

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Extruded polystyrene boards

Banja Komerc Bekament DOO Banja Arandjelovac



EPD HUB, HUB-6895

Published on 03.07.2026, last updated on 03.07.2026, valid until 02.07.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Banja Komerc Bekament DOO Banja Arandjelovac
Address	Kralja Petra Prvog 132, Banja
Contact details	tehnicka.podrska@bekament.com
Website	www.bekament.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021, ISO 14025 & EN 16783
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	LCA Institut and Matija Veljkovic
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Yazan Badour 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	Extruded polystyrene boards
Additional labels	BK-Dur XPS
Product reference	-
Place(s) of raw material origin	World
Place of production	Arandjelovac, Serbia
Place(s) of installation and use	Europe
Period for data	Calendar year 2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m ²
Declared unit mass	1,5 kg
Mass of packaging	0,00021 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	8,81
GWP-total, A1-A3 (kgCO ₂ e)	8,82
Secondary material, inputs (%)	39,2
Total energy use, A1-A3 (kWh)	28,2
Net freshwater use, A1-A3 (m ³)	0,04

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The company Bekament is one of the most technologically advanced companies for the production of materials for finishing works in construction, which has been successfully operating in the markets of Serbia and the region for more than 3 decades.

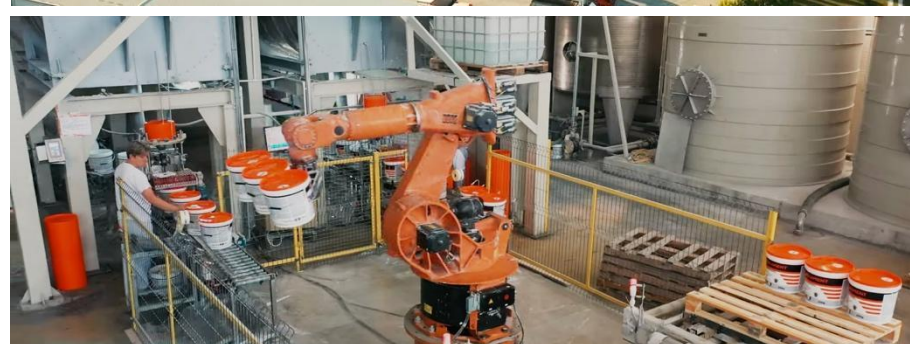
Today, the company operates 6 quarries and 9 plants covering 25 hectares, offering a portfolio of over 250 products.

With more than 500 employees, Bekament continuously improves industry standards and product quality. Supported by a modern laboratory and quality control department, the company develops advanced technologies and meets market demands, holding internationally recognized certificates (ETA, ISO 9001, ISO 14001, ISO 45001).

Its product range includes interior and exterior construction finishing materials, insulation, waterproofing, ceramics, decorative, wood and metal products, sealing and gluing systems, plastering solutions, and special-purpose products. The fully integrated production process starts of the famous stone from its own mine at Venčac, through processing of the same by grinding into granules and micronized fillers, to the production of liquid and powdery materials for finishing works in civil engineering.

Through a network of over 1,200 partners and distributors, Bekament products are available in more than 10 EU and regional markets.

Further information can be found on:
www.bekament.com



PRODUCT DESCRIPTION

BK-Dur XPS, waffle is a thermal insulation board made of extruded polystyrene foam with a ribbed surface structure, resistant to water (moisture) and high-pressure loads. It is manufactured with 38% recycled content.

It is intended for insulation of new buildings and renovation of existing buildings. Hard-pressed polystyrene foam boards with a closed-cell structure allow the building to “breathe.” This is achieved by a special mixture and composition of cells in combination with the treated surface. It is used for insulation of foundations, insulation of floors with high pressure load, perimeter insulation, and insulation of flat roofs.

Further information can be found at:
<https://www.bekament.com>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	100	World
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	-

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m ²
Mass per declared unit	1,5 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 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	ND	ND	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

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.

BK-DUR XPS is produced through a sophisticated process that combines modern technology, precise quality control, and environmental responsibility. Its closed-cell structure, exceptional strength, and minimal water absorption make it ideal for foundations, floors, roofs, and all critical parts of a building.

The manufacturing process begins with carefully selected raw materials, including virgin GPPS and additives (lubricants, nucleating agents, colorants, and fire retardants). Virgin polystyrene is blended with recycled polystyrene, additives, and blowing agents, and then introduced into the extrusion process under high pressure and temperature. During this process, a homogeneous mass with fully closed cells is formed, providing the boards with superior thermal insulation, high mechanical strength, and minimal water absorption.

After extrusion, the boards pass through a post-expansion tunnel, followed by cutting and cooling. They then undergo therm-bonding, embossing, and precise cutting into standard dimensions. Each board is subjected to strict quality control to ensure long-term durability and reliability under all conditions. The boards are then packaged and stored.

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, are not in the scope of the study.

PRODUCT USE AND MAINTENANCE (B1-B7)

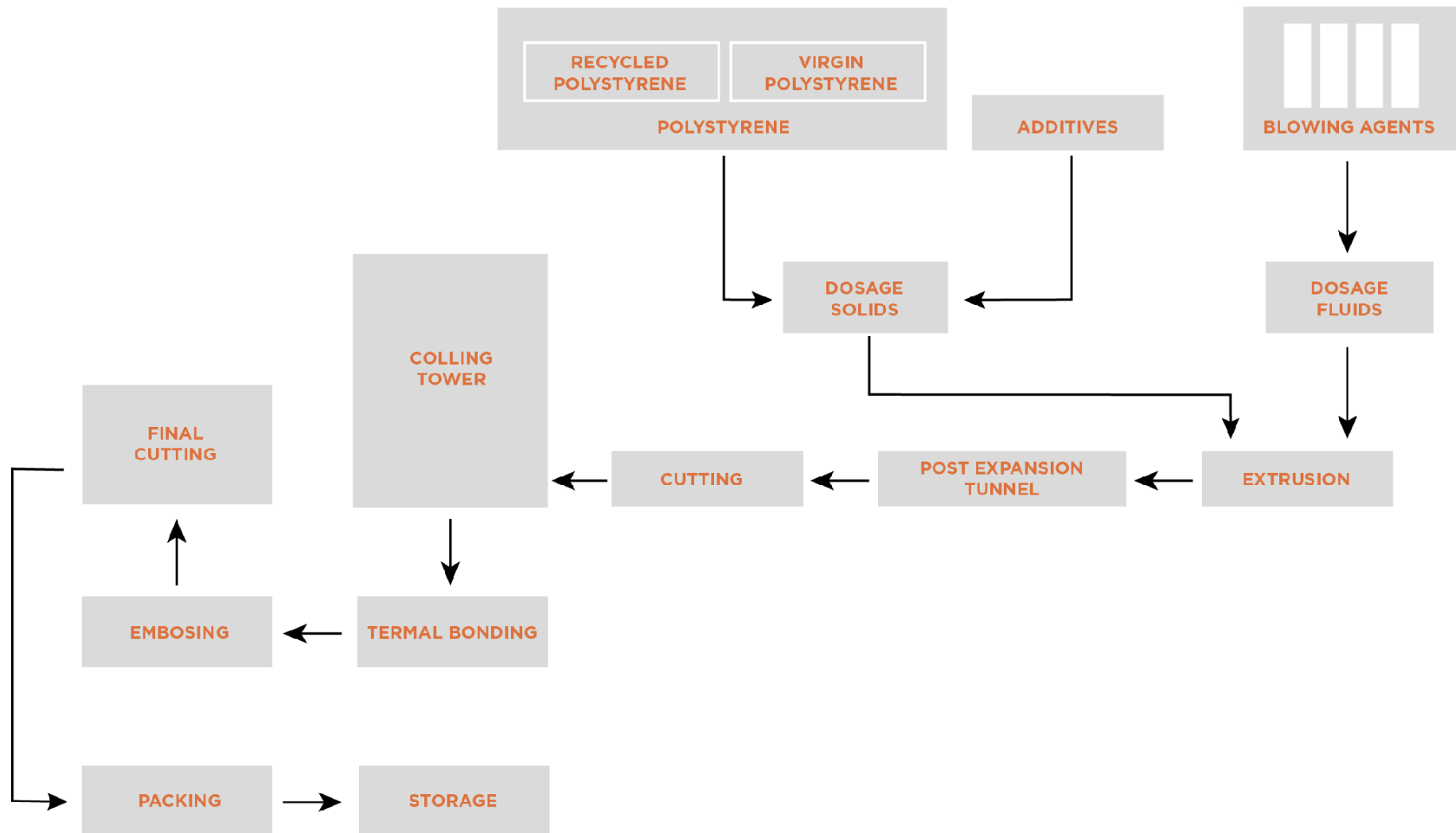
This EPD does not cover the use phase.

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

PRODUCT END OF LIFE (C1-C4, D)

At the end of the products life the XPS boards are 59% of the waste is sent to incineration, 9% to recycling, and 32% to landfill. The transport distances are 100 km for incineration and landfill, while 150 km is used for recycling.

MANUFACTURING DIAGRAM (A1-A3)



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 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 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	Physical Properties
Packaging material	Physical Properties
Ancillary materials	Physical Properties
Manufacturing energy and waste	Economic Values

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 for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 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 ₂ e	4,11E+00	3,07E-01	4,41E+00	8,82E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E-02	2,81E+00	1,10E-03	-6,86E+00
GWP – fossil	kg CO ₂ e	4,10E+00	3,07E-01	4,41E+00	8,81E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,72E-02	2,82E+00	3,00E-03	-6,86E+00
GWP – biogenic	kg CO ₂ e	5,93E-03	4,90E-08	5,20E-04	6,45E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,95E-06	-4,06E-03	-1,90E-03	1,90E-03
GWP – LULUC	kg CO ₂ e	6,25E-03	1,37E-04	1,70E-03	8,09E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,69E-06	8,61E-06	1,71E-06	-6,40E-04
Ozone depletion pot.	kg CFC-11e	1,65E-07	4,46E-09	3,65E-08	2,06E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E-10	4,00E-10	8,68E-11	-5,01E-08
Acidification potential	mol H ⁺ e	1,41E-02	1,07E-03	2,20E-02	3,72E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,96E-05	3,49E-04	2,12E-05	-7,47E-02
EP-freshwater ²⁾	kg Pe	9,12E-04	3,32E-05	8,60E-03	9,55E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,71E-06	3,94E-06	2,46E-07	-1,11E-02
EP-marine	kg Ne	2,92E-03	3,53E-04	5,00E-03	8,27E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,97E-05	1,80E-04	8,10E-06	-7,13E-03
EP-terrestrial	mol Ne	2,88E-02	3,81E-03	2,58E-02	5,85E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,13E-04	1,77E-03	8,84E-05	-5,47E-02
POCP (“smog”) ³⁾	kg NMVOCe	2,02E-02	1,56E-03	1,01E-02	3,19E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,75E-05	4,40E-04	3,17E-05	-2,01E-02
ADP-minerals & metals ⁴⁾	kg Sbe	2,84E-05	8,77E-07	1,52E-06	3,08E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,90E-08	7,45E-08	4,76E-09	-6,91E-06
ADP-fossil resources	MJ	8,76E+01	4,38E+00	4,25E+01	1,35E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,47E-01	2,70E-01	7,35E-02	-7,97E+01
Water use ⁵⁾	m ³ e depr.	9,49E-01	2,55E-02	9,62E+01	9,72E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,38E-03	5,67E-02	2,12E-04	-1,10E+00

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.

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	3,27E+00	6,08E-02	4,86E+00	8,20E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,42E-03	7,02E-03	7,10E-04	-5,01E+00
Renew. PER as material	MJ	2,94E-02	0,00E+00	0,00E+00	2,94E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-2,00E-02	-9,40E-03	0,00E+00
Total use of renew. PER	MJ	3,30E+00	6,08E-02	4,86E+00	8,23E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,42E-03	-1,30E-02	-8,69E-03	-5,01E+00
Non-re. PER as energy	MJ	5,37E+01	4,38E+00	3,53E+01	9,33E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,47E-01	-2,83E+01	-5,70E+00	-8,02E+01
Non-re. PER as material	MJ	3,40E+01	0,00E+00	7,53E+00	4,15E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,45E+00	-5,10E+00	5,35E-01
Total use of non-re. PER	MJ	8,77E+01	4,38E+00	4,28E+01	1,35E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,47E-01	-2,28E+01	-1,08E+01	-7,97E+01
Secondary materials	kg	5,87E-01	1,83E-03	1,25E-03	5,91E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,04E-04	3,41E-04	1,85E-05	-6,64E-03
Renew. secondary fuels	MJ	1,36E-04	2,39E-05	9,01E-05	2,50E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,35E-06	2,55E-06	3,83E-07	-3,28E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	2,20E-02	6,28E-04	1,28E-02	3,54E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,58E-05	7,94E-04	7,65E-05	-2,53E-02

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	7,97E-01	2,80E-02	8,58E-03	8,34E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,23E-03	2,63E-02	8,12E-05	-3,12E-01
Non-hazardous waste	kg	6,68E+00	5,53E-01	2,51E-01	7,48E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,41E-02	9,44E-01	1,86E-03	-5,38E+01
Radioactive waste	kg	6,35E-05	8,78E-07	8,16E-06	7,25E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,05E-08	8,16E-08	1,13E-08	-3,02E-05

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,35E-01	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,85E-01	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – 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 ₂ e	4,10E+00	3,07E-01	4,41E+00	8,82E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E-02	2,82E+00	3,00E-03	-6,86E+00

9) 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 characterisation factor for biogenic CO₂ is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Electricity, Serbia, residual mix, 2024, Serbia, One Click LCA, 0.84 kgCO₂e/kWh
2. Drying, natural gas, World, Ecoinvent, 0.0407 kgCO₂e/m³

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	1.03
Collection process: Mixed waste (kg)	0.48
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0.14
Recovery: energy recovery (kg)	0.89
Disposal (kg)	0.48
Scenario assumptions e.g. transportation (mode, km) & other	Transport of mixed construction waste to waste treatment facility is assumed to be 100 km by truck.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Yazan Badour as an authorized verifier for EPD Hub Limited 03.07.2026

