ENVIRONMENTAL PRODUCT DECLARATION

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

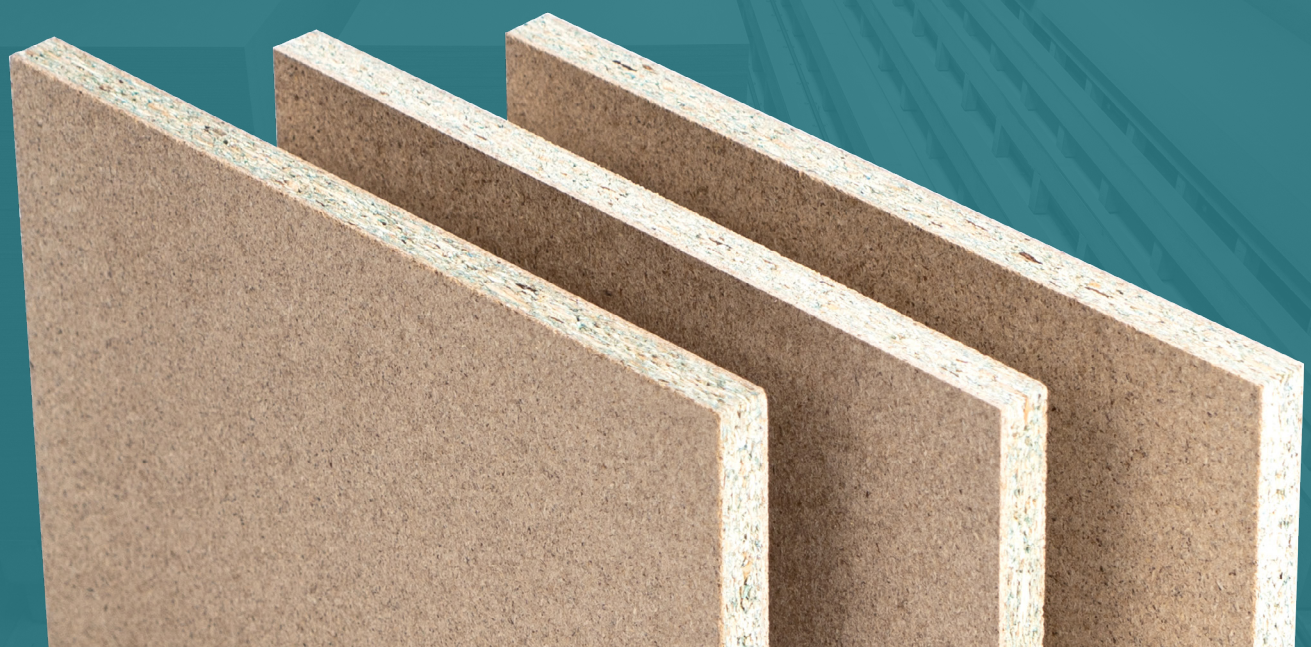
PARTICLE BOARD

from
UAB “VMG Wood solutions”

VMG WOOD SOLUTIONS

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-11268
Publication date:	2024-02-08
Valid until:	2029-02-07

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



VMG WOOD SOLUTIONS

EPD®

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:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 15804+A2 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

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; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION

Owner of the EPD:

VMG WOOD SOLUTIONS

UAB VMG Wood Solutions

Phone: +370 46 469 508

Contact person: Vilma Burškytė

Email: vilma.burskyte@vmg.eu

Description of the organisation:
UAB VMG WOOD SOLUTION is a new legal entity in 2023 demerged from the oldest company of the VMG group – AB KLAIPĖDOS MEDIENA founded in 1898. In the beginning AB KLAIPĖDOS MEDIENA produced wooden boxes for cigars. Later, one of the first companies in the region introduced the production of chipboard and plywood. Separate plant for particle boards (MDPGA department) was opened in 2020 September. Main activity is particle board production for furniture manufacturing. In 2023 August MDPGA department became separate company AB VMG Wood Solutions. All activities kept the same. Company have around 140 employees.

Product-related or management system-related certifications:
The company has implemented quality management in accordance with the standard requirements of LST EN ISO 9001: 2015 and environmental management standards in accordance with the requirements of LST EN ISO 14001: 2015. Product raw material – wood, comes from sustainable managed forests.

Name and location of production site(s):
Menčių vlg., Akmenės distr., Lithuania

PRODUCT INFORMATION

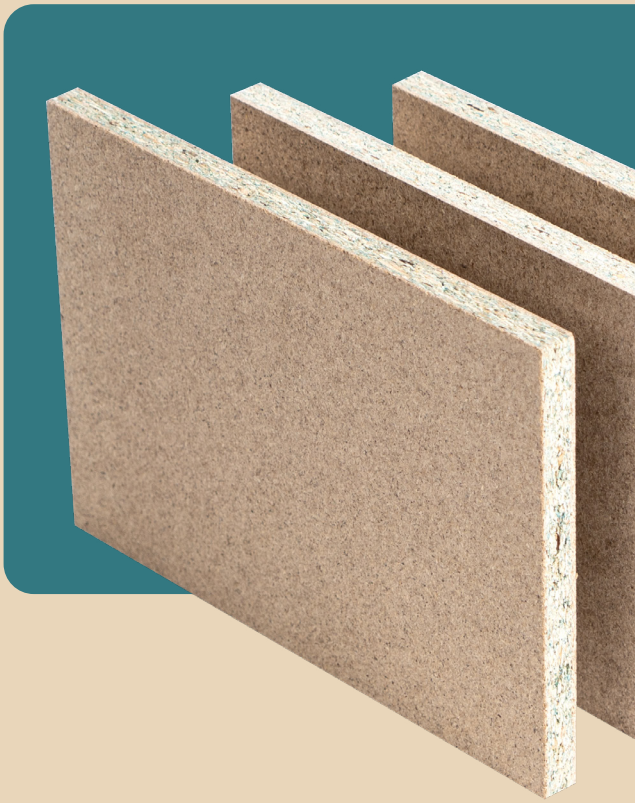
Product name: PARTICLE BOARD

Product description:
Particle board (furniture production) produced by pressing wood chips reduced to a required fraction flake, then mixed with the required chemical components (resin, hardener, wax, formaldehyde scavenger). In particle board are different layers. After pressing process, particle boards are sanded and cut to size what is needed. Furniture particle boards are produced according EN312:210 standard, IOS-MAT-0162.

Product is available in various sizes:
thickness: 3-40 mm, width: 1830-2500 mm,
length: 1220-5600 mm.

UN CPC code: 3143

Geographical scope: Europe



LCA INFORMATION

Declared unit:
The declared unit is 1 m^3 of particle board. Particle boar density is in between 600-650 kg/m^3.

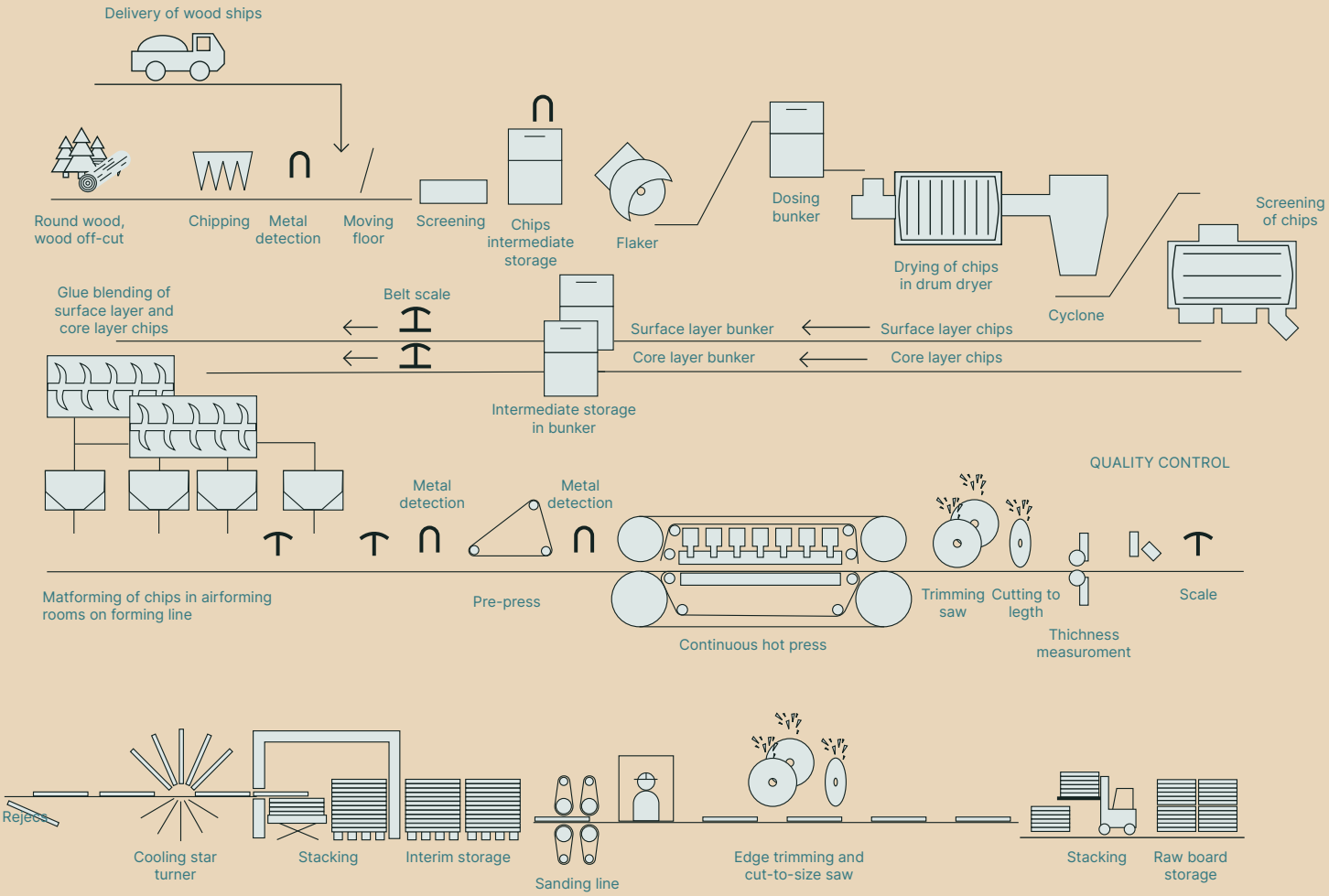
Reference service life:
The service life is the same as for the building, and it is usually set at 60 years.

Time representativeness:
Primary data was collected internally. Product recently on the market – LCI data is not yet based on 1 year of production.

Database(s) and LCA software used:
The Ecoinvent database v.3.8 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.

Description of system boundaries:
This EPD covers the cradle to gate with options, and covers 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, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	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	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	MND	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	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
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 two-month 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. Softwood logs and chips are delivered to manufacture from sustainable managed forests.

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.

VMG WOOD SOLUTIONS

EPD®

PRODUCTION PROCESS DESCRIPTION

Round wood is chipped to flakes fraction in several stages. The chips are dried and screen into two different fractions. Finer fractions flakes go to the surface layer of the particle board, and the courser fractions flakes – for the core layer. Each fraction flakes are mixed with chemical components and transported to forming machines. Four forming machines form a mat of resinated flakes which consists of three layers: two surface layers and one core layer. The material is transported to a hot press. In the press, there are pressing and heating processes. The raw boards after press are trimmed, cut to master size and then transported to the cooling and stacking area. After that particle board is sanded and cut-to-final size as ordered. The stacks are packed in the packaging line. Already packed stacks are transported to the finished product warehouse by forklifts. All production waste is used in production as fuel or raw material.

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: This module includes product deconstruction, dismantling, and demolition. Consumption of fuel in the demolition process is calculated according to transported mass. Energy consumption for demolition is assumed to be 0,150 kWh for 1 m^3 (Bozdağ, Ö & Seçer, M (2007) and the Level(s) project). The source of energy is diesel fuel used by construction machinery.

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 50 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.

VMG WOOD SOLUTIONS

EPD®

CONTENT INFORMATION

Product components	Weight,%	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Wood chips (softwood)	82-87	0	82-87
UF/MUF resin	8-12	0	0
Hardener	2-5	0	0
Paraffin	0,2-0,6	0	0
Water	4-7	0	0
Total	**100**	**0**	**82-87**

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Paper	0,02	0,003	0
PET film	0,04	0,006	0
Wood	1,26	0,204	3,92E-01
Total	**1,32**	**0,213**	**3,92E-01**

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

VMG WOOD SOLUTIONS

EPD®

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

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-total	kg CO_2eq.	-7,18E+02	9,49E+00	4,97E-02	2,91E+00	9,71E+01	0,00E+00	-2,14E+02
GWP-fossil	kg CO_2eq.	2,41E+02	9,58E+00	4,9+E-02	2,90E+00	9,50E+00	0,00E+00	-2,14E+02
GWP-biogenic	kg CO_2eq.	-9,60E+02	3,71E-03	9,10E-06	1,12E-03	9,71E+02	0,00E+00	-2,78E-02
GWP-LULUC	kg CO_2eq.	5,58E+00	3,54E-03	4,94E-06	1,07E-04	1,72E-03	0,00E+00	-6,12E-03
ODP	kg CFC 11 eq.	4,87E-05	2,20E-06	1,06E-08	6,68E-07	6,58E-07	0,00E+00	-3,14E-05
AP	mol H^+eq.	1,32E+00	4,06E-02	5,16E-04	1,23E-02	1,01E-02	0,00E+00	-2,33E-01
EP-freshwater	kg Pe eq.	7,69E-03	7,85E-05	1,64E-07	2,38E-05	1,29E-04	0,00E+00	-1,88E-04
EP-marine	kg Ne eq.	3,07E-01	1,217E-02	2,28E-04	3,65E-03	4,81E-02	0,00E+00	-7,57E-02
EP-terrestrial	mol Ne eq.	3,58E+00	1,33E-01	2,50E-03	4,03E-02	5,11E-01	0,00E+00	-8,29E-01
POCP	kg NMVOCe	9,48E-01	4,26E-02	6,89E-04	1,29E-02	1,26E-01	0,00E+00	-2,62E-01
ADP- minerals &metals*	kg Sb eq.	4,18E-03	2,25E-05	2,52E-08	6,81E-05	2,60E-05	0,00E+00	-2,12E-04
ADP-fossil*	MJ	5,61E+03	1,44E+02	6,68E-01	4,36E+01	8,12E+01	0,00E+00	-3,56E+03
WDP*	m^3	4,50E+03	6,44E+02	1,79E-03	1,95E-01	4,13E+01	0,00E+00	-1,44E+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 high or as there is limited experience with the indicator.

ADDITIONAL MANDATORY AND VOLUNTARY IMPACT CATEGORY INDICATORS

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2eq.	2,41E+02	9,58E+00	4,96E-02	2,90E+00	9,50E+00	0,00E+00	-2,14E+02

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 CO2 is set to zero.

RESOURCE USE INDICATORS

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	8,71E+03	1,62E+00	3,82E-03	4,91E+01	7,49E+03	0,00E+00	-6,07E+00
PERM	MJ	7,49E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,46E+04
PERT	MJ	1,62E+04	1,62E+00	3,82E-03	4,91E-01	7,49E+03	0,00E+00	-6,07E+00
PENRE	MJ	4,58E+03	1,44E+02	6,68E-01	4,36E+01	1,14E+03	0,00E+00	-3,56E+03
PENRM	MJ	1,06E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	5,64E+03	1,44E+02	6,68E-01	4,36E+01	1,14E+03	0,00E+00	-3,56E+03
SM	kg	1,30E+00	4,00E-02	2,61E-04	1,21E-02	1,94E-01	0,00E+00	-1,89E-01
RSF	MJ	4,35E-01	4,03E-04	8,54E-07	1,22E-04	4,57E-04	0,00E+00	-4,86E-04
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	9,47E+00	1,86E-02	4,06E-05	5,65E-03	1,31E-01	0,00E+00	-3,41E-01
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							

WASTE INDICATORS

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	1,06E+01	1,91E-01	8,94E-04	5,78E-02	0,00E+00	0,00E+00	-1,17E+00
Non-hazardous waste	kg	1,85E+02	3,14E+00	6,28E-03	9,50E-01	0,00E+00	0,00E+00	-8,33E+00
Radioactive waste	kg	9,66E-03	9,63E-04	4,70E-06	2,92E-04	0,00E+00	0,00E+00	-2,04E-03

OUTPUT FLOW INDICATORS

Indicator	Unit	A1-A3	A4	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
Materials for recycling	kg	1,50E-01	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	6,19E+02	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	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	0,00E+00	0,00E+00

BIOGENIC CONTENT

Results per declared unit		
Biogenic carbon content	**Unit**	**Quantity**
Biogenic carbon content in product	kg C	2,50E+02
Biogenic carbon content in packaging	kg C	3,92E-01

SCENARIO DOCUMENTATION

MANUFACTURING ENERGY SCENARIO DOCUMENTATION

Scenario parameter	Value	%, of Lithuanian green electricity mix
Electricity data source and quality	Electricity production, hydro, run-of-river (Reference product: electricity, high voltage). Lithuania. Ecoinvent 3.8.	
Electricity (hydro) CO_2e / kWh	0,004	26,11
Electricity data source and quality	Electricity production, wind, >3mw turbine, onshore (Reference product: electricity, high voltage) Lithuania. Ecoinvent 3.8.	
Electricity (wind) CO_2e / kWh	0,021	51,77
Electricity data source and quality	Electricity production, photovoltaic, 3kwp slanted-roof installation, multi-si, panel, mounted (Reference product: electricity, low voltage) Lithuania. Ecoinvent 3.8.	
Electricity (photovoltaic) CO2e / kWh	0,094	3,99
Electricity data source and quality	Heat and power co-generation, wood chips, 6667 kw (Reference product: electricity, high voltage) Lithuania. Ecoinvent 3.8.	
Electricity (biomass) CO2e / kWh	0,064	18,14

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)

REFERENCES

General Programme Instructions of the International EPD® System. Version 4.0.

ISO 14020:2000 Environmental labels and declarations – General principles

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

Bozdağ, Ö and Seçer, M., Energy consumption of RC buildings during their life cycle. Izmir, Dokuz University (2007) and the Level(s) project.