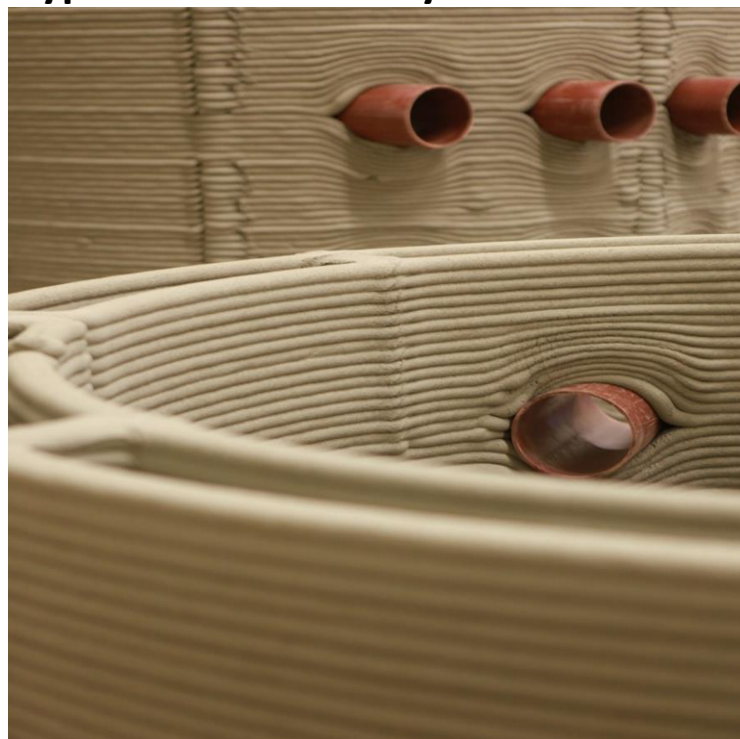


# ENVIRONMENTAL PRODUCT DECLARATION

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

**Drawpit / Inspection chamber**

**Hyperion Robotics Oy**



**EPD HUB, HUB-1315**

Publishing date 19 April 2024, last updated on 30 April 2024, valid until 19 April 2029.

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Hyperion Robotics Oy
Address	Karamalmintie 2, Loading Bay H305, Espoo, Finland
Contact details	contact@hyperionrobotics.com
Website	hyperionrobotics.com

### EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules A4-A5, C1-C4, D
EPD author	D D Ramteke, Hyperion Robotics Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Magaly González Vázquez, 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	Drawpit / Inspection chamber
Additional labels	-
Product reference	-
Place of production	Espoo, Finland
Period for data	01/01/2023-31/12/2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit
Declared unit mass	5078 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	9,20E+02
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	8,02E+02
Secondary material, inputs (%)	3.87
Secondary material, outputs (%)	91.6
Total energy use, A1-A3 (kWh)	2240
Total water use, A1-A3 (m <sup>3</sup> e)	14.8

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Specializing in 3D concrete printing, Hyperion Robotics Oy is at the forefront of integrating automation and advanced manufacturing techniques into the realm of construction. Our focus lies in developing sustainable, efficient, and cost-effective building solutions, leveraging 3D printing technology to create structures and components with reduced material waste and enhanced design flexibility.

### PRODUCT DESCRIPTION

Hyperion's cylindrical drawpit serves as an access chamber designed to facilitate the connection and inspection of underground utilities, primarily data and electrical cables. This innovative structure integrates a printed permanent formwork with a cast-in reinforced concrete core, offering robustness and durability. The drawpit features multiple PVC pipe penetrations through its walls, providing versatile options for the geometrical arrangement of cables and ensuring adaptability to various installation requirements. Distinct from traditional methods like cast in situ, precast, or stackable rings, Hyperion's drawpits streamline the installation process, significantly reducing on-site construction time. The design is optimized for efficiency and ease of access, making it a preferable choice for modern infrastructure projects.

Key specifications of the Hyperion drawpit include:

**Inner clear diameter:** 1.6 meters, allowing ample space for cable routing and maintenance activities.

**Outer diameter:** 1.9 meters, ensuring structural integrity and sufficient insulation from the surrounding earth.

**Height:** 2.2 meters, providing sufficient vertical space for easy access and cable management.

**Weight:** Approximately 5 tons, indicative of the robustness and material density required to withstand underground conditions and loads.

Further information can be found at [hyperionrobotics.com](http://hyperionrobotics.com)

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	1%	Finland
Minerals	99%	Finland
Fossil materials	-	-
Bio-based materials	-	-

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.34
Biogenic carbon content in packaging, kg C	32.45

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit VP-011	1 Unit
Mass per declared unit VP-012	5078 kg
Functional unit	-
Reference service life	-

### SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
-	-	-
-	-	-
-	-	-
-	-	-

# 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	Deconstr./demol.	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 environmental impact assessment for the product delves into the usage of materials in 3D printing a drawpit, encompassing cementitious printing materials, cast concrete, reinforcement, pipe inserts, and packaging. The transport of these raw materials to the production site is evaluated, with distance assumptions based on Google Maps data. The assessment also considers electricity consumption and waste

management during the production process. For packaging and ancillary materials, their specific types and quantities are factored into the analysis. Material loss during the printing and handling phases is conservatively estimated at 15% of the total material weight. The assessment also addresses the end-of-life (EoL) considerations for manufacturing waste, outlining the assumed percentages, and referencing the data used. Furthermore, it includes the transportation logistics and distances involved in moving the production waste to the closest recycling facility relative to the company's location.

The production process for a drawpit begins with the preparation of materials suitable for 3D concrete printing. Once the materials are prepared, they are transferred to a silo for feeding into the mixing pump. Upon achieving the desired consistency, the material is then pumped to a robot arm which deposits it along a toolpath. During the printing process, rebars and pipes are installed after a certain number of layers have been printed. The drawpits are then left to cure in an open environment for several days. Vertical rebars are inserted into the drawpit, which is subsequently filled with ready-mix concrete and left to cure outdoors. For transportation, each drawpit is placed on a transportation palette, and a protective wooden structure is constructed around it. This structure is then shipped on a truck and delivered to the client.

### 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.

The environmental impact of transporting the final drawpits to the client (A4) includes the direct exhaust emissions from fuel consumption, the environmental impacts associated with fuel production, and emissions related to transportation infrastructure. The drawpits are collected and transported from the factory to the client's location, with the transportation distance determined based on these locations. The average transportation distance from the production plant to the building site is estimated to be 2282 km, utilizing both lorries and ships for the

journey.

The vehicle capacity utilization is assumed to be at 100%, indicating a full load for each transport. While this may vary, such variations are considered negligible in this context, as transportation emissions play a minor role in the overall environmental impact. The study also accounts for the fact that return trips are typically not utilized by the transportation company to serve other clients, meaning empty returns are factored into the assessment.

Furthermore, it is assumed that transportation does not result in product losses, as the drawpits are securely fastened and protected during transit. This ensures that the products arrive at the client's site in their intended condition without any damage or loss of material.

The environmental assessment incorporates end-of-life (EoL) considerations for installation waste, specifying assumed percentages and referencing data from ancillary and packaging materials, categorized under A3 (wooden structure). Additionally, it details the transportation logistics and distances for moving production waste to a recycling facility, which is presumed to be within a 50 km radius of the installation site. The pallet and wooden structure used for packaging are shredded and utilized in incineration. According to RICS standard (Whole life carbon assessment for the built environment) 80 % of wood can be recycled while 20% end up in incineration. With incinerators operating below 60% efficiency, the shredded wood is assumed to be used for energy production (D).

## 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)

In the end-of-life phase, specifically during demolition, it is assumed that 100% of the waste is collected as distinct construction waste. The demolition process itself requires energy, predominantly in the form of diesel fuel used by construction machinery. The average energy consumption for such a demolition process is considered (Bozdağ, Ö &

Seçer, M. 2007).

Post-demolition, the dismantled Drawpit are transported to the nearest construction waste treatment facility. It's estimated that there is no mass loss during the products lifespan, so the end-of-life product is assumed to maintain the same weight as the originally declared product. The estimated transportation distance to the closest disposal site is 50 km, with lorries being the primary mode of transport due to their commonality.

At the waste treatment plant, efforts are made to segregate waste that can be reused, recycled, or recovered for energy. According to the World Steel Association 2020 report, approximately 85% of steel and 92% of concrete are recyclable (Moggridge, M., 2020). The losses incurred during the waste treatment process are considered negligible (C3). The residual 8% of concrete presumed to be sent to landfills (C4) (Ideon, T. & Osjamets, M. (2010)). Owing to the recycling potential of reinforcement steel and concrete, these materials can serve as secondary raw materials, thereby reducing the need for virgin raw materials. 92% of concrete and 85% of steel sent for waste processing are transformed into secondary raw materials post-recycling. Finally, at the end of its life, 100% of the plastic pipe in the drawpit is presumed to be directed to landfill (C4).

# MANUFACTURING PROCESS

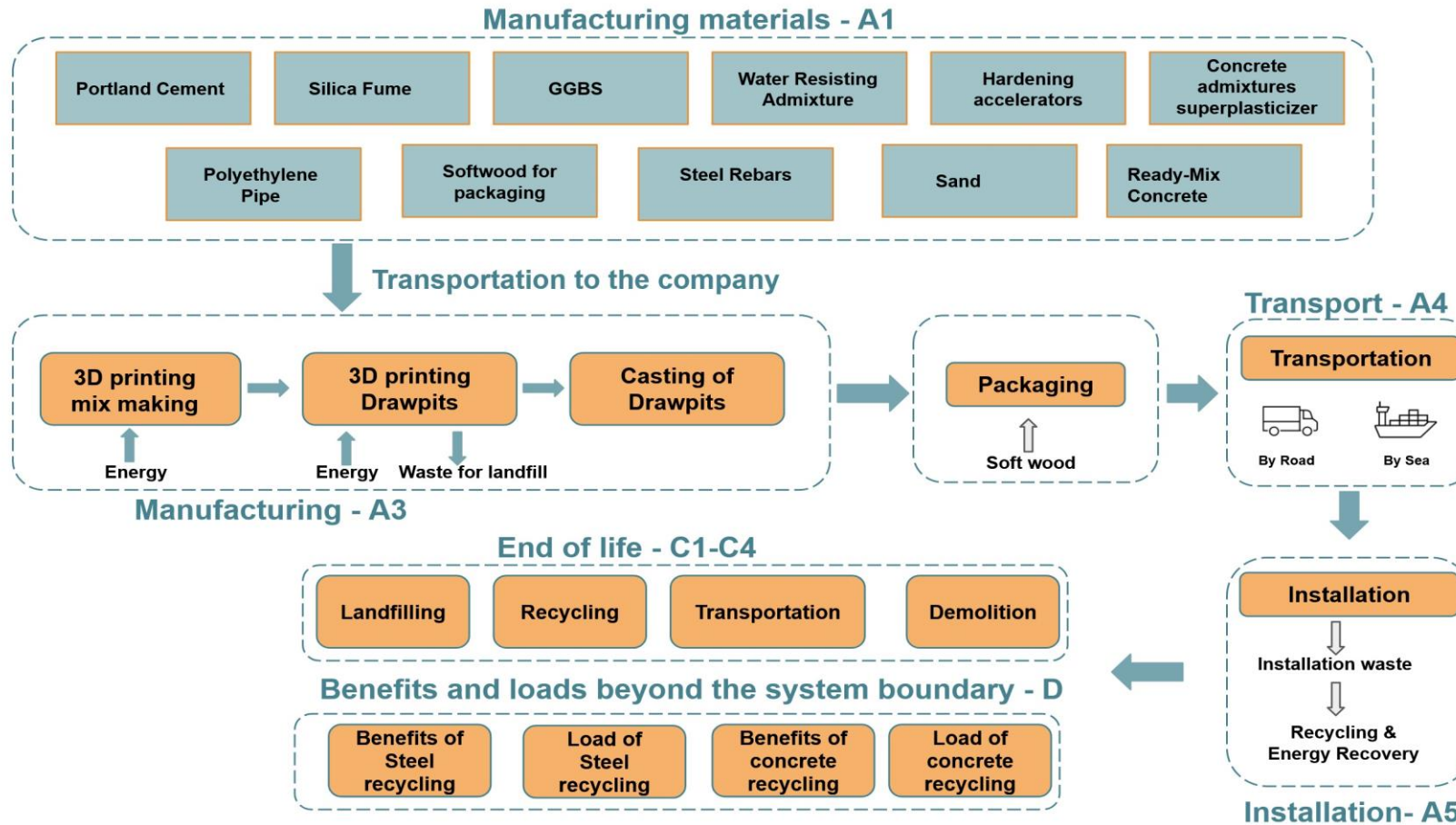


Figure 1: Flow diagram of the manufacturing process.

## 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 materials	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	- %

The section concerning the representativeness of an average of multiple products, factories, or manufacturers is not applicable to our calculations.

### 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.

1. 'Whole life carbon assessment for the built environment', Version 2, issued November 2023, Royal Institution of Chartered Surveyors (RICS), London.
2. Bozdağ, Ö. & Seçer, M. (2007). Energy consumption of demolition process is on the average.
3. Moggridge, M., 2020. New study shows life cycle of stainless steels [online]. Surrey: Steel Times International. Available at: <https://www.steeltimesint.com/news/new-study-shows-life-cycle-of-stainless-steels> [Accessed 10 March 2021].
4. Ideon, T. & Osjamets, M. (2010). Ehitus- ja lammutusjätmete sortimisuuring (Construction and demolition waste sorting and recycling).

# 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 <sup>1)</sup>	kg CO <sub>2</sub> e	8,52E+02	4,59E+01	-9,54E+01	8,02E+02	2,21E+02	1,20E+02	MND	MND	MND	MND	MND	MND	MND	1,68E+01	5,35E+01	4,20E+01	3,46E+00	-2,10E+02
GWP – fossil	kg CO <sub>2</sub> e	8,50E+02	4,59E+01	2,38E+01	9,20E+02	2,21E+02	5,74E-01	MND	MND	MND	MND	MND	MND	MND	1,68E+01	5,35E+01	4,30E+01	3,67E+00	-1,52E+02
GWP – biogenic	kg CO <sub>2</sub> e	1,24E+00	0,00E+00	-1,19E+02	-1,18E+02	-1,39E-17	1,19E+02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,02E+00	-2,16E-01	-5,79E+01
GWP – LULUC	kg CO <sub>2</sub> e	3,65E-01	1,89E-02	1,83E-01	5,67E-01	1,21E-01	7,07E-04	MND	MND	MND	MND	MND	MND	MND	1,67E-03	2,51E-02	3,19E-02	2,18E-03	6,97E-02
Ozone depletion pot.	kg CFC-11e	3,09E-05	1,04E-05	2,32E-06	4,36E-05	4,77E-05	6,50E-08	MND	MND	MND	MND	MND	MND	MND	3,59E-06	1,20E-05	8,33E-06	9,19E-07	-6,30E-06
Acidification potential	mol H <sup>+</sup> e	2,65E+00	1,91E-01	1,28E-01	2,97E+00	3,83E+00	3,52E-03	MND	MND	MND	MND	MND	MND	MND	1,75E-01	2,13E-01	3,57E-01	2,15E-02	-6,89E-01
EP-freshwater <sup>2)</sup>	kg Pe	4,11E-02	3,92E-04	5,70E-04	4,21E-02	1,19E-03	3,03E-05	MND	MND	MND	MND	MND	MND	MND	5,57E-05	4,36E-04	1,10E-03	2,47E-05	-2,96E-03
EP-marine	kg Ne	4,97E-01	5,59E-02	3,07E-02	5,84E-01	9,68E-01	1,06E-03	MND	MND	MND	MND	MND	MND	MND	7,73E-02	6,14E-02	1,35E-01	7,70E-03	-6,31E-02
EP-terrestrial	mol Ne	8,58E+00	6,17E-01	3,54E-01	9,55E+00	1,07E+01	1,15E-02	MND	MND	MND	MND	MND	MND	MND	8,48E-01	6,78E-01	1,46E+00	8,18E-02	-1,99E+00
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	2,20E+00	1,97E-01	1,02E-01	2,50E+00	2,86E+00	3,09E-03	MND	MND	MND	MND	MND	MND	MND	2,33E-01	2,08E-01	4,08E-01	2,41E-02	-8,66E-01
ADP-minerals & metals <sup>4)</sup>	kg Sbe	3,01E-04	1,43E-04	3,82E-04	8,26E-04	5,59E-04	1,50E-06	MND	MND	MND	MND	MND	MND	MND	8,52E-06	2,47E-04	2,16E-04	5,40E-06	-4,01E-03
ADP-fossil resources	MJ	2,22E+03	6,85E+02	5,86E+02	3,49E+03	3,04E+03	9,35E+00	MND	MND	MND	MND	MND	MND	MND	2,26E+02	7,85E+02	7,00E+02	6,26E+01	-1,48E+03
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	1,94E+02	3,29E+00	1,12E+01	2,09E+02	1,19E+01	6,94E-01	MND	MND	MND	MND	MND	MND	MND	6,08E-01	4,09E+00	6,92E+00	2,05E-01	-2,16E+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	2,28E-05	4,82E-06	3,47E-06	3,11E-05	1,33E-05	4,10E-08	MND	MND	MND	MND	MND	MND	MND	4,68E-06	4,01E-06	4,14E-05	4,33E-07	-8,08E-06
Ionizing radiation <sup>6)</sup>	kBq U235e	1,98E+04	3,38E+00	2,18E+01	1,98E+04	1,51E+01	1,61E-01	MND	MND	MND	MND	MND	MND	MND	1,04E+00	4,24E+00	6,83E+00	2,84E-01	-6,28E+00
Ecotoxicity (freshwater)	CTUe	5,65E+03	6,21E+02	4,50E+02	6,72E+03	2,27E+03	7,79E+00	MND	MND	MND	MND	MND	MND	MND	1,36E+02	6,81E+02	8,63E+02	4,19E+01	-3,58E+03
Human toxicity, cancer	CTUh	7,26E-07	1,71E-08	1,34E-08	7,57E-07	1,07E-07	5,72E-10	MND	MND	MND	MND	MND	MND	MND	5,21E-09	2,37E-08	2,68E-08	1,06E-09	1,17E-06
Human tox. non-cancer	CTUh	1,70E-05	6,11E-07	3,23E-07	1,79E-05	1,99E-06	2,26E-08	MND	MND	MND	MND	MND	MND	MND	9,83E-08	6,67E-07	4,93E-07	2,72E-08	6,46E-06
SQP <sup>7)</sup>	-	4,55E+03	7,05E+02	2,60E+02	5,52E+03	1,40E+03	4,43E+00	MND	MND	MND	MND	MND	MND	MND	2,94E+01	4,78E+02	7,75E+02	1,34E+02	-3,12E+03

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 <sup>8)</sup>	MJ	1,07E+03	9,05E+00	5,14E+02	1,59E+03	3,39E+01	1,01E+00	MND	MND	MND	MND	MND	MND	MND	1,29E+00	1,34E+01	3,89E+01	5,68E-01	-3,31E+02
Renew. PER as material	MJ	6,62E-01	0,00E+00	1,07E+03	1,07E+03	0,00E+00	-1,07E+03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-5,63E-01	-9,93E-02	1,60E+02
Total use of renew. PER	MJ	1,07E+03	9,05E+00	1,58E+03	2,66E+03	3,39E+01	-1,07E+03	MND	MND	MND	MND	MND	MND	MND	1,29E+00	1,34E+01	3,84E+01	4,68E-01	-1,70E+02
Non-re. PER as energy	MJ	4,84E+03	6,85E+02	5,86E+02	6,11E+03	3,04E+03	9,34E+00	MND	MND	MND	MND	MND	MND	MND	2,26E+02	7,85E+02	7,00E+02	6,26E+01	-1,48E+03
Non-re. PER as material	MJ	4,25E+02	0,00E+00	0,00E+00	4,25E+02	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-5,89E-02	-4,25E+02	0,00E+00
Total use of non-re. PER	MJ	5,27E+03	6,85E+02	5,86E+02	6,54E+03	3,04E+03	9,34E+00	MND	MND	MND	MND	MND	MND	MND	2,26E+02	7,85E+02	7,00E+02	-3,62E+02	-1,48E+03
Secondary materials	kg	1,96E+02	2,22E-01	4,10E-02	1,97E+02	1,18E+00	5,36E-03	MND	MND	MND	MND	MND	MND	MND	8,85E-02	3,21E-01	2,83E-01	1,35E-02	8,10E+01
Renew. secondary fuels	MJ	1,39E+02	2,37E-03	3,87E-04	1,39E+02	8,02E-03	1,71E-05	MND	MND	MND	MND	MND	MND	MND	2,89E-04	3,70E-03	6,58E-03	3,64E-04	-2,04E-02
Non-ren. secondary fuels	MJ	2,34E+02	0,00E+00	0,00E+00	2,34E+02	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 <sup>3</sup>	1,43E+01	9,33E-02	4,74E-01	1,48E+01	3,02E-01	3,28E-03	MND	MND	MND	MND	MND	MND	MND	1,37E-02	1,10E-01	3,77E-01	6,84E-02	-4,93E+00

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	1,24E+01	9,42E-01	1,44E+00	1,48E+01	3,73E+00	2,62E-02	MND	MND	MND	MND	MND	MND	MND	3,03E-01	1,02E+00	1,72E+00	0,00E+00	-7,55E+01
Non-hazardous waste	kg	4,60E+02	1,59E+01	3,38E+02	8,14E+02	4,91E+01	9,29E+00	MND	MND	MND	MND	MND	MND	MND	2,13E+00	1,85E+01	8,40E+02	4,26E+02	-3,25E+02
Radioactive waste	kg	3,65E-02	4,59E-03	5,09E-03	4,62E-02	2,12E-02	5,82E-05	MND	MND	MND	MND	MND	MND	MND	1,59E-03	5,35E-03	4,71E-03	0,00E+00	-2,47E-03

### 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	2,35E+01	0,00E+00	3,02E+02	3,25E+02	0,00E+00	3,20E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,65E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	1,04E-01	0,00E+00	0,00E+00	1,04E-01	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
Exported energy	MJ	2,68E+01	0,00E+00	0,00E+00	2,68E+01	0,00E+00	4,25E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

## 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.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

Updated 30.04.2024

