



SILROC CALCIUM SILICATE MASONRY PRODUCTS

ENVIRONMENTAL PRODUCT DECLARATION
UAB BAUROC

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EPD registration number: RTS_510_26

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EPD of multiple products,
based on the average results
of the product group

GENERAL INFORMATION

MANUFACTURER

Manufacturer	UAB Bauroc
Address	Statybininkų g. 19, Matuizų k., LT-65480 Varėnos r.
Contact details	bauroc@bauroc.lt
Website	https://bauroc.lt/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	Rakennustieto Oy Malminkatu 16 A, 00100 Helsinki, Finland
Reference standard	EN 15804+A2:2020, based on Environmental Footprint 3.1 and ISO 14025
PCR	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS EPD PCR 2024 is used.
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with option, modules C1-C4 and module D
EPD author	Audrius Budinavičius, UAB Euromatas, Raudondvario pl. 168, LT-47172 Kaunas, Lithuania, www.euromatas.lt
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Sigita Židonienė, UAB Vesta Consulting
Program operator	Rakennustieto Oy Malminkatu 16 A, 00100 Helsinki, Finland

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Silroc calcium silicate masonry products	
Place of production	Lithuania	
Period for data	2025	
GTIN (Global Trade Item Number)	4742213006610	4742213006689
	4742213006627	4742213006696
	4742213006634	4742213006702
	4742213006603	4742213006719
	4742213006641	4742213006726
	4742213006658	4742213006733
	4742213006665	4742213006740
	4742213006672	4742213006757
UN CPC code	37540	

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes 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.

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

UAB Bauroc is part of the Bauroc Group, one of the leading producers of autoclaved aerated concrete (AAC) in the Baltic region and Northern Europe. The Lithuanian plant manufactures AAC blocks for external and internal walls of residential and non-residential buildings. The company applies modern, energy-

efficient production technologies and uses mainly locally sourced raw materials. All products comply with relevant European standards and technical requirements. UAB Bauroc operates according to the principles of sustainable development, continuously improving production efficiency, reducing environmental impact, and promoting circular economy practices.

PRODUCT DESCRIPTION

The product portfolio of SILROC consists of high-quality calcium silicate blocks and bricks manufactured in various dimensions and configurations to meet diverse construction requirements. The products are composed of natural raw materials, primarily sand, quicklime, and water, compacted under high pressure and cured in autoclaves to form a robust crystalline structure.

Due to variations in raw material composition - specifically the higher quicklime content used in the manufacturing of silicate blocks - two distinct product groups are declared in this EPD: silicate blocks and silicate bricks. The detailed product grouping and specifications are presented in following table.

These calcium silicate units are engineered for the construction of both load-bearing and non-load-bearing vertical structures. They are suitable for internal partitions, external envelope walls, and specialized fire-separation barriers across a wide spectrum of building types, including residential, commercial, public, and industrial projects.

The definitive physical and mechanical performance of each unit is determined by its specific product model and dimensions. The product lineup includes various thickness options - such as 240 mm, 180 mm, 150 mm, or 120 mm - allowing for optimized structural thickness, acoustic insulation, and thermal mass capacity depending on project requirements.

PRODUCT APPLICATION

SILROC calcium silicate bricks and blocks are extensively utilized across the construction sector, including single-family and multi-story residential housing, administrative and commercial complexes, institutional facilities, and industrial buildings. The units are specifically designed for the erection of interior and

exterior load-bearing walls, non-load-bearing partitions, firewalls, and other engineered masonry assemblies.

The product range is versatile, serving as an ideal solution for both new construction developments and complex building renovation or modernization projects. In accordance with architectural and structural design blueprints, these products can be laid using either conventional masonry mortars or specialized thin-bed adhesives (thin-layer mortars). All installation and masonry works must be executed in strict compliance with current structural design codes, building regulations, and applicable national standards.

PRODUCT TECHNICAL SPECIFICATIONS AND GROUPING

Product group	Product	Measurements (mm)	Density (kg/m ³)	Thermal conductivity (W/m·K)	Normalized compressive strength (N/mm ²)	Reaction to fire
Silicate blocks	silroc PLUS 120	120x198x250	1275-1600	0,55	≥10/15	A1
	silroc PLUS 150	150x198x250				
	silroc PLUS 180	180x198x250				
	silroc PLUS 240	240x198x250				
	silroc 120	250x120x238				
	silroc 150	250x150x238				
	silroc 180	250x180x238				
	silroc 240	250x240x238				
	silroc 250	250x250x238				
Silicate bricks	silroc BRICK 65	250x120x65	1640-1760	0,55	≥10/15	A1
	silroc BRICK 88	250x120x88				

Further information can be found at <https://bauroc.lt/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	100	LT, EU
Fossil materials	-	-
Bio-based materials	-	-

PRODUCT RAW MATERIAL COMPOSITION

Material	(Silicate blocks) Weight, kg	(Silicate bricks) Weight, kg	Post-consumer material, weight-%	Renewable, %	Material origin
Sand	876	880	0	0	LT
Quicklime	90	86	0	0	EU
Water	33	33	0	0	LT
Bypass dust	1	1	0	0	LT

PACKAGING MATERIALS

Material	Weight, kg	Post-consumer material, weight-%	Renewable, %	Material origin
Wooden pallets	20.77	0	95	LT
Protective stretch	0.65	0	0	LT
Plastic straps	0.10	0	0	LT

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	8,6

DECLARED UNIT

Declared unit	One ton of SILROC Calcium silicate masonry products
Mass per declared unit	1000 kg
Mass of packaging	21,52 kg

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE CYCLE

SYSTEM BOUNDARY

This EPD covers the cradle to gate with options scope with following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), A5 (Assembly) 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.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A 1	A 2	A 3	A 4	A 5	B 1	B 2	B 3	B 4	B 5	B 6	B 7	C1	C2	C3	C 4	D		
x	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = ND.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The primary raw material for manufacturing calcium silicate products is silica-rich quartz sand, which is combined with quicklime CaO and water. Raw materials are delivered to the manufacturing plant in bulk and stored in dedicated silos and covered sand bunkers to prevent environmental contamination and moisture fluctuations. Continuous quality control is performed at this stage to verify the chemical composition, moisture levels, and particle size distribution of the ingredients. To maximize energy efficiency and minimize the carbon footprint of the facility, approximately 95% of the total electricity consumed during the manufacturing process is generated by an on-site solar power park. According to the precise technical formulation, the sand, quicklime, and a specified amount of water are accurately batched via automated dosing systems and transferred into a mixing unit. The components are thoroughly blended to achieve a completely homogeneous mass with uniform moisture distribution, ensuring consistent density and structural strength in the final product. The mixed composition is then directed to reactor silos, where the quicklime CaO undergoes an exothermic reaction with water, converting into calcium hydroxide Ca(OH)_2 . This hydration process is strictly monitored for temperature and duration to guarantee complete chemical conversion, which is vital for the subsequent synthesis of calcium silicates. Following hydration, the prepared mixture is fed into high-pressure

hydraulic presses. Before pressing, the steel mold liners and die plates are coated with a thin layer of release oil to prevent adhesion and ensure a high-quality surface finish. Inside the molds, the mixture is subjected to a compressive force of 15-25 MPa, which compacts the material, removes excess air, and shapes it into green bricks with precise geometric dimensions. Once molded, the green units are de-molded and transported in batches into the autoclaves (large pressure vessels) for the final hydro-thermal curing stage. The units are treated with saturated steam at temperatures of 180–200 °C under a pressure of approximately 10 bar for up to 12 hours. Inside the autoclave, calcium hydroxide reacts chemically with silicon dioxide, forming a crystalline calcium silicate hydrate matrix (tobermorite) that gives the products their definitive high mechanical strength, robustness, and dimensional stability. After the autoclaving cycle, the pressure is reduced under controlled parameters, and the blocks are gradually stabilized to ambient temperature to prevent internal thermal stresses. The cooled products undergo visual and mechanical quality sorting. Any green or cured product rejects, structural breakage, or trimming remnants generated during the process are collected, mechanically crushed on-site, and fully recycled back into the production cycle as a secondary aggregate filler, establishing a closed-loop waste management system. The final stage of the manufacturing process involves sorting, stacking the approved products on wooden pallets, wrapping them securely with plastic stretch film, and binding them with heavy-duty strapping bands. The packaged elements are then transferred to the external stockyard for temporary storage before being dispatched to the construction site.

TRANSPORT AND INSTALLATION (A4-A5)

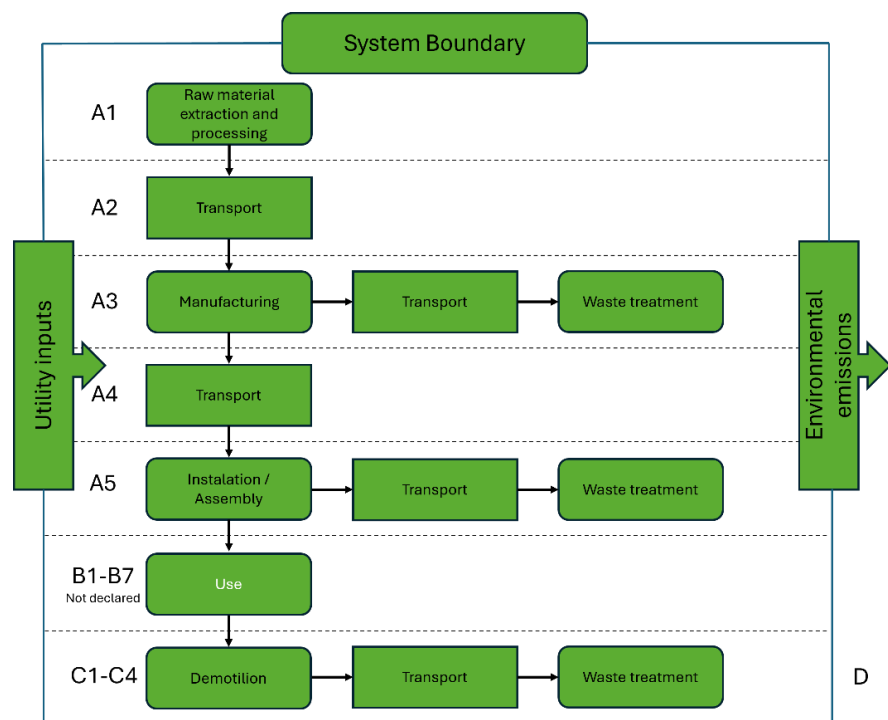
Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. Environmental impacts from installation into the building (A5) include the product installation losses,

emissions of energy use in installation and generation of waste at the construction site.

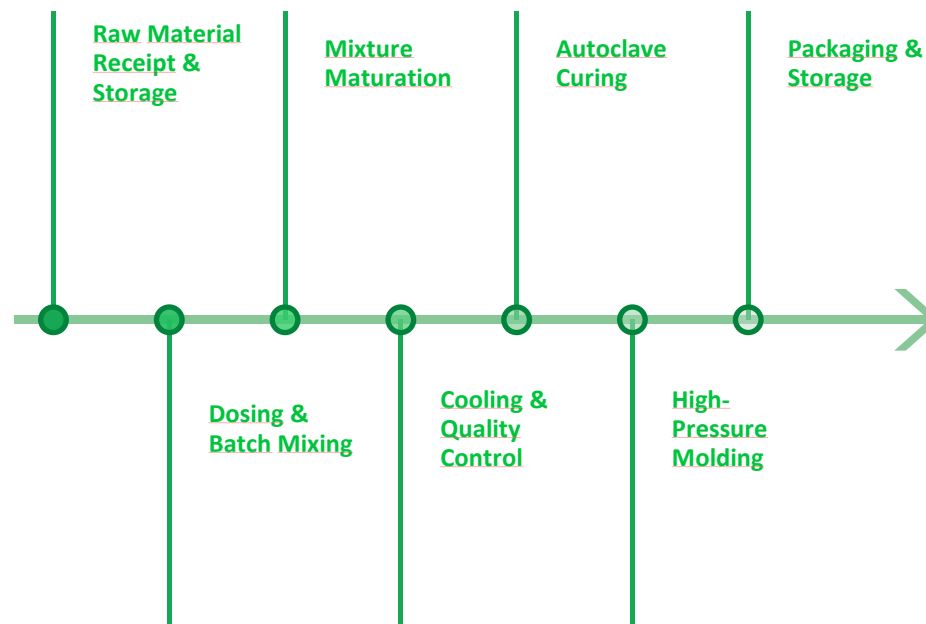
PRODUCT END OF LIFE (C1-C4, D)

At the end of life, 100% of the waste is assumed to be collected as construction waste during the demolition phase (C1). All of end-of-life product is assumed to be sent to the closest facilities (C2). 89% of product is recycled (C3) and the remaining is sent to local landfill for disposal (C4). Due to the recycling potential of concrete, the end-of-life product is converted into recycled raw materials (D). The end-of-life stages begin with the deconstruction and demolition from the installation site and then the waste is transferred for recycling and disposal of the product.

SYSTEM BOUNDARY FLOW DIAGRAM



MANUFACTURING PROCESS



LIFE CYCLE ASESMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the Standards and PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes for which data is available are included in

the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total excluded input and output flows do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

DATA QUALITY SUMMARY

The data quality of this EPD is assessed in accordance with EN 15804+A2, ISO 14040/44 and the applied PCR. Primary data for modules A1–A3 were collected directly from the manufacturer for the period 2025-01-01 to 2025-12-31 and are considered to be of high representativeness, completeness and consistency. Secondary data were sourced from Ecoinvent 3.11/3.12 and verified EN 15804-compliant EPDs. The overall data quality for raw materials, energy, transportation and waste treatment is rated as good to very good. The scenarios for end-of-life (C1–C4) and module D rely on high-quality generic datasets and documented assumptions. All relevant inputs and outputs have been included, and exclusions do not exceed 5% of total mass or energy flows.

AVERAGING INFORMATION

The silicate product range manufactured by UAB Bauroc, including silicate blocks and silicate bricks, is produced in the same manufacturing facility using

identical technologies and raw material bases. However, the production of silicate blocks requires approximately 6% higher quicklime content compared to silicate bricks. Furthermore, variations in quicklime content (up to 6%) are applied within each product group to achieve different compressive strength classes. Consequently, the total Global Warming Potential (A1-A3) variation between product groups exceeds the 10% threshold. Therefore, instead of a single overall average, this EPD declares two distinct average product groups: silicate blocks and silicate bricks. Each declared unit reflects a weighted average based on the production volumes within its respective product group. This approach fully complies with the applied PCR requirements and ensures an accurate representation of the manufacturer's specific product lines.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Allocated by mass
Ancillary materials	Allocated by mass
Manufacturing energy and waste	Allocated by mass

This is a multiple-product EPD.

The products in question (silicate blocks and bricks) are produced in the same factory using identical production technology. However, the production of silicate blocks requires approximately 6% higher quicklime content compared to bricks, which results in a roughly 7% difference in the total GWP (Global Warming Potential) for modules A1-A3. Furthermore, within each product

group, the manufacturer adjusts the quicklime content by up to an additional 6% to achieve variations in compressive strength classes. Consequently, the total GWP variation exceeds the 10% threshold. Therefore two average product groups are studied and declared in this EPD.

This Life Cycle Analysis (LCA) study is carried out taking into account all methodological aspects, such as efficiency, system boundaries, data quality, allocation procedures and decision rules for assessing inputs and outputs. All estimates and assumptions are given below:

The capacity utilisation volume factor for A2 and C2 vehicles is taken as 1, which means full loading. In reality, it may differ, but the role of transport emissions in the overall results is small, so the load variation is considered insignificant. Empty returns are not taken into account, as it is assumed that the transport company uses the return journey to meet the needs of other customers.

A3: During production, raw materials are dosed, mixed, molded under high pressure, and cured in steam autoclaves. Finished silicate blocks and bricks are stacked on wooden pallets, wrapped in plastic film, and secured with plastic strapping. Any internal production waste generated during the manufacturing process is fully recycled and fed back directly into the production cycle, resulting in zero external production waste.

A5: According to technical datasheets, mortar installation requires 0.16 l of water per 1 kg of mortar (1.92 l for 12 kg). However, water was not added separately in the LCA model because the selected OneClickLCA datapoint already includes mixing water. Furthermore, in this module, impacts from the treatment of waste packaging materials (plastic stretch wrap, plastic strapping, and wooden pallets) and the compensation of biogenic emissions from wooden pallets are taken into account. For all packaging materials, data from the European Statistical Authority have been acquired. Based on the most recent data of 2022 (Packaging materials waste end-of-life), 43% of plastic packaging materials are recycled, 43% are incinerated with energy recovery,

and 14% are landfilled. For wooden pallets, it is assumed that 95% are reused and 5% are incinerated with energy recovery.

C1: Dismantling, dismantling, demolition. Fuel consumption in the demolition process is calculated based on the transported mass. The energy source is diesel used by construction machinery. The energy consumption of demolition is assumed to be 10 kWh/ton (Bozdağ, Ö and Seçer, M (2007) and Level(s) project). It is assumed that 100% of the waste is collected.

C2: A truck is used for transportation, which is one of the most common modes of transport in disposal processes. It is assumed that all waste, such as steel structures or end-of-life products, will be transported to the nearest treatment plants or recycling sites, which are approximately 50 km away. This distance is considered average, as transport routes often include areas close to large cities, where the distance to recycling sites is not great. It is also assumed that the product retains its original weight even when it is no longer suitable for use.

C3: Silicate blocks and bricks are not physically separated from other mineral construction waste during the demolition of a building. The average recovery and recycling rate for mineral waste in the European Union is approximately 89%, so it is assumed that this portion of the demolished silicate products will be processed and reused, for example, as crushed aggregate for road construction.

C4: It is assumed that 11% of the product will be landfilled at the end of its life cycle.

D: The recycling process turns the waste product into crushed aggregate for road construction, thus avoiding the use of primary raw materials.

LCA SOFTWARE AND BIBLIOGRAPHY

The Life Cycle Assessment was carried out using the One Click LCA EPD Generator, a cloud-based LCA software tool compliant with EN 15804+A2. The Cut-off allocation method in accordance with EN 15804+A2 was applied. Generic background data were sourced from the Ecoinvent 3.11 (2024) database and One Click LCA datasets. Where available, specific data from verified EN 15804-compliant EPDs were used. Characterisation factors follow EN 15804+A2 and the JRC EF 3.1 method.

- 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.
- Ecoinvent 3.11/3.12 database and One Click LCA database.
- EN 15804:2012+A2:2020 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.
- RTS EPD PCR 2024
- Silroc calcium silicate masonry products LCA background report. August 2026
- Bozdağ, Ö & Seçer, M. 2007. Energy consumption of RC buildings during their life cycle.
- https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics
- D. Caro, C. Lotado, A. Damgaard, J. Crostobal, G. Foster, F. Flachenecker, D. Tonini, 2024. Environmental and socio-economic effects of construction and demolition waste recycling in the European Union

ENVIRONMENTAL IMPACT DATA (SILICATE BLOCKS)

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. Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	9,50E+01	2,04E+01	3,53E+01	3,62E+00	5,46E+00	3,84E+00	6,76E-01	-7,91E+00
GWP – fossil	kg CO ₂ e	1,25E+02	2,04E+01	3,65E+00	3,62E+00	5,45E+00	3,84E+00	6,76E-01	-7,90E+00
GWP – biogenic	kg CO ₂ e	-2,98E+01	4,69E-03	3,17E+01	5,87E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO ₂ e	5,30E-02	9,09E-03	1,10E-03	3,66E-04	2,43E-03	3,94E-04	3,84E-04	-7,47E-03
Ozone depletion pot.	kg CFC-11e	5,83E-07	2,97E-07	1,96E-08	5,57E-08	7,93E-08	5,71E-08	1,97E-08	-3,67E-08
Acidification potential	mol H ⁺ e	1,94E-01	7,10E-02	9,40E-03	3,24E-02	1,90E-02	3,44E-02	4,66E-03	-5,11E-02
EP-freshwater ²⁾	kg Pe	4,99E-03	2,21E-03	3,38E-04	1,16E-04	5,91E-04	1,24E-04	5,95E-05	-2,73E-03
EP-marine	kg Ne	6,90E-02	2,35E-02	3,07E-03	1,52E-02	6,27E-03	1,60E-02	1,84E-03	-1,24E-02
EP-terrestrial	mol Ne	7,60E-01	2,54E-01	3,30E-02	1,66E-01	6,78E-02	1,75E-01	2,01E-02	-1,50E-01
POCP (“smog”) ³⁾	kg NMVOCe	2,60E-01	1,04E-01	1,01E-02	4,97E-02	2,78E-02	5,24E-02	7,26E-03	-3,80E-02
ADP-minerals & metals ⁴⁾	kg Sbe	1,39E-04	5,84E-05	1,15E-05	1,32E-06	1,56E-05	1,38E-06	1,03E-06	-4,84E-05
ADP-fossil resources	MJ	7,61E+02	2,91E+02	2,12E+01	4,70E+01	7,78E+01	5,01E+01	1,65E+01	-8,16E+01
Water use ⁵⁾	m ³ e depr.	6,08E+01	1,70E+00	7,95E-01	1,18E-01	4,54E-01	1,29E-01	7,26E-01	-1,29E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Particulate matter	Incidence	3,97E-06	2,00E-06	1,28E-07	9,25E-07	5,34E-07	7,48E-06	1,09E-07	-8,30E-07
Ionizing radiation ⁶⁾	kBq U235e	2,14E+00	2,44E-01	7,95E-02	1,96E-02	6,52E-02	2,13E-02	9,53E-03	-6,40E-01
Ecotoxicity (freshwater)	CTUe	4,03E+02	6,05E+01	9,00E+00	4,77E+00	1,61E+01	2,86E+01	2,06E+00	-1,22E+01
Human toxicity, cancer	CTUh	4,33E-08	3,21E-09	5,41E-10	3,48E-10	8,56E-10	3,92E-10	1,18E-10	-2,07E-09
Human tox. non-cancer	CTUh	4,97E-07	1,81E-07	2,08E-08	6,17E-09	4,84E-08	6,16E-09	2,86E-09	-6,58E-08
SQP ⁷⁾	-	3,49E+03	2,91E+02	2,24E+01	3,24E+00	7,76E+01	3,31E+00	3,26E+01	-9,67E+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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	4,10E+02	4,05E+00	-1,64E+01	2,94E-01	1,08E+00	3,14E-01	1,54E-01	-9,23E+00
Renew. PER as material	MJ	3,14E+02	0,00E+00	-3,14E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	7,25E+02	4,05E+00	-3,31E+02	2,94E-01	1,08E+00	3,14E-01	1,54E-01	-9,23E+00
Non-re. PER as energy	MJ	6,75E+02	2,91E+02	-7,53E+00	4,70E+01	7,78E+01	5,01E+01	1,65E+01	-8,16E+01
Non-re. PER as material	MJ	5,16E+01	0,00E+00	-5,16E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	7,27E+02	2,91E+02	-5,92E+01	4,70E+01	7,78E+01	5,01E+01	1,65E+01	-8,16E+01
Secondary materials	kg	2,26E+00	1,22E-01	6,51E-03	1,95E-02	3,26E-02	2,07E-02	4,10E-03	8,74E+02
Renew. secondary fuels	MJ	2,53E+01	1,59E-03	4,87E-04	5,11E-05	4,25E-04	5,43E-05	8,61E-05	-8,48E-04
Non-ren. secondary fuels	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
Use of net fresh water	m ³	1,47E+00	4,18E-02	1,93E-02	2,83E-03	1,12E-02	3,21E-03	1,70E-02	-2,97E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	2,42E+00	1,86E+00	1,93E-01	1,52E-01	4,98E-01	5,61E-02	5,36E-02	-2,09E+00
Non-hazardous waste	kg	5,27E+01	3,68E+01	3,41E+01	7,60E-01	9,83E+00	8,17E-01	1,08E+02	-6,33E+00
Radioactive waste	kg	5,88E-03	5,84E-05	2,00E-05	4,61E-06	1,56E-05	5,23E-06	2,25E-06	-1,52E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	1,97E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,50E-02	0,00E+00	3,20E-01	0,00E+00	0,00E+00	8,74E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	2,60E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	1,01E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,01E+01
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	3,40E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,40E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	6,71E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,71E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹⁰⁾	kg CO ₂ e	1,25E+02	2,04E+01	3,65E+00	3,62E+00	5,46E+00	3,84E+00	6,76E-01	-7,91E+00

10) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows - CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide - were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO₂ is set to zero.

ENVIRONMENTAL IMPACT DATA (SILICATE BRICKS)

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. Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	8,92E+01	2,04E+01	3,53E+01	3,62E+00	5,46E+00	3,84E+00	6,76E-01	-7,89E+00
GWP – fossil	kg CO ₂ e	1,19E+02	2,04E+01	3,65E+00	3,62E+00	5,45E+00	3,84E+00	6,76E-01	-7,88E+00
GWP – biogenic	kg CO ₂ e	-2,99E+01	4,69E-03	3,17E+01	5,87E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO ₂ e	5,26E-02	9,09E-03	1,10E-03	3,66E-04	2,43E-03	3,94E-04	3,84E-04	-7,46E-03
Ozone depletion pot.	kg CFC-11e	5,79E-07	2,97E-07	1,96E-08	5,57E-08	7,93E-08	5,71E-08	1,97E-08	-3,57E-08
Acidification potential	mol H ⁺ e	1,89E-01	7,10E-02	9,40E-03	3,24E-02	1,90E-02	3,44E-02	4,66E-03	-5,11E-02
EP-freshwater ²⁾	kg Pe	4,96E-03	2,21E-03	3,38E-04	1,16E-04	5,91E-04	1,24E-04	5,95E-05	-2,73E-03
EP-marine	kg Ne	6,75E-02	2,35E-02	3,07E-03	1,52E-02	6,27E-03	1,60E-02	1,84E-03	-1,24E-02
EP-terrestrial	mol Ne	7,43E-01	2,54E-01	3,30E-02	1,66E-01	6,78E-02	1,75E-01	2,01E-02	-1,50E-01
POCP (“smog”) ³⁾	kg NMVOCe	2,54E-01	1,04E-01	1,01E-02	4,97E-02	2,78E-02	5,24E-02	7,26E-03	-3,79E-02
ADP-minerals & metals ⁴⁾	kg Sbe	1,39E-04	5,84E-05	1,15E-05	1,32E-06	1,56E-05	1,38E-06	1,03E-06	-4,83E-05
ADP-fossil resources	MJ	7,34E+02	2,91E+02	2,12E+01	4,70E+01	7,78E+01	5,01E+01	1,65E+01	-8,09E+01
Water use ⁵⁾	m ³ e depr.	6,10E+01	1,70E+00	7,95E-01	1,18E-01	4,54E-01	1,29E-01	7,26E-01	-1,29E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Particulate matter	Incidence	3,92E-06	2,00E-06	1,28E-07	9,25E-07	5,34E-07	7,48E-06	1,09E-07	-8,30E-07
Ionizing radiation ⁶⁾	kBq	2,10E+00	2,44E-01	7,95E-02	1,96E-02	6,52E-02	2,13E-02	9,53E-03	-6,38E-01
Ecotoxicity (freshwater)	CTUe	3,97E+02	6,05E+01	9,00E+00	4,77E+00	1,61E+01	2,86E+01	2,06E+00	-1,18E+01
Human toxicity, cancer	CTUh	4,30E-08	3,21E-09	5,41E-10	3,48E-10	8,56E-10	3,92E-10	1,18E-10	-2,07E-09
Human tox. non-cancer	CTUh	4,84E-07	1,81E-07	2,08E-08	6,17E-09	4,84E-08	6,16E-09	2,86E-09	-6,57E-08
SQP ⁷⁾	-	3,49E+03	2,91E+02	2,24E+01	3,24E+00	7,76E+01	3,31E+00	3,26E+01	-9,67E+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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	4,09E+02	4,05E+00	-1,64E+01	2,94E-01	1,08E+00	3,14E-01	1,54E-01	-9,22E+00
Renew. PER as material	MJ	3,14E+02	0,00E+00	-3,14E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	7,23E+02	4,05E+00	-3,31E+02	2,94E-01	1,08E+00	3,14E-01	1,54E-01	-9,22E+00
Non-re. PER as energy	MJ	6,51E+02	2,91E+02	-7,53E+00	4,70E+01	7,78E+01	5,01E+01	1,65E+01	-8,09E+01
Non-re. PER as material	MJ	5,16E+01	0,00E+00	-5,16E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	7,02E+02	2,91E+02	-5,92E+01	4,70E+01	7,78E+01	5,01E+01	1,65E+01	-8,09E+01
Secondary materials	kg	2,21E+00	1,22E-01	6,51E-03	1,95E-02	3,26E-02	2,07E-02	4,10E-03	8,74E+02
Renew. secondary fuels	MJ	2,46E+01	1,59E-03	4,87E-04	5,11E-05	4,25E-04	5,43E-05	8,61E-05	-8,48E-04
Non-ren. secondary fuels	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
Use of net fresh water	m ³	1,47E+00	4,18E-02	1,93E-02	2,83E-03	1,12E-02	3,21E-03	1,70E-02	-2,97E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	2,40E+00	1,86E+00	1,93E-01	1,52E-01	4,98E-01	5,61E-02	5,36E-02	-2,09E+00
Non-hazardous waste	kg	5,20E+01	3,68E+01	3,41E+01	7,60E-01	9,83E+00	8,17E-01	1,08E+02	-6,00E+00
Radioactive waste	kg	5,59E-03	5,84E-05	2,00E-05	4,61E-06	1,56E-05	5,23E-06	2,25E-06	-1,51E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	1,97E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,50E-02	0,00E+00	3,20E-01	0,00E+00	0,00E+00	8,74E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	2,60E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	1,01E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,01E+01
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	3,40E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,40E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	6,71E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,71E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹⁰⁾	kg CO ₂ e	1,19E+02	2,04E+01	3,65E+00	3,62E+00	5,46E+00	3,84E+00	6,76E-01	-7,89E+00

10) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows - CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide - were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO₂ is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

SCENARIO PARAMETER	VALUE
Electricity data source and quality	Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted, Lithuania, Ecoinvent
Electricity CO ₂ e/kWh	0.0947 kgCO ₂ e/kWh
Electricity data source and quality	Electricity, low voltage, residual mix, Lithuania, Ecoinvent
Electricity CO ₂ e/kWh	0.70 kgCO ₂ e/kWh
Heat data source and quality	Heat production, propane, at industrial furnace >100kW (Reference product: heat, district or industrial, other than natural gas)
Heat CO ₂ e/MJ	0.085 kg CO ₂ e / MJ
Heat data source and quality	Heat and power co-generation, wood chips, 6667 kW (Reference product: heat, district or industrial, other than natural gas)
Heat CO ₂ e/kWh	0.0024 kg CO ₂ e / MJ

Transport scenario documentation

SCENARIO PARAMETER	VALUE
Fuel type and consumption of vehicle or vehicle type used for transport	Transport, freight, lorry, >32 metric ton, diesel, EURO 5, Ecoinvent 3.12
A4 average transport distance (km)	180
Capacity utilization (including empty returns) %	100% of the capacity in mass, no empty returns
Bulk density of transported products (kg/m ³)	1600 kg/m ³
Volume capacity utilisation factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaged products)	1

End of life scenario documentation

SCENARIO PARAMETER	VALUE
Collection process: collected separately (kg)	874 (863 kg of product + 11 kg of installation materials)
Collection process: Mixed waste (kg)	108 (107 kg of product + 1 kg of installation materials)
Recovery: re-use (kg)	-
Recovery: recycling (kg)	874 (863 kg of product + 11 kg of installation materials)
Recovery: energy recovery (kg)	-
Disposal (kg)	108 (107 kg of product + 1 kg of installation materials)
Scenario assumptions e.g. transportation (mode, km) & other	End-of-life product is transported 50 km with an average lorry.

Installation of the product in the building scenario documentation

SCENARIO PARAMETER	VALUE
Ancillary materials for installation (specified by material)	12 kg Masonry mortar
Water use	-*
Other resource use	-
Quantitative description of energy type (regional mix) and consumption during the installation process	-
Waste materials on the building site before waste processing, generated by the product's installation (specified by type)	20.77 kg Wood pallets 0.65 kg Packaging film 0.10 kg Plastic tape
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	0.28 kg Packaging film for recycling 0.28 kg Packaging film for energy recovery 0.09 kg Packaging film for landfill disposal 0.04 kg Plastic tape for recycling 0.04 kg Plastic tape for energy recovery 0.02 kg Plastic tape for landfill disposal 19.73 kg Wood pallets for reuse 1.04 kg Wood pallets for energy recovery
Direct emissions to ambient air, soil and water	-

*- The application of 12 kg of mortar requires a technical water addition of 1.92 L (0.16 L/kg of dry mortar). Since the selected OneClickLCA background dataset for the cement mortar explicitly includes the mixing water within its system boundary, direct water consumption is reported as included within the dataset to prevent double counting.