epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Límtré (Glued laminated timber/GLT/Glulam)

The Norwegian EPD Foundation

Owner of the declaration:
Límtré Vírnet

Product:
Límtré (Glued laminated timber/GLT/Glulam)

Declared unit:
1 m3

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 015:2021 Part B for wood and wood-based products for use in construction

Program operator:
The Norwegian EPD Foundation

Declaration number:
NEPD-9472-9140

Registration number:
NEPD-9472-9140

Issue date:
27.03.2025

Valid to:
27.03.2030

EPD software:
LCAno EPD generator ID: 882932

General information

Product

Límtré (Glued laminated timber/GLT/Glulam)

Owner of the declaration:

Límtré Vírnet
Contact person: Einar Bjarnason
Phone: +3544125300
e-mail: einar@limtrevirnet.is

Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-norge.no

Manufacturer:

Límtré Vírnet
Borgarbraut 74
310 Borgarnes, Iceland

Declaration number:

NEPD-9472-9140

Place of production:

Límtré Vírnet - Flúðum
846 Flúðum
, Iceland

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 015:2021 Part B for wood and wood-based products for use in construction

Management system:

Statement of liability:

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

Organisation no:

Declared unit:

1 m3 Límtré (Glued laminated timber/GLT/Glulam)

Issue date:

27.03.2025

Declared unit with option:

A1-A3, A4, A5, C1, C2, C3, C4, D

Valid to:

27.03.2030

Year of study:

2023

Functional unit:

Comparability:

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

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. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are 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 by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD: Vincent Merida - Verkvist

Reviewer of company-specific input data and EPD: Børge Heggen Johansen, Energiråd AS

Verification of EPD tool:

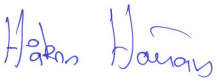
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Alexander Borg, Asplan Viak AS

(no signature required)

Approved:



Håkon Hauan, CEO EPD-Norge

Product

Product description:

Glued laminated timber (GLT) is used for structural purposes like load bearing beams and pillars. The declared product is made of spruce and has an average moisture content of 12%. The product can be ordered with or without a galvanized steel nail plate.

Product specification

The product is constructed to match individual customer specifications and consists of planed spruce, a melamine urea resin adhesive, and can be joined with a galvanized steel nail plate.

Materials	kg	%
Glue for wood	7,50	1,59
Metal - Steel	1,26	0,26
Wood	462.00	98,13
Total	470,76	100,00

Packaging	kg	%
Packaging - Plastic	0,83	49,11
Packaging - Plastic straps	0,86	50,89
Total incl. packaging	472,46	100,00

Technical data:

This product is produced according to EN 14080:2013 and is delivered according to individual customer specifications.

Market:

Iceland

Reference service life, product

As building

Reference service life, building or construction works

60 years

LCA: Calculation rules

Declared unit:

1 m3 Límtré (Glued laminated timber/GLT/Glulam)

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. In forestry, economic allocation between sawn timber and solid wood is used. At sawmills, energy, water, waste, materials and internal transport are divided into sub-processes and then allocated according to income between the main and secondary products. Environmental impact and resource consumption for the primary production of recycled materials is allocated to the original product system. Economic allocation was applied to account for the various co-products originating from mill activities. The economic value of each co-product was used to allocate energy flows between products.

Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

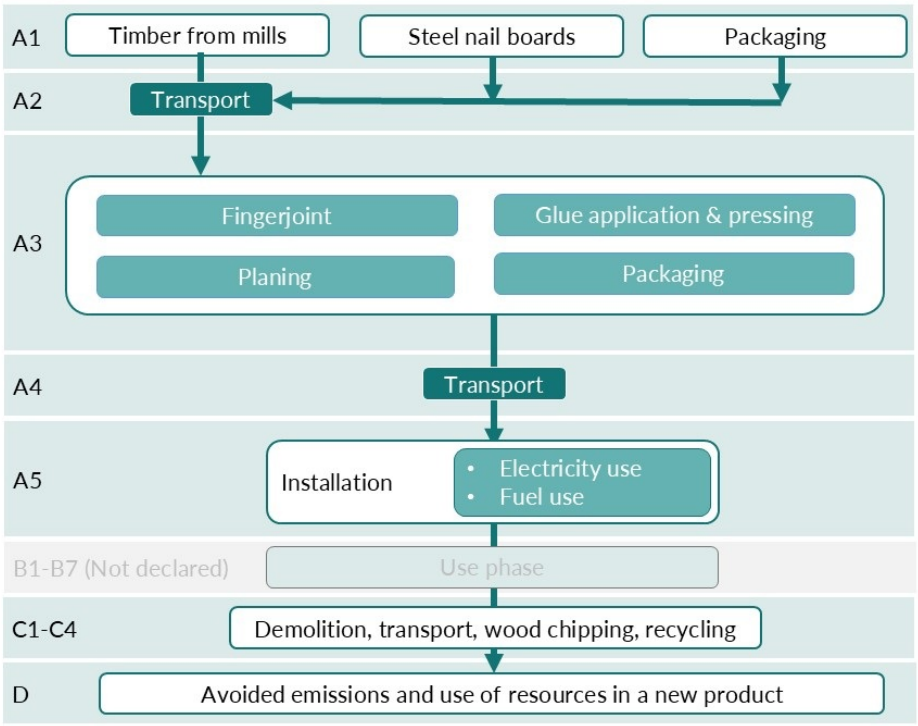
Materials	Source	Data quality	Year
Glue for wood	ecoinvent 3.6	Database	2019
Metal - Steel	S-P-01921	EPD	2017
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Plastic straps	ecoinvent 3.6	Database	2019
Wood	NEPD-5658-4967-NO	EPD	2019

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	Assembly	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	MND	MND	X	X	X	X	X

System boundary:

Cradle-to-gate plus options C1-C4, D



Additional technical information:

At the end of its useful life, the glulam is assumed to be demolished and transported to a waste processing facility. There it is shredded in a stationary wood chipping unit and is re-used as animal bedding or landscape materials. Biogenic carbon is calculated according to EN16485:2014/EN15804+A2, where the net biogenic carbon cycle A to C is zero (i.e. carbon dioxide neutral).

LCA: Scenarios and additional technical information

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

The product is typically produced without a nail plate, however, it is included in the LCI to demonstrate the worst case scenario.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (kgkm) - RER	36,7 %	265	0,043	l/tkm	11,40

Assembly (A5)	Unit	Value			
Electricity, Iceland (kWh)	kWh	0,028			
Diesel, burned (kWh) - GLO	kWh	0,27			
Materials to Recycling (kg)	kg	1,69			

De-construction demolition (C1)	Unit	Value			
Diesel, burned in Excavator, 30 ton (L)	L	0,052			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Ship, Freight, Transoceanic (kgkm)	65,0 %	2000	0,003	l/tkm	6,00
Truck, unspecified, EURO 6 (kgkm) - RER	46,1 %	100	0,034	l/tkm	3,40
Truck, unspecified, EURO 6 (kgkm) - RER	46,1 %	100	0,034	l/tkm	3,40

Waste processing (C3)	Unit	Value			
Wood chipping, industrial residual wood, stationary electric chipper (kg) - RER	kg	466,19			
Materials to recycling (kg) - C3	kg	2,98			
Balancing waste - RPEM (MJ) - (Type 4)	MJ	8059,68			
Balancing waste - Biogenic carbon in product (kg) - (Type 4)	kg	724,31			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
substitution of wood chips (kg) - RoW	kg	466,19			
Substitution of polyethylene, LDPE, granulate (kg) - RER	kg	0,83			
Substitution of polyethylene terephthalate, PET, amorphous (kg) - GLO	kg	0,86			
Substitution of primary steel with net scrap (kg)	kg	1,29			

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact										
	Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	-6,15E+02	2,05E+01	1,15E-01	1,79E-01	6,26E+00	7,28E+02	0	-2,94E+01
	GWP-fossil	kg CO_2 -eq	1,06E+02	2,05E+01	1,13E-01	1,79E-01	6,25E+00	4,08E+00	0	-2,91E+01
	GWP-biogenic	kg CO_2 -eq	-7,23E+02	8,46E-03	1,92E-04	4,20E-05	2,75E-03	7,24E+02	0	-7,26E-02
	GWP-luluc	kg CO_2 -eq	3,03E+00	7,28E-03	8,72E-04	3,99E-05	2,30E-03	9,16E-03	0	-2,83E-01
	ODP	kg CFC11 -eq	1,88E-05	4,63E-06	2,47E-08	3,97E-08	1,43E-06	3,41E-07	0	-4,66E-06
	AP	mol H+ -eq	9,36E-01	5,88E-02	1,03E-03	8,60E-04	1,96E-02	2,25E-02	0	-1,68E-01
	EP-FreshWater	kg P -eq	3,91E-03	1,63E-04	5,50E-07	9,62E-07	5,29E-05	4,20E-04	0	-2,20E-03
	EP-Marine	kg N -eq	2,57E-01	1,16E-02	4,40E-04	3,06E-04	4,03E-03	3,01E-03	0	-5,55E-02
	EP-Terrestial	mol N -eq	3,05E+00	1,30E-01	4,84E-03	3,37E-03	4,50E-02	3,69E-02	0	-5,98E-01
	POCP	kg NMVOC -eq	7,89E-01	4,98E-02	1,34E-03	1,00E-03	1,72E-02	9,62E-03	0	-2,20E-01
	ADP-minerals&metals[1]	kg Sb-eq	1,60E-03	5,65E-04	8,35E-07	1,29E-06	1,69E-04	1,57E-05	0	-4,19E-04
	ADP-fossil[1]	MJ	1,72E+03	3,09E+02	1,59E+00	2,55E+00	9,70E+01	8,25E+01	0	-4,60E+02
	WDP[1]	m^3	2,39E+04	2,99E+02	8,15E+00	8,63E-01	9,39E+01	1,21E+03	0	-1,98E+02

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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment: EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

1. 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 experienced with the indicator

Remarks to environmental impacts

Additional environmental impact indicators										
Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	PM	Disease incidence	8,28E-06	1,25E-06	2,63E-08	2,81E-09	4,29E-07	6,85E-08	0	-1,65E-06
	IRP[2]	kgBq U235 -eq	8,30E+00	1,35E+00	6,84E-03	1,09E-02	4,24E-01	7,10E-01	0	-1,40E+00
	ETP-fw[1]	CTUe	2,80E+03	2,29E+02	1,08E+00	1,59E+00	7,30E+01	5,18E+01	0	-4,49E+02
	HTP-c[1]	CTUh	2,64E-07	0,00E+00	3,60E-11	7,80E-11	0,00E+00	2,33E-09	0	-2,26E-08
	HTP-nc[1]	CTUh	1,80E-06	2,50E-07	9,73E-10	1,68E-09	9,52E-08	5,17E-08	0	-2,37E-07
	SQP[1]	dimensionless	1,88E+03	2,16E+02	3,93E-01	3,20E-01	8,27E+01	1,62E+01	0	-4,25E+04

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 = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

1. 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 experienced with the indicator
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.

Resource use										
Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	PERE	MJ	1,90E+03	4,43E+00	1,50E-01	1,78E-02	1,42E+00	1,39E+01	0	-9,10E+03
	PERM	MJ	8,06E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-8,06E+03	0	0,00E+00
	PERT	MJ	9,96E+03	4,43E+00	1,50E-01	1,78E-02	1,42E+00	-8,05E+03	0	-9,10E+03
	PENRE	MJ	1,64E+03	3,09E+02	1,59E+00	2,55E+00	9,70E+01	8,26E+01	0	-4,28E+02
	PENRM	MJ	1,97E+01	0,00E+00	-1,97E+01	0,00E+00	0,00E+00	0,00E+00	0	-3,53E+01
	PENRT	MJ	1,66E+03	3,09E+02	-1,81E+01	2,55E+00	9,70E+01	8,26E+01	0	-4,64E+02
	SM	kg	3,32E-02	0,00E+00	0,00E+00	1,91E-03	0,00E+00	0,00E+00	0	-2,12E-01
	RSF	MJ	1,62E+00	1,58E-01	3,54E-04	5,78E-04	5,05E-02	1,18E+00	0	-1,48E-01
	NRSF	MJ	1,94E+00	5,66E-01	3,16E-03	-6,65E-03	1,78E-01	1,66E-01	0	1,47E+00
	FW	m^3	6,02E+00	3,31E-02	7,47E-04	1,45E-04	1,11E-02	6,90E-02	0	-1,31E-01

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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Waste

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	4,16E-01	1,59E-02	6,03E-05	9,71E-05	5,28E-03	1,08E-02	0	-8,08E-02
	NHWD	kg	3,31E+01	1,50E+01	1,93E-02	4,12E-03	5,98E+00	4,49E-01	0	-1,41E+01
	RWD	kg	9,76E-03	2,11E-03	1,10E-05	1,76E-05	6,59E-04	5,82E-04	0	-2,09E-03

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Output flow

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
	MFR	kg	4,22E+00	0,00E+00	1,69E+00	0,00E+00	0,00E+00	2,98E+00	0	0,00E+00
	MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
	EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
	EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	1,98E+02
Biogenic carbon content in accompanying packaging	kg C	0,00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2

Additional requirements

Greenhouse gas emissions 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).

Electricity mix	Source	Amount	Unit
Electricity, Iceland (kWh)	ecoinvent 3.6	55,84	g CO2-eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products									
Indicator	**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO_2 -eq	1,09E+02	2,05E+01	1,14E-01	1,79E-01	6,26E+00	4,11E+00	0	-3,00E+01

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

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 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no Report number: 07.21
EPD generator for NPCR 015 Part B for Wood-based products, Background information for EPD generator application and LCA data,
NPCR Part A: Construction products and services. Ver. 2.0, 24.03.2021 EPD Norway.
NPCR 015 Part B for wood and wood-based products , Ver. 4.0, 07.10.2021, EPD Norway.

epd-norge Global program operatør	**Program operator and publisher** The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway	Phone: e-mail: web:	+47 977 22 020 post@epd-norge.no www.epd-norge.no
Límtré Vírnet	**Owner of the declaration:** Límtré Vírnet Borgarbraut 74 , 310 Borgarnes, Iceland	Phone: e-mail: web:	+3544125300 einar@limtrevirnet.is limtrevirnet.is
LCA.no	**Author of the Life Cycle Assessment** LCA.no AS Dokka 6A, 1671 Kråkerøy, Norway	Phone: e-mail: web:	+47 916 50 916 post@lca.no www.lca.no
LCA.no	**Developer of EPD generator** LCA.no AS Dokka 6A, 1671 Kråkerøy, Norway	Phone: e-mail: web:	+47 916 50 916 post@lca.no www.lca.no
ECO PLATFORM EPD VERIFIED	ECO Platform ECO Portal	web: web:	www.eco-platform.org ECO Portal