



Environmental Product Declaration



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

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

Cement-based Adhesives for Thermal Insulation Boards

Products included in the EPD:

HYGROSMART®-ADHESIVE TH-70

HYGROSMART®-ADHESIVE TH

from

ALCHIMICA S.A.

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES 0024483
Publication date:	2025-06-18
Valid until:	2030-06-18

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
E-mail:	info@environdec.com

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): PCR 2019:14 Construction products, version 1.3.4, 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

Life Cycle Assessment (LCA)

LCA accountability: ALCHIMICA S.A.

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by accredited certification body

Third-party verification: Business Quality Verification is an approved certification body accountable for the third-party verification



The certification body is 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 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: ALCHIMICA S.A.

Contact: alchimica@alchimica.com

Production site: 71st km Athens-Lamia National Road, 341 00
(PROV.Rd. CHALKIDA – THIVA), Greece

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®-ADHESIVE TH-70**

Product identification:

Cementitious adhesive specifically designed for the installation of thermal insulation boards on building façades and structural substrates. It is CE-certified under EN 998-1:2016, EN 12004:2007+A1:2012 (C2TE classification), and EN 13499:2003, and compliant with EAD 040083-00-0404.

Product description:

HYGROSMART[®]-ADHESIVE TH-70 is a high-performance, fiber-reinforced cementitious adhesive specifically designed for the installation of thermal insulation boards on building façades and structural substrates. Manufactured by ALCHIMICA S.A., this product is suitable for use with expanded polystyrene (EPS), extruded polystyrene (XPS), mineral wool (MW), rock wool (RW), and polyurethane (PU) panels on concrete, plaster, or render surfaces.

The formulation ensures excellent adhesion, high mechanical strength, and zero vertical slip. It is CE-certified under EN 998-1:2016, EN 12004:2007+A1:2012 (C2TE classification), and EN 13499:2003, and compliant with EAD 040083-00-0404. It exhibits outstanding bond strength under standard and humid conditions, excellent workability, and extended open time, making it ideal for ETICS applications as part of the HYGROSMART COVER OVER System.

Product name: **HYGROSMART[®]-ADHESIVE TH**

Product identification:

Cementitious adhesive specifically designed for the installation of thermal insulation boards on building facades and structural substrates. It is CE-certified under EN 998-1:2016 and EN 13499:2003, and compliant with EAD 040083-00-0404, demonstrating its suitability for ETICS applications.

Product description:

HYGROSMART[®] ADHESIVE TH is a high-performance cementitious adhesive formulated for the installation of thermal insulation boards on external façades and structural substrates. Manufactured by ALCHIMICA S.A., the product is compatible with expanded polystyrene (EPS), extruded polystyrene (XPS), mineral wool (MW), rock wool (RW), and polyurethane (PU) panels applied to concrete, plaster, or render surfaces.

The formulation delivers excellent adhesion, stable mechanical properties, and zero vertical slip. It is CE-certified under EN 998-1:2016 and EN 13499:2003, and compliant with EAD 040083-00-0404, demonstrating its suitability for ETICS applications. With high bond strength under standard and humid conditions, **HYGROSMART[®] ADHESIVE TH** ensures reliable performance in a wide range of climatic conditions.

TECHNICAL SPECIFICATIONS			
PROPERTY	HYGROSMART®- ADHESIVE TH-70	HYGROSMART®- ADHESIVE TH	METHOD
Form	Cement-based powder	Cement-based powder	-
Colour	White	White	-
Water demand	25%	28%	-
Open time	30min	30min	-
Dry bulk density of hardened mortar	1460 kg/m ³	1480 kg/m ³	EN 1015-10:1999/A1:2006
Compressive strength	11.7 N/mm ² for category CS IV	10.3 N/mm ² for category CS IV	EN 1015-11:1999/A1:2006
Adhesive strength	1.5 N/mm ² fracture pattern type b	1.1 N/mm ² fracture pattern type b	EN 1015-12:2016
Capillary water absorption coefficient	0.19 for category Wc 2	0.11 for category Wc 2	EN 1015-18:2002
High initial tensile adhesion strength	≥1.0 N/mm ²	≥1.0 N/mm ²	EN 12004-2:2017
High tensile adhesion strength after water immersion	≥1.0 N/mm ²	≥1.0 N/mm ²	EN 12004-2:2017
High tensile adhesion strength after heat ageing	≥1.0 N/mm ²	≥1.0 N/mm ²	EN 12004-2:2017
High tensile adhesion strength after freeze-thaw cycles	≥1.0 N/mm ²	≥1.0 N/mm ²	EN 12004-2:2017

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

Geographical scope: Global

LCA information

Declared unit: 1 kilogram (kg) of an average Cement-based adhesive

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

Database(s) and LCA software used: Ecoinvent database v.3.10, OpenLCA v.2.2.0 software

Description of system boundaries: The system boundaries are cradle to gate (A1-A3) with modules C+D.

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

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

A1: Raw Material Supply

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

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 cement-based adhesives for thermal insulation boards takes place with the whole demolition of the building/ construction. Thus, it is assumed that the energy used for the demolition of cement-based adhesives for thermal insulation boards 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 cement-based adhesives for thermal insulation boards will be landfilled, thus 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 cement-based adhesives for thermal insulation boards will be landfilled.

System diagram:

PRODUCT STAGE A1-A3



A1 RAW MATERIALS SUPPLY



A2 TRANSPORT



A3 MANUFACTURING

WEIGHING > MIXING > PACKAGING

END LIFE STAGE C1-C4

C1 DECONSTRUCTION - DEMOLITION



C2 TRANSPORTATION OF WASTE



3 WASTER PROCESSING



C4 DISPOSAL



RESOURCE - RECOVERY STAGE D

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	x	x	x	x	x
Geography	GLOBAL		GR	-	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	74%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

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 cement-based adhesives for thermal insulation boards takes place with the whole demolition of the building. It is assumed that the energy used for the demolition of cement-based adhesives for thermal insulation boards 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 cement-based adhesives for thermal insulation boards will be landfilled.

Content information

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.

Product components	Weight, kg	Post-consumer material, weight-%
Calcium carbonate	7,10E-01	0
Portland cement	2,15E-01	0
RDP copolymer	1,39E-02	0
Additives	6,06E-02	0
TOTAL	1,00E+00	0
Packaging materials	Weight, kg	Weight-% (versus the product)
Paper sack	3,66E-03	0.37
Polyethylene LDPE film	6,07E-04	0.06
Wood (pallets)	1,30E-02	1.3
TOTAL	1,73E-02	1.73

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	CO2 Emissions (Kg CO2/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.

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 v2.2.0 software, with datasets sourced from the Ecoinvent v3.10 database.

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-02234	2020	Primary data	72,28%
Transport of raw materials & packaging	Database	Ecoinvent v3.10	2024	Primary data	1,26%
Generation of electricity used in manufacturing of product	DAPEEP SA	Residual energy mix	2023	Primary data	0,19%
Total share of primary data, of GWP-GHG results for A1-A3					73,73%

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	5,99E-01	0,00E+00	1,94E-02	0,00E+00	6,25E-03	0,00E+00
GWP-biogenic	kg CO ₂ eq.	3,31E-03	0,00E+00	3,36E-06	0,00E+00	1,69E-06	0,00E+00
GWP-luluc	kg CO ₂ eq.	2,48E-04	0,00E+00	6,33E-06	0,00E+00	3,22E-06	0,00E+00
GWP-total	kg CO ₂ eq.	6,02E-01	0,00E+00	1,94E-02	0,00E+00	6,26E-03	0,00E+00
ODP	kg CFC 11 eq.	9,28E-09	0,00E+00	3,85E-10	0,00E+00	1,81E-10	0,00E+00
AP	mol H ⁺ eq.	3,06E-03	0,00E+00	6,06E-05	0,00E+00	4,43E-05	0,00E+00
EP-freshwater	kg P eq.	1,38E-04	0,00E+00	1,29E-06	0,00E+00	5,19E-07	0,00E+00
EP-marine	kg N eq.	5,85E-04	0,00E+00	2,04E-05	0,00E+00	1,69E-05	0,00E+00
EP-terrestrial	mol N eq.	6,38E-03	0,00E+00	2,22E-04	0,00E+00	1,84E-04	0,00E+00
POCP	kg NMVOC eq.	2,49E-03	0,00E+00	9,49E-05	0,00E+00	6,60E-05	0,00E+00
ADPE-minerals&metals*	kg Sb eq.	5,40E-06	0,00E+00	6,34E-08	0,00E+00	9,97E-09	0,00E+00
ADPF-fossil*	MJ	6,86E+00	0,00E+00	2,72E-01	0,00E+00	1,53E-01	0,00E+00
WDP*	m ³	1,05E-01	0,00E+00	1,31E-03	0,00E+00	4,29E-04	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.

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO2 eq.	5,99E-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							

Resource use indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	5,33E-01	0,00E+00	4,61E-03	0,00E+00	1,42E-03	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,33E-01	0,00E+00	4,61E-03	0,00E+00	1,42E-04	0,00E+00
PENRE	MJ	6,56E+00	0,00E+00	2,47E-01	0,00E+00	1,39E-01	0,00E+00
PENRM	MJ	2,98E-01	0,00E+00	2,53E-02	0,00E+00	1,47E-02	0,00E+00
PENRT	MJ	6,86E+00	0,00E+00	2,72E-01	0,00E+00	1,53E-01	0,00E+00
SM	kg	1,31E-02	0,00E+00	3,07E-04	0,00E+00	7,16E-05	0,00E+00
RSF	MJ	6,13E-03	0,00E+00	8,59E-05	0,00E+00	1,47E-05	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	3,75E-03	0,00E+00	3,61E-05	0,00E+00	1,59E-04	0,00E+00

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.

Output flow and waste indicators

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
EEE	MJ	3,20E-03	0,00E+00	4,57E-05	0,00E+00	9,19E-06	0,00E+00
EET	MJ	2,83E-02	0,00E+00	6,47E-05	0,00E+00	5,95E-06	0,00E+00
MER	kg	2,75E-06	0,00E+00	3,86E-08	0,00E+00	6,62E-09	0,00E+00
MFR	kg	1,20E-02	0,00E+00	2,78E-04	0,00E+00	5,91E-05	0,00E+00
HWD	kg	1,04E-02	0,00E+00	2,66E-04	0,00E+00	1,14E-04	0,00E+00
NHWD	kg	9,73E-02	0,00E+00	2,95E-03	0,00E+00	1,66E-03	0,00E+00
RWD	kg	5,25E-06	0,00E+00	8,66E-08	0,00E+00	2,38E-08	0,00E+00

Additional impacts

ETP-fw	CTUe	7,43E+00	0,00E+00	7,30E-02	0,00E+00	2,10E-02	0,00E+00
HTP-nc*	CTUh	9,34E-09	0,00E+00	1,75E-10	0,00E+00	2,76E-11	0,00E+00
HTP-c*	CTUh	2,13E-09	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	2,11E-08	0,00E+00	1,52E-09	0,00E+00	1,01E-09	0,00E+00
SQP*	Dimensionless	2,24E+00	0,00E+00	1,62E-01	0,00E+00	3,02E-01	0,00E+00

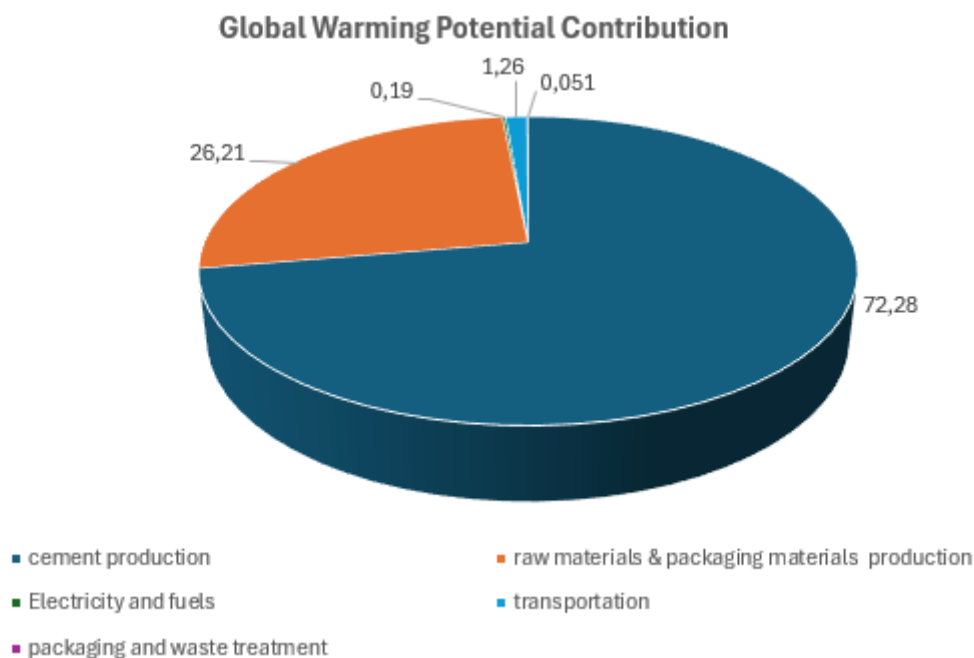
*Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

** 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.

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.



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

References

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14 v.1.3.4 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)

