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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	NEPD00296E
ECO EPD Ref. No.	00000147
Issue date	06.01.2015
Valid to	06.01.2020

Huntonit building boards

Huntonit AS

www.epd-norge.no

General information

Product

Huntonit building boards

Owner of the declaration

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Manufacturer

Huntonit AS
Venneslavegen 233
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Norway

Declaration number:

NEPD00296E

Place of production:

Vennesla, Norway

This declaration is based on Product Category Rules:

CEN Standard EN 15804 serve as core PCR
NPCR010 rev1 (12/2013) Building boards

Management system:

ISO 9001:2008, ISO 14001:2004, ISO 50001:2011, PEFC ST 2002:2013

Declared unit:

Production of 1 m^2 painted wood fibreboard with 11 mm thickness

Org. No:

NO 914 801 958 MVA

Declared unit with option:

1 m^2 painted wood fibreboard with 11 mm thickness installed with a reference service life of 60 years.

Issue date

06.01.2015

Functional unit:

Valid to

06.01.2020

The EPD has been worked out by:

Lars G. F. Tellnes
Norwegian Institute of Wood Technology

Comparability:

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

Year of study:

2013-2014

Verification:

Independent verification of data, other environmental information and EPD has been carried out in accordance with ISO14025, 8.1.3 and 8.1.4

externally ☑ internally ☐

Christofer Skaar, PhD
(Independent verifier approved by EPD Norway)

Approved

Dagfinn Malnes
Managing Director of EPD-Norway

Declared unit:
Production of 1 m2 painted wood fibreboard with 11 mm thickness

Key environmental indicators	Unit	Cradle to gate A1 - A3	Transport *****	Module A4
Global warming	kg CO_2 -eqv	-10,2†	0,05	0,48
Energy use	MJ	163	0,85	8
Dangerous substances	*	-	-	-
Share renewables of energy use	%	35	1	1
Indoor air classification	-	Not tested	-	-

† Includes sequestration of 16,09 kg CO_2 through photosynthesis in A1-A3.

* The product contains no substances from the REACH Candidate list or the Norwegian priority list

***** Transport from production site to central warehouse in Norway. See explanation on page 7.

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.

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/m^2 for 11 mm boards and approx. 8,0 kg/m^2 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).

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

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

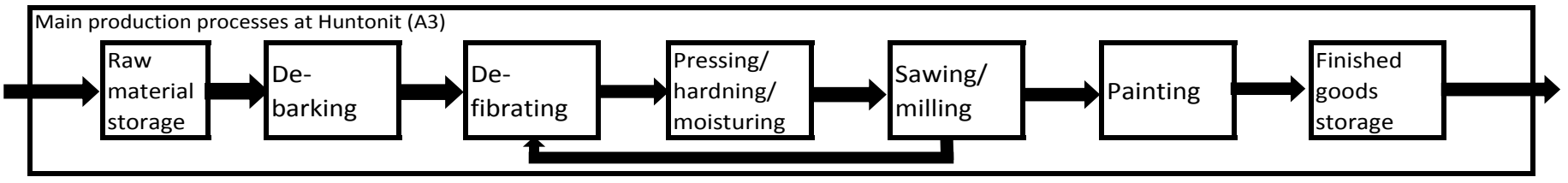
Materials	kg	%
Wood	8,67	94,24
Water	0,41	4,46
Paint and varnish	0,06	0,65
Resin	0,05	0,54
Addetives	0,01	0,11
Total product	9,2	100,00
Wood packaging	0,11	
Steel packaging	<0,01	
Plastic packaging	0,03	
Total with packaging	9,34	

Reference service life:
The reference service life is the same as the building and is usually set to 60 years.

LCA: Calculation rules

Declared unit with option:
1 m2 painted wood fibreboard with 11 mm thickness installed with a reference service life of 60 years.

System boundary:
Flow chart of the production (A3) of painted fibreboards are shown below, while the rest of the modules are shown on page 5. Modul D is calculated by energy substitution and is explained in the scenarios.



Data quality:
Production data for Huntonit is based on the average in 2013. Data for production of logs, chips, energy, transport, waste treatment and production of other materials is from the databse Ecoinvent v2.2, released in 2010.

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:
Allocation is done in accordance to NS-EN 15804:2012. In the upstream production chain of wood, this is economic allocation and the values used are the default in Ecoinvent v2.2.

Calculation of biogenic carbon content:
Sequestration and emissions of biogenic carbon is calculated according to EN16485:2014. This approach is based on the modularity principle in EN15804:2012 that states that all environmental aspects and impacts are declared in the life cycle where they appear. The calculation of biogenic carbon content and conversion to carbon dioxide is done according to NS-EN 16449:2014. With a dry weight of wood on 8,67 kg per declared unit, 15,9 kg CO_2 will be accounted as seqestrated in A1-A3 and the same as emissions in C3 and C4. In addition there is 0,19 kg CO_2 sequestrated in the wood packaging.

Estimates and assumptions:
All key assumptions and estimates are either presented in the EPD or can be found in NPCR010 (12/2013)

LCA: Scenarios and additional technical information

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

Transport to building site is based on a scenario with transport from the factory to a builders' merchant and then an additional 20 km to a building site.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	75	Lorry, >32t, EURO4	400	0,026 l/tkm	10,4
Truck	39	Lorry, 3,5-7,5t, EURO4	20	0,11 l/tkm	2,2

It is assumed 1 MJ per m^3 of electricity use at building site and that 10% of the boards are wasted.

Installation in the building (A5)

	Unit	Value
Auxiliary	kg	
Water consumption	m^3	
Electricity consumption	MJ	0,01
Other energy carriers	MJ	
Material loss	kg	0,92
Output materials from waste treatment	kg	
Dust in the air	kg	

Replacement (B4)/Refurbishment (B5)

	Unit	Value
Replacement cycle*	Yr	60
Electricity consumption	kWh	
Replacement of worn parts		

* Number or RSL (Reference Service Life)

The transport of wood waste is based on average distance for Norway in 2007 and was 85 km. In addition, the share that is exported to Sweden is estimated to 67% by truck, 9% by rail and 24% by boat. The transport distances to Sweden are assumed to be 200 km by truck, 400 km by rail and 800 km by boat.

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	50	Lorry, 20-28t	85	0,05 l/tkm	4,25
Truck	75	Lorry, <32t	200	0,026 l/tkm	5,2
Railway		Freight train	400	0,239 MJ/tkm	
Boat	50	Barge	800	0,011 l/tkm	8,8

The benefits beyond the life cycle is calculated by the sum of exported energy of the life cycle. For the share that is recovered in Norway, this is substitution of Norwegian electricity and district heating mixes and different types of industrial fuels. For the share that is exported to Sweden, generic data from ELCD 3.0 is used.

The building boards can be sorted as mixed wood waste on building site and is normally treated with energy recovery. The scenario for treatment of wood waste is based on the Norwegian waste accounts in 2011. This is mostly waste incineration and use as industrial fuel, but also some minor landfilling.

Benefits and loads beyond the system boundaries (D)

	Unit	Value
Substitution of electric energy	MJ	12
Substitution of thermal energy	MJ	41
Substitution of biofuel	kg	2,39

End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	9,2
Reuse	kg	
Recycling	kg	
Energy recovery	kg	8,37
Incineration without energy recovery	kg	0,644
To landfill	kg	0,18

LCA: Results

The results for global warming potential in A1-A3 have large contribution from the sequestration of 15,9 kg carbon dioxide during wood growth, the same amount are counted as emitted during waste treatment in C3 and C4. In addition, there is 0,19 kg sequestrated in the packaging in A1-A3 and which is emitted in A5.

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

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	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	MNR	MNR	X	X	X	X	X

Environmental impact

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO_2 -eqv	-1,02E+01	4,82E-01	8,64E-01	1,29E-04	2,55E-01	1,48E+01	1,47E+00	-3,73E+00
ODP	kg CFC11-eqv	6,99E-07	7,82E-08	7,97E-08	1,15E-11	3,88E-08	1,16E-08	1,37E-09	-3,31E-07
POCP	kg C_2H_4 -eqv	1,44E-03	6,31E-05	1,63E-04	1,53E-08	4,37E-05	7,60E-05	8,54E-06	-1,06E-03
AP	kg SO_2 -eqv	1,42E-02	1,87E-03	1,96E-03	2,99E-07	1,37E-03	1,90E-03	1,51E-04	-2,13E-02
EP	kg PO_4^{3-}-eqv	6,39E-03	3,82E-04	7,61E-04	6,22E-08	2,96E-04	4,78E-04	4,12E-05	-1,16E-03
ADPM	kg Sb-eqv	7,86E-06	1,55E-06	1,02E-06	3,90E-10	5,53E-07	1,05E-07	1,03E-08	-7,09E-07
ADPE	MJ	1,02E+02	7,29E+00	1,11E+01	1,72E-03	3,73E+00	1,63E+00	1,49E-01	-7,85E+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	C1	C2	C3	C4	D
RPEE	MJ	5,70E+01	1,12E-01	2,41E+01	1,14E-02	5,43E-02	1,43E+02	1,10E+01	-6,64E+01
RPEM	MJ	1,68E+02	INA	-1,62E+00	INA	INA	-1,51E+02	-1,17E+01	INA
TPE	MJ	2,25E+02	1,12E-01	2,25E+01	1,14E-02	5,43E-02	-8,88E+00	-6,85E-01	-6,64E+01
NRPE	MJ	1,06E+02	7,70E+00	1,18E+01	2,24E-03	3,93E+00	2,11E+00	1,83E-01	-5,04E+01
NRPM	MJ	2,57E+00	INA	INA	INA	INA	-5,10E-01	-3,92E-02	INA
TRPE	MJ	1,08E+02	7,70E+00	1,07E+01	2,24E-03	3,93E+00	1,60E+00	1,43E-01	-5,04E+01
SM	kg	INA	INA	INA	INA	INA	INA	INA	INA
RSF	MJ	INA	INA	INA	INA	INA	INA	INA	INA
NRSF	MJ	INA	INA	INA	INA	INA	INA	INA	INA
W	m^3	2,54E+01	6,56E-01	2,70E+00	4,07E-03	3,16E-01	3,22E-01	1,69E-02	-6,09E+00

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	C1	C2	C3	C4	D
HW	kg	1,69E-03	2,14E-04	4,47E-03	6,59E-08	7,91E-05	0,00E+00	2,72E-03	-3,65E-04
NHW	kg	7,61E-01	6,09E-02	1,16E-01	1,08E-04	2,62E-02	0,00E+00	1,91E-01	-1,66E-01
RW	kg	1,30E-04	6,82E-06	1,48E-05	1,03E-08	3,51E-06	0,00E+00	1,60E-07	-2,03E-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	C1	C2	C3	C4	D
CR	kg	INA	INA	INA	INA	INA	INA	INA	INA
MR	kg	INA	INA	2,97E-02	INA	INA	INA	INA	INA
MER	kg	INA	INA	2,44E-01	INA	INA	2,18E+00	INA	-2,39E+00
EEE	MJ	INA	INA	1,62E+00	INA	INA	1,44E+01	INA	-1,17E+01
ETE	MJ	INA	INA	5,57E+00	INA	INA	4,98E+01	INA	-4,05E+01

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 = $9{,}0*10^{-3}$ = 0,009

Additional Norwegian requirements

Electricity
Norwegian consumption mix at medium voltage is used at the production site and is calculated based on the average for 2008-2010, with some adjustment to be equal to emission factors published by EPD-Norway.

Greenhouse gas emissions: 0,0117 kg CO_2 - eqv/MJ

Dangerous substances
None of the following substances have been added to the product: Substances on the REACH Candidate list of substances of very high concern (of 16.06.2014) or substances on the Norwegian Priority list (of 03.11.2014) or substances that lead to the product being classified as hazardous waste. The chemical content of the product complies with regulatory levels as given in the Norwegian Product Regulations.

Transport
Transport from production site to central warehouse in Norway is: 50 km
This transport scenario is not realistic, but is calculated based on requirements from EPD-Norway.

Indoor environment
Test for the emissions from the product to the indoor environment have not been performed.
The product is recommended by the Norwegian Asthma and Allergy Association.

Carbon footprint
Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2006	*Environmental labels and declarations - Type III environmental declarations - Principles and procedures*
ISO 14044:2006	*Environmental management - Life cycle assessment - Requirements and guidelines*
EN 15804:2012	*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*
Tellnes, L. G. F.	*LCA-report for Huntonit. LCA-report nr. 321123-1 from Norwegian Institute of Wood Technology, Oslo, Norway.*
NPCR010 (12/2013)	*Product category rules for building boards, december 2013.The Norwegian EPD Foundation, Oslo, Norway.*
NS-EN 16485:2014	*Round and sawn timber - Envrionmental Product Declaration - Product category rules for wood and wood- based products fo ruse in constructin.*
NS-EN 16449:2014	*Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.*
Ecoinvent v2.2 (2010)	*European Centre of Life Cycle Inventories. http://www.ecoinvent.ch*
ELCD 3.0 (2013)	*European reference Life-Cycle Database. http://eplca.jrc.ec.europa.eu/ELCD3/*
TG nr. 2038	*SINTEF Building and Infrastructure Technical Approval nr. 2038 for Huntonit Building boards.*

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