

IN ACCORDANCE WITH ISO 14025

Environmental product declaration



Owner of the declaration:

Aven Holmestrand AS

Program holder and publisher:

The Norwegian EPD foundation

Declaration number:

NEPD-8376-7993-EN

Registration Number:

NEPD-8376-7993-EN

EPD Software:

Aven EPD generator

Manufacturer:

Aven Holmestrand AS

Product:

1200*1200 4v

Item number: 126

Issue date:

06.12.2024

Valid to:

06.12.2029

General information

Product:

1200*1200 4v

Program Operator:

The Norwegian EPD Foundation

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Declaration Number:

NEPD-8376-7993-EN

Comparability

EPDs from other programmes than The Norwegian EPD Foundation may not be comparable. In addition, EPDs of construction products and other type of products may not be comparable if they do not comply with EN 15804:2012+A2:2019.

This declaration is based on PCR:

NPCR 023:2021 Packaging product and services V. 1.1

Statements:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidences.

Declared Unit:

One produced unit of packaging

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD Norway, and iii) the process is reviewed annually. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD Norway's procedures and guidelines for verification and approval of EPD tools.

Owner of Declaration:

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Manufacturer:

Aven Holmestrand AS

Sørbyveien 17, 3083 Holmestrand, Norway

Place of Production:

Holmestrand, Norway.

Management System:

ISO 9001, 14001 & 45001

Organization Number

916494777

Issue date:

06.12.2024

Valid to:

06.12.2029

Year of the study:

2021-2022

Development and verification of EPD:

The declaration has been developed and verified using the AVEN EPD tool ver 1.0, developed by NIRAS A/S. The EPD tool is a reference flow tool based on the recipe approach and has been approved by EPD Norway.

Developer of EPD:

Martin Klausen

Reviewer of company specific input data and EPD:

Lena Nerdrum

Martin Erlandsson (No signature required)

IVL Swedish Environmental Research Institute

Independent verifier approved by EPD-Norway

Approved by
Managing Director



Product:

Product Description:

The wooden pallet is a type of packaging product, which is used in logistics for transporting products of various kinds between product manufacturers, retailers and consumers, as well as for warehouse storage and other operations.

The properties of the wooden pallets differ with regard to length, width, height, weight and approved safe working load. That means the number of boards, nails and blocks used in each pallet type of pallet differ, while the type of materials used are the same. Both wooden blocks and chipboard blocks are used.

Product Specification:

The main product components are listed in the table below for 1 unit of 1200*1200 4v per declared unit.

Materials	Amount (kg)	Share (%)
Spruce Boards	7,06	73,86 %
Chipboard Blocks	2,47	25,80 %
Steel Nails	0,03	0,33 %
Total	9,56	100,00 %

Technical Data:

The manufactured pallet has the dimensions 1200x1200mm and most of the wood used is FSC® and PEFC Certified

Market:

The product included in this EPD is considered representative for a Norwegian scenario. The majority of suppliers are located in Nordic countries and Germany.

Reference service life, product:

No RSL is declared. This EPD is based on a cradle-to-gate with options assessment and does not include the use stage.

LCA: Calculation Rules

Declared Unit:

One produced unit of packaging: 1200*1200 4v

Data Quality:

Data is overall considered very good and all major processes are represented with data of good quality in compliance with the criteria from ISO 14044 and ISO 14025. Data for raw material quantities, origin of supply, raw material production processes taking place at Aven facilities are provided by reports for the calendar years 2021 - 2022.

Generally, the background datasets are of high quality. Almost all are from Europe and energy is country specific. The majority of the datasets are only a couple of years old and the technologies are well represented. According to the requirements of EN15804, specific manufacturer data has been used for the processes that the manufacturer has direct influence over in their production/processing facility. Generic data has been used for the upstream processes.

Allocation:

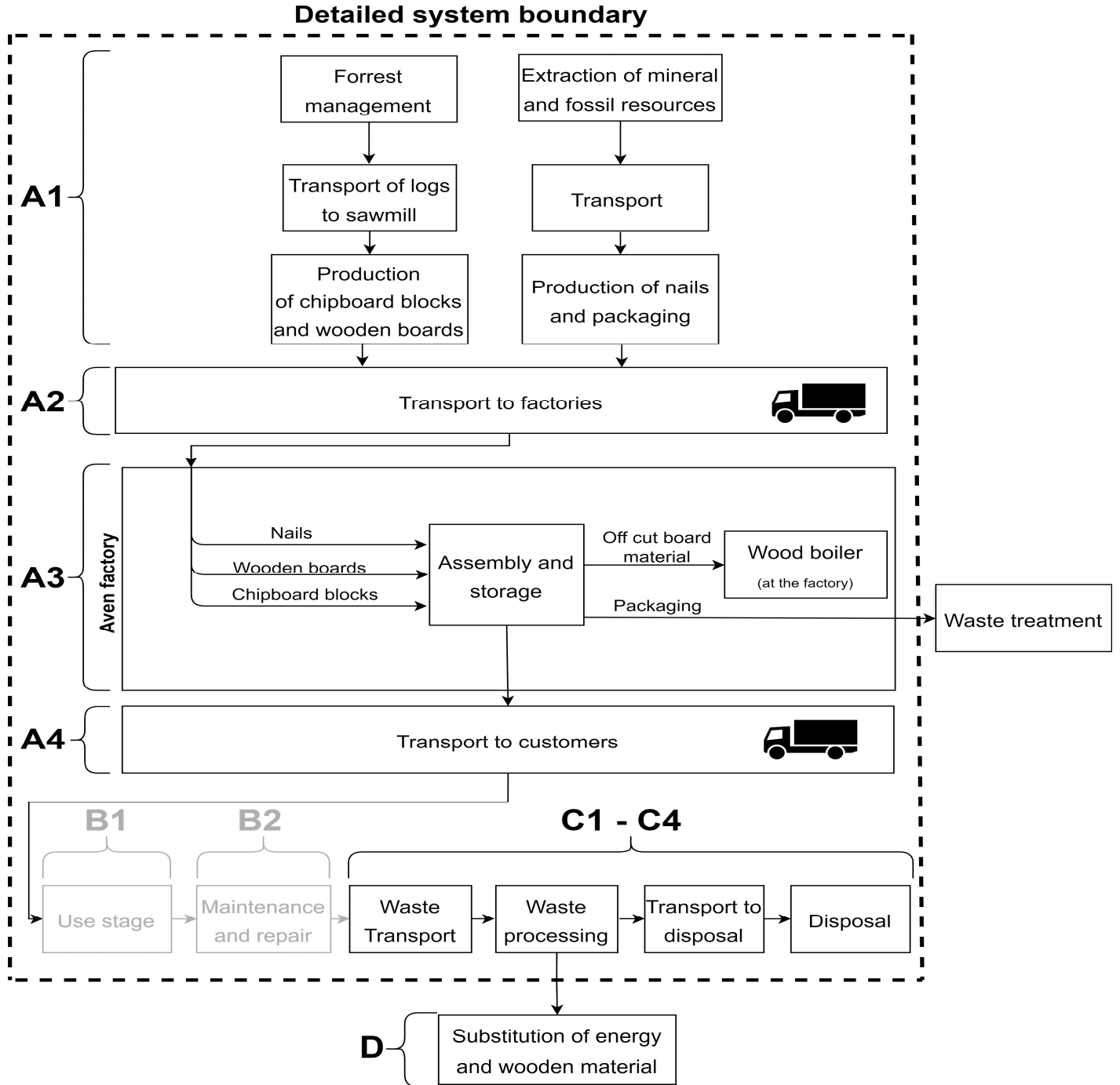
All environmental burdens associated with forestry activities (no use of HVOs assumed) are allocated to the wooden logs and none have been attributed to the waste products from forestry (branches and tops). Byproducts resulting in the downstream process (e.g. at the sawmill factory, etc.), which are sold as products themselves, are attributed the burdens of the forestry activities and transport from forests to sawmill by mass allocation, in accordance with EN 15804:2012+A2:2019.

System Boundary:

The system boundary comprises cradle-to-gate with options and thus covers the modules for product stage, supply, end-of-life stage and supplementary information (A1-A3, A4, C1-C4 and D).

Cut-Off Criteria

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804+A2, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5% of energy usage and mass and 1% of energy usage and mass for unit processes.



LCA: Scenarios and Additional Technical Information

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

Transport Scenarios (A4 + C1):

The following information describe the scenarios in the different modules of the EPD. The A4 module represents transport between Aven Holmestrand's pallet factory in Holmestrand and a specific customer. As this EPD is generated by a reference flow tool, there are three predefined options for transport. A given A4 transport distance of 0 thus implies that no transport of the given option takes place.

The C1 module represents collection of waste in addition to transport for recycling and energy recovery. Expert judgement has been used to derive transport distances for end-of-life modules.

Module	Type of Vehicle	Capacity utilisation (incl. return) [%]	Distance [km]	Energy/Fuel Consumption	Unit	Value	Unit
A4	Lorry >32 t, EURO6	46,9%	210	2,30E-02	l/tkm	4,83	l/t
A4	Ferry	50,0%	0	1,92E-03	l/tkm	0,00	l/t
A4	Freigh train	45,0%	0	1,08E-01	MJ/tkm	0,00	MJ/t
C1	Lorry 16-32 t, EURO5	32,9%	85	4,49E-02	l/tkm	3,81	l/t

End-of-Life (C2):

Waste processing of wood is assumed to be distributed between 83,1% energy recovery by municipal inceration, 10,8% recycling through chipping, and 6,1% landfill. Waste processing of steel nails is intended for 100% recycling. Expert judgement has been used in deriving waste scenarios for end-of-life modules.

Type	Unit	Value
Hazardous waste disposed	kg	0,00
Reuse	kg	0,00
To Landfill	kg	0,58
Recycling	kg	1,06
Energy recovery	kg	7,92

Benefits and loads beyond the system boundaries (D):

The benefits and loads beyond system boundaries are calculated from the net flows sent to incineration and recycling. Recovered energy from incineration substitutes an average Norwegian electricity mix and average district heating from unconstrained sources (primarily biomass and electricity while excluding waste incineration) based on Statistics Norway (2021).

Type	Unit	Value
Substitution of electricity	kWh	6,28
Substitution of heat	MJ	84,83
Substitution of wooden chips	kg	1,03
Substitution of steel	kg	0,02

LCA: Results

The following section lists the environmental impact and resource consumption calculated according to EN 15804 +A2:2019. Results are presented per declared unit. Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009

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

Product stage			Supply Stage	Use stage		End of life stage				Benefits & loads beyond system boundary	
Raw material extraction	Transport	Manufacturing	Transport	Distribution	Maintenance	Waste transport	Waste processing	Transport to disposal	Disposal	Reuse-Recovery-	Recycling-potential
A1	A2	A3	A4	B1	B2	C1	C2	C3	C4	D	D
X	X	X	X	MND	MND	X	X	X	X	X	X

Core environmental impact indicators:

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	-1,22E+01	3,34E-01	2,42E-01	1,47E+01	7,93E-03	1,12E+00	-9,26E-01
GWP-fossil	kg CO2 eq	3,24E+00	3,34E-01	2,41E-01	1,82E-01	7,92E-03	4,73E-03	-8,74E-01
GWP-biogenic	kg CO2 eq	-1,55E+01	3,01E-04	2,18E-04	3,95E-03	7,15E-06	1,11E+00	-4,92E-02
GWP-luluc	kg CO2 eq	6,48E-03	1,31E-04	9,48E-05	2,01E-04	3,11E-06	1,23E-06	-2,92E-03
ODP	kg CFC11 eq	3,91E-07	7,73E-08	5,59E-08	1,22E-08	1,83E-09	1,81E-09	-7,31E-08
AP	mol H+ eq	2,19E-02	1,36E-03	9,80E-04	1,66E-03	3,22E-05	4,24E-05	-8,18E-03
EP-freshwater	kg P eq	1,01E-03	2,15E-05	1,55E-05	1,13E-04	5,10E-07	8,45E-07	-2,84E-04
EP-marine	kg N eq	5,31E-03	4,08E-04	2,95E-04	7,40E-04	9,67E-06	2,17E-04	-1,96E-03
EP-terrestrial	mol N eq	6,74E-02	4,46E-03	3,22E-03	7,03E-03	1,06E-04	1,75E-04	-2,90E-02
POCP	kg NMVOC eq	1,70E-02	1,37E-03	9,87E-04	1,75E-03	3,24E-05	6,35E-05	-5,60E-03
ADP-minerals&metals	kg Sb eq	2,99E-05	1,16E-06	8,39E-07	5,48E-07	2,75E-08	1,65E-08	-8,32E-06
ADP-fossil	MJ	4,99E+01	5,05E+00	3,65E+00	2,46E+00	1,20E-01	1,30E-01	-1,21E+01
WDP	m3 depriv.	2,77E+00	1,51E-02	1,09E-02	3,78E-02	3,59E-04	6,27E-04	-3,50E-01

GWP-total: Global Warming Potential; **GWP-fossil:** Global Warming Potential fossil fuels; **GWP-biogenic:** Global Warming Potential biogenic; **GWP-LULUC:** Global Warming Potential land use and land use change; **ODP:** Depletion potential of the stratospheric ozone layer; **AP:** Acidification potential, Accumulated Exceedance; **EP-freshwater:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional Norwegian requirements" for indicator given as PO4 eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:** Eutrophication potential, Accumulated Exceedance; **POCP:** Formation potential of tropospheric ozone; **ADP-M&M:** Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption

Additional environmental impact indicators:

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PM	disease inc.	6,29E-07	2,87E-08	2,08E-08	1,47E-08	6,81E-10	9,44E-10	-9,25E-08
IRP	kBq U-235 eq	2,93E-01	2,59E-02	1,88E-02	4,61E-02	6,15E-04	7,96E-04	-2,13E-01
ETP-fw	CTUe	1,28E+00	3,03E-01	2,19E-01	1,93E-02	7,19E-03	7,55E-03	-2,04E-01
HTP-c	CTUh	1,21E-08	1,28E-10	9,22E-11	3,37E-10	3,03E-12	3,76E-12	-1,38E-09
HTP-nc	CTUh	5,73E-08	4,14E-09	2,99E-09	1,47E-08	9,81E-11	1,19E-10	-2,88E-08

PM: Particulate matter emissions; **IRP:** Ionising radiation, human health; **ETP-fw:** Ecotoxicity (freshwater); **ETP-c:** Human toxicity, cancer effects; **HTP-nc:** Human toxicity, non-cancer effects

Classification of disclaimers to the declaration of core & additional environmental impact indicators:

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Resource Use:

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
RPEE	MJ	2,03E+01	7,11E-02	5,14E-02	3,13E-01	1,69E-03	5,81E-03	0,00E+00
RPEM	MJ	1,36E+02	0,00E+00	0,00E+00	-1,35E+02	0,00E+00	-8,79E+00	0,00E+00
TPE	MJ	1,57E+02	7,11E-02	5,14E-02	-1,35E+02	1,69E-03	-8,79E+00	0,00E+00
NRPE	MJ	3,05E+01	5,05E+00	3,65E+00	2,46E+00	1,20E-01	1,30E-01	0,00E+00
NRPM	MJ	1,94E+01	0,00E+00	0,00E+00	-1,94E+01	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	4,99E+01	5,05E+00	3,65E+00	-1,69E+01	1,20E-01	1,30E-01	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
RSF	MJ	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
W	m ³	1,36E-01	5,62E-04	4,07E-04	3,07E-03	1,33E-05	1,65E-04	-3,30E-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:

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
HW	kg	8,31E-05	1,32E-05	9,53E-06	1,64E-05	3,13E-07	1,60E-07	-1,46E-05
NHW	kg	1,21E+00	2,60E-01	1,88E-01	6,05E-02	6,16E-03	5,83E-01	-3,37E-01
RW	kg	1,69E-04	3,41E-05	2,47E-05	1,35E-05	8,10E-07	8,45E-07	-6,25E-05

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

End-of-Life - Output Flow:

Indicator	Unit	A1-A3	A4	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	1,03E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	7,92E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

Information describing the biogenic carbon at factory gate:

Biogenic Carbon Content	Unit	Value
Biogenic carbon content in product	kg C	4,24
Biogenic carbon content in the accompanying packaging	kg C	0,00

Note: 1 kg C is equivalent of 44/12 CO₂

Additional Norwegian Requirements:

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

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3) based on ecoinvent 3.8.

National electricity grid	Unit	Amount
Electricity, low voltage {NO} market for Cut-off, U	kg CO ₂ eq/kWh	2,68E-02

Hazardous Substances:

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.






- The product contains no substances given by the REACH Candidate list or the Norwegian priority
- The product contains substances given by the REACH Candidate list or the Norwegian
- The product contain dangerous substances, more than 0,1% by weight, given by the
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskriften, Annex III), see

Carbon Footprint:

Carbon footprint has not been worked out for the product.

Bibliography:

ISO 14025:2010	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+A2:2019	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
CEN/TR 13910	Packaging - Report on criteria and methodologies for life cycle analysis of packaging
The Norwegian EPD Foundation	NPCR 023:2021 Packaging products and services issue date: 20.12.2021 and valid to: 15.07.2024. Version 1.1
Aven Holmestrand AS	Environmental Product Declaration – Pallets. Background Report, Aven Holmestrand AS, 1 May 2022, revised Dec 2022
Statistics Norway	District Heating and District Cooling: Consumption of fuel used for gross production of district heating, 2021

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EPD for the best environmental decision
