Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

KLH® - CLT (Cross Laminated Timber)

from

KLH Massivholz GmbH

production site Wiesenau

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of a single product from a manufacturer
EPD registration number:	EPD-IES-0027209:001
Version date:	2026-01-26
Validity date:	2031-01-26

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <*Construction products, PCR 2019:14, version 2.0.1 and UN CPC code: 314 – Boards and panels, Wood and Wood-based products for use in construction*
PCR review was conducted by: *The Technical Committee of the International EPD® System contacted via info@environdec.com*
c-PCR, if applicable: *C-PCR-006 (to PCR 2019:14), version 2019-12-20 and UN CPC 031, 311, 312, 313, 314, 315, 316, 319*

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: *Angela Schindler, Umweltberatung* Approved by: International EPD System *EPD process certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.envrondec.com.
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: KLH Massivholz GmbH,
Address: Gewerbestraße 4, A – 8842 Teufenbach-Katsch
Contact: office@klh.at, www.klh.at Tel +43 3588 8835
Address and contact information of the LCA practitioner commissioned by the EPD owner, if applicable: IBO GmbH, Alserbachstraße 5/8 | A-1090 Wien, ibo@ibo.at
Product-related or management system-related certifications: ISO 9001- and 14001-certificate

Description of the organisation:
KLH is one of the global leaders in the production of cross-laminated timber (KLH® - CLT), having pioneered the product in collaboration with the Technical University of Graz in 1996. Since 1999, when the first production facility in Teufenbach-Katsch, Styria, was put into operation, production capabilities and plant expansion have been continuously improved. The newest cutting-edge production plant in Bad. St. Leonhard (Wiesenau), Carinthia, was launched in 2021.
KLH® solid timber boards are widely used around the world as wall, floor, and roof elements in structural timber construction. KLH Massivholz and KLH Massivholz Wiesenau are fully owned by Johann Offner Unternehmensgruppe, a traditional family business with over 250 years of history.

PRODUCT INFORMATION

Product name: KLH® - CLT (Cross-Laminated Timber)

Product identification: KLH® - CLT (Cross-Laminated Timber) are panel-shaped wood-based materials manufactured according to ETA 06/0138 (European Technical Assessment).

UN CPC code: 31421 Other plywood, veneered panels and similar laminated wood, of coniferous wood
HS code: 44188200 Cross-laminated timber "CLT or X-lam"

Product description: KLH® - CLT consists of softwood boards or rod-glued boards or wood-based panels that are glued together to form cross-laminated timber (solid panel-shaped timber construction elements). Generally, the softwood boards of the successive individual layers are arranged perpendicularly (angle of 90°) to each other. During the production process, small amounts of glue are added to make panels from crosswise arranged boards, which are then finished as required. Depending on the surface type, a corresponding surface is produced using various processes. Panel thicknesses up to and including 500 mm can be produced. KLH® - CLT (cross-laminated timber) has an average moisture content of 12 % (+/-2 %) after production.

Application/intended use:
KLH® - CLT is ideally suited for load-bearing, bracing and non-load-bearing wall, floor and roof elements. They are used in the construction of single-family houses, multi-storey residential buildings, public buildings, administrative buildings, industrial and commercial buildings, conversions and extensions as well as in bridge constructions.
The dimensioning and execution are carried out according to the structural, building physics and legal requirements. For this reason, KLH® - CLT are manufactured exclusively on a project-specific and made-to-order basis.
When used correctly, there are no known or expected limitations on service life. The service life that can be expected from KLH® - CLT on correct use thus equals that of the service life of the building in which it is used.

Name and location of production site(s):
KLH Massivholz Wiesenau GmbH
Wiesenau 2
A-9462 Bad St. Leonhard

Approach to chemicals (hazardous substances)
No dangerous substances from the candidate list of SVHC for Authorisation are present in concentrations greater than 0.1% by weight in the product.

References to any relevant websites for more information: www.klh.at/

CONTENT DECLARATION

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/m³
Sawn wood board from softwood (moisture content =12 %)	466	0	99	208
Glue	4,0	0	0	0
TOTAL	470	0	99	208

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Polyethylene	0,36	0,08	0
Polyester	0,12	0,03	0
TOTAL	0,485	0,1	0

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

LCA INFORMATION

It is the declaration of a product from the KLH factory in Wiesenau.

Declared unit: 1 m³ of KLH® - CLT (with an average density of 470 kg/m³ and a moisture content of 12 % (+/- 2 %).

Reference service life: The RSL is understood as the period of time until the CLT is replaced, rebuild, renovated or restored. If properly installed, the service lifetime of the CLT is equal to the lifetime of the building. Wood products can reach over 100 years service life in service classes 1 and 2. The reference service life of 100 years corresponds to the specifications of the service life catalogue of Bau-EPD GmbH, Austria for the preparation of EPDs /Bau EPD GmbH 2015/ for glulam.

Time representativeness: The data for the KLH® - CLT are collected from the factory site in Wiesenau (Bad St. Leonhard) for the year 2024.

Geographical scope:
KLH produces KLH® - CLT at two factory sites in Austria and delivers the products to all over the world. In 2024, approx. 99 % of the wood processed into KLH® - CLT at the Wiesenau plant came from Austrian sawmills and their surrounding forests.

Database(s) and LCA software used: Data from /ecoinvent v3.11 (2024)/ for generic data and the Software SimaPro (Version 10.2.0.2 Multi user) has been used.

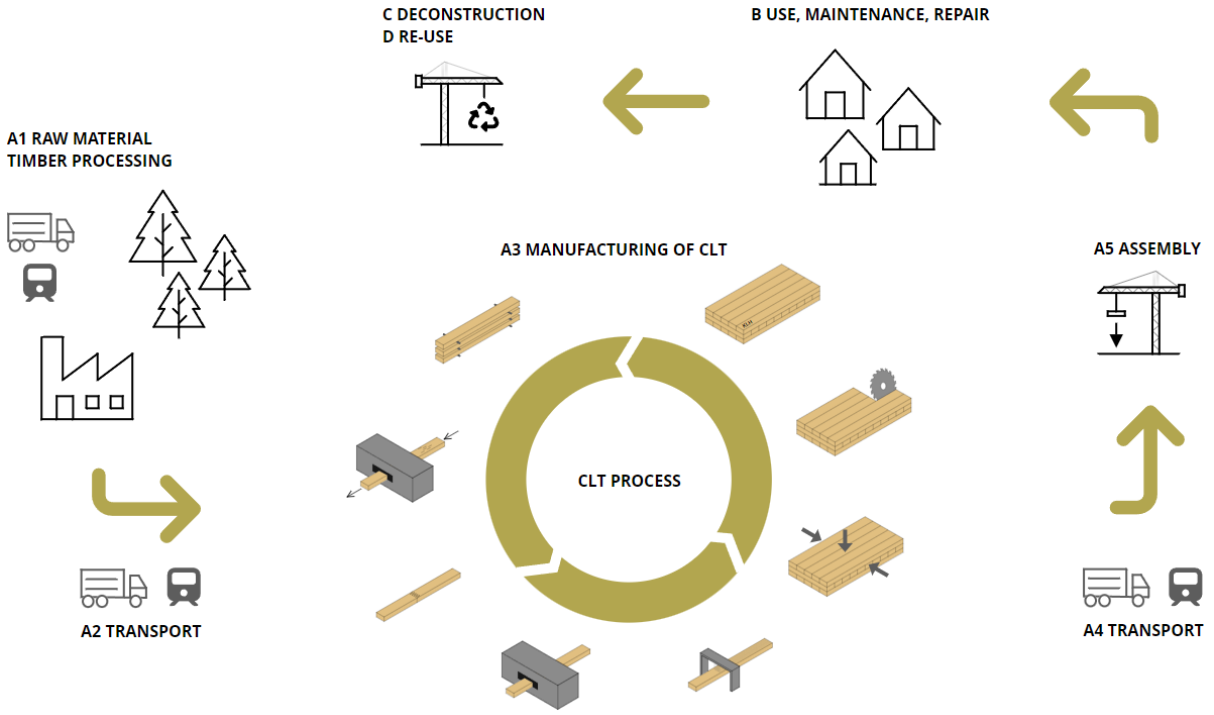
Description of system boundaries:
Cradle to gate with options and module D (A + C + D)

More information:
Standards /EN 15804/, /EN 16485/, /EN 15941/ and /PCR 2019:14/ from The International EPD® System provide the core product category rules for the assessment.

Target group: business to business & business to consumers

Cut-Off Rule: 1 %.
This rule is based on the assumption that the input flows do not have a major impact on the environmental impacts as a whole.

Allocation:
The allocation is performed according to EN15804. Physical, economic and energy allocations have been used.



Product stage (A1-A3):
These stages cover upstream processes such as the extraction and processing of sawn raw softwood boards mainly from Austria, the production of glue, auxiliary and packaging materials. A declared ecological electricity mix was taken into account for the main sawmill.

All information on truck transport from the origin of these materials to the two KLH factory sites, including intra-plant transport was included.
The production of KLH® - CLT and by-products includes all incoming and outcoming material and energy flows. Site-specific ecological mixes were declared and balanced for electricity consumption.

Construction process (A4-A5):
KLH® - CLT panels are delivered to the customer by truck. The distance taken into account was 658 km, averaged over the domestic and international quantities. According to the manufacturer, there is no waste during installation due to the complete prefabrication. Diesel consumption for crane and lifting platform were estimated and included. Resulting packaging waste is sent for thermal waste treatment.

Use stage (B1-B7):
A declaration over the entire life cycle according to the PCR of construction products is not permissible if no functional unit has been defined. Since no environmental impacts are to be expected during the use of the product and no harmful substances are released into the air, water or soil, no impacts would occur in the use phase. Therefore, the declaration of the use phase was waived.

End of life stage (C1-C4):
It was assumed that the energy required to remove the elements at the end of life corresponds to that required to install them.
Scenario 1 in C3 assumes 100 % incineration with energy recovery. An average transport distance to the waste incineration plant of 50 km is assumed in C2.
The products can theoretically be dismantled non-destructively. A confirmation from the manufacturer was submitted that 100 % reuse is possible. Therefore, complete reuse is accounted for in **scenario 2**.

It lies in the future and requires planning for the deconstruction of fasteners, connections and for material separation, some of which is already being implemented.
It was assumed that the panels are taken to a recycling plant. For this purpose, the distance of 50 km is assumed in C2.

Resource Recovery (D):
Scenario 1 Thermal recovery:
Energy recovery for electricity is accounted for with an efficiency of 11.61 % and for heat with an efficiency of 29.34 % /CEWEP 2012/. Collection and recovery without losses was assumed. The net flows in Module D therefore also correspond to the quantities consumed.
It is assumed that all CO_2 absorbed during the growth phase of the wood is re-emitted in the disposal phase according to /EN 16485/. Thus, there is no benefit in module D either. In the following product system, the CO_2 must again be included negatively according to /EN 16485/.
Scenario 2 Reuse:
The 100 % reuse provides benefits in the magnitude of the complete production of 1 m^3 KLH® - CLT in the subsequent system. The CO_2 is also re-emitted in disposal C3 according to /EN 16485/.

Data Quality:
Specific LCA data for the manufacturing of the KLH® - CLT plant are from 2024. Specific electricity consumption for the main sawmill is from 2024. The upstream data is based on /ecoinvent v3.11/, where no data is older than 10 years. Geographical representativeness was ensured by giving priority to data sets from the study area under consideration. In cases where no relevant data was available, the geographical reference area was expanded. For technological representativeness, priority was given to data sets that correspond to the current state of the art of the processes examined. In cases where no exactly matching data was available, similar technological processes were used.

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	x	x	x	x	x								x	x	x	x	x
Geography	AT(99 %) and EU	RER	AT	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	-	RER
Share of primary data	6,87 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0 %					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0 %					-	-	-	-	-	-	-	-	-	-	-	-

**The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.*

Process	Source type and Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Generation of electricity used in manufacturing of product	Collected data & database ecoinvent 3.11	2024	Primary data	6,87 %
Total share of primary data, of GWP-GHG results for A1-A3				6,87 %

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results for Scenario 1 Thermal recovery (C1-D)

The impact categories and associated indicators, methods and characterisation factors of EN 15804:2012+A2:2019 of 2022-02-15 (EF 3.1) were used.

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	-6,86E+02	6,35E+01	1,09E+01	9,57E+00	4,47E+00	7,81E+02	0,00E+00	-2,62E+02
GWP-fossil	kg CO2 eq.	7,48E+01	6,34E+01	1,09E+01	9,57E+00	4,47E+00	1,87E+01	0,00E+00	-2,62E+02
GWP-biogenic	kg CO2 eq.	-7,62E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,62E+02	0,00E+00	0,00E+00
GWP-luluc	kg CO2 eq.	1,76E+00	2,20E-02	9,82E-04	9,79E-04	1,48E-03	2,11E-03	0,00E+00	-2,82E-01
ODP	kg CFC 11 eq.	1,95E-06	1,35E-06	1,42E-07	1,42E-07	9,75E-08	9,08E-08	0,00E+00	-9,54E-06
AP	mol H+ eq.	5,16E-01	3,24E-01	8,57E-02	8,55E-02	1,44E-02	8,51E-02	0,00E+00	-5,48E-01
EP-freshwater	kg P eq.	1,31E-02	4,18E-03	3,10E-04	3,08E-04	3,05E-04	3,29E-03	0,00E+00	-8,44E-02
EP-marine	kg N eq.	2,01E-01	9,73E-02	3,99E-02	3,98E-02	4,83E-03	4,76E-02	0,00E+00	-1,23E-01
EP-terrestrial	mol N eq.	2,11E+00	1,07E+00	4,37E-01	4,36E-01	5,26E-02	4,36E-01	0,00E+00	-1,15E+00
POCP	kg NMVOC eq.	1,13E+00	3,88E-01	1,31E-01	1,30E-01	2,18E-02	1,09E-01	0,00E+00	-4,90E-01
ADP-minerals &metals*	kg Sb eq.	7,60E-04	2,03E-04	3,44E-06	3,41E-06	1,51E-05	1,36E-05	0,00E+00	-2,44E-04
ADP-fossil*	MJ	1,18E+03	8,91E+02	1,25E+02	1,25E+02	6,34E+01	7,07E+01	0,00E+00	-4,84E+03
WDP*	m3	1,92E+01	3,36E+00	2,70E-01	2,66E-01	2,46E-01	3,50E+00	0,00E+00	-2,15E+01
Acronyms	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								

** Disclaimer: 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.*
The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks."
The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	7,65E+01	6,35E+01	1,09E+01	9,57E+00	4,47E+00	1,87E+01	0,00E+00	-2,62E+02

Resource use indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	9,31E+02	1,35E+01	8,13E-01	7,62E-01	9,98E-01	7,94E+03	0,00E+00	-4,78E+02
PERM	MJ	7,94E+03	0,00E+00	-4,79E-02	0,00E+00	0,00E+00	-7,94E+03	0,00E+00	0,00E+00
PERT	MJ	8,87E+03	1,35E+01	7,66E-01	7,62E-01	9,98E-01	1,74E+00	0,00E+00	-4,78E+02
PENRE	MJ	1,07E+03	8,91E+02	1,43E+02	1,25E+02	6,34E+01	1,71E+02	0,00E+00	-4,84E+03
PENRM	MJ	1,18E+02	0,00E+00	-1,82E+01	0,00E+00	0,00E+00	-9,99E+01	0,00E+00	0,00E+00
PENRT	MJ	1,18E+03	8,91E+02	1,25E+02	1,25E+02	6,34E+01	7,08E+01	0,00E+00	-4,84E+03
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
FW	m^3	1,82E+00	1,08E-01	8,95E-03	8,79E-03	7,91E-03	1,11E-01	0,00E+00	-1,38E+00
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

The primary energy was calculated according to Option C of Annex 3 of PCR 2019:14.

Waste indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,25E-02	5,98E-03	8,69E-04	8,67E-04	4,32E-04	4,50E-04	0,00E+00	-1,88E-02
Non-hazardous waste disposed	kg	3,16E+01	4,00E+01	1,01E-01	8,44E-02	3,04E+00	8,44E+00	0,00E+00	-6,31E+00
Radioactive waste disposed	kg	2,20E-03	4,57E-04	2,34E-05	2,33E-05	3,39E-05	3,54E-05	0,00E+00	-2,64E-02

Output flow indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	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
Material for recycling	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
Materials for energy recovery	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
Exported energy, electricity	MJ	6,30E-01	0,00E+00	2,11E+00	0,00E+00	0,00E+00	9,37E+02	0,00E+00	0,00E+00
Exported energy, thermal	MJ	1,58E+00	0,00E+00	5,36E+00	0,00E+00	0,00E+00	2,37E+03	0,00E+00	0,00E+00

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Other environmental performance indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Particulate matter emissions (PM)	disease inc	2,87E-05	4,84E-06	2,44E-06	2,44E-06	3,57E-07	8,80E-07	0,00E+00	-2,22E-06
Ionising radiation, human health ***	kBq U-235 eq	4,99E+00	1,02E+00	5,33E-02	5,31E-02	7,56E-02	7,94E-02	0,00E+00	-5,56E+01
Ecotoxicity (freshwater) **	CTUe	5,48E+02	1,15E+02	7,08E+00	6,75E+00	8,40E+00	7,74E+01	0,00E+00	-2,76E+02
Human toxicity, cancer effects **	CTUh	8,67E-08	1,10E-08	1,04E-09	9,72E-10	7,59E-10	1,45E-08	0,00E+00	-3,55E-08
Human toxicity, Non cancer effects **	CTUh	1,22E-06	5,34E-07	1,72E-08	1,53E-08	3,95E-08	9,40E-07	0,00E+00	-7,89E-07
Land use related impacts / soil quality **	Pt	3,58E+04	4,97E+02	8,30E+00	8,27E+00	3,75E+01	1,90E+01	0,00E+00	-3,34E+02

*** 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.*
**** 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.*

Additional LCA results for Scenario 2 Reuse

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	9,57E+00	4,47E+00	7,62E+02	0,00E+00	-7,73E+01
GWP-fossil	kg CO2 eq.	9,57E+00	4,47E+00	0,00E+00	0,00E+00	-7,55E+01
GWP-biogenic	kg CO2 eq.	0,00E+00	0,00E+00	7,62E+02	0,00E+00	0,00E+00
GWP-luluc	kg CO2 eq.	9,79E-04	1,48E-03	0,00E+00	0,00E+00	-1,76E+00
ODP	kg CFC 11 eq.	1,42E-07	9,75E-08	0,00E+00	0,00E+00	-1,98E-06
AP	mol H+ eq.	8,55E-02	1,44E-02	0,00E+00	0,00E+00	-5,17E-01
EP-freshwater	kg P eq.	3,08E-04	3,05E-04	0,00E+00	0,00E+00	-1,34E-02
EP-marine	kg N eq.	3,98E-02	4,83E-03	0,00E+00	0,00E+00	-2,01E-01
EP-terrestrial	mol N eq.	4,36E-01	5,26E-02	0,00E+00	0,00E+00	-2,11E+00
POCP	kg NMVOC eq.	1,30E-01	2,18E-02	0,00E+00	0,00E+00	-1,13E+00
ADP-minerals &metals*	kg Sb eq.	3,41E-06	1,51E-05	0,00E+00	0,00E+00	-7,60E-04
ADP-fossil*	MJ	1,25E+02	6,34E+01	0,00E+00	0,00E+00	-1,19E+03
WDP*	m3	2,66E-01	2,46E-01	0,00E+00	0,00E+00	-1,93E+01
Acronyms	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					

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[2]	kg CO_2 eq.	9,57E+00	4,47E+00	0,00E+00	0,00E+00	-7,73E+01

Resource use indicators

Results per functional or declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	7,62E-01	9,98E-01	7,94E+03	0,00E+00	-9,32E+02
PERM	MJ	0,00E+00	0,00E+00	-7,94E+03	0,00E+00	-7,94E+03
PERT	MJ	7,62E-01	9,98E-01	0,00E+00	0,00E+00	-8,87E+03
PENRE	MJ	1,25E+02	6,34E+01	9,99E+01	0,00E+00	-1,08E+03
PENRM	MJ	0,00E+00	0,00E+00	-9,99E+01	0,00E+00	-1,18E+02
PENRT	MJ	1,25E+02	6,34E+01	0,00E+00	0,00E+00	-1,20E+03
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	8,79E-03	7,91E-03	0,00E+00	0,00E+00	-1,83E+00
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water					

The primary energy was calculated according to Option C of Annex 3 of PCR 2019:14.

Waste indicators

Results per functional or declared unit						
Indicator	**Unit**	**C1**	**C2**	**C**	**C4**	**D**
Hazardous waste disposed	kg	8,67E-04	4,32E-04	0,00E+00	0,00E+00	-1,25E-02
Non-hazardous waste disposed	kg	8,44E-02	3,04E+00	0,00E+00	0,00E+00	-3,16E+01
Radioactive waste disposed	kg	2,33E-05	3,39E-05	0,00E+00	0,00E+00	-2,28E-03

Output flow indicators

Results per functional or declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	4,70E+02	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

[2] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Other environmental performance indicators

Results per functional or declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Particulate matter emissions (PM)	disease inc	2,44E-06	3,57E-07	0,00E+00	0,00E+00	-2,87E-05
Ionising radiation, human health ***	kBq U-235 eq	5,31E-02	7,56E-02	0,00E+00	0,00E+00	-5,15E+00
Ecotoxicity (freshwater) **	CTUe	6,75E+00	8,40E+00	0,00E+00	0,00E+00	-5,49E+02
Human toxicity, cancer effects **	CTUh	9,72E-10	7,59E-10	0,00E+00	0,00E+00	-8,68E-08
Human toxicity, Non cancer effects **	CTUh	1,53E-08	3,95E-08	0,00E+00	0,00E+00	-1,22E-06
Land use related impacts / soil quality **	Pt	8,27E+00	3,75E+01	0,00E+00	0,00E+00	-3,58E+04

*** 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.*
**** 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.*

ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

KLH Massivholz is a company that places a strong emphasis on environmental responsibility, both internally and externally. Quality, environmental protection and energy efficiency are inseparably linked. That is why KLH has established an environmental management system in accordance with EN ISO 14001 and integrated it into its quality management.

KLH is committed to

- Source raw materials from sustainably managed forests to conserve resources
- environmentally friendly use of technologies and manufacturing processes
- minimize CO_2 emissions through efficient procurement and sales logistics
- increase energy efficiency by using by-products for our own energy supply
- actively avoid and minimize waste
- reduce pollutants and emissions

Overall, KLH's commitment to sustainability goes beyond the manufacturing process. Commitment to the protection of soil, water and air and the primacy of environmental responsibility. KLH Massivholz strives to offer its customers high-quality products and services that reflect this dedication to the environment.

Further information can be found at https://www.klh.at/

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ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-Location Centre
CPC	Central Product Classification
GHS	Globally Harmonized System of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
CLT	Cross Laminated Timber
PCR	Product Category Rule
ETA	European Technical Assessment

REFERENCES

General Programme Instructions of the International EPD® System. Version 5.0.1
PCR 2019:14. Construction Products. Version 2.0.1

c-PCR 2019:14. WOOD AND WOOD-BASED PRODUCTS FOR USE IN CONSTRUCTION (EN 16485:2014)- Version 1.0.0 Date 2025-04-08

CEWEP 2012. Dr.-Ing. Dieter O.Reimann, CEWEP Energy Report III, December 2012

Bau EPD GmbH 2015. Bau EPD GmbH: Nutzungsdauerkatalog der Bau-EPD GmbH für die Erstellung von EPDs, Version 0.02 vom 10.8.2015

Standards

EN 15804:2012+A2:2019/AC:2021 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products CEWEP Energy Report III

EN 16485:2014 Round and sawn timber - Environmental product declarations - Product category rules for wood and wood-based products for use in construction

EN 16449:2014 Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide

EN 15942:2012 Sustainability of construction works - Environmental product declarations - Communication format business-to-business

EN 15941:2024 Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data

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

ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services

Tools and Database

Software SimaPro (Version 10.2.02 Multi user), PRè Consultance B.V.
Ecoinvent 3.11 (2024) database. http://www.ecoinvent.org

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