

Owner: VTI A/S
No.: MD-24014-EN
Issued: 25-06-2024
Valid to: 25-06-2029

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

VTI A/S
Nr Bjertvej 24, 7830 Vinderup
CVR: 14642080


Issued:

25-06-2024

Valid to:

25-06-2029

Programme

EPD Danmark
www.epddanmark.dk



- ☐ Industry EPD
☒ Product EPD

It is noted that the EPD is a specific EPD.

Declared product

Glulam, produced in various dimensions

Number of declared datasets/product variations: 1

Production sites

Nr Bjertvej 24, DK-7830 Vinderup, Denmark
Vijakas iela 1, Rēzekne, LV-4604, Latvia

Use of Guarantees of Origin

- ☒ No certificates used
☐ Electricity covered by GO
☐ Biogas covered by GO

Declared unit

1 m³ of glulam

Year of production site data (A3)

1/5-2022 - 30/4-2023

EPD version

Version 2.0

Basis of calculation

This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the data-sets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products for the purpose of assessing the environmental performance of buildings.

EPD type

- ☐ Cradle-to-gate with modules C1-C4 and D
☒ Cradle-to-gate with options, modules C1-C4 and D
☐ Cradle-to-grave and module D
☐ Cradle-to-gate
☐ Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data according to EN ISO 14025

- ☐ internal ☒ external

Third party verifier:

David Althoff Palm, Dalemarken AB

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (X = included in LCA; MND = module not declared)

Product			Construction process		Use							End-of-Life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Re-use, recovery and 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

Product information

Product description

The product materials are listed below.

Material	Amount [kg]	Weight-% of declared product
Wood*	445,13	89,0%
Water	49,46	9,9%
Glue	4,35	0,9%
Wood Filler	1,05	0,2%
TOTAL	500	100%

*Pine & spruce.

Sales packaging

Sales packaging is listed below.

Packaging	Amount [kg]	Weight-% of sales packaging
EUR Pallets*	12,06	88,5%
Wood Beams	0,12	0,9%
Film	1,34	9,8%
Strips	0,11	0,8%
TOTAL	13,63	100%

*The number of times that EUR pallets are typically re-used before being disposed of has not been accounted for in the table.

Representativity

This declaration represents 1 m³ of glulam; produced in Vinderup as well as Rēzekne and sold to customers in Europe. Product-specific data covers the period between 1/5-2022 - 30/4-2023.

Background data is based on the ecoinvent cut-off by classification database (v.3.9.1). Generally, the used background datasets are of high quality and are only a couple of years old. It is noted that the cut-off by classification database uses economic allocation to handle multifunctional processes such as with forestry, harvesting and transport to wood suppliers (allocation between sawn wood, wood chips and sawdust).

Hazardous substances

The product does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation" in quantities exceeding 0,1% by weight.

<http://echa.europa.eu/candidate-list-table>

Product use

Glulam is used in furniture, windows, doors, stairs and DIY projects.

Reference Service Life (RSL)

Not defined.

Essential characteristics

Technical information can be obtained by contacting VTI.

<https://www.vti.dk/>

Picture of product



LCA background

Declared unit

The LCI and LCIA results in this EPD represent 1 m³ of glulam.

	Value	Unit
Declared unit	1	m ³
Density	500	kg/m ³
Conversion factor to 1 kg	0,002	m ³ /kg

Functional unit

Not defined.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804 and the core rules in EN 16485:2014 (product category rules for wood and wood-based products for use in construction).

Energy modelling principles

VTI does not purchase guarantees of origin (GO). The LCA study is therefore modelled as described in the following.

The foreground system is modelled using the national residual mixes of Denmark and Latvia.

The background system is modelled using grid mixes both upstream and downstream.

Flowdiagram

Flow Diagram: VTI A/S		
Product	A1 Raw material supply	Wood (pine & spruce), Glue and Wood Filler
	A2 Transport	Transport to VTI's two production sites
	A3 Manufacturing	Production of glulam
Construction process	A4 Transport	Transport to VTI's customers
	A5 Construction installation process	Glulam is installed in various building parts
End of Life	C1 Deconstruction demolition	Building parts are deconstructed/demolished
	C2 Transport	Transport to waste management
	C3 Waste processing	Scenario 1: Recycling, Scenario 2: Incineration
	C4 Disposal	Glulam is not landfilled in this LCA study
Beyond system boundary	D Reuse- recovery- recycling potential	Recycling Energy Recovery

System boundary

This EPD is based on a cradle-to-gate LCA with options (A4-A5), modules C1-C4 and module D in which 100 weight-% has been accounted for.

There are no known excluded processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to production sites

A3 – Manufacturing processes

For its glulam production, VTI buys pine/spruce, glue and wood filler (used to fill imperfections) from different suppliers in Europe. These materials are transported to VTI's two production locations, Vinderup and Rēzekne, from where glulam is produced and packaged, ready for transport to customers. VTI produces glulam by cutting wood to required dimensions after which they chamfer, glue and polish the wood pieces.

The LCA results are declared in aggregated form, meaning that A1-A3 is declared as one module.

Construction process stage (A4-A5) includes:

Glulam is sold to customers in Europe from both Vinderup and Rēzekne. VTI provided an overview of its customers in the data collection period. Module A4 is based on this overview.

The installation method of glulam depends on the intended use of the product. A diesel consumption of 0.7 L/m³ is assumed to be representative for the different installation methods that VTI's glulam has. VTI estimates that its customers will generate glulam cut offs during installation. These cut offs are accounted for in module A5.

Waste processing of sales packaging is also accounted in module A5.

Use stage (B1-B7) includes:

The use stage is not declared.

End-of-Life (C1-C4) includes:

The End-of-Life includes two different scenarios. Scenario 1 assumes that glulam (100%) is collected separately from other construction waste and recycled into particle boards. Scenario 2 assumes that glulam (100%) is collected with mixed construction waste and incinerated. These scenarios are modelled as the actual percentages of recycling and incineration are unknown.

Transport to waste processing is assumed to be 117 km. This modelled transport distance of 117 km is based on a conservative approach as this is the longest transport distance that VTI uses from its own production to waste processing. It was not possible to quantify a transport distance based on the geographical locations of VTI's customers.

Following EN 16485, Scenario 1 (100% recycling) is included in module C3 while Scenario 2 (100% incineration) is included in module C4 due to having a low energy recovery below 0,6.

Re-use, recovery and recycling potential (D) includes:

For Scenario 1, module D includes benefits from the avoided production of virgin wood shavings (used in particle boards). In addition, module D also includes benefits from the avoided production of average European electricity and thermal energy due to incineration of sales packaging in module A5.

For Scenario 2, module D includes benefits from the avoided production of average European electricity and thermal energy. Both glulam and sales packaging are incinerated.

LCA results

Scenario 1 (100% recycling in module C3)

ENVIRONMENTAL IMPACTS PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	-5,69E+02	1,17E+02	3,67E+01	2,52E+00	1,08E+01	8,40E+02	0,00E+00	-9,52E+02
GWP-fossil	[kg CO ₂ eq.]	2,64E+02	1,16E+02	1,87E+01	2,52E+00	1,08E+01	2,39E+01	0,00E+00	-4,65E+01
GWP-biogenic	[kg CO ₂ eq.]	-8,34E+02	1,07E-01	1,79E+01	5,79E-04	9,90E-03	8,16E+02	0,00E+00	-9,05E+02
GWP-luluc	[kg CO ₂ eq.]	1,62E+00	5,75E-02	6,17E-02	2,84E-04	5,34E-03	7,19E-02	0,00E+00	-2,70E-01
ODP	[kg CFC 11 eq.]	5,41E-06	2,54E-06	3,08E-07	4,01E-08	2,35E-07	3,43E-07	0,00E+00	-7,83E-07
AP	[mol H ⁺ eq.]	1,58E+00	2,55E-01	9,02E-02	2,34E-02	2,36E-02	1,28E-01	0,00E+00	-2,64E-01
EP-freshwater	[kg P eq.]	8,28E-02	8,28E-03	3,48E-03	7,74E-05	7,68E-04	5,11E-03	0,00E+00	-2,46E-02
EP-marine	[kg N eq.]	5,54E-01	6,42E-02	3,46E-02	1,08E-02	5,96E-03	4,33E-02	0,00E+00	-7,51E-02
EP-terrestrial	[mol N eq.]	5,99E+00	6,52E-01	3,71E-01	1,18E-01	6,06E-02	4,57E-01	0,00E+00	-7,97E-01
POCP	[kg NMVOC eq.]	2,11E+00	3,95E-01	1,26E-01	3,49E-02	3,67E-02	1,47E-01	0,00E+00	-2,66E-01
ADPm ¹	[kg Sb eq.]	7,94E-04	3,81E-04	3,99E-05	8,80E-07	3,53E-05	6,15E-05	0,00E+00	-9,66E-05
ADPf ¹	[MJ]	4,09E+03	1,65E+03	2,26E+02	3,30E+01	1,54E+02	3,33E+02	0,00E+00	-7,65E+02
WDP ¹	[m ³ world eq. deprived]	5,77E+01	6,82E+00	2,30E+00	7,12E-02	6,33E-01	1,64E+00	0,00E+00	-7,46E+00
Caption	<p>GWP-total = Global Warming Potential - total; 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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.</p>								
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease incidence]	6,32E-05	8,68E-06	3,23E-06	6,52E-07	8,05E-07	2,12E-06	0,00E+00	-9,09E-06
IRP ²	[kBq U235 eq.]	3,32E+01	2,24E+00	1,30E+00	1,57E-02	2,08E-01	1,55E+00	0,00E+00	-1,24E+01
ETP-fw ¹	[CTUe]	2,91E+03	1,64E+03	1,95E+02	3,16E+01	1,52E+02	3,88E+02	0,00E+00	-3,85E+02
HTP-c ¹	[CTUh]	5,31E-07	1,06E-07	2,59E-08	1,54E-09	9,85E-09	3,27E-08	0,00E+00	-5,95E-08
HTP-nc ¹	[CTUh]	6,87E-06	2,35E-06	4,17E-07	1,07E-08	2,18E-07	5,10E-07	0,00E+00	-8,85E-07
SQP ¹	-	1,35E+05	1,00E+03	5,03E+03	2,22E+00	9,28E+01	2,17E+02	0,00E+00	-3,84E+04
Caption	<p>PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)</p> <p>The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.</p>								
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>² 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.</p>								

RESOURCE USE PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	2,51E+04	2,60E+01	9,28E+02	1,88E-01	2,42E+00	1,73E+01	0,00E+00	-5,70E+03
PERM	[MJ]	7,30E+03	0,00E+00	-1,75E+02	0,00E+00	0,00E+00	-7,12E+03	0,00E+00	0,00E+00
PERT	[MJ]	3,24E+04	2,60E+01	7,53E+02	1,88E-01	2,42E+00	-7,10E+03	0,00E+00	-5,70E+03
PENRE	[MJ]	4,09E+03	1,65E+03	2,26E+02	3,30E+01	1,54E+02	3,33E+02	0,00E+00	-7,65E+02
PENRM	[MJ]	6,06E+01	0,00E+00	-6,06E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	4,15E+03	1,65E+03	1,65E+02	3,30E+01	1,54E+02	3,33E+02	0,00E+00	-7,65E+02
SM	[kg]	1,17E+01	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
FW	[m ³]	2,58E+00	2,38E-01	1,04E-01	2,59E-03	2,21E-02	9,18E-02	0,00E+00	-4,26E-01
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.								

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	1,68E-02	1,05E-02	1,11E-03	2,22E-04	9,77E-04	1,67E-03	0,00E+00	-2,19E-03
NHWD	[kg]	8,94E+01	8,22E+01	5,58E+00	4,72E-02	7,63E+00	1,49E+01	0,00E+00	-6,99E+00
RWD	[kg]	8,40E-03	5,44E-04	3,28E-04	3,62E-06	5,05E-05	3,86E-04	0,00E+00	-3,15E-03
CRU	[kg]	1,20E-01	0,00E+00	1,16E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	2,70E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,00E+02	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	0,00E+00
EEE	[MJ]	1,20E+02	0,00E+00	6,41E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	2,40E+02	0,00E+00	1,28E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.								

Scenario 2 (100% incineration in module C4)

ENVIRONMENTAL IMPACTS PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	-5,69E+02	1,17E+02	3,67E+01	2,52E+00	1,08E+01	0,00E+00	8,61E+02	-1,93E+02
GWP-fossil	[kg CO ₂ eq.]	2,64E+02	1,16E+02	1,87E+01	2,52E+00	1,08E+01	0,00E+00	4,43E+01	-1,89E+02
GWP-biogenic	[kg CO ₂ eq.]	-8,34E+02	1,07E-01	1,79E+01	5,79E-04	9,90E-03	0,00E+00	8,16E+02	-3,22E+00
GWP-luluc	[kg CO ₂ eq.]	1,62E+00	5,75E-02	6,17E-02	2,84E-04	5,34E-03	0,00E+00	7,40E-02	-2,31E-01
ODP	[kg CFC 11 eq.]	5,41E-06	2,54E-06	3,08E-07	4,01E-08	2,35E-07	0,00E+00	4,78E-07	-6,16E-06
AP	[mol H ⁺ eq.]	1,58E+00	2,55E-01	9,02E-02	2,34E-02	2,36E-02	0,00E+00	2,10E-01	-5,26E-01
EP-freshwater	[kg P eq.]	8,28E-02	8,28E-03	3,48E-03	7,74E-05	7,68E-04	0,00E+00	8,49E-03	-8,30E-02

EP-marine	[kg N eq.]	5,54E-01	6,42E-02	3,46E-02	1,08E-02	5,96E-03	0,00E+00	8,64E-02	-1,08E-01
EP-terrestrial	[mol N eq.]	5,99E+00	6,52E-01	3,71E-01	1,18E-01	6,06E-02	0,00E+00	8,72E-01	-1,01E+00
POCP	[kg NMVOC eq.]	2,11E+00	3,95E-01	1,26E-01	3,49E-02	3,67E-02	0,00E+00	2,53E-01	-4,14E-01
ADPm ¹	[kg Sb eq.]	7,94E-04	3,81E-04	3,99E-05	8,80E-07	3,53E-05	0,00E+00	7,47E-05	-2,09E-04
ADPf ¹	[MJ]	4,09E+03	1,65E+03	2,26E+02	3,30E+01	1,54E+02	0,00E+00	3,99E+02	-3,51E+03
WDP ¹	[m ³ world eq. deprived]	5,77E+01	6,82E+00	2,30E+00	7,12E-02	6,33E-01	0,00E+00	-4,19E+00	-2,46E+01
Caption	<p>GWP-total = Global Warming Potential - total; 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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.</p>								
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ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease incidence]	6,32E-05	8,68E-06	3,23E-06	6,52E-07	8,05E-07	0,00E+00	3,00E-06	-1,93E-06
IRP ²	[kBq U235 eq.]	3,32E+01	2,24E+00	1,30E+00	1,57E-02	2,08E-01	0,00E+00	1,63E+00	-5,79E+01
ETP-fw ¹	[CTUe]	2,91E+03	1,64E+03	1,95E+02	3,16E+01	1,52E+02	0,00E+00	5,09E+02	-6,40E+02
HTP-c ¹	[CTUh]	5,31E-07	1,06E-07	2,59E-08	1,54E-09	9,85E-09	0,00E+00	1,06E-07	-8,39E-08
HTP-nc ¹	[CTUh]	6,87E-06	2,35E-06	4,17E-07	1,07E-08	2,18E-07	0,00E+00	2,56E-06	-1,80E-06
SQP ¹	-	1,35E+05	1,00E+03	5,03E+03	2,22E+00	9,28E+01	0,00E+00	2,36E+02	-3,31E+02
Caption	<p>PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)</p> <p>The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.</p>								
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>² 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.</p>								

RESOURCE USE PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	2,51E+04	2,60E+01	9,28E+02	1,88E-01	2,42E+00	0,00E+00	1,90E+01	-3,86E+02
PERM	[MJ]	7,30E+03	0,00E+00	-1,75E+02	0,00E+00	0,00E+00	0,00E+00	-7,12E+03	0,00E+00
PERT	[MJ]	3,24E+04	2,60E+01	7,53E+02	1,88E-01	2,42E+00	0,00E+00	-7,10E+03	-3,86E+02
PENRE	[MJ]	4,09E+03	1,65E+03	2,26E+02	3,30E+01	1,54E+02	0,00E+00	3,99E+02	-3,51E+03
PENRM	[MJ]	6,06E+01	0,00E+00	-6,06E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	4,15E+03	1,65E+03	1,65E+02	3,30E+01	1,54E+02	0,00E+00	3,99E+02	-3,51E+03
SM	[kg]	1,17E+01	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
FW	[m ³]	2,58E+00	2,38E-01	1,04E-01	2,59E-03	2,21E-02	0,00E+00	-1,62E-02	-1,64E+00
Caption	<p>PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-</p>								

	renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m ³ OF GLULAM									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	1,68E-02	1,05E-02	1,11E-03	2,22E-04	9,77E-04	0,00E+00	2,01E-03	-9,14E-03
NHWD	[kg]	8,94E+01	8,22E+01	5,58E+00	4,72E-02	7,63E+00	0,00E+00	2,09E+01	-7,69E+00
RWD	[kg]	8,40E-03	5,44E-04	3,28E-04	3,62E-06	5,05E-05	0,00E+00	4,06E-04	-1,49E-02

CRU	[kg]	1,20E-01	0,00E+00	1,16E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	2,70E-02	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	0,00E+00
EEE	[MJ]	1,20E+02	0,00E+00	6,41E+01	0,00E+00	0,00E+00	8,66E+02	8,66E+02	0,00E+00
EET	[MJ]	2,40E+02	0,00E+00	1,28E+02	0,00E+00	0,00E+00	0,00E+00	1,74E+03	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.								

BIOGENIC CARBON CONTENT PER 1 m ³ OF GLULAM		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	222,57
Biogenic carbon content in accompanying packaging	[kg C]	4,88
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Additional information

Technical information on scenarios

Transport to the building site (A4), per declared unit

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Lorry, 16-32 tonnes	-
Transport load and distance	630,20	tkm

Installation of the product in the building (A5), per declared unit

Scenario information	Value	Unit
Energy type	Diesel	-
Energy consumption	0,7	L
Waste materials (cut offs and sales packaging)	20,55	kg

End-of-Life (C1-C4), per declared unit

Scenario 1 (100% recycling) information	Value	Unit
Collected separately	500	kg
For recycling	500	kg

Scenario 2 (100% incineration) information	Value	Unit
Collected with mixed waste	500	kg
For energy recovery	500	kg

Re-use, recovery and recycling potential (D), per declared unit

Scenario 1 (100% recycling) information	Value	Unit
Displaced material	500	kg
Electricity recovery from waste incineration	38,92	MJ
Thermal energy recovery from waste incineration	77,77	MJ

Scenario 2 (100% incineration) information	Value	Unit
Electricity recovery from waste incineration	905,02	MJ
Thermal energy recovery from waste incineration	1815,29	MJ

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804 +A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804 +A1 chapter 7.4.2.

References

Publisher	 epddanmark www.epddanmark.dk <small>Template version 2023.2</small>
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Transition ApS Regnbuepladsen 7, 1550 København V Emma Ekebjærg, Lasse Langstrup Hågerstrand
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General programme instructions

General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804

DS/EN 15804 + A2:2019 - "Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products"

EN 16485

DS/EN 16485:2014 - "Product category rules for wood and wood-based products for use in construction"

EN 15942

DS/EN 15942:2011 - "Sustainability of construction works - Environmental product declarations - Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 - "Environmental labels and declarations - Type III environmental declarations - Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 - "Environmental management - Life cycle assessment - Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 - "Environmental management - Life cycle assessment - Requirements and guidelines"

The Danish Environmental Protection Agency

Selektiv nedrivning i byggebranchen: Livscyklusvurdering (LCA) af konsekvenser ved selektiv nedrivning
(udgivet: februar 2022)