

Environmental Product Declaration

**EPD**
INTERNATIONAL EPD SYSTEM



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

One-component,

Cementitious Waterproofing Mortars from
ALCHIMICA S.A.

Products included in the EPD:

HYGROSMART®-IMPER-C

HYGROSMART®- IMPER-C-1K-ELASTIC

EPD of multiple products, based on the average results of the product group



Programme:

Programme operator:

EPD registration number:

Version date:

Validity date:

The International EPD System, www.environdec.com

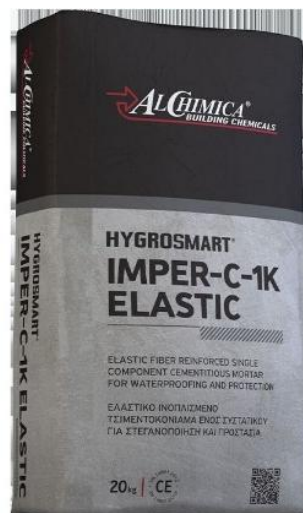
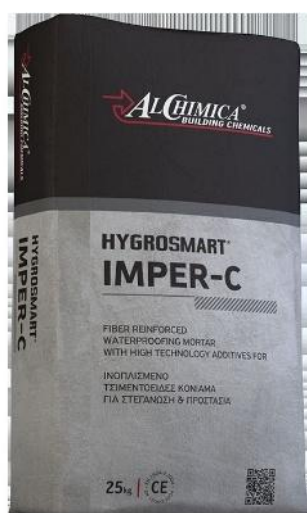
EPD International AB

EPD-IES-0026135:001

2025-11-14

2030-10-09

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see 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
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products, version 2.0.1, CPC code: 375 Articles of concrete, cement and plaster
PCR review was conducted by: The technical Committee of the International EPD System, info@environdec.com

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: Business Quality Verification P.C.

Address: 5, Konitsis Street, GR 15125, Marousi, Attica / Greece www.bqv.gr – info@bqv.gr Accredited by: Hellenic Accreditation System (ESYD) with accreditation number 1218
Procedure for follow-up of data during EPD validity involves third party verifier:
☒ Yes ☐ No

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025

Information about EPD owner

Owner of the EPD: ALCHIMICA S.A.

Production site: 71st km Athens-Lamia National Road, 341 00

Contact: alchimica@alchimica.com

Description of the organisation:

ALCHIMICA S.A. is a manufacturer of advanced construction chemicals, with over 40 years of expertise in the design, formulation, and production of high-performance systems for waterproofing, concrete repair, structural protection, ETICS and industrial flooring. Serving both new construction and renovation markets, our solutions are specified in projects ranging from residential developments to complex infrastructure works across more than 100 countries.

With a production capacity exceeding 40,000 tons annually, ALCHIMICA operates three fully owned manufacturing facilities with a total footprint of 55,000 m². These include state-of-the-art dedicated units for resin-based and liquid-applied systems, alongside automated lines for polyurethane sealants and cement-based mortars. Every batch is monitored through integrated quality control protocols, ensuring consistency, traceability, and full compliance with applicable technical standards.

Our in-house R&D center plays a central role in product innovation, staffed by a multidisciplinary team of chemists and engineers. Close collaboration between R&D, production, and technical support ensures rapid development cycles and the ability to tailor solutions to market-specific demands. The result is a large portfolio of CE-marked products and systems that meet the latest regulatory and performance requirements in diverse climates and applications.

ALCHIMICA's range includes:

- Liquid-Applied Polyurethane Waterproofing Membranes
- Polyurethane Sealing Technologies
- Cementitious Mortars for Concrete Repairs
- High-Performance Cementitious Waterproofing Mortars
- ETICS Systems
- Tile Adhesives
- Industrial Flooring Systems

Certified under ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018, our operations reflect a structured commitment to quality, environmental stewardship, and occupational safety. Sustainability is embedded in our manufacturing and R&D processes, with a focus on long-lasting systems that reduce resource use and lifecycle impacts. We actively pursue the development of low-emission, user-safe formulations that support healthier environments and align with modern green building standards.

Through energy-efficient production, waste minimization, and responsible sourcing, ALCHIMICA aims to reduce its environmental footprint while delivering reliable, high-performance solutions that contribute to the long-term resilience of the built environment.

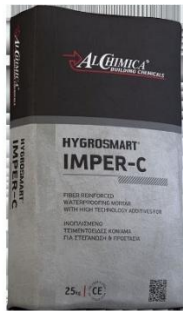
A defining element of ALCHIMICA's approach is the technical support provided alongside its products. From initial specification to on-site application, our teams assist professionals with product selection, detailing, and installation training—ensuring both correct use and long-term performance. We are not

simply suppliers, but long-term partners to the construction industry—offering proven solutions, industrial capability, and a legacy of performance.

Product information

Product name: **HYGROSMART®-IMPER-C**

Product identification: **HYGROSMART®-IMPER-C** is a one-component, fiber-reinforced cementitious waterproofing and protective mortar for concrete substrates.



UN CPC code: 375 Articles of concrete, cement and plaster

Product description:

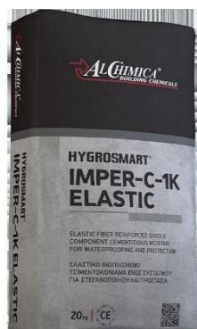
HYGROSMART®-IMPER-C is a one-component, fiber-reinforced cementitious waterproofing and protective mortar for concrete substrates. Manufactured by ALCHIMICA S.A., it is formulated with cementitious binders, high-performance polymers, and selected additives to ensure excellent workability, high adhesion, and mechanical strength. The product forms a crack-free, impermeable coating resistant to hydrostatic pressure, carbonation, and freeze-thaw cycles. It is suitable for waterproofing and protecting basement walls, water tanks, swimming pools, and underground structures. Certified according to EN 1504-2 for surface protection systems, HYGROSMART® IMPER-C is produced under ISO 9001, ISO 14001, and ISO 45001 management systems, ensuring consistent quality, environmental responsibility, and occupational health and safety.

Brief description of main processes : The manufacturing process commences with the precise weighing of raw materials such as calcium carbonate and cement. These materials are subsequently conveyed to an industrial mixer, where they are thoroughly blended until a homogeneous mixture is achieved. The resulting mixture is then packaged into paper bags for storage and distribution.

Location of manufacturing site: 71st km Athens-Lamia National Road, 341 00

Product name: **HYGROSMART®-IMPER-C-1K-ELASTIC**

Product identification: **HYGROSMART®- IMPER-C-1K-ELASTIC** is a one-component, fiber-reinforced, flexible cementitious waterproofing mortar for protecting mineral substrates under tile installations



UN CPC code: 375 Articles of concrete, cement and plaster

Product description:

HYGROSMART®- IMPER-C-1K-ELASTIC is a one-component, fiber-reinforced, flexible cementitious waterproofing mortar for protecting mineral substrates under tile installations. Manufactured by ALCHIMICA S.A., it is formulated with water-repellent polymers and high-performance additives to ensure excellent workability, strong adhesion, and durable waterproofing performance. The product forms a flexible, crack-bridging coating that resists both positive and negative water pressure, UV exposure, and freeze-thaw cycles. Certified under EN 14891:2012 for use beneath ceramic tiling bonded with adhesives, it is ideal for bathrooms, wet rooms, balconies, swimming pools (under tiles), retaining walls, and concrete structures. It is applied in two coats by brush, roller, or trowel, and produced under ISO 9001, ISO 14001, and ISO 45001 management systems, ensuring consistent quality, environmental compliance, and workplace safety.

Brief description of main processes : The manufacturing process commences with the precise weighing of raw materials such as calcium carbonate and cement. These materials are subsequently conveyed to an industrial mixer, where they are thoroughly blended until a homogeneous mixture is achieved. The resulting mixture is then packaged into paper bags for storage and distribution.

Location of manufacturing site: 71st km Athens-Lamia National Road, 341 00

TECHNICAL SPECIFICATIONS		
PROPERTY	HYGROSMART®-IMPER-C-1K-ELASTIC	METHOD
Water tightness	No penetration	EN 14891:2012
Crack bridging ability under standard conditions (23°C)	≥ 0.75 mm	EN 14891:2012
Crack bridging ability at low temperatures (-5°C)	≥ 0.75 mm	EN 14891:2012
Initial tensile adhesion strength	≥ 0.5 N/mm ²	EN 14891:2012
Tensile adhesion strength after contact with chlorinated water	≥ 0.5 N/mm ²	EN 14891:2012
Durability of initial tensile adhesion against contact with lime water	≥ 0.5 N/mm ²	EN 14891:2012
Durability of initial tensile adhesion against freeze and freeze-thaw cycles	≥ 0.5 N/mm ²	EN 14891:2012
Durability of initial tensile adhesion against climate/heat ageing action	≥ 0.5 N/mm ²	EN 14891:2012
Durability of initial tensile adhesion against water/humidity action	≥ 0.5 N/mm ²	EN 14891:2012

TECHNICAL SPECIFICATIONS

PROPERTY	HYGROSMART ¹ -IMPER-C	METHOD
CO ₂ Permeability	$S_D > 50 \text{ m}$	EN 1062-6:2002
Water vapour permeability	$S_D < 5 \text{ m}$	EN ISO 7783:2011
Capillary absorption & permeability to water	$< 0.1 \text{ Kg/m}^2 \cdot \text{h}^{0,5}$	EN 1062-3:2008
Adhesion strength by pull-off test	$\geq 1.0 \text{ N/mm}^2$	EN 1542-1999

Content declaration

It is an EPD of multiple products, based on the average results of the product group.

The average environmental impacts presented in this EPD represent a weighted average based on the production volumes of the individual products included.

Declared unit: 1 kilogram (kg) of an average one component cementitious waterproofing mortar.

The composition of the product is expressed in weight (kg).

The content declaration below represents a weighted average content declaration based on the production volumes of the individual products included.

Product content	Weight, kg	Range, kg		Post-consumer recycled material, mass-% of product
Fillers	7,10E-01	6,95E-01	7,24E-01	0
Inorganic binders	1,87E-01	1,00E-01	2,75E-01	0
Additives	1,03E-01	3,00E-02	1,76E-01	0

Packaging materials	Weight-kg (per declared unit)
Paper (bag)	4,04E-03
LDPE (film)	6,10E-04
PE/PET/ALU (bag)	1,16E-04
Cardboard (box)	4,18E-04
Wood (pallet)	1,31E-02

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH Regulations that exceed 0.1% of the total weight are present in the final product.

Carbon electricity intensity	
Environmental effects	CO ₂ Emissions (Kg CO ₂ /KWh)*
0.24	

* Residual Greek Mix: **DAPEEP Report 2022** In accordance with section 1.4 of PCR 2019: 14 “Construction Products” version 1.3.2, it is required to disclose the climate impact (measured in kilograms of CO₂ eq. per kilowatt-hour (kWh) using the GWP-GHG indicator) associated with the electricity acquisition during the manufacturing process in A3.

LCA information

Declared unit: 1 kilogram (kg) of an average cementitious waterproofing mortar

Time representativeness: The data used for the analysis refer to the year 2024

Geographical scope: Global

Database(s) and LCA software used: Ecoinvent database v.3.11, OpenLCA v.2.5.0 software

Characterization factors (JRC): Based on Reference package EF 3.1

Production of infrastructure and capital goods are excluded from the study.

Description of system boundaries: The system boundaries are cradle to gate (A1-A3) with modules C1-C4 and module D.

A1: Raw Material Supply

The production starts with the material supply. This stage includes the manufacture of raw materials like portland cement and calcium carbonate.

A2: Transportation of raw materials to manufacturer

Transportation stage is relevant to delivery of raw materials from the supplier to the gate of manufacturing plant. Raw materials are transported by trucks or by ships from different suppliers in Europe and Asia.

A3: Manufacturing

Manufacturing starts with weighing of raw materials. After weighing, raw materials are mixed. Last stage of manufacturing is the packaging of final products.

Concerning **electricity** mix, the national residual energy mix (2023) as published in DAPEEP SA was used.

C1: De-construction, demolition

Demolition of cementitious repair mortars takes place with the whole demolition of the building/construction. Thus, it is assumed that the energy used for the demolition of cementitious repair mortars has minor significance and the environmental impact of this module is set to be zero.

C2: Transportation of waste

A distance of 100 km by a 16-32 tonne lorry from construction/demolition sites to disposal sites has been chosen as an assumption.

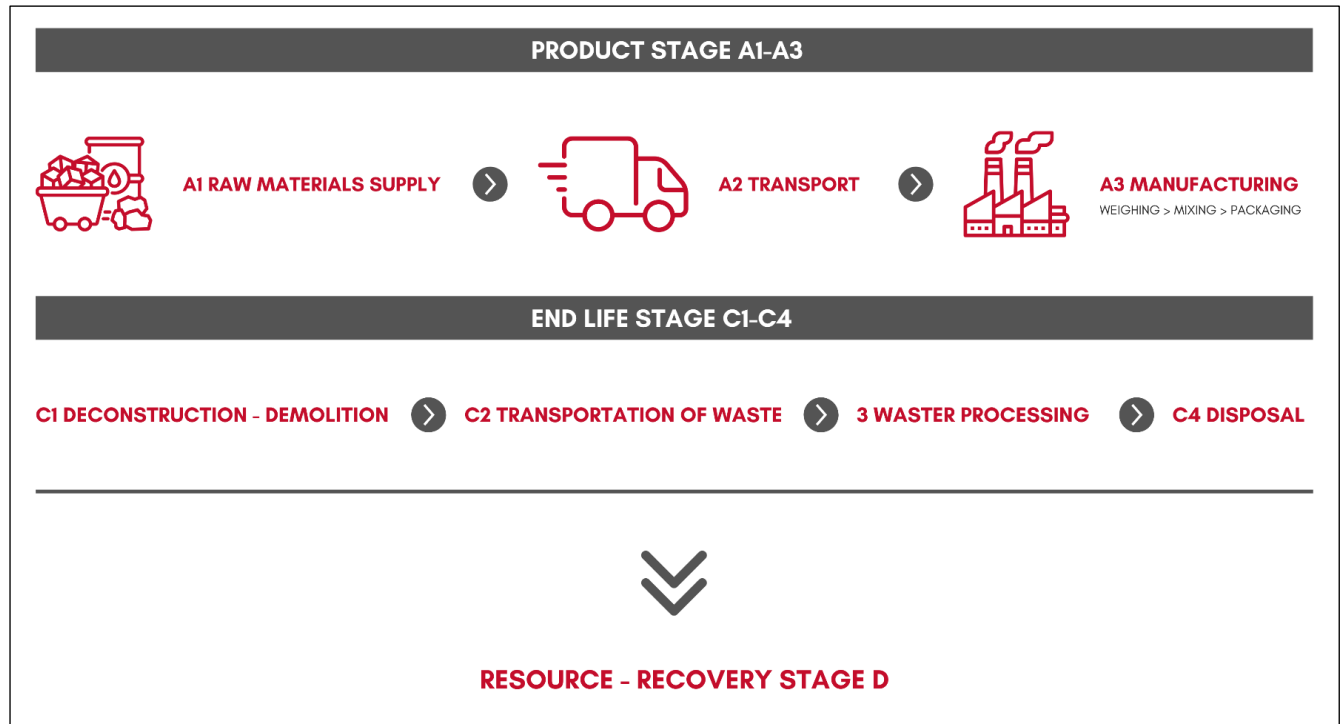
C3: Waste processing for re-use, recovery and/or recycling

This module includes waste processing of the product after its life cycle in order to be recycled and reused in another product system. It is assumed that 100% of the end-of-life waste of cementitious repair mortars will be landfilled and the environmental impact of this module is set to be zero.

C4: Disposal

This module includes the final disposal of the discarded product. As mentioned above, 100% of the end-of-life waste of cementitious repair mortars will be landfilled.

System diagram:



Additional LCA information

Assumptions:

Module A2+C2: It is assumed that a EURO5, 16-32 tonne lorry is used for road transportation and a container ship for sea transportation.

Module C1: Demolition of cementitious repair mortars takes place with the whole demolition of the building. It is assumed that the energy used for the demolition of cementitious repair mortars has minor significance and the environmental impact of this module is set to be zero.

Module C2: A distance of 100 kilometers (km) between construction sites and waste treatment facilities was considered in within the study's calculations.

Module C3+C4: It is assumed that 100% of the end-of-life waste of cementitious repair mortars will be landfilled.

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

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

	Product stage			Distribution/ installation stage		Use stage							End of life stage				Beyond product life cycle
	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	x	x	x	x	x
Geography	GLOBAL		GR	-	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Share of primary data	60.30%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	34.46%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

Description of data quality assessment and reference years

All primary data used for Modules A2 and A3 were provided directly by Alchimica and refer to actual operations carried out in the year 2024. These data were collected from the company's internal records.

Generic data were obtained using the OpenLCA v2.5.0 software, with datasets sourced from the Ecoinvent v3.11 database

Data Quality Information according to EN 15941:2024

Period of Data Collection: 01/01/2024 – 31/12/2024

Geography: Greece, production site located at 71st km Athens-Lamia National Road, 341 00

Market scope: European market, primarily Southern Europe

Technology: Production includes mixing, sieving and robotic packaging operations using electric energy and an electric forklift (electric-powered forklift truck). All production steps and equipment are located within the same facility.

Completeness: The datasets cover all relevant processes from raw material acquisition, production, packaging, and energy use.

No significant processes were excluded.

LCI/LCA database: Ecoinvent v3.11 database

Primary data: Company's internal records for all production operations in 2024.

Secondary data: Generic datasets from Ecoinvent v3.11 used for energy, raw materials, packaging, waste and transport.

Share of primary data, of GWP-GHG results for A1-A3

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Production of cement	EPD	S-P-03609 S-P-03611	2022	Primary data	56.94%
Production of calcium carbonate	Database	Ecoinvent v3.11	2024	Generic data	18.96%
Production of ethylene vinyl acetate	Database	Ecoinvent v3.11	2024	Generic data	14.35%
Production of raw materials	Database	Ecoinvent v3.11	2024	Generic data	5.21%
Production of packaging materials	Database	Ecoinvent v3.11	2024	Generic data	0.59%
Packaging and waste treatment	Database	Ecoinvent v3.11	2024	Generic data	0.59%
Transport of raw materials & packaging	Database	Ecoinvent v3.11	2024	Primary data	3.30%
Generation of electricity used in manufacturing of product	DAPEEP SA	Residual energy mix	2023	Primary data	0.06%
Total share of primary data, of GWP-GHG results for A1-A3					60,30%

The reported share of primary data is associated with uncertainty, as an EPD used as data source lack information on the share of primary data.

Environmental performance

Mandatory impact category indicators according to EN 15804- Impact/1 (kg) of an average cementitious waterproofing mortar

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	6,28E-01	0,00E+00	1,94E-02	0,00E+00	6,26E-03	0,00E+00
GWP-fossil	kg CO ₂ eq.	6,24E-01	0,00E+00	1,94E-02	0,00E+00	6,25E-03	0,00E+00
GWP-biogenic	kg CO ₂ eq.	4,63E-03	0,00E+00	3,36E-06	0,00E+00	1,69E-06	0,00E+00
GWP-luluc	kg CO ₂ eq.	3,36 E-04	0,00E+00	6,33E-06	0,00E+00	3,22E-06	0,00E+00
ODP	kg CFC 11 eq.	1,29E-06	0,00E+00	3,85E-10	0,00E+00	1,81E-10	0,00E+00
AP	mol H ⁺ eq.	2,29E-03	0,00E+00	6,06E-05	0,00E+00	4,43E-05	0,00E+00
EP-freshwater	kg P eq.	1,09E-04	0,00E+00	1,29E-06	0,00E+00	5,17E-07	0,00E+00
EP-marine	kg N eq.	4,05E-04	0,00E+00	2,04E-05	0,00E+00	1,69E-05	0,00E+00
EP-terrestrial	mol N eq.	5,58E-03	0,00E+00	2,22E-04	0,00E+00	1,84E-04	0,00E+00
POCP	kg NMVOC eq.	2,55E-03	0,00E+00	9,49E-05	0,00E+00	6,60E-05	0,00E+00
ADP-minerals&metals*	kg Sb eq.	6,39E-06	0,00E+00	6,34E-08	0,00E+00	9,97E-09	0,00E+00
ADP-fossil*	MJ	1,11E+01	0,00E+00	2,72E-01	0,00E+00	1,53E-01	0,00E+00
WDP*	m ³	1,61E-01	0,00E+00	1,31E-03	0,00E+00	4,29E-04	0,00E+00
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 on these results are high or as there is limited experienced with the indicator.*

Additional mandatory and voluntary impact category indicators- Impact/1 (kg) of an average cementitious waterproofing mortar

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	6,24E-01	0,00E+00	1,94E-02	0,00E+00	6,26E-03	0,00E+00
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017							

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 CO₂ is set to zero.

Resource use indicators- Impact/1 (kg) of an average cementitious waterproofing mortar

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	6,15E-01	0,00E+00	4,61E-01	0,00E+00	1,42E-03	0,00E+00
PERM	MJ	3,54E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	6,19E-01	0,00E+00	4,61E-03	0,00E+00	1,42E-03	0,00E+00
PENRE	MJ	1,11E+01	0,00E+00	2,47E-01	0,00E+00	1,39E-01	0,00E+00
PENRM	MJ	1,01E-03	0,00E+00	2,53E-02	0,00E+00	1,47E-02	0,00E+00
PENRT	MJ	1,11E+01	0,00E+00	2,72E-01	0,00E+00	1,53E-01	0,00E+00
SM	kg	3,27E-02	0,00E+00	3,07E-04	0,00E+00	7,16E-05	0,00E+00
RSF	MJ	5,09E-02	0,00E+00	8,59E-05	0,00E+00	1,47E-05	0,00E+00
NRSF	MJ	4,35E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	3,92E-03	0,00E+00	3,61E-05	0,00E+00	1,59E-04	0,00E+00
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- Impact/1 (kg) of an average cementitious waterproofing mortar

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,46E-02	0,00E+00	2,66E-04	0,00E+00	1,14E-04	0,00E+00
NHWD	kg	1,99E+00	0,00E+00	2,95E-03	0,00E+00	1,66E-03	0,00E+00
RWD	kg	8,81E-06	0,00E+00	8,66E-08	0,00E+00	2,38E-08	0,00E+00

Output flow indicators- Impact/1 (kg) of an average cementitious waterproofing mortar

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	1,87E-02	0,00E+00	2,78E-04	0,00E+00	5,91E-05	0,00E+00
MER	kg	0,00E+00	0,00E+00	3,86E-08	0,00E+00	6,62E-09	0,00E+00
EEE	MJ	5,78E-03	0,00E+00	4,57E-05	0,00E+00	9,19E-06	0,00E+00
EET	MJ	4,86E-02	0,00E+00	6,47E-05	0,00E+00	5,95E-06	0,00E+00

Additional impacts- Impact/1 (kg) of an average cementitious waterproofing mortar

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
ETP-fw	CTUe	3,82E+00	0,00E+00	7,30E-02	0,00E+00	2,10E-02	0,00E+00
HTP-nc*	CTUh	3,85E-09	0,00E+00	1,75E-10	0,00E+00	2,76E-11	0,00E+00
HTP-c*	CTUh	1,76E-10	0,00E+00	1,35E-10	0,00E+00	2,83E-11	0,00E+00
IRP**	kBq U235 eq.	3,47E-02	0,00E+00	3,49E-04	0,00E+00	9,78E-05	0,00E+00
PM	Disease Incidence	1,71E-08	0,00E+00	1,52E-09	0,00E+00	1,01E-09	0,00E+00
SQP*	Dimensionless	2,35E+00	0,00E+00	1,62E-01	0,00E+00	3,02E-01	0,00E+00

**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.*

*** Disclaimer: 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.*

Variations of included products

Mandatory impact category indicators according to EN 15804 - Variations

Indicator	Variations %
GWP-total	106.60%
GWP-fossil	104.40%
GWP-biogenic	1574.37%
GWP-luluc	135.50%
GWP-GHG	104.4%
ODP	22073.91%
AP	94.84%
EP-freshwater	159.08%
EP-marine	182.46%
EP-terrestrial	56.68%
POCP	132.03%
ADP-minerals&metals*	115.59%
ADP-fossil*	245.38%
WDP*	165.61%

Resource use indicators - Variations

Indicator	Variations %
PERE	123.16%
PERM	100.00%
PERT	119.12%
PENRE	245.38%
PENRM	76.40%

PENRT	245.38%
SM	19.46%
RSF	27.96%
NRSF	87.99%
FW	153.39%

Waste indicators - Variations

Indicator	Variations %
HWD	159.85%
NHWD	213.15%
RWD	231.70%

Output flow indicators - Variations

Indicator	Variations %
CRU	0.00%
MFR	198.72%
MER	0.00%
EEE	229.85%
EET	146.43%

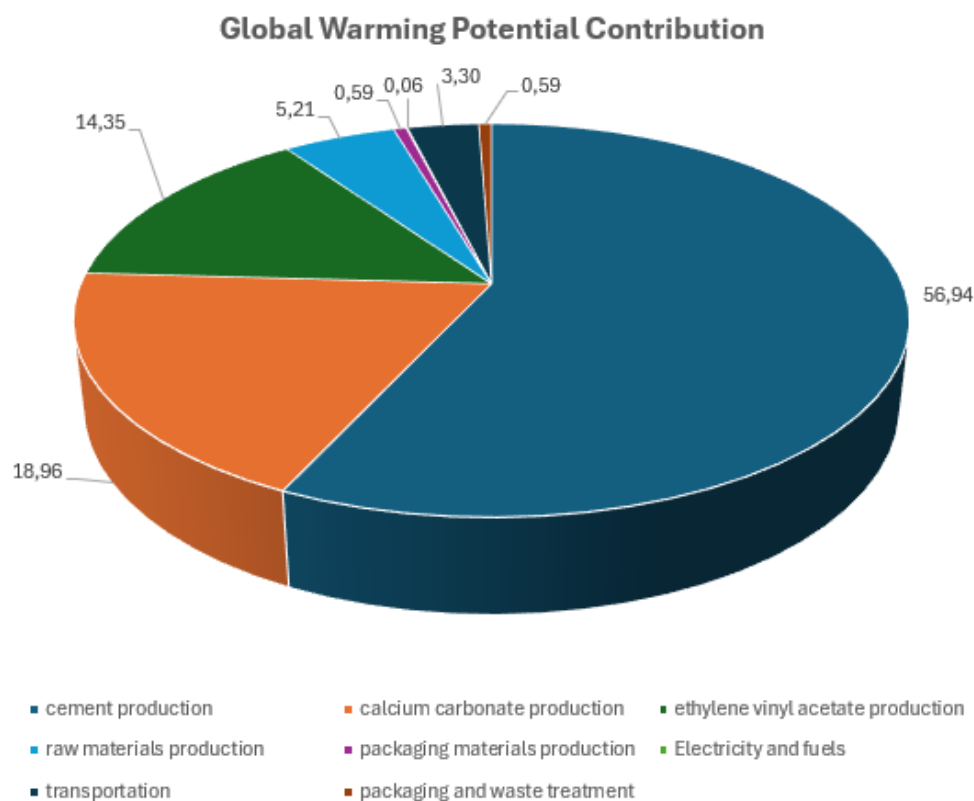
Additional impacts - Variations

Indicator	Variations %
ETP-fw	774.36%
HTP-nc*	61.56%
HTP-c*	304.59%
IRP**	231.88%
PM	186.20%
SQP*	150.00%

Interpretation

The majority of the total Global Warming Potential (GWP) is attributed to the upstream processes, primarily due to the extraction of raw materials and the production of Portland Cement and is followed by transportation to the production unit. The production of the final product and the manufacturing of packaging, has a relatively minor impact on GWP.

It is evident that raw material acquisition and processing are major drivers of the environmental impact, especially in terms of global warming potential, with Portland Cement production representing a significant contributor.



Note:

The use of the results of modules A1-A3 is discouraged without considering the results of module C.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

List of abbreviations

GWP-biogenic	Global Warming Potential - biogenic
GWP-fossil	Global Warming Potential - fossil fuels
GWP-luluc	Global Warming Potential - land use and land use change
GWP-total	Global Warming Potential - total
GWP-IOBC/GHG	Global warming potential except emissions and uptake of biogenic carbon
ETP-fw	Potential Comparative Toxic Unit for ecosystems
HTP-nc	Potential Comparative Toxic Unit for humans - non-cancer effects
ADPF	Abiotic depletion potential - fossil resources
ADPE	Abiotic depletion potential - non-fossil resources
AP	Acidification potential, Accumulated Exceedance
ODP	Depletion potential of the stratospheric ozone layer
EP-freshwater	Eutrophication potential - freshwater
EP-marine	Eutrophication potential - marine
EP-terrestrial	Eutrophication potential - terrestrial
POCP	Photochemical Ozone Creation Potential
HTP-c	Potential Comparative Toxic Unit for humans - cancer effects
IRP	Potential Human exposure efficiency relative to U235
PM	Potential incidence of disease due to PM emissions
SQP	Potential Soil quality index
WDP	Water (user) deprivation potential
CRU	Components for re-use
EEE	Exported electrical energy
EET	Exported thermal energy
MER	Materials for energy recovery
MFR	Materials for recycling
PENRT	Total use of non renewable primary energy resources
PERT	Total use of renewable primary energy resources
FW	Use of net fresh water
PENRE	Use of non renewable primary energy resources used as energy carrier
PENRM	Use of non renewable primary energy resources used as raw materials
NRSF	Use of non renewable secondary fuels
PERE	Use of renewable primary energy resources used as energy carrier
PERM	Use of renewable primary energy resources used as raw materials
RSF	Use of renewable secondary fuels
SM	Use of secondary materials
HWD	Hazardous waste disposed
NHWD	Non hazardous waste disposed
RWD	Radioactive waste disposed

EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared

References

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- PCR 2019:14 v.2.0.1 Construction products. EPD System.
- EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works — Environmental Product Declarations - Core rules for the product category of construction products
- ISO 14020:2000 Environmental labels and declarations - General principles
- ISO 14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines
- Ecoinvent / Ecoinvent Centre, www.Eco-invent.org
- Residual Energy Mix 2023 from Renewable Energy Sources Operator & Guarantees of Origin (DAPEEP SA)

Version history

2025-10-09/ EPD Version 001 Original version of EPD (unpublished version)

2025-11-14/ EPD Version 002 Added information regarding data quality assessment

