STEYPUSTÖÐIN

STERKARI LAUSNIR

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025

Hekla pumice
Steypustöðin ehf

EPD HUB, HUB-4117
Published on 13.10.2025, last updated on 13.10.2025, valid until 12.10.2030

Life Cycle Assessment study has been performed following the requirements of ISO 14025, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	**Steypustöðin**
Address	**Malarhöfði 10, 110 Reykjavík, Iceland**
Contact details	**kai@steypustodin.is**
Website	**https://steypustodin.is/**

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	**ISO 14025, and ISO 14040/14044**
PCR	**EPD Hub Core PCR Version 1.2, 24 Mar 2025**
Sector	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4, C1-C4, D
EPD author	Baldur Reykdal – VSÓ Ráðgjöf
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Pat Hermon, as an authorised verifier acting for EPD Hub Limited.

PRODUCT

Product name	Hekla pumice
Additional labels	-
Product reference	-
Place(s) of raw material origin	Merkurhraun, Hekla, Iceland
Place of production	Iceland
Place(s) of installation and use	Denmark
Period for data	Data collection is based on Q1 and Q2 of 2025
Averaging in EPD	No averaging
A1-A3 Specific data (%)	94,7

ENVIRONMENTAL DATA SUMMARY

Declared unit	One cubic meter (1 m^3)
Declared unit mass	412,4 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	3,77E+00
GWP-total, A1-A3 ($kgCO_2e$)	3,77E+00
Secondary material, inputs (%)	0
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	14,4
Net freshwater use, A1-A3 (m^3)	0

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

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.

PRODUCT DESCRIPTION

Overview

Pumice is a lightweight, naturally expanded volcanic aggregate sourced from southern Iceland. Supplied by Steypustöðin, this premium-grade material delivers exceptional structural, thermal, and chemical stability. It is used in horticulture.

Slight chemical differences reflect its unique **dacitic volcanic origin**, distinguishing it from more common rhyolitic pumice.

Chemical Composition

Silica (SiO_2): ~66–76 %
Alumina (Al_2O_3): ~13–16 %
Minor oxides present: FeO, CaO, Na_2O, K_2O
Bound Water (H_2O^+): ~1–2 %
Loss on Ignition (LOI): ~1–3 %
Mineralogical Composition

Amorphous volcanic glass content: ~95 %
Trace minerals include:
Plagioclase (~3–4 %)
Olivine, pyroxene, magnetite (<1 % each)
No detectable quartz, cristobalite, clay, gypsum, or fibrous minerals

Physical Properties

Dry bulk density: ~320 kg/m^3
Wet bulk density: ~627,9 kg/m^3
Specific gravity: ~2.3–2.6
Thermal conductivity: ~0.07–0.10 kcal/m·h·°C (~0.08 W/m·K)
Pore structure (1–12 mm grain size):
Open pores: ~50 %
Closed pores: ~25 %
Glass matrix: ~25 %
Water absorption capacity: ~52–62 % by volume

Further information can be found at:
https://steypustodin.is/

PRODUCT RAW MATERIAL MAIN COMPOSITION

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

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

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	One cubic meter (1 m^3)
Mass per declared unit	412,4 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	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

Modules not declared = ND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the extracting of the raw materials well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the cleansing processes at the washing/screening facilities are included in this stage.
A market-based approach is used in modelling the electricity mix utilized in the factory. All electricity is sourced from the Icelandic national grid.

Pumice is a natural stone product which is excavated from a quarry in Merkurhraun, Iceland. The pumice is gathered from the quarry by using excavators and wheel loaders. The excavators dig out the pumice and move the material to a wheel loader which delivers it to a truck. The excavators and wheel loaders are accounted for in A1 Raw materials phase as diesel usage. The energy use of the excavator and wheel loader is derived from daily average diesel usage and daily average workload (annual averages are not available as the site is new). A standard liter to kWh conversion of 10,9 is used. The electricity usage of the washer/screener is gathered by daily average data. Only tap water is used as an ancillary material, 350 kg. There are no production losses associated with the product as all the material is washed/screened on site. All the material which is not used in the product is therefore returned to the mine from which it is sourced.

The pumice is washed and screened at the mining facility. From there it is driven by truck 25 km to a storage facility. All pumice is stored at the storage facility before it is transported further to customers. This distance is 25 km and is accounted for in A3 Additional Transport. The weight of the pumice is 628 kg as it is considered 100% wet. The washing/screening process uses electricity and water which is accounted for in the A3 Ancillary Materials and Energy Use.

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.

From the storage facility the pumice is driven by truck (with a 43 m^3 capacity) to the port, 130 km. This is designated A4 (a).
Lastly is the transport of pumice by sea. The scenario chosen is from the port in Iceland to the port in Denmark as most of the pumice is sold there. The distance traveled by sea is 1945 km and the capacity of the ship is 6000 m3. This is designated A4 (b). Further transport and processes once the product reaches Denmark is out of the scope of this EPD. The product is mainly sold

to Byggros in Denmark which uses the product for various agricultural uses across their many factories and sites.
Before and after storage the declared unit has different weight based on the water content of the unit. For the A4 transport the weight is 412,4 kg as the pumice is ~30% wet.

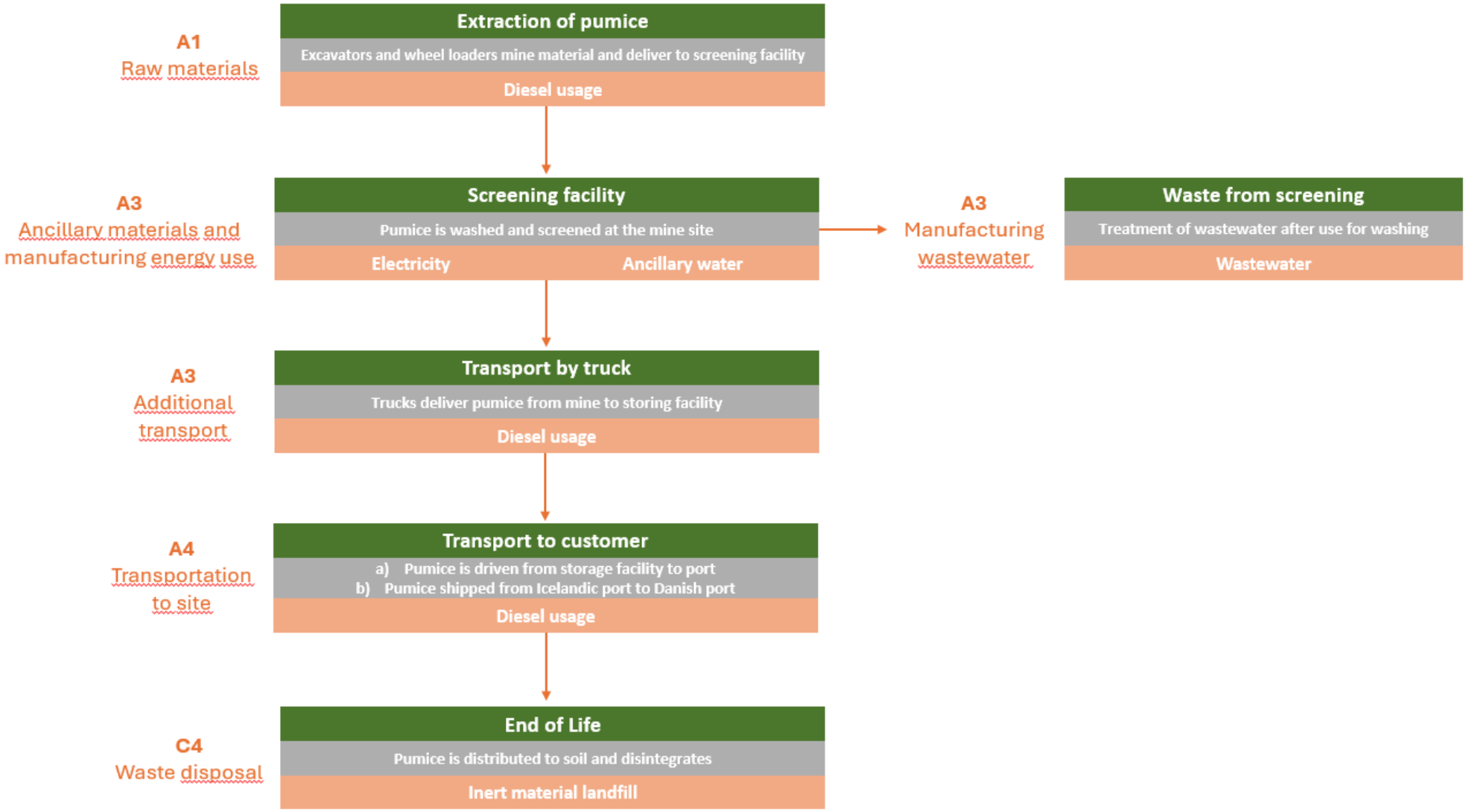
PRODUCT USE AND MAINTENANCE (B1-B7)

Phases B1-B7 are not accounted for.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The product is used in Denmark as fertilizer for soil, so it is absorbed into the ground. Therefore, its EoL scenario is most like inert landfill for zeolite. This data point is chosen in C1-4 and marked as C4 waste disposal. There are no benefits associated with the EoL phase; thus, nothing is declared in the D phase.

SYSTEM DYAGRAM



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 that is 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.

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 made according to 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	Not applicable
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

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.

There are no co-products at the mine and all the pumice that is mined is used. The allocation for the ancillary materials and the manufacturing energy is done by volume. The volume which the wheel loader and excavator mine each day is used, along with their diesel usage per day, to ascertain their diesel usage per cubic meter of pumice. The electricity used for a cubic meter by the washing/screening facility is gathered in the same way.

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

Impact category	Unit	A1	A2	A3	A1-A3	A4 (a)	A4 (b)	A5	B1-7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	1,57E+00	0,00E+00	2,19E+00	3,77E+00	5,77E+00	5,73E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	2,58E+00	0,00E+00
GWP – fossil	kg CO_2e	1,57E+00	0,00E+00	2,20E+00	3,77E+00	5,77E+00	5,73E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	2,57E+00	0,00E+00
GWP – biogenic	kg CO_2e	1,60E-04	0,00E+00	-5,24E-03	-5,08E-03	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	1,61E-04	0,00E+00	1,37E-03	1,53E-03	2,58E-03	3,81E-03	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,47E-03	0,00E+00
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	2,41E-08	0,00E+00	1,06E-07	1,30E-07	8,53E-08	8,17E-08	ND	ND	0,00E+00	0,00E+00	0,00E+00	7,46E-08	0,00E+00
Acidification potential	mol H^+e	1,42E-02	0,00E+00	8,31E-03	2,25E-02	1,97E-02	1,50E-01	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,82E-02	0,00E+00
EP-freshwater[2)]	kg Pe	4,54E-05	0,00E+00	3,05E-04	3,50E-04	4,50E-04	2,12E-04	ND	ND	0,00E+00	0,00E+00	0,00E+00	2,12E-04	0,00E+00
EP-marine	kg Ne	6,58E-03	0,00E+00	3,10E-03	9,68E-03	6,47E-03	3,42E-02	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,96E-03	0,00E+00
EP-terrestrial	mol Ne	7,21E-02	0,00E+00	2,61E-02	9,81E-02	7,03E-02	3,81E-01	ND	ND	0,00E+00	0,00E+00	0,00E+00	7,60E-02	0,00E+00
POCP ("smog")[3)]	kg NMVOCe	2,15E-02	0,00E+00	1,01E-02	3,16E-02	2,90E-02	1,06E-01	ND	ND	0,00E+00	0,00E+00	0,00E+00	2,72E-02	0,00E+00
ADP-minerals & metals[4)]	kg Sbe	5,64E-07	0,00E+00	7,16E-06	7,72E-06	1,61E-05	6,77E-06	ND	ND	0,00E+00	0,00E+00	0,00E+00	4,09E-06	0,00E+00
ADP-fossil resources	MJ	2,06E+01	0,00E+00	3,04E+01	5,09E+01	8,39E+01	7,01E+01	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,32E+01	0,00E+00
Water use[5)]	m^3e depr.	5,14E-02	0,00E+00	2,44E-01	2,95E-01	4,14E-01	2,26E-01	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,82E-01	0,00E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterization 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

Impact category	Unit	A1	A2	A3	A1-A3	A4 (a)	A4 (b)	A5	B1-7	C1	C2	C3	C4	D
Particulate matter	Incidence	4,03E-07	0,00E+00	2,04E-07	6,07E-07	5,78E-07	1,69E-07	ND	ND	0,00E+00	0,00E+00	0,00E+00	4,15E-07	0,00E+00
Ionizing radiation[6)]	kBq U235e	9,11E-03	0,00E+00	6,23E-02	7,14E-02	7,28E-02	3,72E-02	ND	ND	0,00E+00	0,00E+00	0,00E+00	3,97E-02	0,00E+00
Ecotoxicity (freshwater)	CTUe	1,13E+00	0,00E+00	8,47E+00	9,60E+00	1,18E+01	5,58E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	5,30E+00	0,00E+00
Human toxicity, cancer	CTUh	1,62E-10	0,00E+00	7,22E-10	8,84E-10	9,52E-10	1,29E-09	ND	ND	0,00E+00	0,00E+00	0,00E+00	4,75E-10	0,00E+00
Human tox. non-cancer	CTUh	2,56E-09	0,00E+00	3,26E-08	3,51E-08	5,42E-08	1,81E-08	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,09E-08	0,00E+00
SQP[7)]	-	1,44E+00	0,00E+00	2,62E+01	2,76E+01	8,43E+01	5,70E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,24E+02	0,00E+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 (a)	A4 (b)	A5	B1-7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	1,30E-01	0,00E+00	9,25E-01	1,05E+00	1,15E+00	6,40E-01	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,10E-01	0,00E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	1,30E-01	0,00E+00	9,25E-01	1,05E+00	1,15E+00	6,40E-01	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,10E-01	0,00E+00
Non-re. PER as energy	MJ	2,06E+01	0,00E+00	3,04E+01	5,09E+01	8,39E+01	7,01E+01	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,32E+01	0,00E+00
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	2,06E+01	0,00E+00	3,04E+01	5,09E+01	8,39E+01	7,01E+01	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,32E+01	0,00E+00
Secondary materials	kg	8,54E-03	0,00E+00	2,49E-02	3,35E-02	3,57E-02	3,98E-02	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,59E-02	0,00E+00
Renew. secondary fuels	MJ	2,23E-05	0,00E+00	1,47E-04	1,70E-04	4,53E-04	8,39E-05	ND	ND	0,00E+00	0,00E+00	0,00E+00	3,29E-04	0,00E+00
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,36E-03	0,00E+00	2,98E-03	4,34E-03	1,24E-02	5,42E-03	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,57E-02	0,00E+00

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4 (a)	A4 (b)	A5	B1-7	C1	C2	C3	C4	D
Hazardous waste	kg	2,29E-02	0,00E+00	9,81E-02	1,21E-01	1,42E-01	1,09E-01	ND	ND	0,00E+00	0,00E+00	0,00E+00	6,98E-02	0,00E+00
Non-hazardous waste	kg	3,12E-01	0,00E+00	3,59E+02	3,59E+02	2,62E+00	1,48E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,59E+00	0,00E+00
Radioactive waste	kg	2,23E-06	0,00E+00	1,52E-05	1,74E-05	1,79E-05	9,14E-06	ND	ND	0,00E+00	0,00E+00	0,00E+00	9,68E-06	0,00E+00

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4 (a)	A4 (b)	A5	B1-7	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	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	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	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	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	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	ND	ND	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	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4 (a)	A4 (b)	A5	B1-7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	1,57E+00	0,00E+00	2,20E+00	3,77E+00	5,77E+00	5,73E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	2,58E+00	0,00E+00

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 characterization 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

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 ISO 14040/14044 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

Pat Hermon, as an authorised verifier acting for EPD Hub Limited.

Pat Hermon

VERIFIED ISO 14025