ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Laminated Natural Rubber Bearing
Farrat Isolevel Ltd

EPD HUB, HUB-1952
Published on 21.09.2024, last updated on 21.09.2024, valid until 21.09.2029.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Farrat Isolevel Ltd
Address	Balmoral Road, Altrincham, Greater Manchester, WA15 8HJ, United Kingdom
Contact details	sales@farrat.com
Website	https://www.farrat.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 und 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	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Amarachi. F. Obilor, Farrat Isolevel Ltd
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Nemanja Nedic, as an authorized verifier acting for EPD Hub Limited

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	Laminated Natural Rubber Bearing
Additional labels	-
Product reference	LNR
Place of production	United Kingdom
Period for data	Calendar year 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of Laminated Natural Rubber Bearing
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	3.27E+00
GWP-total, A1-A3 ($kgCO_2e$)	3.27E+00
Secondary material, inputs (%)	19.8
Secondary material, outputs (%)	75.9
Total energy use, A1-A3 (kWh)	11.8
Net freshwater use, A1-A3 (m^3)	0.04

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Farrat's heritage of solving engineering challenges dates back to 1959. Since then, we have developed vibration isolation solutions for clients around the world.
Our vibration control solutions are used to support buildings and building structures in order to provide protection from low-frequency ground-borne noise and vibration generated from external sources such as underground railways for the entire life of the building.
As a proud British manufacturer, Farrat design and manufacture a comprehensive range of ever improving standard and bespoke products; ranging from individual acoustic bearings through to complete building isolation systems (BIS).

PRODUCT DESCRIPTION

Farrat's elastomeric bearings or full area mats are used to support the vertical loads of the building whilst acting as a low natural frequency spring to eliminate the disturbance associated with ground-borne vibration and re-radiated noise. Bearings can be designed to support:
- Columns
- Project specific connection details
- New and retained facades
- Cores (stair and lift)
- Floor slab edges

Farrat vertical support bearings can be designed in various forms, depending on the specific requirements and constraints of the application.

Our Building Vibration Isolation solutions are manufactured to meet the ISO 9001:2021 and ISO 14001:2021 quality standards.

Further technical information is available on the Farrat website. https://farrat.com/category/building-acoustics/vertical-support-bearings/

Further information can be found at https://www.farrat.com/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	64.57	UK, EU
Minerals	0	
Fossil materials	0.87	EU
Bio-based materials	34.55	Asia, Africa

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	0.001077

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of Laminated Natural Rubber Bearing
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

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

The laminated natural rubber bearing consists of steel plates, natural rubber layers, bearing cover and adhesive. The raw materials are produced in the United Kingdom and are delivered to the manufacturer's site. The rubber is cut and arranged in layers, alternating with coated steel plates to form a sandwich structure. This layered assembly is then placed into a moulding machine for vulcanization. Nitrile butadiene rubber covers are positioned on both the top and bottom of the sandwich-like product, which is subsequently pressed together to achieve the final shape. Any flash is trimmed off, after which quality checks are conducted. The manufacturing process requires electricity to power the moulding machine and press. The product is placed on wooden pallets and secured with packaging film.

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.

Average transportation distance from production plant to retailer's sites is assumed as 471 km and the transportation method is assumed to be lorry. 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. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as product is packaged properly. Environmental impacts from installation into the building include generation of waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets.

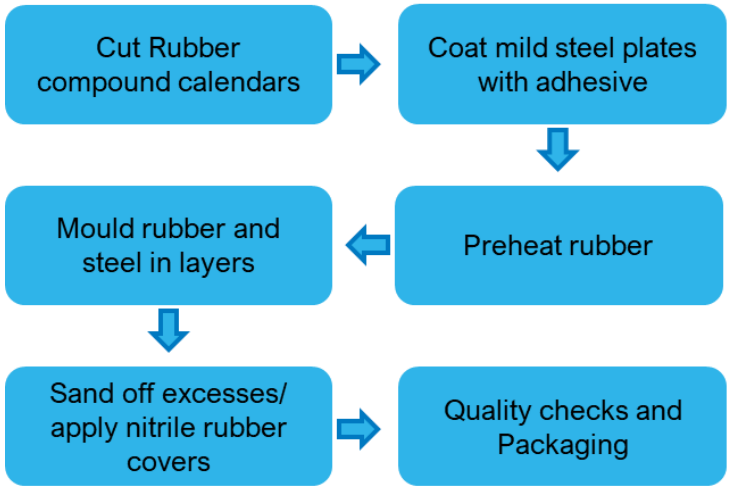
PRODUCT USE AND MAINTENANCE (B1-B7)

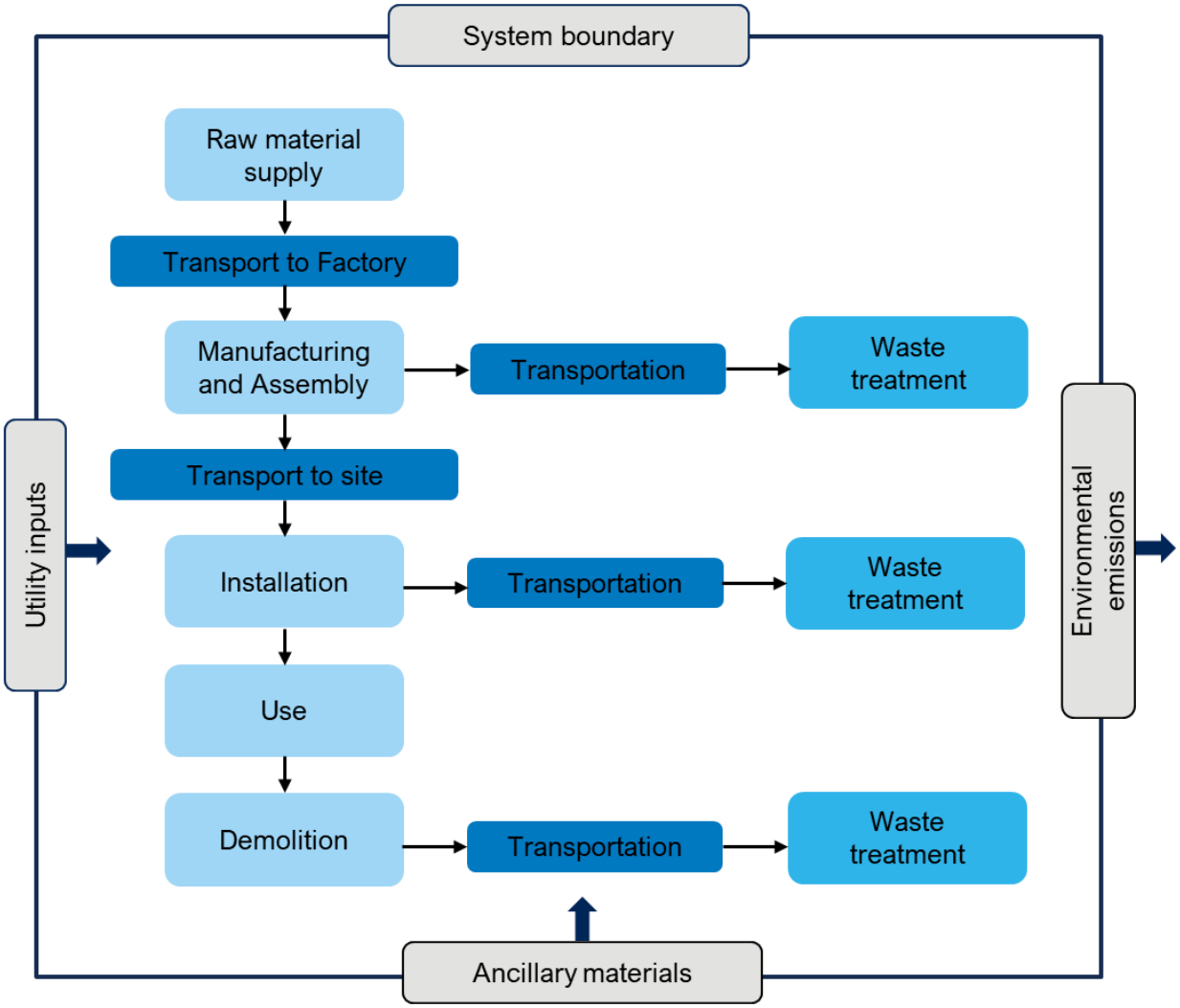
The use phase is not included in the assessment as it is not relevant for the product.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The disassembly of the product is assumed to be done manually, so no energy resources are considered in this study. It is assumed that the different waste materials are collected separately and transported to a waste treatment facility. Transportation distance to waste treatment plant is assumed to be about 900 km and the transportation method is assumed to be lorry (C2). Module C3 accounts for energy and resource inputs for sorting and treating of materials for recycling. Landfilled materials are included in module C4. Due to the material recovery potential of the product, and material and energy recovery potential of its packaging, recycled raw materials lead to avoided virgin material production and the energy recovered from incineration replaces electricity and heat from primary sources. Benefits and loads from incineration and recycling are included in Module D.

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.

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	Allocated by mass or volume
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	- %

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

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 v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

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	2.51E+00	3.35E-02	7.29E-01	3.27E+00	8,20E-02	1.40E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3.63E-02	2.45E-01	5.02E-03	-1.38E+00
GWP – fossil	kg CO_2e	2.51E+00	3.35E-02	7.32E-01	3.27E+00	8,20E-02	1.36E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3.63E-02	2.45E-01	5.01E-03	-1.38E+00
GWP – biogenic	kg CO_2e	0.00E+00	0.00E+00	-3.95E-03	-3.95E-03	0,00E+00	3.95E-03	MND	MND	MND	MND	MND	MND	MND	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP – LULUC	kg CO_2e	1.08E-03	1.36E-05	3.82E-04	1.47E-03	3,34E-05	5.82E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1.48E-05	2.48E-05	2.01E-06	-2.53E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	1.03E-07	7.38E-09	8.68E-08	1.97E-07	1,81E-08	9.15E-10	MND	MND	MND	MND	MND	MND	MND	MNR	8.01E-09	2.48E-09	4.02E-10	-5.89E-08
Acidification potential	mol H^+e	1.13E-02	1.38E-04	2.26E-03	1.37E-02	3,39E-04	4.14E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1.50E-04	2.46E-04	1.04E-05	-5.50E-03
EP-freshwater[2)]	kg Pe	9.90E-05	2.82E-07	1.49E-05	1.14E-04	6,92E-07	1.13E-07	MND	MND	MND	MND	MND	MND	MND	MNR	3.06E-07	9.56E-07	1.83E-08	-5.24E-05
EP-marine	kg Ne	2.30E-03	4.04E-05	3.80E-04	2.72E-03	9,90E-05	1.85E-05	MND	MND	MND	MND	MND	MND	MND	MNR	4.39E-05	5.80E-05	7.84E-06	-1.12E-03
EP-terrestrial	mol Ne	2.61E-02	4.46E-04	4.20E-03	3.07E-02	1,09E-03	1.65E-04	MND	MND	MND	MND	MND	MND	MND	MNR	4.84E-04	6.61E-04	3.83E-05	-1.30E-02
POCP ("smog")[3)]	kg NMVOCe	1.14E-02	1.36E-04	3.90E-03	1.55E-02	3,33E-04	4.57E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1.47E-04	1.78E-04	1.22E-05	-6.47E-03
ADP-minerals & metals4)	kg Sbe	3.04E-05	1.16E-07	3.72E-06	3.42E-05	2,85E-07	4.68E-08	MND	MND	MND	MND	MND	MND	MND	MNR	1.26E-07	2.24E-06	3.17E-09	-2.34E-05
ADP-fossil resources	MJ	3.28E+01	4.84E-01	1.46E+01	4.79E+01	1,19E+00	7.55E-02	MND	MND	MND	MND	MND	MND	MND	MNR	5.26E-01	2.57E-01	2.91E-02	-1.52E+01
Water use[5)]	m^3e depr.	1.23E+00	2.12E-03	2.74E-01	1.50E+00	5,20E-03	4.52E-03	MND	MND	MND	MND	MND	MND	MND	MNR	2.30E-03	1.09E-02	1.47E-04	-2.93E-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, PEF

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	1.89E-07	2.85E-09	1.94E-08	2.11E-07	8,20E-02	1.72E-09	MND	MND	MND	MND	MND	MND	MND	MNR	3.09E-09	3.39E-09	2.04E-10	-8.50E-08
Ionizing radiation[6)]	kBq U235e	1.18E-01	2.25E-03	6.18E-02	1.82E-01	8,20E-02	3.40E-04	MND	MND	MND	MND	MND	MND	MND	MNR	2.44E-03	2.63E-03	1.34E-04	2.86E-02
Ecotoxicity (freshwater)	CTUe	6.88E+01	4.46E-01	7.63E+00	7.69E+01	0,00E+00	1.99E-01	MND	MND	MND	MND	MND	MND	MND	MNR	4.84E-01	1.43E+00	3.45E-02	-4.37E+01
Human toxicity, cancer	CTUh	1.33E-08	1.25E-11	2.28E-10	1.36E-08	3,34E-05	1.95E-11	MND	MND	MND	MND	MND	MND	MND	MNR	1.36E-11	3.85E-11	1.11E-12	1.02E-08
Human tox. non-cancer	CTUh	5.99E-08	4.15E-10	5.29E-09	6.56E-08	1,81E-08	2.94E-10	MND	MND	MND	MND	MND	MND	MND	MNR	4.51E-10	1.56E-09	1.83E-11	-3.02E-08
SQP[7)]	-	7.12E+00	3.36E-01	2.29E+00	9.75E+00	3,39E-04	7.90E-02	MND	MND	MND	MND	MND	MND	MND	MNR	3.64E-01	4.72E-01	6.44E-02	-3.83E+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	2.26E+00	5.68E-03	5.13E-01	2.78E+00	1,39E-02	2.51E-03	MND	MND	MND	MND	MND	MND	MND	MNR	6.16E-03	4.14E-02	7.17E-04	-9.80E-01
Renew. PER as material	MJ	0.00E+00	0.00E+00	3.46E-02	3.46E-02	0,00E+00	-3.46E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0.00E+00	0.00E+00	0.00E+00	1.00E-02
Total use of renew. PER	MJ	2.26E+00	5.68E-03	5.48E-01	2.82E+00	1,39E-02	-3.21E-02	MND	MND	MND	MND	MND	MND	MND	MNR	6.16E-03	4.14E-02	7.17E-04	-9.70E-01
Non-re. PER as energy	MJ	3.28E+01	4.84E-01	6.30E+00	3.95E+01	1,19E+00	7.55E-02	MND	MND	MND	MND	MND	MND	MND	MNR	5.26E-01	2.57E-01	2.91E-02	-1.38E+01
Non-re. PER as material	MJ	6.72E-02	0.00E+00	4.25E+00	4.31E+00	0,00E+00	-4.25E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0.00E+00	-3.63E-02	-2.85E-02	1.42E+00
Total use of non-re. PER	MJ	3.28E+01	4.84E-01	1.05E+01	4.39E+01	1,19E+00	-4.17E+00	MND	MND	MND	MND	MND	MND	MND	MNR	5.26E-01	2.21E-01	6.53E-04	-1.23E+01
Secondary materials	kg	1.98E-01	1.59E-04	2.59E-03	2.01E-01	3,91E-04	1.37E-04	MND	MND	MND	MND	MND	MND	MND	MNR	1.73E-04	3.16E-04	1.78E-05	7.38E-01
Renew. secondary fuels	MJ	2.59E-04	2.06E-06	4.80E-03	5.06E-03	5,06E-06	1.22E-06	MND	MND	MND	MND	MND	MND	MND	MNR	2.24E-06	1.43E-05	2.95E-07	-1.18E-04
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	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.81E-02	5.73E-05	7.01E-03	3.51E-02	1,40E-04	3.46E-05	MND	MND	MND	MND	MND	MND	MND	MNR	6.21E-05	4.27E-04	3.11E-05	-4.43E-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	9.22E-01	6.97E-04	1.21E-01	1.04E+00	1,71E-03	3.81E-04	MND	MND	MND	MND	MND	MND	MND	MNR	7.57E-04	1.62E-03	4.60E-04	-4.05E-01
Non-hazardous waste	kg	4.11E+00	1.11E-02	5.74E-01	4.69E+00	2,73E-02	7.30E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1.21E-02	1.21E-01	1.68E-01	-2.09E+00
Radioactive waste	kg	4.94E-05	3.20E-06	4.41E-05	9.68E-05	7,84E-06	3.22E-07	MND	MND	MND	MND	MND	MND	MND	MNR	3.47E-06	1.32E-06	0.00E+00	-1.07E-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	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	4.40E-02	4.40E-02	0.00E+00	3.38E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0.00E+00	7.59E-01	0.00E+00	0.00E+00
Materials for energy rec	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	MNR	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	1.51E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0.00E+00	1.48E-02	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	2.40E+00	3.31E-02	7.17E-01	3.15E+00	8,12E-02	1.35E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3.59E-02	2.45E-01	4.22E-03	-1.31E+00
Ozone depletion Pot.	kg CFC_{-11}e	1.04E-07	5.85E-09	6.95E-08	1.79E-07	1,43E-08	7.40E-10	MND	MND	MND	MND	MND	MND	MND	MNR	6.34E-09	2.05E-09	3.19E-10	-6.29E-08
Acidification	kg SO_2e	9.17E-03	1.08E-04	1.88E-03	1.12E-02	2,64E-04	3.08E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1.17E-04	1.96E-04	7.88E-06	-4.46E-03
Eutrophication	kg PO_4^3e	4.30E-03	2.48E-05	6.81E-04	5.00E-03	6,07E-05	2.15E-04	MND	MND	MND	MND	MND	MND	MND	MNR	2.69E-05	8.77E-05	2.34E-04	-2.17E-03
POCP (“smog”)	kg C_2H_4e	1.07E-03	4.38E-06	1.89E-04	1.26E-03	1,07E-05	2.08E-06	MND	MND	MND	MND	MND	MND	MND	MNR	4.76E-06	7.43E-06	8.89E-07	-7.19E-04
ADP-elements	kg Sbe	3.01E-05	1.13E-07	3.69E-06	3.39E-05	2,78E-07	4.57E-08	MND	MND	MND	MND	MND	MND	MND	MNR	1.23E-07	2.23E-06	3.08E-09	-2.34E-05
ADP-fossil	MJ	3.28E+01	4.84E-01	1.46E+01	4.79E+01	1,19E+00	7.55E-02	MND	MND	MND	MND	MND	MND	MND	MNR	5.26E-01	2.57E-01	2.91E-02	-1.52E+01

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.

Nemanja Nedic, as an authorized verifier acting for EPD Hub Limited
22.09.2024

VERIFIED ISO 14025