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The Norwegian EPD Foundation

	NEPD-2287-1041-NO

NEPD-2287-1041-NO Hunton Wood Fibre Insulation Board™

General information

NEPD-2287-1041-NO Hunton

Manufacturer:

post@epd-norge.no

Declaration number:
NEPD-2287-1041-NO

Production location:
Gjøvik, Norge

ECO Platform registration number:

Quality/Environmental s
ISO 50001:2011
ISO 9001:2015
PEFC ST 2002:2013

The declaration is based on PCR:
CEN Standard EN 15804 serves as core PCR
NPCR 012 Insulation materials v.2 (06/2018).

Org. no.:
964 014 256

Liability declaration:
The owner of the declaration shall be liable for the underlying information and documentation. The Norwegian EPD Foundation shall not be liable for manufacturer information, lifecycle assessment, data and documentation.

06-07-2020

Declared unit:

Year of study:
2015-2020

Declared unit with option:

Comparability:
Building material EPDs are not necessarily comparable, if they do not correspond to NS-EN 15804 and are viewed in a construction context.

Functional unit:
1 m2 wood fibre insulation installed in a thickness of 38 mm and a thermal resistance of R=1 Km2/W from cradle-to-grave with a reference lifecycle of 60 years.

Environmental declaration prepared by:
Lars G. F. Tellnes
Østfoldforskning AS

Østfoldforskning

Verification:

Independent verification of declaration and data, in accordance with ISO 14025:2010

☐ intern al ☑ external

Third party verifier:
Alexander Borg
Alexander Borg, Asplan Viak approved by The Norwegian

Approved

Håkon Hauan
Daglig leder av EPD-Norge

Product

Product description:
Hunton Nativo Wood Fibre Insulation Board is produced by defibration of wood chips which are then mixed with additives for structure and fire resistance. Used for thermal insulation of walls, roofs and

Product specification:
Applies to all dimensions of wood fibre insulation

Technical data:
Wood fibre insulation board has a thermal conductivity of (23°C/50
% RH) 0.038 W/mK at a density of 50 kg/m3. Thermal conductivity has been tested in accordance with EN 13171, which is also the harmonised standard the product is produced in compliance with.

Market area:

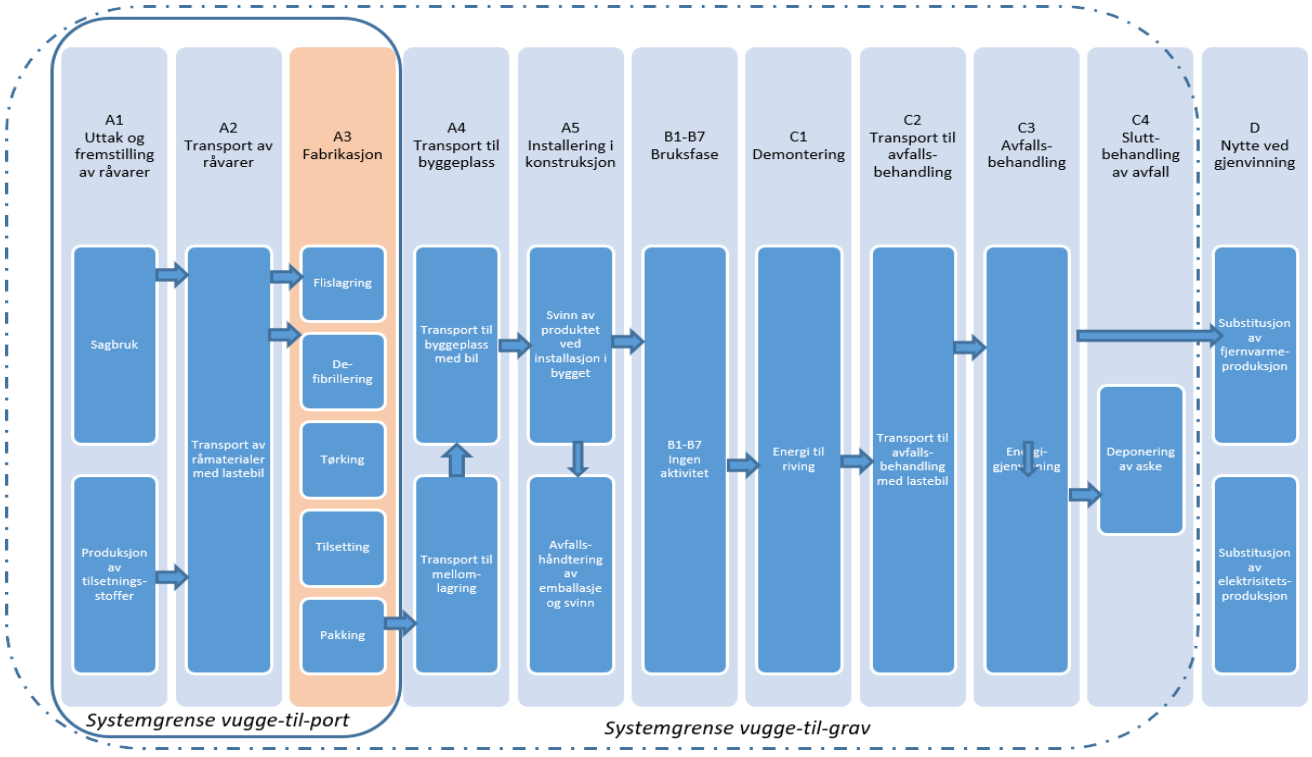
Materials	kg	%
Wood fibre, dry weight	1.54	81.2 %
Water	0.15	8.0 %
Ammonium phosphate	0.15	8.1 %
Polyolefin fibre	0.05	2.7 %
Total for product	1.90	100.0 %
Wooden packaging	0.11	
Plastic packaging	0.03	
Total, with packaging	2.04	

Lifecycle:
Reference lifecycle is the same as that of the construction, usually set to 60 years. This is based on O&M (FDV) for the product and the assumptions therein.

LCA: Calculation rules

Functional unit:
1 m2 wood fibre insulation installed in a thickness of 38 mm and a thermal resistance of R=1 Km2/W from cradle-to-grave with a

System limits:
Flowchart for the entire lifecycle (A1-C4) with system limits has been shown in the diagram below. Module D has also been included outside the lifecycle with energy and material substitution from recycling,



Data quality:
Data for the production of wood fibre insulation is based on half a year of production in 2019. For the raw material wood chips, it is based on ecoinvent and updated with Norwegian data. The remaining data is based on ecoinvent v3.5, but adjusted to improve representativity. Ecoinvent v3.5 was launched in 2018, why no data is older than 10 years. All energy consumption in database figures are assumed not used as raw material.

Cut-off criteria:
All important raw materials and all significant energy consumption have been included. The production process for the raw materials and energy flows involved as very small amounts (<1%) have not been included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:
Allocation has been made in accordance with provisions of EN 15804. Electricity consumption in production has been allocated by specific energy consumption for the various products, while remaining energy consumption, water, waste and internal transport have been allocated by mass across products.
Impact on the primary production of recycled materials has been allocated to the main product where the material was used. In the value chain for timber, economic allocation has been used.

Calculation of biogenic carbon content:
Absorbance and release of carbon dioxide from biological origin has been calculated based on NS-EN 16485:2014. This method is based on the principle of modularity in EN 15804:2012, where release must be counted in the lifecycle module where it actually happens. The amount of carbon dioxide has been calculated in accordance with NS-EN 16449:2014. The net contribution to GWP from biogenic carbon is shown for each module on page 8. Timber comes from sustainable forestry and features PEFC certified traceability.

LCA: Scenarios and other technical information

The following information describes the scenarios for the modules in the EPD.

250 km of transport to intermediate storage via large lorry has been assumed. Furthermore, a transport distance of 50 km via medium lorry has been assumed.

Transport from production location to user (A4)

Type	Capacity utilisation, incl. return (%)	Vehicle type	Distance, km	Fuel/ Energy consumption	Unit
Car	12	EURO5, >32 tonn	250	0.088	(l/100 0 km)
Car	11	EURO5, 16-32 tonnes	50	0.121	(l/100 0 km)

In the construction phase, shrinkage of 2 % has been assumed, as well as some electricity for installation. Waste management of the packaging is also included.

No LCA-related environmental impact has been used.

Construction phase (A5)

	Unit	Value
Auxiliary materials	m^3	0
Auxiliary materials	kg	0
Auxiliary materials	kg	0
Water consumption	m^3	0
Electricity consumption	MJ	0.04
Other energy sources	MJ	0
Material loss	kg	0.038
Materials from waste management	kg	0.14
Dust in the air	kg	0

Installed products in use (B1)

	Unit	Value
Relevant emissions during use	kg	0

The product normally requires no maintenance or repair.

Maintenance (B2)/Repair (B3)

	Unit	Value
Maintenance frequency*	p	0
Auxiliary materials	kg	0
Other resources	kg	0
Water consumption	kg	0
Electricity consumption	MJ	0
Other energy sources	MJ	0
Material loss	kg	0

In a normal situation, the product requires no replacement during the construction's lifecycle.

Replacement (B4)/Renovation (B5)

	Unit	Value
Replacement frequency*	year	60
Electricity consumption	kWh	0
Replacement of worn parts	0	0

* Value or reference lifecycle

The product has no energy or water consumption in operation.

Energy (B6) and water (B7) consumption in operation

	Unit	Value
Water consumption	m^3	0
Electricity consumption	kWh	0
Other energy sources	MJ	0
Heating effect of the equipment	kW	0

The product can be sorted as mixed wood waste at the construction site and managed with energy recovery.

Decommissioning phase (C1, C3, C4)

	Unit	Value
Hazardous waste	kg	0
Mixed waste	kg	1.90
Recycling	kg	0
Recirculation	kg	0
Energy recovery	kg	1.90
For waste deposit	kg	0

The transport of wood waste is based on the average distance for 2007 in Norway and makes up 85 km (Raadal et al. (2009).

Transport waste management (C2)

Type	Capacity utilisation, incl. return (%)	Vehicle type	Distance, km	Fuel/ Energy consumption	Value (l/t)
Car		Unspecified	85	0.027 (l/1000 km)	2.3

The gains from exported energy from energy recovery in municipal waste facilities have been calculated with replacement of Norwegian electricity mix and Norwegian district heating mix. Data for electricity mix is the same as that used in A1-A3, and district heating mix is based on the 2017 production.

Post-lifecycle gains and stresses (D)

	Unit	Value
Substitution of electrical energy	MJ	2.3
Substitution of thermal energy	MJ	19.1
Substitution of raw materials	kg	0

LCA: Results

The results for global warming in the various modules return a large contribution from absorbance and release of biogenic carbon. The net contribution from biogenic carbon in each module is shown on page 8.

Hunton produces wood fibre insulation at their new factory which has no direct emissions to the environment other than from internal transport, but the energy consumption was identified as greater than planned. This is due to process development and optimisation not being fully developed yet, but energy consumption is expected to be reduced. Therefore, it is Hunton's ambition to revise the EPD one year after publication.

System limits (X = included, MND = Module Not Declared, MNR = Module Not Relevant)

Product phase			Construction Installation phase		Use phase							Decommissioning phase					Post-lifecycle
Raw materials	Transport	Manufacture	Transport	Construction installation phase	Use	Maintenance	Repair	Replacement	Renovation	Operational energy consumption	Operational water consumption	Disassembly	Transport	Waste management	Waste for final processing		Potential for recycling-recovery-recirculation
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

Environmental impact

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
GWP	kg CO_2 equiv.	-2.38E+00	2.63E-01	2.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ODP	kg CFC11 equiv.	4.65E-08	5.02E-08	2.93E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POCP	kg C_2H_4 equiv.	1.30E-04	4.28E-05	6.12E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AP	kg SO_2 equiv.	2.49E-03	8.65E-04	1.23E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EP	kg PO_4^{3-} equiv.	5.09E-04	1.43E-04	2.66E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ADPM	kg Sb equiv.	2.79E-06	5.55E-07	1.51E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ADPE	MJ	9.99E+00	4.11E+00	4.19E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Environmental impact

Parameter	Unit	B6	B7	C1	C2	C3	C4		D
GWP	kg CO_2 equiv.	0.00E+00	0.00E+00	3.25E-04	2.04E-02	2.93E+00	2.49E-04		-2.02E-01
ODP	kg CFC11 equiv.	0.00E+00	0.00E+00	3.04E-11	3.85E-09	1.69E-09	8.64E-11		-2.40E-08
POCP	kg C_2H_4 equiv.	0.00E+00	0.00E+00	6.73E-08	3.38E-06	6.68E-06	7.16E-08		-2.66E-04
AP	kg SO_2 equiv.	0.00E+00	0.00E+00	1.47E-06	7.97E-05	1.88E-04	1.70E-06		-1.24E-03
EP	kg PO_4^{3-} equiv.	0.00E+00	0.00E+00	3.67E-07	1.42E-05	5.00E-05	3.09E-07		-3.88E-04
ADPM	kg Sb equiv.	0.00E+00	0.00E+00	5.09E-09	5.78E-08	2.81E-08	2.87E-10		-1.08E-06
ADPE	MJ	0.00E+00	0.00E+00	3.16E-03	3.16E-01	1.99E-01	8.09E-03		-2.41E+00

GWP Globalt Warming Potential; ODP Stratospheric ozone depletion potential; POCP Photochemical ozone creation potential; AP Acidification potential for sources on land and in water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource consumption

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
RPEE	MJ	2.73E+01	4.35E-02	2.96E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RPEM	MJ	3.08E+01	0.00E+00	-1.75E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPE	MJ	5.81E+01	4.35E-02	1.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPE	MJ	9.36E+00	4.18E+00	4.60E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPM	MJ	2.99E+00	0.00E+00	2.43E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TRPE	MJ	1.23E+01	4.18E+00	4.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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	0.00E+00
W	m^3	9.60E-03	8.62E-04	2.83E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Resource consumption

Parameter	Unit	B6	B7	C1	C2	C3	C4		D
RPEE	MJ	0.00E+00	0.00E+00	4.17E-02	3.45E-03	2.89E+01	1.36E-04		-1.88E+01
RPEM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.88E+01	0.00E+00		0.00E+00
TPE	MJ	0.00E+00	0.00E+00	4.17E-02	3.45E-03	8.90E-02	1.36E-04		-1.88E+01
NRPE	MJ	0.00E+00	0.00E+00	5.57E-03	3.22E-01	1.98E+00	8.37E-03		-3.05E+00
NRPM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.78E+00	0.00E+00		0.00E+00
TRPE	MJ	0.00E+00	0.00E+00	5.57E-03	3.22E-01	2.08E-01	8.37E-03		-3.05E+00
SM	kg	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		-1.16E-03
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
W	m^3	0.00E+00	0.00E+00	2.29E-06	6.11E-05	5.03E-04	9.56E-06		-1.78E-03

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

Lifecycle end - Waste

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
HW	kg	1.03E-05	2.46E-06	4.22E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHW	kg	3.64E-01	3.46E-01	2.64E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RW	kg	4.03E-05	2.84E-05	1.97E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Lifecycle end - Waste

Parameter	Unit	B6	B7	C1	C2	C3	C4		D
HW	kg	0.00E+00	0.00E+00	7.19E-09	2.04E-07	5.59E-07	2.68E-09		-3.07E-06
NHW	kg	0.00E+00	0.00E+00	3.75E-04	2.18E-02	2.08E-02	4.63E-02		-1.13E-01
RW	kg	0.00E+00	0.00E+00	4.10E-08	2.17E-06	5.43E-07	4.97E-08		-1.72E-05

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

Lifecycle end - Output

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
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	1.18E-02	0.00E+00	2.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	5.34E-04	0.00E+00	3.33E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	2.98E-02	0.00E+00	4.72E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	MJ	3.17E-01	0.00E+00	3.88E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Lifecycle end - Output

Parameter	Unit	B6	B7	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
MR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.33E+00	0.00E+00		-2.33E+00
ETE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.91E+01	0.00E+00		-1.91E+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

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

National market mix with imports at medium voltage, including production of transfer lines and grid loss, have been applied for electricity in the production process (A3).

Data source	Quantity	Unit
Ecoinvent v3.5 (2018)	28.4	grammes CO_2 equiv./kWh

Hazardous substances

- ☑ The product contains no substances from the REACH Candidate list or the Norwegian priority list
- ☐ The product contains substances which are below 0.1 % weight by weight on the REACH Candidate list
- ☐ The product contains substances from the REACH Candidate list or the Norwegian priority list, see table under Specific Norwegian requirements.
- ☐ The product contains no substances on the REACH Candidate list or the Norwegian priority list The product can be characterised as hazardous waste (cf. Annex III to the Norwegian Waste Regulation - Avfallsforskriften), see table under Specific Norwegian requirements.

Transport

Central warehouse is on the same location as the 0 km

Indoor climate

In Technical Approval (Teknisk Godkjenning) no. 20440, Hunton Wood Fibre Insulation Board has been deemed not to release particulates, gasses or radiation that have
a negative impact on the indoor climate or on health.

Climate declaration

In order to increase transparency in the contribution to climate impact, the GWP indicator has been broken up into sub-indicators:

GWP-IOBC Climate impact calculated after the principle of immediate oxidation of biogenic carbon.
GWP-BC Climate impact from net absorbance and release of biogenic carbon from the materials in each module.

Climate impact

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5
GWP-IOBC	kg CO_2 equiv.	5.66E-01	2.63E-01	3.37E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-BC	kg CO_2 equiv.	-2.95E+00	0.00E+00	1.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP	kg CO_2 equiv.	-2.38E+00	2.63E-01	2.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Climate impact

Parameter	Unit	B6	B7	C1	C2	C3	C4		D
GWP-IOBC	kg CO_2 equiv.	0.00E+00	0.00E+00	3.25E-04	2.04E-02	1.47E-01	2.49E-04		-2.02E-01
GWP-BC	kg CO_2 equiv.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.78E+00	0.00E+00		0.00E+00
GWP	kg CO_2 equiv.	0.00E+00	0.00E+00	3.25E-04	2.04E-02	2.93E+00	2.49E-04		-2.02E-01

Bibliography

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NS-EN ISO 14044:2006	*Environmental management - Life cycle assessment - Requirements and guidelines*
NS-EN 15804:2012+A1:2013	*Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*
ISO 21930:2007	*Sustainability in building construction - Environmental declaration of building products*
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*
NPCR012 v.2	*Product category rules for insulation products*
Ecoinvent v3.5	*Swiss Centre of Life Cycle Inventories. www.ecoinvent.ch*
Statistics Norway	*Table 04730: Consumption of fuel for gross production of district heating, 2018*
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Raadal et al. (2009).	*Raadal, H. L., Modahl, I. S. & Lyng, K-A. (2009). Climate accounts for waste management, Phase I and II. OR.18.09 from Østfoldforskning, Norway*
NS-EN 13171	*Thermal insulation products for buildings. Factory made wood fibre (WF) products - Requirements*
Hunton Fiber (2017)	*O&M (FDV) documentation. Hunton Nativo Wood Fibre Insulation Boards*

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