

ENVIRONMENTAL PRODUCT DECLARATION



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

VMG LIGNUM JOIST

from UAB VMG Lignum construction

Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



GENERAL INFORMATION

Programme:	The International EPD® System
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ACCOUNTABILITIES FOR PCR, LCA AND INDEPENDENT, THIRD-PARTY VERIFICATION

PRODUCT CATEGORY RULES (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR) Product Category Rules (PCR): Construction products 2019:14 Version 1.3.2, 2023-12-08; c-PCR-006 Wood and wood-based products for use in construction (EN 16485:2014) Version 2019-12-20 UN CPC code of 31600 PCR review was conducted by: Martin Erlandsson, IVL

Swedish Environmental Research Institute, martin.erlandsson@ivl.se

LIFE CYCLE ASSESSMENT (LCA)

LCA accountability: Sigita Židonienė, PhD., Vesta Consulting
www.vestaconsulting.lt

THIRD-PARTY VERIFICATION

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third-party verifier: Prof. Ing. Vladimír Kočí, PhD., vladimir.koci@lca.cz

Approved by: The International EPD® System

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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data and etc. For further information about comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION

Owner of the EPD:



UAB VMG Lignum
construction



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Vilma Burškytė



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Description of the organisation:

UAB VMG Lignum construction, established 2020, as part of VMG group. VMG group is group from 25 companies with 5000 employees. Core activities of our company – production of construction particle boards, middle of this year start production of LVL and I joist for construction markets.

The mission of the VMG group is the way to a sustainable home. Sustainable development, innovation, quality, flexibility, and attention to customers are key values of whole VMG group.

Product-related or management system-related certifications:

VMG Lignum Joist has CE marking and represents that products comply with the EU's New Approach Directives. Joist produced and certified in compliance with EAD 130367-00-0304 Composite wood-based beams and columns.

Company has ISO certification with certification for both ISO 9001:2015 (Quality Standard) and ISO 14001:2015 (Environmental Standard), ISO 45001:2018 (Occupational health and safety management systems Standard).

Name and location of production site(s):

UAB VMG Lignum constructions
Ryto g. 4, Menčių km. Akmenės r.

PRODUCT INFORMATION

Product name: VMG LIGNUM JOIST

Product description: VMG Lignum Joist (also known as double beam or Joist, I-beam) is an engineered wood product that can be used in various ways in structures and buildings. The double beam is mostly used for horizontal constructions, such as roofs, slabs between floors, less often for vertical constructions, such as wall studs. VMG Lignum Construction

manufactures VMG Lignum Joist from VMG Lignum LVL flanges and VMG Lignum Board P5 or OSB3 webs. In different buildings

VMG LIGNUM JOIST are used for:

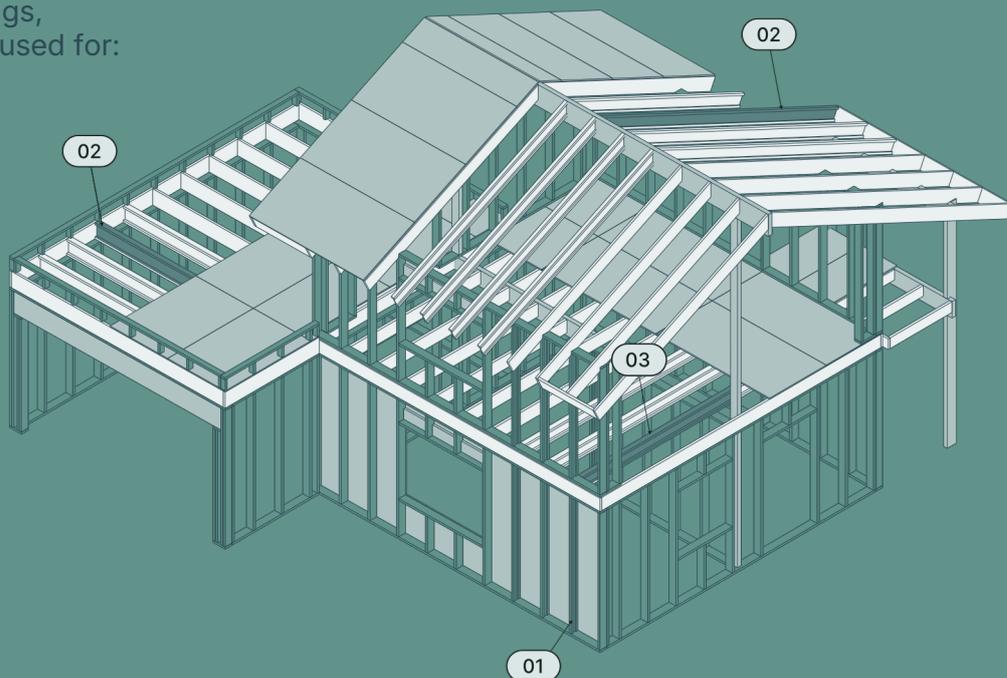
- (1) wall studs,
- (2) roof beams
- (3) floor beams



PRODUCT USE:

In light-structure buildings,
VMG LIGNUM JOIST is used for:

- ① wall studs
- ② roof rafters
- ③ ceiling beams



Technical characteristics:

Products are available in various sizes and lengths.

Marginal dimensions:

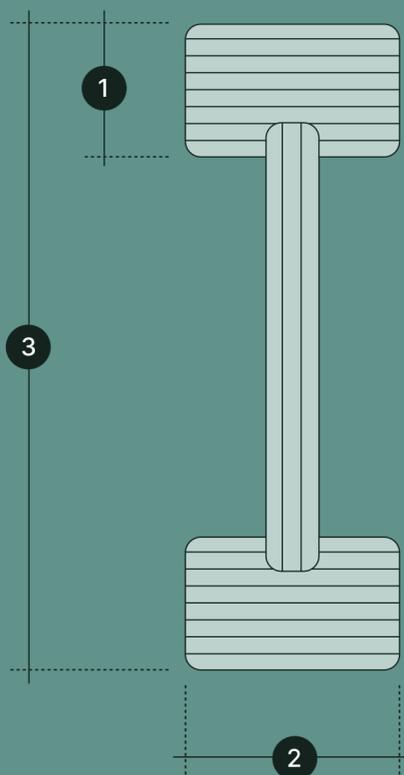
- ① Width 45-90 mm,
- ② Web thickness 8-10 mm,
- ③ Height 200-400 mm.

UN CPC code:

31600

Geographical scope:

Europe



LCA INFORMATION

DECLARED UNIT:

The declared unit is 1 m' (running meter) of VMG Construction joist, that weight 3,73 kg.

REFERENCE SERVICE LIFE: The service life is the same as for the building, and it is usually set at 60 years.

TIME REPRESENTATIVENESS:

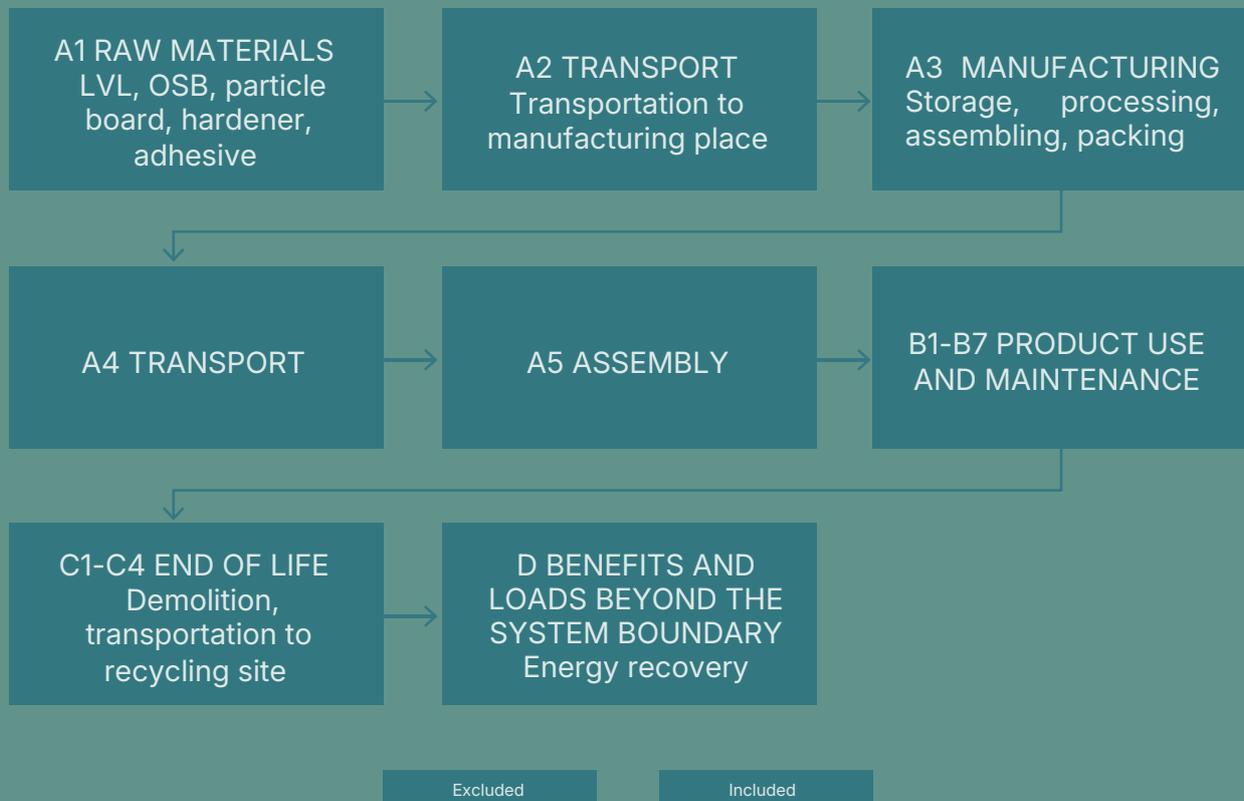
Primary data was collected internally. Reporting year -2024, this is the last full year.

DATABASE(S) AND LCA SOFTWARE USED:

The Ecoinvent database v.3.10.1 provides the life cycle inventory data for the raw and process materials obtained from the background system. The LCA software used is One Click LCA. The Characterization Factors used in this report is based on Environmental Footprint (EF) 3.1.

DESCRIPTION OF SYSTEM BOUNDARIES: This EPD covers the cradle to gate with options scope with the following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

SYSTEM DIAGRAM:



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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	demolition	De-construction	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	MND	MND	MND	MND	MND	MND	MND		X	X	X	X	X	
Geography	EU	EU	LT	EU	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU	
Specific data used	5,39%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-	-

Description of the system boundary (X = Included in LCA; MND = Module Not declared)

DATA QUALITY: The foreground data collected internally is based on one year production amounts and extrapolations of measurements on specific machines and plants. Overall, the data quality can be described as good. The primary data collection has been done thoroughly.

CUT-OFF CRITERIA:

Life cycle inventory data for a minimum of 99% of total material and energy input flows have been included in the life cycle analysis. However, only materials having in summa less than 1% of the weight of the product were not used in calculations.

PRODUCT STAGE:

A1: This module considers the extraction and processing of raw materials and energy consumption. Raw materials as LVL and particle board are produced in the same company and have published EPDs.

A2: The raw materials are transported to the manufacturing plant. In this case, the model includes road transportation of each raw material.

A3: This module includes the manufacture of products and packaging. It also considers the energy consumption and waste generated at the production plant. Product manufacturing consist of LVL and OSB/particle boards processing, assembly, joist grading, palletizing, and packaging.

CONSTRUCTION PROCESS STAGE:

A4: This module includes transport from the production gate to the construction site where the product shall be installed. The transportation doesn't cause losses as products are packaged properly.

A5: module is not declared. .

Use stage: Not declared.

END OF LIFE STAGE:

C1: It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. Consumption of fuel in demolition process is calculated according to product mass. Energy consumption for demolition considered the use of power tools as electric screwdriver or manpower, therefore impact is neglected.

C2: Transport of the discarded product to the processing site. It is estimated that there is no mass loss during the use of the product, therefore, the end-of-life product is assumed that it has the same weight as the declared product. All the end-of-life product is assumed to be sent to the closest facilities, such as recycling. Transportation distance to the closest disposal area is estimated as 100 km and the transportation method is lorry which is the most common.

C3: Waste processing for reuse, recovery and/or recycling. Wood is a highly recyclable material; it is assumed that 100% of the product is collected separately at demolition site and send directly to incineration facility with energy recovery.

C4: It is assumed that 100% of the product is collected at the construction site and sent for incineration, so no input in module C4.

BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D): The benefits of recyclable waste generated in module C3 are considered in module D. The heat production as a benefit when the product is incinerated in module C3 is considered.



CONTENT INFORMATION

Material	Weight, kg	Weight, %	Post consumer %	Renewable %	Country / Region of origin
LVL	2,25	60,32	0	100	EU
Particle board	0,24	6,43	0	100	EU
OSB	1,19	31,90	0	100	EU
Adhesive	0,03	0,80	0	0	EU
Hardener	0,02	0,54	0	0	EU
Total	3,73	100	0	98,66	EU
Packaging material	Weight, kg	Weight % (versus the product)	Weight biogenic carbon, kg C		
PET film	0,01	0,27	0		
Eur-flat pallet	0,01	0,27	0,02		
Total	0,02	0,54	0,02		

No dangerous substances from the candidate list of SVHC for Authorisation are present in concentrations greater than 0.1% by weight in the product.



RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

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. NB: it is discouraged to use the results of modules A1-A3 without considering the results of module C when module C is declared.

MANDATORY IMPACT CATEGORY INDICATORS ACCORDING TO EN 15804+A2, EFl

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-total	kg CO ₂ e	-4,14E+00	6,63E-02	0,00E+00	4,02E-02	6,54E+00	0,00E+00	-1,57E+00
GWP-fossil	kg CO ₂ e	2,34E+00	6,63E-02	0,00E+00	4,01E-02	5,79E-02	0,00E+00	-1,57E+00
GWP-biogenic	kg CO ₂ e	-6,49E+00	0,00E+00	0,00E+00	0,00E+00	6,49E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO ₂ e	4,83E-03	2,49E-05	0,00E+00	1,80E-05	1,60E-05	0,00E+00	-1,32E-04
ODP	kg CFC-11e	1,79E-07	1,33E-09	0,00E+00	5,93E-10	6,50E-10	0,00E+00	-4,66E-08
AP	mol H ⁺ e	1,29E-02	2,14E-04	0,00E+00	1,37E-04	6,01E-04	0,00E+00	-1,84E-03
EP-freshwater	kg Pe	-9,98E-02	4,47E-06	0,00E+00	3,13E-06	2,51E-05	0,00E+00	-3,44E-05
EP-marine	kg Ne	4,09E-03	7,27E-05	0,00E+00	4,50E-05	3,19E-04	0,00E+00	-6,60E-04
EP-terrestrial	mol Ne	3,79E-02	7,91E-04	0,00E+00	4,89E-04	3,07E-03	0,00E+00	-7,12E-03
POCP	kg NMVOCe	1,46E-02	3,49E-04	0,00E+00	2,02E-04	7,71E-04	0,00E+00	-4,18E-03
ADP - minerals & metals*	kg Sbe	2,19E-05	1,83E-07	0,00E+00	1,12E-07	1,19E-07	0,00E+00	-1,37E-06
ADP-fossil*	MJ	4,78E+01	9,60E-01	0,00E+00	5,83E-01	5,13E-01	0,00E+00	-2,47E+01
WDP*	m ³ e depr.	3,13E+00	4,92E-03	0,00E+00	2,88E-03	1,22E-01	0,00E+00	-1,07E-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 of these results are higher as there is limited experience with the indicator.

Reading example: 6,42E-1 refers to 0,642.

ADDITIONAL MANDATORY IMPACT CATEGORY INDICATORS – GWP-GHG*

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG	kg CO2e	2,35E+00	6,63E-02	0,00E+00	4,02E-02	5,79E-02	0,00E+00	-1,57E+00

* This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator is almost equal to the GWP indicator originally defined in EN 15804: 2012+A1: 2013.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Particulate matter	Incidence	2,12E-07	6,60E-09	0,00E+00	4,02E-09	6,73E-09	0,00E+00	-7,54E-09
Ionizing radiation ⁴⁾	kBq U235e	1,44E-01	1,16E-03	0,00E+00	5,07E-04	5,85E-04	0,00E+00	-7,86E-03
Ecotoxicity (freshwater) Human	CTUe	5,10E+01	1,13E-01	0,00E+00	8,24E-02	3,93E-01	0,00E+00	-7,32E-01
toxicity, cancer Human tox. non-cancer	CTUh	4,07E-09	1,09E-11	0,00E+00	6,63E-12	1,08E-10	0,00E+00	-1,77E-10
	CTUh	3,48E-08	6,24E-10	0,00E+00	3,77E-10	7,26E-09	0,00E+00	-2,61E-09
SQP ⁵⁾	-	4,27E+02	9,67E-01	0,00E+00	5,87E-01	1,44E-01	0,00E+00	-6,34E-01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

RESOURCE USE INDICATORS

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	4,42E+01	1,56E-02	0,00E+00	7,98E-03	-6,32E+01	0,00E+00	-9,23E-02
PERM	MJ	6,85E+01	0,00E+00	0,00E+00	0,00E+00	-6,32E+01	0,00E+00	0,00E+00
PERT	MJ	1,13E+02	1,56E-02	0,00E+00	7,98E-03	-1,32E+02	0,00E+00	-9,23E-02
PENRE	MJ	3,55E+01	9,60E-01	0,00E+00	5,83E-01	5,13E-01	0,00E+00	-2,47E+01
PENRM	MJ	1,10E+01	0,00E+00	0,00E+00	0,00E+00	-1,10E+01	0,00E+00	0,00E+00
PENRT	MJ	4,65E+01	9,60E-01	0,00E+00	5,83E-01	-1,05E+01	0,00E+00	-2,47E+01
SM	kg	1,19E-02	4,16E-04	0,00E+00	2,48E-04	1,20E-03	0,00E+00	-4,05E-03
RSF	MJ	1,47E-02	5,24E-06	0,00E+00	3,15E-06	2,84E-06	0,00E+00	-6,74E-06
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	9,14E-02	1,42E-04	0,00E+00	8,61E-05	7,49E-04	0,00E+00	-2,70E-03
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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.							

WASTE INDICATORS

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	1,26E-01	1,39E-03	0,00E+00	9,87E-04	2,41E-02	0,00E+00	-2,78E+00
Non-hazardous waste	kg	4,91E+01	2,78E-02	0,00E+00	1,83E-02	3,83E+00	0,00E+00	-2,92E-01
Radioactive waste	kg	5,93E-05	2,86E-07	0,00E+00	1,24E-07	1,46E-07	0,00E+00	-1,95E-06

OUTPUT FLOW INDICATORS

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00						
Materials for recycling	kg	5,70E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	1,53E-01	0,00E+00	0,00E+00	0,00E+00	3,73E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E+01	0,00E+00	0,00E+00

INFORMATION ON BIOGENIC CARBON CONTENT

Results per declared unit		
Biogenic carbon content	Unit	Quantity
Biogenic carbon content in product	kg C	1,20
Biogenic carbon content in packaging	kg C	0,02



SCENARIO DOCUMENTATION

MANUFACTURING ENERGY SCENARIO DOCUMENTATION

Scenario parameter	GWP (A1-A3) value	Source
Green electricity Lithuania (modelled based on GO): 48% hydro 43% wind 14% solar 18% biomass	0,021 kg CO ₂ e/kWh	Electricity production, hydro, run-of-river (Reference product: electricity, high voltage). Lithuania. Ecoinvent 3.10.1 Electricity production, wind, >3mw turbine, onshore (Reference product: electricity, high voltage) Lithuania. Ecoinvent 3.10.1 Electricity production, photovoltaic, 3kwp slanted-roof installation, multi-si, panel, mounted (Reference product: electricity, low voltage) Lithuania. Ecoinvent 3.10.1 Heat and power co-generation, wood chips, 6667 kw (Reference product: electricity, high voltage) Lithuania. Ecoinvent 3.10.1
Petrol for forklifts	0.0524 kg CO ₂ e / kWh	Market for petrol, unleaded, burned in machinery (Reference product: petrol, unleaded, burned in machinery) Ecoinvent 3.10.1
Diesel for forklifts	0.1 kg CO ₂ e / MJ	Market for diesel, burned in building machine (Reference product: diesel, burned in building machine) Ecoinvent 3.10.1

TRANSPORT SCENARIO DOCUMENTATION (A4)

Parameter	Value/Description
Vehicle type used for transport	EURO 5 truck with a trailer with an average load of >32t;
Distance	100 % of production: Truck – 165 km.
Capacity utilization	56 % of the capacity in volume (truck)

END OF LIFE SCENARIO DOCUMENTATION (C1-C4)

Scenario parameter	Value
Collection process – kg collected separately	3,73 kg
Collection process – kg collected with mixed waste	–
Recovery process – kg for re-use	–
Recovery process – kg for recycling	–
Recovery process – kg for energy recovery	3,73 kg
Disposal (total) – kg for final deposition	–
Scenario assumptions e.g. transportation	Dismantled product is transported 100 km

REFERENCES

GeneralProgrammeInstructions of the International EPD® System. Version 4.0.

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations Principles and procedures. ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks. ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines. EN 15804+A2 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products. PCR 2019:14 Construction products (version 1.3.2) c-PCR-006 Wood and wood-based products for use in construction (EN 16485:2014) Version 2019-12-20 One Click LCA tool Ecoinvent 3.10.1 database

DIFFERENCE VERSUS PREVIOUS VERSIONS

2024-04-03 Version 1

2025-10-07 Version 1.1.

Major update: EPD recalculated for full reference year. Product composition updated. Added EoL scenario documentation. Share of specific data updated. Additional optional results were calculated.