Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Penetron Admix

from

Penetron Products Pvt. Ltd.

Programme:	The International EPD® System, www.environdec.com, www.environdecindia.com
Programme operator:	EPD International AB
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *Construction Products, PCR 2019:14, version 1.3.4 and UN CPC code 375*
PCR review was conducted by: The Technical Committee of the International EPD System. See www.envirodec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat at www.environdec.com/contact.
Date of EPD: 6 May 2025, Version: 2
Life Cycle Assessment (LCA)
LCA accountability: Mr. Sagar Ahiwale, Green Solution, Pune.
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by the individual verifier Third-party verifier: *Ms. Arati Bhosale, Pune, India.* Approved by: The International EPD® System

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Penetron Products Pvt. Ltd.
111/2A, Kapparathampatty, Chinnappampatty Main Road, Thoramangalam village, Salem 636501, Tamil Nadu, India.

Contact: Mr. Suresh K. Iyer
Phone: 04298- 291992
Email: info@penetronproducts.in
Website: www.penetron.com

Description of the organization: Founded in the late 1970s, PENETRON developed cementitious waterproofing products and additives to create an optimal crystalline technology. The know-how and experience gained over the past 40 years have enabled PENETRON to offer a broad range of concrete solutions, including crystalline waterproofing, water stops, and liquid sealers. The PENETRON system has been proven effective on countless major projects worldwide. The technical excellence of the products and a knowledgeable and dependable team of people have made the company the industry leader.

Name and location of production site(s):
The EPD refers to the production of Penetron Product, namely Penetron Admix, at the manufacturing site, located in Tamil Nadu, India. The report will be published on the EPD platform and the ECO platform.

Product information

Product name: Penetron Admix
Product description: It is a powdered, non-toxic, third-generation crystalline admixture, is introduced into new concrete during the batching process. Once integrated into the concrete mix, it plays a pivotal role in reducing concrete permeability through the permanent self-repair of microcracks, pores, and capillaries. This action ensures effective safeguarding of the concrete against water infiltration and the detrimental effects of degradation, even in the presence of elevated hydrostatic pressure. PENETRON ADMIX equips construction projects with concrete that is both waterproof and long-lasting, possessing the unique ability to autonomously mend and seal cracks that may arise over the concrete's lifespan.

UN CPC code of Penetron Admix: 375

Geographical scope: India

LCA information

Declared unit: 1 kg of product including packaging

Reference service life: Not Applicable

Time representativeness Information on the production of the tables has been collected in Jan 2024-Dec 2024, all generic data referred to the ecoinvent v3.10 database, including updated datasets.

Database(s) and LCA software used: Ecoinvent v3.10 and SimaPro v 9.6.0.1.

The data sets used for the product modeling have been updated within the last year.

Description of system boundaries:

The product becomes physically integrated with other components during installation, making it impossible to separate at the end of life. Additionally, the product undergoes a physical or chemical transformation that renders it unidentifiable at end of life and the product does not contain any biogenic carbon. Hence, Type D system boundary has been selected as per the PCR. We have used system boundary cradle to gate (A1- A3 modules) for this study. As depicted in Figure 6, A1 module includes the supply of raw materials. A2 module includes the transportation of each raw material to the manufacturing site. A3 module includes all the activities/processes taking place on the manufacturing site. Excluded life cycle stages: Module A4 & A5 are not considered as the impacts considered in this phase are building specific rather than product specific and can only be addressed within the overall impact of the construction process. Module B is not considered as the product does not generate relevant environmental impacts during the use phase. Modules C & D are not considered as the products cannot be differentiated at its end of life. Fig. 1 shows the considerations of declared modules.

System diagram:

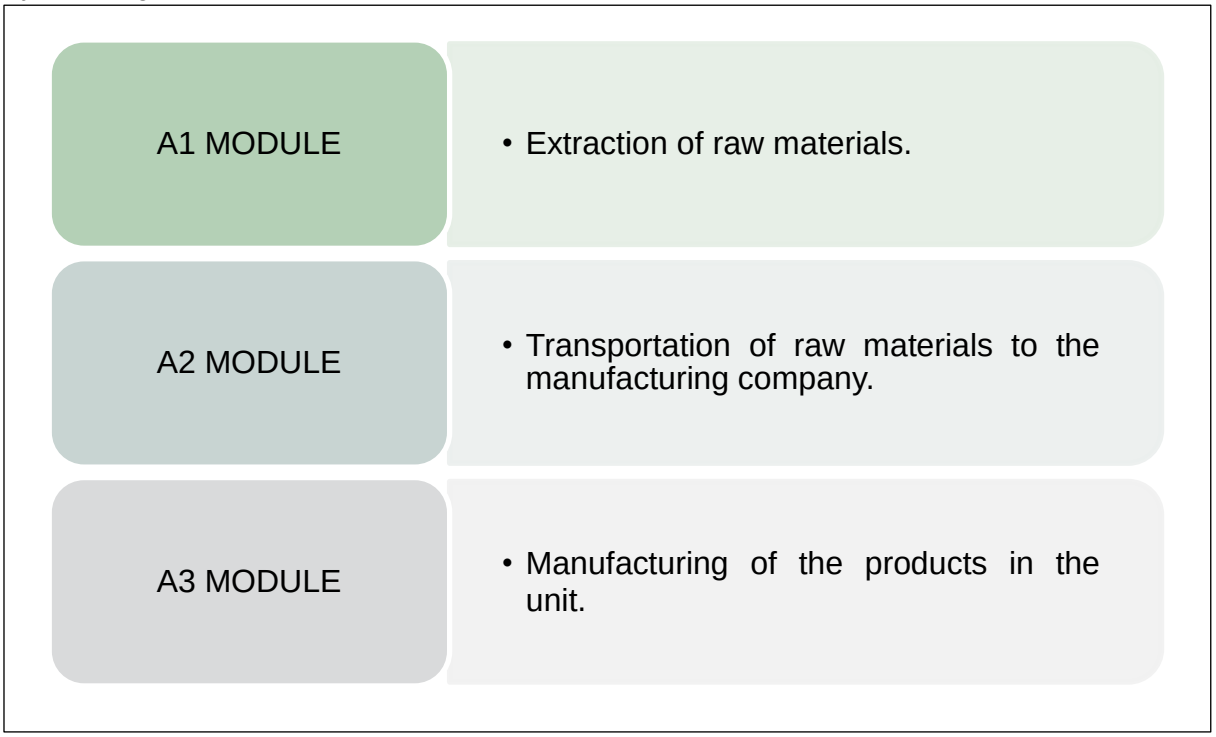
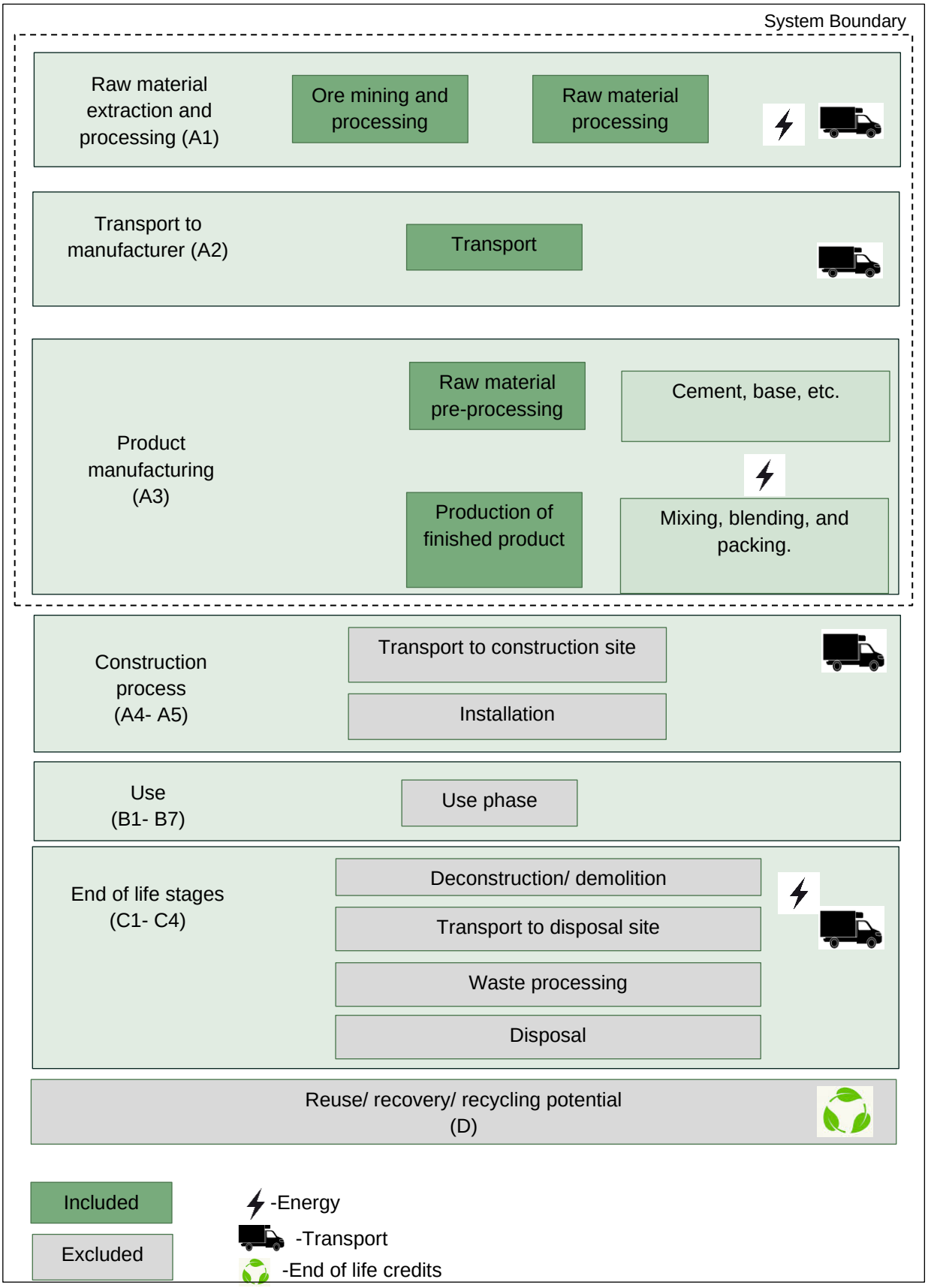
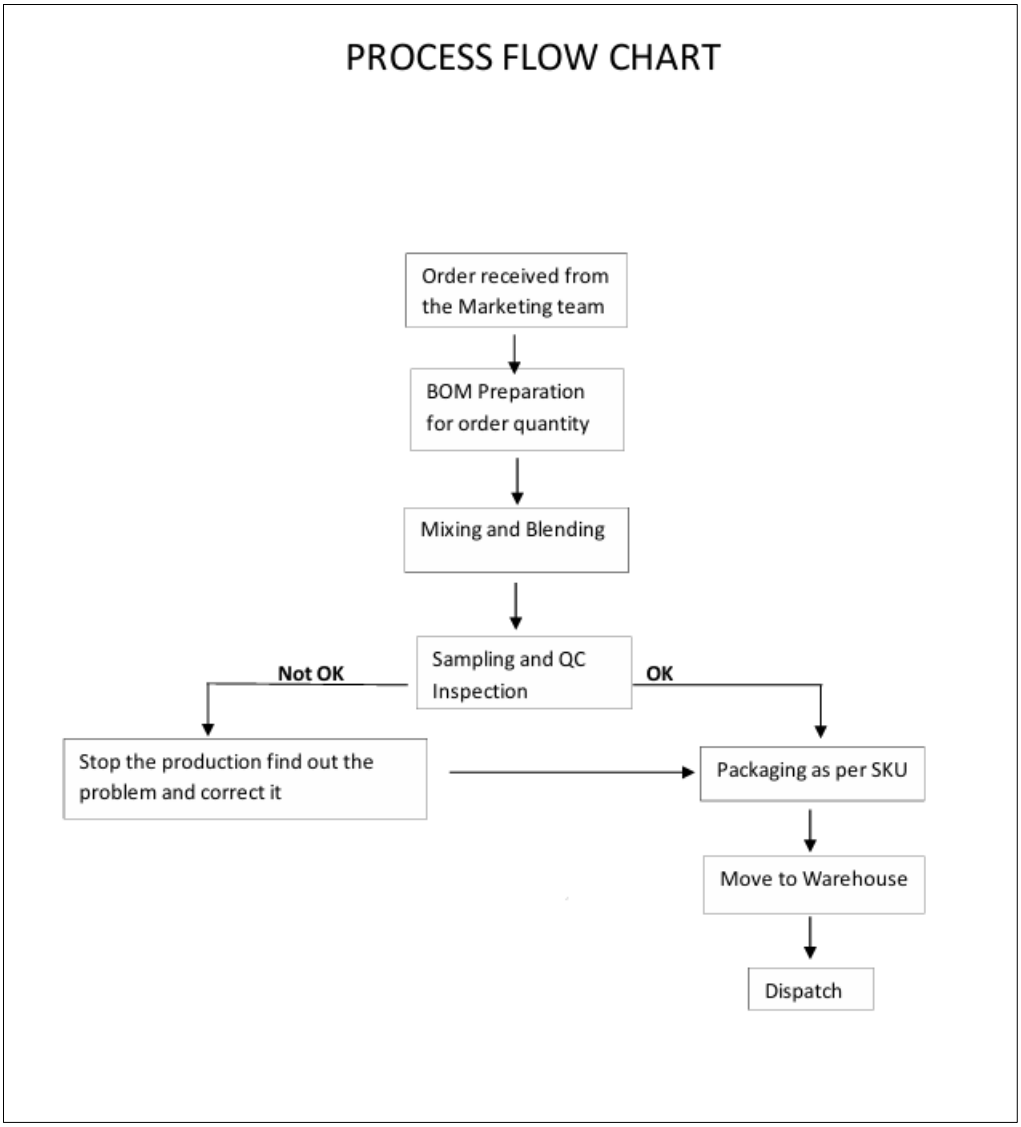


Figure 1 System diagram


System Boundary
Raw material extraction and processing (A1)
Ore mining and processing
Raw material processing
Transport to manufacturer (A2)
Transport
Product manufacturing (A3)
Raw material pre-processing
Cement, base, etc.
Production of finished product
Mixing, blending, and packing.
Construction process (A4- A5)
Transport to construction site
Installation
Use (B1- B7)
Use phase
End of life stages (C1- C4)
Deconstruction/ demolition
Transport to disposal site
Waste processing
Disposal
Reuse/ recovery/ recycling potential (D)
Included
Excluded
-Energy
-Transport
-End of life credits

Manufacturing process:

The manufacturing process for the mentioned product, i.e., Penetron Admix, primarily involves mixing and blending of the ingredients based on the order quantity, and the composition for both the products is as mentioned in the content information. Subsequently, the resulting mixture undergoes inspection. Upon receiving satisfactory inspection results, the product is then packed and prepared for dispatch. The process flow chart is given below. The product Penetron Admix is used as a waterproofing material and is applied on the surface of the building. Penetron Admix seamlessly integrates into concrete structures, providing comprehensive waterproofing and chemical resistance. Its deep-penetrating formula seals capillary tracts and shrinkage cracks, ensuring durability against high hydrostatic pressure. Cost-effective and easy to apply, Penetron enhances concrete strength and protects against various environmental factors. Certified non-toxic and zero VOC, it's safe for potable water applications and environmentally friendly.



Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	IN	IN	IN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(X- declared modules and ND- modules not declared)

Figure 2 System boundary

Allocation and Cut-off rules:

According to the reference PCR, " PCR Construction products- 2019:14 Version 1.3.4", in Life Cycle Inventory, the minimum percentage of total mass and energy flows equal to 99% has been respected, considering the flows included in the modules A1-A3 of the system boundary. A cutoff of approximately 0% is applied, ensuring that all raw materials are included in the calculations. No allocations were made to the input or output data of the product since the company does not report co-products nor reuse, recycling, or recovery of flows during its internal manufacturing processes.

Assumptions:

The following assumptions have been made in this EPD:

- It does not include the manufacturing processes of the capital goods or spare parts and/or maintenance.
- The environmental impact of infrastructure for general management, office and headquarters operations is not included.

- The impact caused by people (common activities, travel for work) is not considered.
- The processes associated with fuel production are intrinsically included in the indicators in Ecoinvent database used in carrying out the LCA.
- The environmental impact of external transport has been calculated using lorries from the Ecoinvent 3.10 database, EURO 6. These Lorries have been selected to reflect the most realistic scenario possible.

Exclusions:

- No other environmental, economic and social impacts are declared.

Data collection:

Specific data have been collected in Dec 2024 for the data collection period from Jan 2024 to Dec 2024.The data was collected for the Dubai site and the site visit was arranged for the same. The evidences for formulating the inventory were gathered from the bills and registers maintained on site during the site visit.

Data quality assessment and declaration for Penetron Admix:

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP- GHG results for A1- A3
Manufacturing of the product	Primary	Collected data	2024	Primary data	90.78
Generation of electricity used in manufacturing of product	Database	Ecoinvent v3.10	2023	Primary data	0.74%
Transport of raw materials to the manufacturing site	Database	Ecoinvent v3.10	2023	Primary data	8.48%
Total share of primary data, of GWP- GHG results for A1- A3					100%

Note: The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that do not capture all relevant aspects of data quality. The indicator is not comparable across product categories.

Content information of Penetron Admix

Product Components	Weight, %	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Cement	65- 80	0	0
Base	25- 45	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Printed paper	0.00055	0.055	0.000275
Paper sack	0.00834	0.834	0.00417
TOTAL	0.00889	0.889	0.004445

Recycled material Provenience of recycled materials (pre-consumer or post-consumer) in the product: the products are made up of virgin raw materials. No recycled materials are used.

Electricity details:

The electricity from the grid provided in India- southern grid is the source of electricity for manufacturing which has a climate impact of 1.13 kg CO_2 eq./ kWh.

The raw materials used for manufacturing the product do not have any hazardous properties but direct exposure might cause skin irritation, eye irritation, and respiratory irritation. Prolonged or repeated exposure might cause damage to organs.

Results of the environmental performance indicators

Penetron Admix

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Total (A1- A3)**
GWP-fossil	kg CO_2 eq.	9.32E-01	8.57E-02	7.42E-03	1.03E+00
GWP-biogenic	kg CO_2 eq.	-1.60E-02	1.17E-06	1.60E-02	1.17E-06
GWP-luluc	kg CO_2 eq.	8.75E-04	4.02E-05	2.56E-05	9.41E-04
GWP-total	kg CO_2 eq.	9.17E-01	8.57E-02	2.34E-02	1.03E+00
ODP	kg CFC 11 eq.	3.65E-09	1.25E-09	1.27E-11	4.91E-09
AP	mol H^+ eq.	3.14E-03	1.43E-03	3.48E-05	4.61E-03
EP-freshwater	kg P eq.	2.03E-04	4.61E-06	7.39E-06	2.15E-04
EP-marine	kg N eq.	9.75E-04	3.55E-04	7.88E-06	1.34E-03
EP-terrestrial	mol N eq.	1.04E-02	3.93E-03	7.31E-05	1.44E-02
POCP	kg NMVOC eq.	2.77E-03	1.13E-03	1.93E-05	3.92E-03
ADP-minerals&metals*	kg Sb eq.	2.34E-06	1.75E-07	1.83E-09	2.51E-06
ADP-fossil*	MJ	5.59E+00	1.12E+00	8.80E-02	6.80E+00
WDP*	m^3	7.14E-02	3.85E-03	1.29E-03	7.66E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption				

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Note: This is a cradle-to-gate study covering Modules A1–A3 only. In accordance with EN 15804 and PCR 2019:14 v1.3.4, the uptake of biogenic carbon has been reported in Module A1 under the GWP-biogenic impact indicator. As the end-of-life stages (Module C) and Module A5 are outside the system boundary, the corresponding biogenic CO_2 emissions are balanced out in A3.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
GWP-GHG[1]	kg CO_2 eq.	9.34E-01	8.70E-02	8.19E-03	1.03E+00
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017	-	-	-	-	-

Resource use indicators

Results per functional or declared unit		
Indicator	**Unit**	**A1-A3**
PERE	MJ	6.40E-01
PERM	MJ	0.00E+00
PERT	MJ	6.40E-01
PENRE	MJ	6.77E+00
PENRM	MJ	0.00E+00
PENRT	MJ	6.77E+00
SM	kg	0.00E+00
RSF	MJ	0.00E+00
NRSF	MJ	0.00E+00
FW	m^3	2.14E-03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water	

Waste indicators

Results per functional or declared unit		
Indicator	**Unit**	**A1-A3**
Hazardous waste disposed	kg	2.19E-05
Non-hazardous waste disposed	kg	8.67E-02
Radioactive waste disposed	kg	3.46E-06

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Output flow indicators

Results per functional or declared unit		
Indicator	**Unit**	**A1-A3**
Components for re-use	kg	0.00E+00
Material for recycling	kg	0.00E+00
Materials for energy recovery	kg	0.00E+00
Exported energy, electricity	MJ	0.00E+00
Exported energy, thermal	MJ	0.00E+00

Other environmental performance indicators

No other environmental performance indicators/ additional environmental information/ social & economic information/ information related to sector EPD/ difference between previous versions has been declared.

References

- EPD International (2017) General Programme Instructions for the InternationalEPD® System. Version 5.0.1, dated 2025-02-27. www.environdec.com
- ISO (2006a), ISO 14025:2006, Environmental labels and declarations – Type III-environmental declarations – Principles and procedures
- ISO (2006b), ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework
- ISO (2006c), ISO 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines
- Emission Estimation Technique Manual, Version 1.1, National Pollutant Inventory, 2001.
- Construction Products PCR version 2019:14, V.1.3.4.
- https:// www.mctuae.com
- SimaPro version 9.6.0.1
- Ecoinvent database version 3.1

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