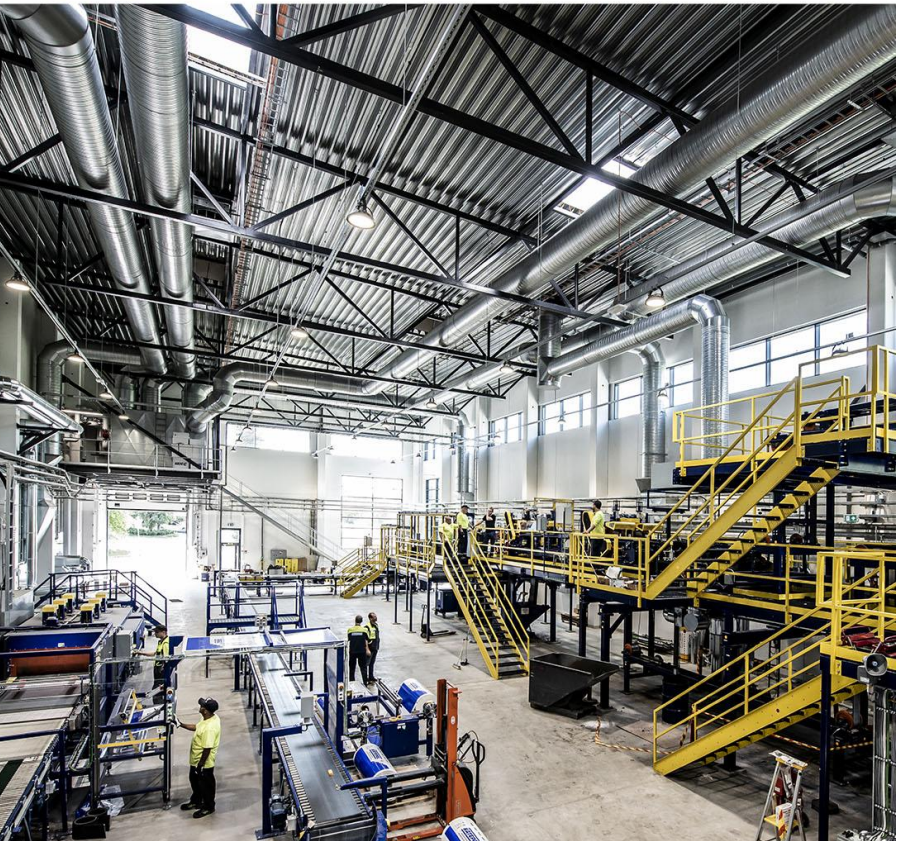


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

KATEPAL CLASSIC KL GREEN

Katepal Oy

EPD HUB, HUB-4080

Published on 02.10.2025, last updated on 02.10.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1, 5 Dec 2023 and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Katepal Oy
Address	Katepalintie 15, 37500 Lempäälä
Contact details	katepal@katepal.fi
Website	https://www.katepal.fi/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804 +A2 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	HUB-3815
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Maija Laurikkala-Dewes, Katepal Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

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	Katepal Classic KL GREEN
Additional labels	-
Product reference	N/A
Place(s) of raw material origin	EU
Place of production	Lempäälä, Finland
Place(s) of installation and use	Europe, World
Period for data	1/1/2024 - 31/12/2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	
A1-A3 Specific data (%)	36,3

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2 of Katepal Classic KL Green from the product line
Declared unit mass	4,73 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1,65E+00
GWP-total, A1-A3 ($kgCO_2e$)	1,02E+00
Secondary material, inputs (%)	0,1
Secondary material, outputs (%)	99,9
Total energy use, A1-A3 (kWh)	7,06
Net freshwater use, A1-A3 (m^3)	0,01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Katepal Oy is a Finnish family-owned company with a history dating back in 1949. Main product categories are high-quality bitumen-based roofing materials as bitumen shingles, bitumen membranes and liquid applied bitumen products.

PRODUCT DESCRIPTION

Katepal Classic KL Green is a bitumen-based roofing shingle for roof waterproofing. As part of the Green product line, it offers an environmentally conscious choice for reducing a building's carbon emissions. The product consists of SBS- modified bitumen and is reinforced with a glass fiber carrier layer. It is a traditionally patterned roofing shingle with a black mineral granulate cover. Bottom surface is covered with sand and an adhesive layer, covered by a protective plastic film. Part of the raw materials are replaced by biogenic raw materials and carbon-free electricity is used in the manufacturing.

Bitumen waterproofing membranes provide good and durable protection against water penetration. Katepal Classic KL Green shingles are suitable for roofs with a slope of 1:5 or steeper and must be used with an underlay membrane. The product should be attached to the substrate with mechanicals fasteners (roofing nails or flat-headed screws). Instructions can be found on the product's plastic packaging and in the installation guide.

Further information can be found at:
https://www.katepal.fi/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	45-60	EU
Fossil materials	40-55	EU
Bio-based materials	3-10	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0,170
Biogenic carbon content in packaging, kg C	0,046

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m^2 of Katepal Classic KL Green from the production
Mass per declared unit	4,73 kg
Functional unit	N/A
Reference service life	ND

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 life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	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 = MND. Modules not relevant = MNR

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 during the manufacturing processes as well as losses during electricity transmission.

The bitumen is delivered hot from the petroleum refinery to the manufacturing site, where it's heated further for the processing. The manufacturing is done by heating the raw materials (bitumen, tall oil pitch and copolymers) to a specific temperature and mixing them. The glass fiber felt acting as a reinforcing structure is impregnated and coated with this bitumen mix. The resulting sheet is covered by mineral granules on the top and with sand, adhesive bitumen mix and a protective plastic film on the bottom. After cooling the product line is cut into four parallel shingles pro m2, which was the declared unit. After cutting the product line in form of shingles, they are piled in packages of 22 shingles, wrapped with packaging film, and placed on a wooden pallet. The pallet is then wrapped with PE shrink hood for storage and transportation.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD..

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.

Freight mode and distances for transportation from production site to the construction site have been approached by most probable scenario based on the annual sales volume of the product. The most probable scenario for transportation distance is 300 km with lorry and 350 km with ferry. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the nested packaged products.

Installation of the product is done by overlapping the product on the roof. The product must be used with an underlay membrane. The product has self-adhesive bottom surface. The product should be attached to the substrate with mechanical fasteners (roofing nails or flat-headed screws), of which 4 are needed for each shingle. Next row of shingles is placed to cover the row of the mechanical fasteners. Due to the overlapping in the installation, one DU of 1m2 of the product represents 0,54m2 of installed roofing shingles, which must be considered when calculating the total emissions of the roof structures. Calculation software applications for the total carbon footprint of a building often calculate the GWP factor of the mechanical fasteners separately, thus the fasteners are excluded here to avoid double counting. The installation loss is assumed to be 1,5%.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

Air, soil, and water impacts during the use phase have not been studied.

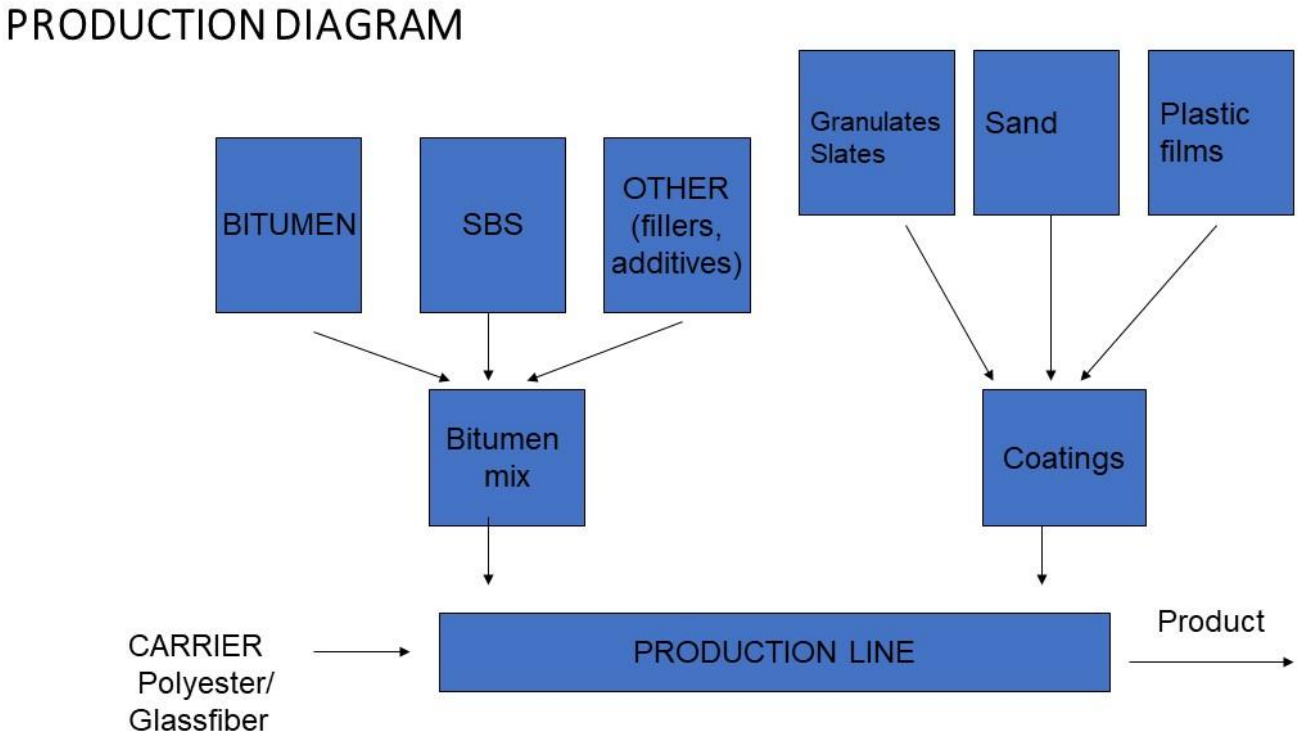
PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase, 100% of the waste is assumed to be collected as separate construction waste. The consumption of energy and natural resources is negligible for disassembling of the end-of-life product, as demolition of bitumen membrane roofing is assumed to be done either manually or with a powered cutter. Thus the impacts of demolition are assumed to be zero (C1).

The End-of-life scenario for 100% of the product in this study is material recycling for asfalt production. The bitumen roofing shingles are delivered to the nearest construction waste treatment plant. It is estimated that there is no mass loss during the use of the product, therefore, the end-of-life product is assumed to have the same weight as the declared product. All of the end-of-life product is assumed to be sent to the closest facility for material recycling. Transportation distance is estimated as 100 km and the transportation method is lorry which is the most common (C2).

Loads and benefits beyond system boundary include crushing the bitumen roofing shingle waste at the recycling facility and replacement of virgin bitumen as raw material for asfalt production. Energy recovered from the combustion of manufacturing waste replaces the use of fossil fuels in energy production which is assumed to be oil. (D). The calculation assumes that the waste incineration plant has co-generation of electricity and heat.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied 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 for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The life cycle analysis includes all industrial processes from raw material acquisition to production, distribution, installation and end-of-life stages. 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.

The study includes modules A1-A3, A4-A5, C1-C4 and D. The use stage B1-B7 is excluded. For easier modelling and because of lack of accuracy in data and available modelling resources few constituents under 0,1% of product mass are excluded. These include some ancillary packaging, that have no serious impact on the emissions of the product. Excluded modules are use stage modules (B1-B7), which are not mandatory according to the PCR.

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 1 and 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.

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	No allocation
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

Module A1-A3: In this study allocation could not be avoided for ancillary material (cooling water), energy consumption and waste production as the information was only measured on factory level. The inputs were allocated to studied product based on annual production volume mass. There was no need to conduct allocation for raw material and packaging data as the amounts per declared unit were taken directly from the product recipe. Estimated production losses were added to the inputs in A1, and the estimated losses were declared as waste output flows in A3. In the factory, several kinds of bitumen roofing products are produced. For different manufactured products the area weight can vary from under 1kg to over 5 kg and thus the allocation by volume would produce different results. Allocation by mass is considered to be more accurate in this case. Module A4: Transportation distance declared is the most probable scenario based on the sales volumes and locations of the customers. Transportation method is

assumed to be lorry and ferry. The transportation doesn't cause losses as products are fixed properly. Also, volume capacity utilization factor is assumed to be 1 for the product. Module A5: Product installation loss at the construction site is assumed to be very low (1,5%). The amount of extra material needed in installation and mechanical fasteners are excluded from the calculation. Module C1: Disassembling of bitumen roofing membrane is done either manually by hand or by using a cutter tool. The consumption of energy and natural resources is negligible for disassembling of the end-of-life product, and thus the impacts of demolition are assumed zero. Module C2: 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. All of the end-of-life product is assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is lorry which is the most common. Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emission in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Module C3, C4: The end-of-life scenario for the product in this study and 1,5% installation loss is incineration. Module D: The energy generated by burning bitumen roofing replaces fossil fuels, oil. The calculation assumes that the waste incineration plant has co-generation of electricity and heat. Allocation used in Ecoinvent 3.10 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 -standard.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	7,94E-01	1,18E-01	1,07E-01	1,02E+00	4,80E-01	4,21E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,15E-02	4,88E-01	0,00E+00	-6,25E-01
GWP – fossil	kg CO_2e	1,26E+00	1,18E-01	2,76E-01	1,65E+00	4,80E-01	2,51E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,14E-02	2,07E-02	0,00E+00	-6,08E-01
GWP – biogenic	kg CO_2e	-4,63E-01	2,18E-05	-1,69E-01	-6,32E-01	8,49E-05	1,69E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,81E-05	4,67E-01	0,00E+00	-1,70E-02
GWP – LULUC	kg CO_2e	7,12E-04	4,77E-05	2,90E-04	1,05E-03	1,98E-04	2,84E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,23E-05	2,12E-06	0,00E+00	-3,88E-04
Ozone depletion pot.	kg CFC_{-11}e	1,58E-08	2,17E-09	8,65E-09	2,66E-08	8,44E-09	8,25E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,82E-09	3,17E-10	0,00E+00	-2,30E-08
Acidification potential	mol H^+e	5,24E-03	5,37E-04	7,95E-04	6,57E-03	6,60E-03	3,90E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,86E-04	1,87E-04	0,00E+00	-3,91E-03
EP-freshwater[2)]	kg Pe	4,58E-05	8,06E-06	5,18E-05	1,06E-04	2,45E-05	4,43E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,06E-06	5,97E-07	0,00E+00	-1,53E-04
EP-marine	kg Ne	1,09E-03	1,51E-04	1,89E-04	1,43E-03	1,66E-03	1,07E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,64E-05	8,66E-05	0,00E+00	-6,77E-04
EP-terrestrial	mol Ne	1,20E-02	1,66E-03	1,98E-03	1,56E-02	1,84E-02	1,11E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,05E-03	9,48E-04	0,00E+00	-7,08E-03
POCP ("smog")[3)]	kg NMVOCe	6,88E-03	6,65E-04	1,15E-03	8,70E-03	5,52E-03	3,82E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,48E-04	2,83E-04	0,00E+00	-4,76E-03
ADP-minerals & metals[4)]	kg Sbe	2,70E-06	3,38E-07	1,28E-06	4,31E-06	1,10E-06	1,46E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,99E-07	7,42E-09	0,00E+00	-3,61E-06
ADP-fossil resources	MJ	6,20E+01	1,69E+00	5,71E+00	6,94E+01	6,38E+00	1,32E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,28E+00	2,71E-01	0,00E+00	-2,06E+01
Water use[5)]	m^3e depr.	2,29E-01	8,25E-03	1,09E-01	3,46E-01	2,58E-02	1,59E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,31E-03	6,76E-04	0,00E+00	-1,08E-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	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	4,52E-08	1,02E-08	9,52E-09	6,49E-08	2,63E-08	2,62E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,19E-09	4,05E-08	0,00E+00	-5,66E-08
Ionizing radiation[6)]	kBq U235e	3,20E-02	1,85E-03	1,64E-02	5,03E-02	6,03E-03	1,21E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,64E-03	1,20E-04	0,00E+00	-3,67E-02
Ecotoxicity (freshwater)	CTUe	3,03E+01	2,14E-01	1,03E+00	3,16E+01	6,94E-01	5,58E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,69E-01	1,49E-02	0,00E+00	-2,25E+00
Human toxicity, cancer	CTUh	1,88E-09	2,01E-11	2,09E-10	2,11E-09	8,84E-11	4,82E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,56E-11	2,13E-12	0,00E+00	-1,70E-10
Human tox. non-cancer	CTUh	1,78E-08	1,05E-09	1,70E-09	2,06E-08	3,05E-09	8,35E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,06E-10	3,37E-11	0,00E+00	-4,42E-09
SQP[7)]	-	9,66E+00	1,38E+00	1,43E+01	2,54E+01	2,54E+00	5,25E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,64E-01	1,90E-02	0,00E+00	-7,60E+00

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	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	9,04E-01	2,61E-02	2,06E+00	2,99E+00	8,53E-02	-1,65E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,22E-02	1,71E-03	0,00E+00	-1,02E+00
Renew. PER as material	MJ	2,15E+00	0,00E+00	0,00E+00	2,15E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,15E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	3,06E+00	2,61E-02	2,06E+00	5,14E+00	8,53E-02	-1,65E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,22E-02	-2,15E+00	0,00E+00	-1,02E+00
Non-re. PER as energy	MJ	1,68E+01	1,69E+00	3,83E+00	2,24E+01	6,38E+00	-3,15E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,28E+00	2,71E-01	0,00E+00	-6,74E+00
Non-re. PER as material	MJ	4,56E+01	0,00E+00	0,00E+00	4,56E+01	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-4,56E+01	0,00E+00	-1,39E+01
Total use of non-re. PER	MJ	6,24E+01	1,69E+00	3,83E+00	6,79E+01	6,38E+00	-3,15E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,28E+00	-4,53E+01	0,00E+00	-2,06E+01
Secondary materials	kg	4,59E-03	7,50E-04	7,14E-03	1,25E-02	2,89E-03	4,42E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,88E-04	1,12E-04	0,00E+00	-3,22E-02
Renew. secondary fuels	MJ	6,76E-04	8,99E-06	5,15E-02	5,22E-02	2,53E-05	7,84E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,43E-06	2,94E-07	0,00E+00	-1,42E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	7,21E-03	2,35E-04	2,66E-03	1,01E-02	6,88E-04	2,98E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,73E-04	1,79E-05	0,00E+00	-6,54E-03

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,62E+00	2,55E-03	1,24E-02	1,63E+00	8,68E-03	3,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,84E-03	3,01E-04	0,00E+00	-3,05E-02
Non-hazardous waste	kg	2,79E-01	4,99E-02	9,86E-01	1,31E+00	1,60E-01	2,57E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,89E-02	4,11E-03	0,00E+00	-5,10E-01
Radioactive waste	kg	1,85E-04	4,58E-07	4,16E-06	1,89E-04	1,49E-06	2,95E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,07E-07	2,94E-08	0,00E+00	-9,30E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	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	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	5,76E-03	0,00E+00	1,04E-01	1,10E-01	0,00E+00	2,91E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,73E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	7,72E-04	0,00E+00	9,80E-04	1,75E-03	0,00E+00	2,63E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,50E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,06E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,94E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	0,00E+00	1,18E-01	1,02E-01	2,20E-01	4,77E-01	1,86E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,08E-02	2,06E-02	0,00E+00	-6,17E-01
Ozone depletion Pot.	kg $CFC_{-11}e$	0,00E+00	1,72E-09	3,27E-09	4,99E-09	6,71E-09	2,88E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,45E-09	2,51E-10	0,00E+00	-1,82E-08
Acidification	kg SO_2e	0,00E+00	4,21E-04	7,97E-05	5,01E-04	5,26E-03	1,69E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,17E-04	1,31E-04	0,00E+00	-3,27E-03
Eutrophication	kg PO_4^3e	0,00E+00	7,99E-05	1,93E-05	9,92E-05	6,51E-04	2,22E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,53E-05	3,07E-05	0,00E+00	8,67E-04
POCP (“smog”)	kg C_2H_4e	0,00E+00	3,21E-05	1,23E-05	4,45E-05	2,87E-04	9,64E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,07E-05	9,84E-06	0,00E+00	-2,53E-04
ADP-elements	kg Sbe	0,00E+00	3,30E-07	1,62E-07	4,92E-07	1,08E-06	4,24E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,92E-07	7,21E-09	0,00E+00	-3,60E-06
ADP-fossil	MJ	0,00E+00	1,66E+00	1,58E+00	3,24E+00	6,28E+00	2,52E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,26E+00	2,69E-01	0,00E+00	-2,00E+01

ENVIRONMENTAL IMPACTS – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	1,26E+00	1,18E-01	2,76E-01	1,65E+00	4,80E-01	2,51E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,15E-02	2,07E-02	0,00E+00	-6,08E-01

9) 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). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. 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.

THIRD-PARTY VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
02.10.2025