



## General information

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**Declaration number:**

**ECO Platform registration number:**

**The declaration is based on PCR:**

CEN Standard EN 15804 serves as core PCR  
NPCR 012 Insulation materials, v.2 (06/2018).

**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.

**Declared unit:**

**Declared unit with option:**

**Functional unit:**

1 m<sup>2</sup> wood fibre insulation installed in a thickness of 38 mm and a thermal resistance of R=1 Km<sup>2</sup>/W from cradle-to-grave with a reference lifecycle of 60 years.

**Verification:**

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

internal  external

Third party verifier:

*Alexander Borg*

Asplan Viak  
Alexander B approved by The Norwegian

**Manufacturer:**

**Production location:**

Gjøvik, Norge

**Quality/Environmental s:**

ISO 50001:2011  
ISO 9001:2015  
PEFC ST 2002:2013

**Org. no.:**

964 014 256

06-07-2020

**Year of study:**

2015-2020

**Comparability:**

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

**Environmental declaration prepared by:**

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Approved

*Håkon Hauan*  
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Daglig leder av EPD-Norge

## Product

### Product description:

Hunton Nativo Wood Fibre Blow-in Insulation is produced by defibration of wood chips which are then mixed with additives for structure as well as fire and microbial resistance. Used for thermal insulation of walls, roofs and ceilings in buildings.

### Product specification:

The LCA calculations have been based on a density of 33.5 kg/m<sup>3</sup>.

### Technical data:

Wood Fibre Blow-in Insulation has a thermal conductivity of (23 °C/ 50 % RH) 0,038 W/mK at a density of 27-40 kgm<sup>3</sup>. Declared thermal conductivity and products comply with the requirements of EN 15101-1, as confirmed by SINTEF Byggforsk product certificate no. 3397.

### Market area:

Nordics, scenarios in LCA have been calculated based on use in Norway.

Materials	kg	%
Wood fibre, dry weight	1.09.	85.8 %
Water	0.10	8.0 %
Ammonium phosphate	0.06	5.1 %
Paraffin wax	0.01	1.1 %
Total for product	1.27	100.0 %
Wooden packaging	0.05	
Plastic packaging	0.01	
Total, with packaging	1.33	

### 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 made therein.

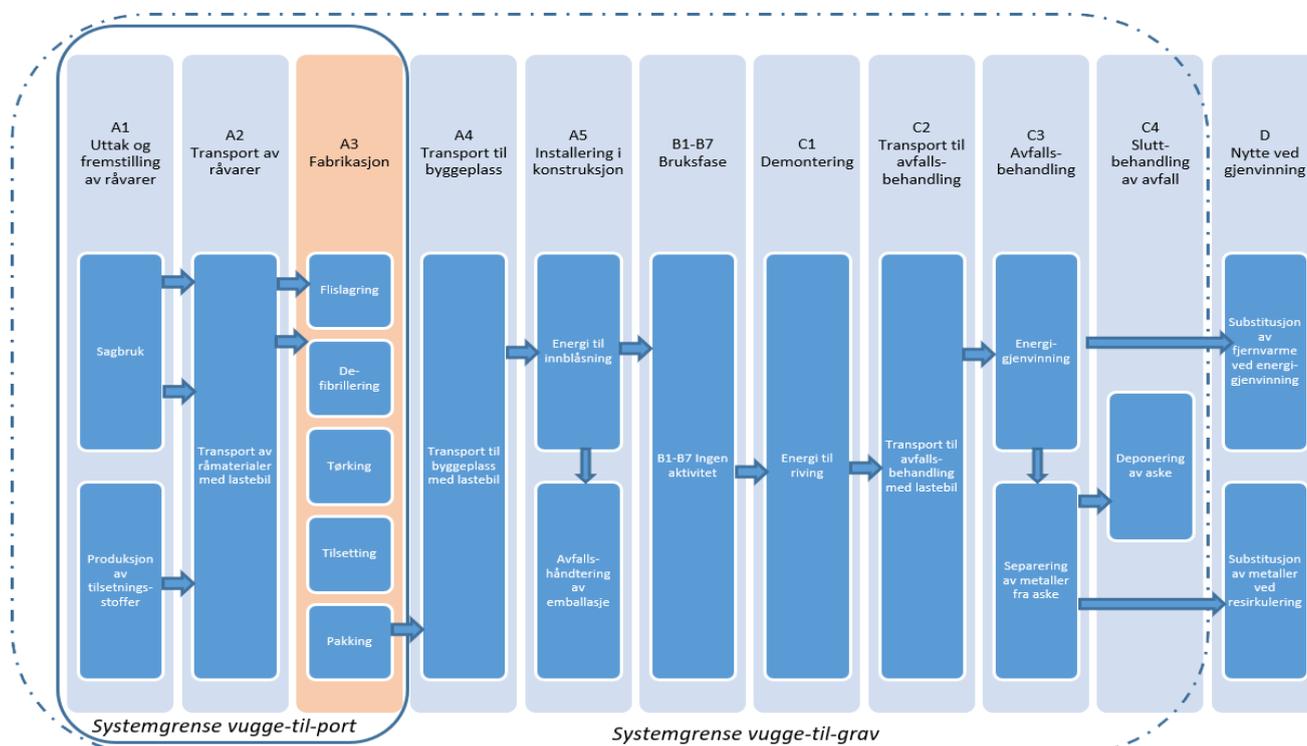
## LCA: Calculation rules

### Functional unit:

1 m<sup>2</sup> wood fibre insulation installed in a thickness of 38 mm and a thermal resistance of R=1 Km<sup>2</sup>/W from cradle-to-grave with a reference lifecycle of 60 years.

### System limits:

Flowchart for the entire lifecycle (A1-C4) with system limits has been shown in the diagram. Module D has also been included outside the lifecycle with energy and material substitution from recycling, and is elaborated upon under the scenarios.



**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.

**Transport from production location to user (A4)**

Type	Capacity utilisation, incl. return (%)	Vehicle type	Distance, km	Fuel/ Energy consumption	Unit
Car	8	EURO5, >32 tonn	250	0.131	(l/1000 km)
Car	9	EURO5, 16-32 tonnes	50	0.200	(l/1000 km)

Waste management of the packaging is also included.

No LCA-related environmental impact has been used.

**Construction phase (A5)**

	Unit	Value
Auxiliary materials	m <sup>3</sup>	0
Auxiliary materials	kg	0
Auxiliary materials	kg	0
Water consumption	m <sup>3</sup>	0
Electricity consumption	MJ	0
	MJ	0.061
Material loss	kg	0.025
Materials from waste management	kg	0.060
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 <sup>3</sup>	0
Electricity consumption	kWh	0
Other energy sources	MJ	0
Heating effect of the equipment	kW	0

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

#### Decommissioning phase (C1, C3, C4)

	Unit	Value
Hazardous waste	kg	0
Mixed waste	kg	1.27
Recycling	kg	0
Recirculation	kg	0
Energy recovery	kg	1.27
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	1.6
Substitution of thermal energy	MJ	13.3
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 <sub>2</sub> equiv.	-1.83E+00	2.60E-01	9.42E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ODP	kg CFC11 equiv.	2.31E-08	5.00E-08	2.87E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POCP	kg C <sub>2</sub> H <sub>4</sub> equiv.	5.36E-05	4.27E-05	4.00E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AP	kg SO <sub>2</sub> equiv.	1.10E-03	9.84E-04	1.03E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EP	kg PO <sub>4</sub> <sup>3-</sup> equiv.	2.50E-04	1.73E-04	2.21E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ADPM	kg Sb equiv.	1.40E-06	5.59E-07	5.42E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ADPE	MJ	4.01E+00	4.10E+00	2.98E-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 <sub>2</sub> equiv.	0.00E+00	0.00E+00	3.25E-04	1.37E-02	2.06E+00	3.38E-04	-1.41E-01
ODP	kg CFC11 equiv.	0.00E+00	0.00E+00	3.04E-11	2.57E-09	1.11E-09	1.15E-10	-1.68E-08
POCP	kg C <sub>2</sub> H <sub>4</sub> equiv.	0.00E+00	0.00E+00	6.73E-08	2.26E-06	4.32E-06	9.67E-08	-1.86E-04
AP	kg SO <sub>2</sub> equiv.	0.00E+00	0.00E+00	1.47E-06	5.33E-05	1.22E-04	2.30E-06	-8.69E-04
EP	kg PO <sub>4</sub> <sup>3-</sup> equiv.	0.00E+00	0.00E+00	3.67E-07	9.52E-06	3.23E-05	4.17E-07	-2.71E-04
ADPM	kg Sb equiv.	0.00E+00	0.00E+00	5.09E-09	3.86E-08	1.87E-08	3.86E-10	-7.54E-07
ADPE	MJ	0.00E+00	0.00E+00	3.16E-03	2.11E-01	1.32E-01	1.09E-02	-1.68E+00

GWP Global 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	1.44E+01	4.33E-02	1.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RPEM	MJ	2.17E+01	0.00E+00	-7.52E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPE	MJ	3.61E+01	4.33E-02	7.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPE	MJ	4.04E+00	4.17E+00	3.17E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPM	MJ	1.11E+00	0.00E+00	1.04E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TRPE	MJ	5.15E+00	4.17E+00	3.28E-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 <sup>3</sup>	5.96E-03	8.56E-04	1.74E-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	2.30E-03	2.08E+01	1.82E-04		-1.32E+01
RPEM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.07E+01	0.00E+00		0.00E+00
TPE	MJ	0.00E+00	0.00E+00	4.17E-02	2.30E-03	3.90E-02	1.82E-04		-1.32E+01
NRPE	MJ	0.00E+00	0.00E+00	5.57E-03	2.15E-01	7.32E-01	1.12E-02		-2.14E+00
NRPM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.95E-01	0.00E+00		0.00E+00
TRPE	MJ	0.00E+00	0.00E+00	5.57E-03	2.15E-01	1.37E-01	1.12E-02		-2.14E+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		-8.08E-04
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 <sup>3</sup>	0.00E+00	0.00E+00	2.29E-06	4.09E-05	3.02E-04	1.28E-05		-1.24E-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	5.42E-06	2.46E-06	2.58E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHW	kg	1.95E-01	3.42E-01	1.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RW	kg	2.06E-05	2.83E-05	1.76E-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	1.36E-07	3.37E-07	3.60E-09		-2.15E-06
NHW	kg	0.00E+00	0.00E+00	3.75E-04	1.46E-02	1.37E-02	6.29E-02		-7.92E-02
RW	kg	0.00E+00	0.00E+00	4.10E-08	1.45E-06	3.41E-07	6.64E-08		-1.21E-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							
MR	kg	1.32E-02	0.00E+00	1.21E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	3.58E-04	0.00E+00	1.40E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	2.00E-02	0.00E+00	3.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	MJ	2.13E-01	0.00E+00	2.71E-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	1.63E+00	0.00E+00		-1.63E+00
ETE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E+01	0.00E+00		-1.33E+01

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

Reading example:  $9.0 \text{ E-03} = 9.0 \times 10^{-3} = 0.009$

## 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 <sub>2</sub> 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

The product has not been tested for emissions to indoor climate

### 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 <sub>2</sub> equiv.	2.46E-01	2.60E-01	2.24E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-BC	kg CO <sub>2</sub> equiv.	-2.07E+00	0.00E+00	7.18E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP	kg CO <sub>2</sub> equiv.	-1.83E+00	2.60E-01	9.42E-02	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 <sub>2</sub> equiv.	0.00E+00	0.00E+00	3.25E-04	1.37E-02	5.64E-02	3.38E-04		-1.41E-01
GWP-BC	kg CO <sub>2</sub> equiv.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E+00	0.00E+00		0.00E+00
GWP	kg CO <sub>2</sub> equiv.	0.00E+00	0.00E+00	3.25E-04	1.37E-02	2.06E+00	3.38E-04		-1.41E-01

## Bibliography

NS-EN ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
NS-EN ISO 14044:2006	<i>Environmental management - Life cycle assessment - Requirements and guidelines</i>
NS-EN 15804:2012+A1:2013	<i>Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products</i>
ISO 21930:2007	<i>Sustainability in building construction - Environmental declaration of building products</i>
NS-EN 16449:2014	<i>Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide</i>
NS-EN 16485:2014	<i>Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction</i>
NPCR012 v.2	<i>Product category rules for insulation products</i>
Ecoinvent v3.5	Swiss Centre of Life Cycle Inventories. <a href="http://www.ecoinvent.ch">www.ecoinvent.ch</a>
Statistics Norway	Table 04730: Consumption of fuel for gross production of district heating, 2018
Statistics Norway	Table 04727: District Heating Balance, 2018
Statistics Norway	Table 09469: Net production of district heating, 2018
Tellnes (2020)	LCA report for Hunton Fiber AS. Report no. OR.04.20 from Østfoldforskning, Kråkerøy, Norway.
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
SINTEF Byggforsk (2019)	Product certificate no. 3397 for Hunton Nativo Wood Fibre Insulation. Published by SINTEF Byggforsk in 2018, and revised in 2019 valid until 1-12-2023.
EN 15101-1	<i>Thermal insulation products for buildings – In-situ formed loose fill cellulose (LFCI) - Del 1: Requirements for products prior to installation</i>
Hunton Fiber (2019)	O&M (FDV) documentation.

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