

VMG LIGNUM CONSTRUCTION ENVIRONMENTAL PRODUCT DECLARATION



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

**Load-bearing construction particle
boards**

From:

UAB VMG Lignum construction



VMG

VMG LIGNUM BOARD

Programme:

The International EPD® System,
www.environdec.com

Programme Operator:

EPD International AB

EPD Registration Number:

S-P-08896

Publication Date:

2023-04-06

Valid Until:

2028-04-05



VMG

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

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 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): Construction products 2019:14 Version 1.2.5, 2022-11-20; 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

UN CPC code of 3143

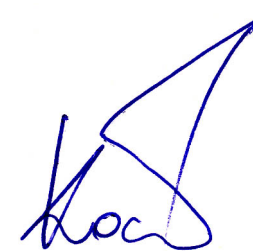
Life Cycle Assessment (LCA)

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: 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

- Phone: +370 46 469 508
- Contact person: Vilma Burškytė
- Email: vilma.burskyte@vmg.eu

Description of the organisation: The main goal of VMG Lignum Construction, which was founded in 2020, is to focus on the production of sustainable wood products for construction and to look for environmentally friendly solutions. Currently, the company's product range consists of VMG Lignum Board (construction chipboard). Core activities of our company - production of construction particle boards and the start of production of LVL and I joist for construction markets in the nearest future.

Product-related or management system-related certifications: Particle board has CE marking and represents that products comply with the EU's New Approach Directives. Particle boards are manufactured in compliance with these European standards which specify all requirements for factory made, technical parameters:

- a) EN 13986
- b) EN 312

Name and location of production site(s): UAB VMG Lignum construction (Ryto g. 4, Menčių km. Akmenės r.).

Product information

Product name: Load-bearing construction particle boards.

Product description: Our particle board with tongue and groove ends produced from raw plates. The main process is to cut raw boards into necessary width and length boards and cut out tongue and groove connections on 2 or 4 sides.

Particle boards can be used widely for all kinds of buildings, for floors, walls and roofs. At the same time, boards can be used and for other purposes as helping materials in building industry.

VMG Lignum Board | Floor can be used as a subfloor (Service class 1&2).

VMG Lignum board Floor T&G4 P4-P7, thickness 8mm, 10mm, 12mm, 18 mm, 22 mm, 25mm, 38 mm plates measurements: 300 - 1200mm. Density 630-700 kg / m³.

UN CPC code: 3143.

Geographical scope: Europe.

LCA INFORMATION

Declared unit: The declared unit is 1 m³ of construction chipboard with an average weight of 677,9 kg/m³.

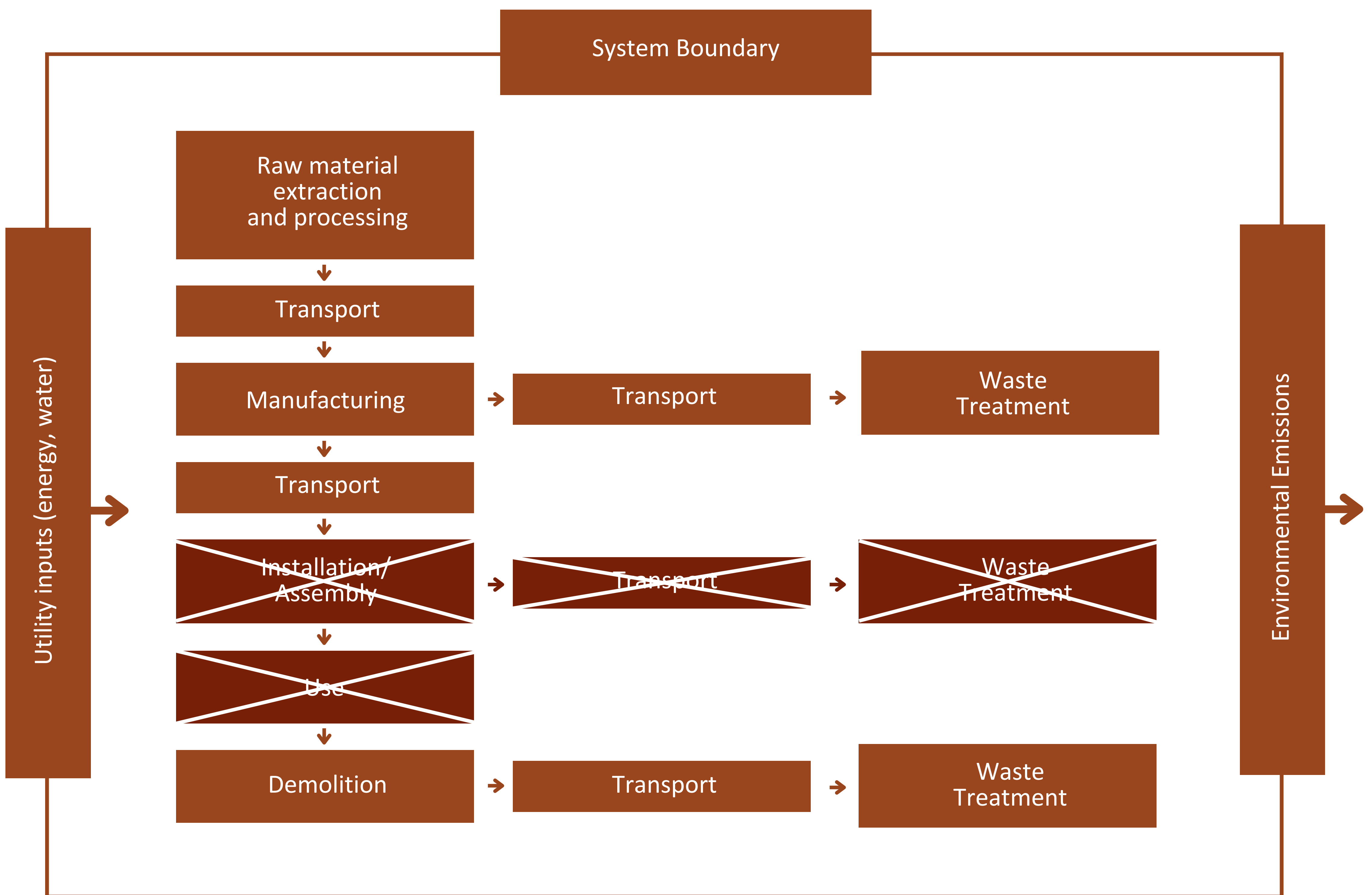
Reference service life: The service life is the same as for the building, and it is usually set at 60 years.

Time representativeness: Primary data was collected internally. The production data refers to the average for the year 2022.

Database(s) and LCA software used: The Ecoinvent database v.3.6 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 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 are included.

System diagram:



LCA INFORMATION

Modules declared, geographical scope, 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	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	
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	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
VARIATION – SITES	NOT RELEVANT			-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Data quality: The foreground data collected internally is based on yearly 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 in summa less than 1% of the product's weight were not used in calculations.

Product stage:

A1: This module considers the extraction and processing of raw materials and energy consumption.

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 process description

Received raw boards supplied for cutting and profiling to automatised production line. At the end of the line, cut to length and with profiled edges, boards are packed to pallets and delivered to prepared product storage.

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 m³. 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 the demolition site and sent directly to an 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

PRODUCT COMPONENTS	WEIGHT, KG	POST-CONSUMER MATERIAL, WEIGHT-%	RENEWABLE MATERIAL, WEIGHT -%
CONSTRUCTION CHIPBOARDS	677,86	0	85
TOTAL	677,86	0	85
CARDBOARD	1,24	0,18	
PLASTIC	0,18	0,02	
TOTAL	1,42	0,20	

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

Mandatory impact category indicators according to EN 15804+A2

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
GWP-TOTAL	KG CO2E	-8,39E2	4,09E0	1,53E2	-6,82E2	4,62E1	4,95E-2	3,08E0	9,73E2	0E0	-4,99E1
GWP-FOSSIL	KG CO2E	2,65E2	4,08E0	1,01E1	2,79E2	4,62E1	4,94E-2	3,08E0	9,84E0	0E0	-4,99E1
GWP-BIOGENIC	KG CO2E	-1,1E3	3,13E-3	1,43E2	-9,62E2	2,56E-2	1,38E-5	2,24E-3	9,63E2	0E0	-8,42E-3
GWP-LULUC	KG CO2E	5,01E-1	1,27E-3	6,95E-2	5,72E-1	1,65E-2	4,18E-6	9,27E-4	1,91E-3	0E0	-1,14E-3
ODP	KG CFC-11E	4,22E-5	9,55E-7	3,54E-6	4,66E-5	1,06E-5	1,07E-8	7,24E-7	7,91E-7	0E0	-7,33E-6
AP	MOL H+E	1,98E0	1,78E-2	1,21E-1	2,12E0	4,33E-1	5,17E-4	1,29E-2	1,11E-1	0E0	-4,58E-2
EP-FRESHWATER	KG PE	7,35E-3	3,44E-5	1,03E-3	8,41E-3	3,43E-4	2E-7	2,51E-5	1,32E-4	0E0	-4,02E-5
EP-MARINE	KG NE	2,48E-1	5,35E-3	3,73E-2	2,91E-1	1,16E-1	2,28E-4	3,9E-3	5,25E-2	0E0	-1,4E-2
EP-TERRESTRIAL	MOL NE	5,73E0	5,91E-2	4,1E-1	6,2E0	1,29E0	2,51E-3	4,31E-2	5,59E-1	0E0	-1,53E-1
POCP	KG NMVOCE	7,9E-1	1,88E-2	1,19E-1	9,28E-1	3,66E-1	6,89E-4	1,38E-2	1,37E-1	0E0	-5,09E-2
ADP-MINERALS&METALS*	KG SBE	5,38E-3	6,91E-5	2,11E-4	5,66E-3	7,01E-4	7,55E-8	5,26E-5	1,3E-4	0E0	-1,34E-5
ADP-FOSSIL*	MJ	4,32E3	6,34E1	3,7E2	4,75E3	6,95E2	6,81E-1	4,79E1	8,64E1	0E0	-8,29E2
WDP*	M3E DEPR.	4,39E2	2,39E-1	4,98E3	5,42E3	2,39E0	1,27E-3	1,78E-1	-7,64E0	0E0	-7,28E0
ACRONYMS	<p><u>GWP-FOSSIL</u> = GLOBAL WARMING POTENTIAL FOSSIL FUELS; <u>GWP-BIOGENIC</u> = GLOBAL WARMING POTENTIAL BIOGENIC; <u>GWP-LULUC</u> = GLOBAL WARMING POTENTIAL LAND USE AND LAND USE CHANGE; <u>ODP</u> = DEPLETION POTENTIAL OF THE STRATOSPHERIC OZONE LAYER; <u>AP</u> = ACIDIFICATION POTENTIAL, ACCUMULATED EXCEEDANCE; <u>EP-FRESHWATER</u> = EUTROPHICATION POTENTIAL, FRACTION OF NUTRIENTS REACHING FRESHWATER END COMPARTMENT; <u>EP-MARINE</u> = EUTROPHICATION POTENTIAL, FRACTION OF NUTRIENTS REACHING MARINE END COMPARTMENT; <u>EP-TERRESTRIAL</u> = EUTROPHICATION POTENTIAL, ACCUMULATED EXCEEDANCE; <u>POCP</u> = FORMATION POTENTIAL OF TROPOSPHERIC OZONE; <u>ADP-MINERALS&METALS</u> = ABIOTIC DEPLETION POTENTIAL FOR NON-FOSSIL RESOURCES; <u>ADP-FOSSIL</u> = ABIOTIC DEPLETION FOR FOSSIL RESOURCES POTENTIAL; <u>WDP</u> = <u>WATER</u> (USER) DEPRIVATION POTENTIAL, DEPRIVATION-WEIGHTED WATER CONSUMPTION</p>										

**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.*

Environmental impacts - GWP-GHG

IMPACT CATEGORY	UNIT	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG	KG CO2E	2,65E2	4,08E0	1,01E1	2,79E2	4,62E1	4,94E-2	3,08E0	9,84E0	0E0	-4,99E1

Environmental impacts – EN 15804+A1, CML / ISO 21930

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
GLOBAL WARMING POT.	KG CO2E	2,57E2	4,05E0	9,68E0	2,71E2	4,58E1	4,91E-2	3,05E0	9,64E0	0E0	-4,86E1
OZONE DEPLETION POT.	KG CFC-11E	3,35E-5	7,6E-7	2,88E-6	3,71E-5	8,4E-6	8,45E-9	5,76E-7	6,65E-7	0E0	-5,46E-6
ACIDIFICATION	KG SO2E	1,39E0	8,88E-3	7,98E-2	1,48E0	2,96E-1	7,3E-5	6,27E-3	7,7E-2	0E0	-3,6E-2
EUTROPHICATION	KG PO43E	3,31E-1	1,79E-3	2,23E-2	3,55E-1	4,02E-2	1,29E-5	1,27E-3	8,65E-2	0E0	-5,97E-3
POCP ("SMOG")	KG C2H4E	8,58E-2	5,39E-4	4,09E-3	9,04E-2	1,05E-2	7,52E-6	3,97E-4	1,6E-3	0E0	-3,22E-3
ADP-ELEMENTS	KG SBE	5,38E-3	6,91E-5	2,11E-4	5,66E-3	7,01E-4	7,55E-8	5,26E-5	1,3E-4	0E0	-1,34E-5
ADP-FOSSIL	MJ	4,32E3	6,34E1	3,7E2	4,75E3	6,95E2	6,81E-1	4,79E1	8,64E1	0E0	-8,29E2

Resource use indicators

IMPACT CATEGORY	UNIT	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	9,61E2	8,37E-1	7,28E2	1,69E3	8,08E0	3,68E-3	6,03E-1	1,97E0	0E0	-1,25E0
PERM	MJ	1,18E4	0E0	1,28E3	1,31E4	0E0	0E0	0E0	1,03E4	0E0	-1,03E4
PERT	MJ	1,28E4	8,37E-1	2,01E3	1,48E4	8,08E0	3,68E-3	6,03E-1	1,03E4	0E0	-1,03E4
PENRE	MJ	3,2E3	6,34E1	3,61E2	3,63E3	6,95E2	6,81E-1	4,79E1	8,64E1	0E0	-8,29E2
PENRM	MJ	1,12E3	0E0	8,6E0	1,12E3	0E0	0E0	0E0	1,12E3	0E0	-1,12E3
PENRT	MJ	4,32E3	6,34E1	3,7E2	4,75E3	6,95E2	6,81E-1	4,79E1	1,21E3	0E0	-1,95E3
SM	KG	1,09E0	0E0	1,61E-2	1,1E0	0E0	0E0	0E0	0E0	0E0	0E0
RSF	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
NRSF	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
FW	M3	8,48E-1	1,33E-2	5,39E-2	9,16E-1	1,32E-1	6,01E-5	9,98E-3	1,73E-1	0E0	-1,75E-1
ACRONYMS	<p><u>PERE</u> = USE OF RENEWABLE PRIMARY ENERGY EXCLUDING RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS; <u>PERM</u> = USE OF RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS; <u>PERT</u> = TOTAL USE OF RENEWABLE PRIMARY ENERGY RESOURCES; <u>PENRE</u> = USE OF NON-RENEWABLE PRIMARY ENERGY EXCLUDING NON-RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS; <u>PENRM</u> = USE OF NON-RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS; <u>PENRT</u> = TOTAL USE OF NON-RENEWABLE PRIMARY ENERGY RE-SOURCES; <u>SM</u> = USE OF SECONDARY MATERIAL; <u>RSF</u> = USE OF RENEWABLE SECONDARY FUELS; <u>NRSF</u> = USE OF NON-RENEWABLE SECONDARY FUELS; <u>FW</u> = USE OF NET FRESH WATER.</p>										

Waste indicators

IMPACT CATEGORY	UNIT	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
HAZARDOUS WASTE	KG	8,77E0	6,35E-2	4,35E-1	9,27E0	6,88E-1	7,32E-4	4,66E-2	0E0	0E0	-2,44E-1
NON-HAZARDOUS WASTE	KG	2,38E2	6,81E0	1,52E1	2,6E2	6,47E1	7,83E-3	5,15E0	0E0	0E0	-1,74E0
RADIOACTIVE WASTE	KG	1,32E-2	4,35E-4	1,48E-3	1,51E-2	4,79E-3	4,77E-6	3,29E-4	0E0	0E0	-4,76E-4

Output flow indicators

IMPACT CATEGORY	UNIT	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
COMPONENTS FOR RE-USE	KG	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
MATERIALS FOR RECYCLING	KG	0E0	0E0	1E-3	1E-3	0E0	0E0	0E0	0E0	0E0	0E0
MATERIALS FOR ENERGY REC	KG	0E0	0E0	2E-2	2E-2	0E0	0E0	0E0	6,78E2	0E0	0E0
EXPORTED ENERGY	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0

Information on biogenic carbon content

RESULTS PER DECLARED UNIT		
BIOGENIC CARBON CONTENT	UNIT	QUANTITY
BIOGENIC CARBON CONTENT IN PRODUCT	KG C	2,63E2
BIOGENIC CARBON CONTENT IN PACKAGING	KG C	-

REFERENCES

General Programme Instructions 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 1.2.5).

c-PCR-006 Wood and wood-based products for use in construction (EN 16485:2014) Version 2019-12-20.



VMG