:**

1 m2 of painted building board with 11 mm thickness installed with a reference service life of 60 years and waste treatment at end-of-life.

Functional unit:**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:

sign

Alexander Borg

(Independent verifier approved by EPD Norway)

Owner of the declaration:

Huntonit AS
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Manufacturer:

Huntonit AS
Venneslavegen 233
NO-4708 Vennesla
Norway

Place of production:

Vennesla, Norway

Management system:

NS-EN ISO 9001:2015, NS-EN ISO 14001:2015, ISO
50001:2018, PEFC ST 2002:2013

Organisation no:

NO 914 801 958 MVA

Issue date:

10.12.2020

Valid to:

10.12.2025

Year of study:

2020

Comparability:

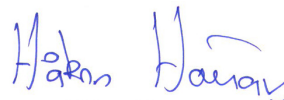
EPD of construction products may not be comparable if they do not comply with EN 15804 and seen in a building context.

The EPD has been worked out by:

Lars G. F. Tellnes

 **NORSUS**

Approved



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:

Huntonit building boards are medium density wood fibreboards for interior use in walls and ceiling. The boards are produced by wet process.

Product specification:

The life cycle assessment is performed on 11 mm board with white paint.

Materials	kg	%
Wood, dry weight	8.49	93.07 %
Water	0.406	4.45 %
Paint and varnish	0.195	2.14 %
Adhesive	0.021	0.23 %
Additives	0.01	0.11 %
Total for product	9.12	100 %
Solid wood	0.07	
Fibreboard	0.43	
Plastic packaging	0.03	
Total product + packaging	9.65	

Technical data:

Standard board thickness is 11 mm, but some boards are also produced at 9 mm thickness. The weight is approx. 9,2 kg/m² for 11 mm boards and approx. 8,0 kg/m² for 9 mm. The variation of the weight is up to 10 %. The moisture content from production is 4 - 9 weight percent.

Huntonit building boards have SINTEF Technical Approval nr. 2038 (TG. Nr 2038).

Market:

Norway and Europe. The scenario is based on use in Norway.

Reference service life, product:

Same as the building.

Reference service life, building:

Typically, reference service life of 60 years is used for buildings.

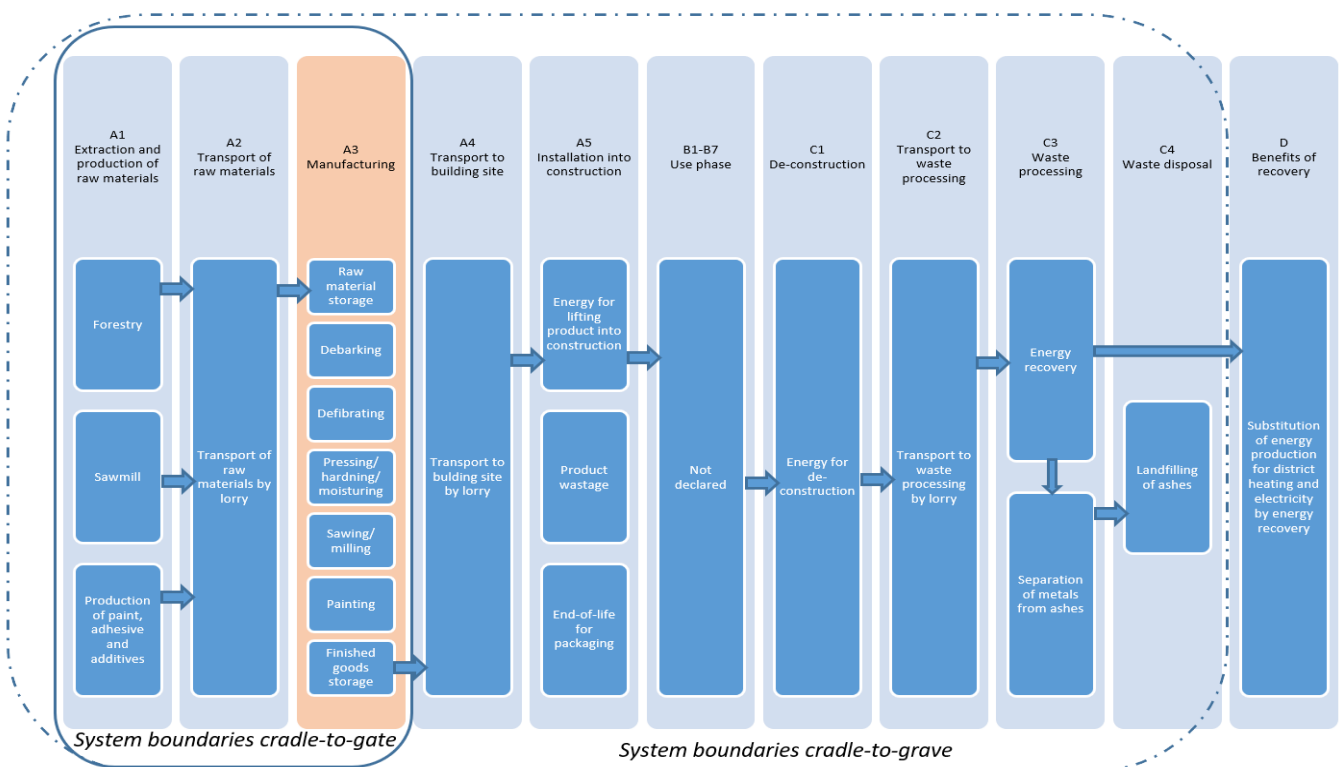
LCA: Calculation rules

Declared unit:

1 m² of painted building board with 11 mm thickness installed with a reference service life of 60 years and waste treatment at end-of-life.

System boundary:

Flow chart for the complete life cycle (A1-C4) with system boundaries are shown in the figure below. Module D is also declared outside the life cycle with energy substitution from recovery and is further explained in the scenarios.



Data quality:

Manufacturing data was collected in 2020 and with 2019 as reference year. The energy use data in manufacturing are however from first half year of 2020, as this was changed. For wood raw materials and transport, these are based on ecoinvent, but have major changes to be representative for Norwegian conditions. Other data are from ecoinvent v3.6, released in 2019, but with some changes to improve representativeness.

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 and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is first sub-divided and then allocated equally among all products through mass allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis. Upstream wood industry and forestry are sub-divided and joint co-production processes have economic allocation.

Calculation of biogenic carbon:

Uptake and emissions of biogenic carbon are calculated according to EN 16485:2014. This is based on the modularity principle in EN 15804:2012, where the emissions shall be accounted in the module where it occurs. The amount of biogenic carbon is calculated according to EN 16449:2014. Net contribution of biogenic carbon is calculated for each module on page 8. The wood is from sustainable sources and has PEFC Chain-of-Custody certification.

LCA: Scenarios and additional technical information

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

All produce is either first transported to a building merchant or directly to a building site. A scenario is included for building merchant where 400 km are on large lorry and 20 km in a smaller lorry to building site.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit
Truck	73	EURO5, >32 tonn	400	0.018	l/tkm
Truck	38	EURO5, 3.5-7.5t tonn	20	0.038	l/tkm

It is assumed 1 MJ of electricity use in assembly per cubic meter and 10 % wastage of the product, in addition to waste management of the packaging.

Module B1 is not declared

Assembly (A5)

	Unit	Value
Auxiliary	kg	0
Water consumption	m ³	0
Electricity consumption	MJ	0.01
Other energy carriers	MJ	0
Material loss	kg	0.9
Output materials from waste treatment	kg	0.5
Dust in the air	kg	0

Use (B1)

	Unit	Value
Relevant emissions during use	kg	MND

Module B2 and B3 are not declared

Maintenance (B2)/Repair (B3)

	Unit	Value
Maintenance cycle*		MND
Auxiliary	kg	MND
Other resources	kg	MND
Water consumption	m ³	MND
Electricity consumption	kWh	MND
Other energy carriers	MJ	MND
Material loss	kg	MND

Module B4 and B5 are not declared

Replacement (B4)/Refurbishment (B5)

	Unit	Value
Replacement cycle*	yr	MND
Electricity consumption	kWh	MND
Replacement of worn parts	0	MND

* Number or RSL (Reference Service Life)

Module B6 and B7 are not declared

Operational energy (B6) and water consumption (B7)

	Unit	Value
Water consumption	m ³	MND
Electricity consumption	kWh	MND
Other energy carriers	MJ	MND
Power output of equipment	kW	MND

End of Life (C1, C3, C4)

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

The transport of wood waste is based on average distance for Norway in 2007 and was 85 km (Raadahl et al, 2009).

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit
Truck		Unspecified	85	0.027	l/tkm

The benefits from exported energy from municipal incineration was calculated from amounts in 2018 and that substitutes Norwegian electricity mix and district heating mix.

Benefits and loads beyond the system boundaries (D)

	Unit	Value
Substitution of electric energy	MJ	15
Substitution of thermal energy	MJ	104
Substitution of raw materials	kg	0
Substitution of fuels	kg	0
Substitution of products	kg	0

LCA: Results

The results for global warming of the different modules have a large contribution from uptake and emission of biogenic carbon. The net contribution of biogenic carbon to each modules is shown on page 8.

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	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

Environmental impact

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
GWP	kg CO ₂ -eqv	-1.20E+01	3.57E-01	1.49E+00	MND	MND	MND	MND	MND
ODP	kg CFC11-eqv	3.15E-07	6.85E-08	4.23E-08	MND	MND	MND	MND	MND
POCP	kg C ₂ H ₄ -eqv	1.32E-03	5.83E-05	1.46E-04	MND	MND	MND	MND	MND
AP	kg SO ₂ -eqv	1.93E-02	1.12E-03	2.27E-03	MND	MND	MND	MND	MND
EP	kg PO ₄ ³⁻ -eqv	1.06E-02	2.25E-04	1.15E-03	MND	MND	MND	MND	MND
ADPM	kg Sb-eqv	6.51E-05	5.45E-06	7.49E-06	MND	MND	MND	MND	MND
ADPE	MJ	6.87E+01	5.70E+00	7.87E+00	MND	MND	MND	MND	MND

Environmental impact

Parameter	Unit	B6	B7	C1	C2	C3	C4	D
GWP	kg CO ₂ -eqv	MND	MND	7.10E-05	9.77E-02	1.62E+01	3.80E-04	-6.78E-01
ODP	kg CFC11-eqv	MND	MND	6.27E-12	1.81E-08	7.74E-09	1.43E-10	-7.70E-08
POCP	kg C ₂ H ₄ -eqv	MND	MND	2.13E-08	1.32E-05	2.97E-05	1.04E-07	-3.72E-04
AP	kg SO ₂ -eqv	MND	MND	4.75E-07	3.16E-04	8.71E-04	2.59E-06	-3.76E-03
EP	kg PO ₄ ³⁻ -eqv	MND	MND	4.74E-08	5.12E-05	2.33E-04	6.62E-07	-9.53E-04
ADPM	kg Sb-eqv	MND	MND	5.37E-09	2.47E-06	1.45E-06	4.23E-09	-6.44E-06
ADPE	MJ	MND	MND	4.84E-04	1.48E+00	9.20E-01	1.29E-02	-7.96E+00

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource use

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
RPEE	MJ	5.63E+01	3.10E-01	3.42E+01	MND	MND	MND	MND	MND
RPEM	MJ	1.71E+02	0.00E+00	-9.67E+00	MND	MND	MND	MND	MND
TPE	MJ	2.27E+02	3.10E-01	2.46E+01	MND	MND	MND	MND	MND
NRPE	MJ	6.98E+01	5.83E+00	8.26E+00	MND	MND	MND	MND	MND
NRPM	MJ	3.66E+00	0.00E+00	1.15E-01	MND	MND	MND	MND	MND
TRPE	MJ	7.35E+01	5.83E+00	8.38E+00	MND	MND	MND	MND	MND
SM	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND
W	m ³	4.66E-01	1.46E-03	4.70E-02	MND	MND	MND	MND	MND

Resource use

Parameter	Unit	B6	B7	C1	C2	C3	C4		D
RPEE	MJ	MND	MND	1.27E-02	2.14E-02	1.73E+02	2.55E-04		-6.46E+01
RPEM	MJ	MND	MND	0.00E+00	0.00E+00	-1.61E+02	0.00E+00		0.00E+00
TPE	MJ	MND	MND	1.27E-02	2.14E-02	1.21E+01	2.55E-04		-6.46E+01
NRPE	MJ	MND	MND	9.85E-04	1.51E+00	3.45E+00	1.31E-02		-9.58E+00
NRPM	MJ	MND	MND	0.00E+00	0.00E+00	-2.51E+00	0.00E+00		0.00E+00
TRPE	MJ	MND	MND	9.85E-04	1.51E+00	9.41E-01	1.31E-02		-9.58E+00
SM	kg	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
RSF	MJ	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
NRSF	MJ	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
W	m ³	MND	MND	9.52E-05	1.71E-04	2.02E-03	1.67E-05		-2.60E-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	B1	B2	B3	B4	B5
HW	kg	8.42E-05	7.12E-06	1.02E-05	MND	MND	MND	MND	MND
NHW	kg	1.85E+00	5.66E-01	2.90E-01	MND	MND	MND	MND	MND
RW	kg	1.24E-04	3.87E-05	1.80E-05	MND	MND	MND	MND	MND

End of life - Waste

Parameter	Unit	B6	B7	C1	C2	C3	C4		D
HW	kg	MND	MND	1.23E-09	3.84E-06	3.96E-06	1.26E-08		-1.51E-05
NHW	kg	MND	MND	1.25E-04	1.05E-01	1.06E-01	6.71E-02		-4.22E-01
RW	kg	MND	MND	8.81E-09	1.03E-05	2.06E-06	8.15E-08		-4.70E-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	B1	B2	B3	B4	B5
CR	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND
MR	kg	1.23E-02	0.00E+00	3.08E-02	MND	MND	MND	MND	MND
MER	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND
EEE	MJ	0.00E+00	0.00E+00	1.40E+00	MND	MND	MND	MND	MND
ETE	MJ	0.00E+00	0.00E+00	9.67E+00	MND	MND	MND	MND	MND

Parameter	Unit	B6	B7	C1	C2	C3	C4		D
CR	kg	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
MR	kg	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
MER	kg	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
EEE	MJ	MND	MND	0.00E+00	0.00E+00	1.40E+01	0.00E+00		-1.52E+01
ETE	MJ	MND	MND	0.00E+00	0.00E+00	9.67E+01	0.00E+00		-1.04E+02

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

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

Additional Norwegian requirements

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

National consumption mix with import on low voltage (production of transmission lines, in addition to direct emissions and losses in grid) are applied electricity for the manufacturing process (A3).

Data source	Amount	Unit
Ecoinvent v3.6 (2019)	22.3	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 (Avfallsforkiften, Annex III), see table.

Indoor environment

The product is tested and approved to the criteria for M1 and Danish Indoor Climate Labelling.
 The product is recommended by the Norwegian Asthma and Allergy Association.

Carbon footprint

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.

Climate impacts



Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
GWP-IOBC	kg CO ₂ -eqv	4.45E+00	3.57E-01	5.70E-01	MND	MND	MND	MND	MND
GWP-BC	kg CO ₂ -eqv	-1.65E+01	0.00E+00	9.17E-01	MND	MND	MND	MND	MND
GWP	kg CO ₂ -eqv	-1.20E+01	3.57E-01	1.49E+00	MND	MND	MND	MND	MND

Climate impacts

Parameter	Unit	B6	B7	C1	C2	C3	C4	D
GWP-IOBC	kg CO ₂ -eqv	MND	MND	7.10E-05	9.77E-02	6.05E-01	3.80E-04	-6.78E-01
GWP-BC	kg CO ₂ -eqv	MND	MND	0.00E+00	0.00E+00	1.56E+01	0.00E+00	0.00E+00
GWP	kg CO ₂ -eqv	MND	MND	7.10E-05	9.77E-02	1.62E+01	3.80E-04	-6.78E-01

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>
EN 16485:2014	<i>Round and sawn timber - Environmental Product Declaration - Product category rules for wood and wood-based products for use in construction</i>
EN 16449:2014	<i>Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide</i>
NPCR010 V3.0	<i>Product category rules for building boards</i>
Ecoinvent v3.6	<i>Swiss Centre of Life Cycle Inventories. www.ecoinvent.ch</i>
Statistics Norway	<i>Table 09469: Net production of district heating by type of heat central, 2018</i>
Statistics Norway	<i>Table 04727: District heating balance, 2018</i>
Statistics Norway	<i>Table 04730: Consumption of fuel used fro gross production of district heating, 2018</i>
Raadal et al. (2009).	<i>Raadal, H. L., Modahl, I. S. & Lyng, K-A. (2009). Klimaregnskap for avfallshåndtering, Fase I og II. Oppdragsrapport nr 18.09 fra Østfoldforskning, Norge</i>
Tellnes (2020)	<i>LCA-report for Huntonit AS. Report OR.39.20 from NORSUS, Kråkerøy, Norway.</i>
TG nr. 2038	<i>SINTEF Building and Infrastructure Technical Approval nr. 2038 for Huntonit Building boards.</i>
NS-EN 9001:2015	<i>Quality management systems - Requirements</i>
NS-EN ISO 14001:2015	<i>Environmental management systems - Requirements with guidance for use</i>
ISO 50001:2018	<i>Energy management systems - Requirements with guidance for use</i>
PEFC ST 2002:2013	<i>Chain of Custody of Forest Based Products - Requirements</i>

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