

Environmental Product Declaration

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

Solvent-based Bitumen Extended Polyurethane Liquid- Applied Waterproofing Membranes from ALCHIMICA S.A.

Products included in the EPD:

HYPERDESMO® PB-1K

HYPERDESMO® PB-1K-AR

HYPERDESMO® PB-1K-FC

HYPERDESMO® PB-MONO

HYPERDESMO® PB-2K

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



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0032203:001
Version date:	2026-06-08
Validity date:	2031-06-08

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: 351 Paints, varnishes and other related products.
PCR review was conducted by: The technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@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: **HYPERDESMO®-PB-1K**

Product identification: **HYPERDESMO®-PB-1K** is a one-component polyurethane-bitumen liquid membrane designed for flashing, waterproofing and protection of vertical surfaces, roofs, and structural elements.



UN CPC code: 351 Paints, varnishes and other related products

Product description:

HYPERDESMO®-PB-1K is a one-component, thixotropic, bitumen-extended polyurethane liquid-applied membrane that cures rapidly by reaction with ambient humidity to form a hydrophobic, elastic, and durable waterproofing and protective coating. Manufactured by ALCHIMICA S.A., it is based on pure elastomeric hydrophobic polyurethane resin extended with chemically polymerised virgin bitumen, providing outstanding mechanical properties, high elongation, tensile and tear strength, and excellent chemical resistance. Its thixotropic nature makes it ideal for application on vertical surfaces and complex shapes without running or bubbling. The membrane achieves very strong adhesion to a wide range of substrates—including concrete and reinforced concrete, cementitious substrates, gypsum and cement boards, asphalt membranes, light metal or fibrous cement roofing, and bituminous surfaces—making it suitable for flashing, waterproofing and protection of roofs, planter boxes, basements, foundations, and closed spaces with high humidity.

HYPERDESMO®-PB-1K is CE-certified (2928-CPR-55) according to the European Standard EN 1504-2 for concrete surface protection systems. It offers high elongation (>600%), broad service temperature resistance (–40°C to +80°C, with shock resistance up to 150°C), proven thermal resistance (EOTA TR011), accelerated weathering performance (ASTM G53, 1000 hours), and effective humidity barrier properties with low water absorption (<0.9%). Produced under ISO 9001, ISO 14001, and ISO 45001 management systems, it ensures consistent quality and reliability for demanding waterproofing and protection applications.

Brief description of main processes of manufacturing: The manufacturing process begins with the accurate weighing of raw materials to ensure the correct formulation. The materials are then transferred to the mixing units, where they are thoroughly stirred. The duration of the mixing stage is adjusted according to the specific characteristics of the product. Parameters such as mixing speed and temperature are carefully controlled to optimize the process.

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

Product name: **HYPERDESMO®-PB-1K-AR**

Product identification: **HYPERDESMO®-PB-1K-AR** is a one-component polyurethane-bitumen liquid membrane with anti-root properties, designed for waterproofing and protection of green roofs, planter boxes, and structural elements exposed to vegetation.



UN CPC code: 351 Paints, varnishes and other related products

Product description:

HYPERDESMO®-PB-1K AR is a one-component, thixotropic, bitumen-extended polyurethane liquid-applied membrane with anti-root properties, that cures rapidly by reaction with ambient humidity to form a hydrophobic, elastic, and durable waterproofing and protective coating. Manufactured by ALCHIMICA S.A., it is based on pure elastomeric hydrophobic polyurethane resin extended with chemically polymerised virgin bitumen, providing outstanding mechanical properties, high elongation, tensile and tear strength, and excellent chemical resistance. Its thixotropic nature makes it ideal for application on vertical surfaces and complex shapes without running or bubbling, while its anti-root formulation prevents root penetration, making it particularly suitable for green roofs, planter boxes, and landscaped areas.

The membrane achieves very strong adhesion to a wide range of substrates—including concrete and reinforced concrete, cementitious substrates, gypsum and cement boards, asphalt membranes, light metal or fibrous cement roofing, and bituminous surfaces—making it suitable for flashing, waterproofing and protection of roofs, planter boxes, basements, foundations, and closed spaces with high humidity. It offers high elongation (>600%), broad service temperature resistance (–40°C to +80°C, with shock resistance up to 150°C), proven thermal resistance (EOTA TR011), accelerated weathering performance (ASTM G53, 1000 hours), and effective humidity barrier properties with low water absorption (<0.9%). Produced under ISO 9001, ISO 14001, and ISO 45001 management systems, it ensures consistent quality and reliability for demanding waterproofing and protection applications, including those exposed to vegetation and root activity.

Brief description of main processes of manufacturing: The manufacturing process begins with the accurate weighing of raw materials to ensure the correct formulation. The materials are then transferred to the mixing units, where they are thoroughly stirred. The duration of the mixing stage is adjusted according to the specific characteristics of the product. Parameters such as mixing speed and temperature are carefully controlled to optimize the process.

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

Product name: **HYPERDESMO®-PB-1K-FC**

Product identification: **HYPERDESMO®-PB-1K-FC** is a one-component, fast-curing polyurethane-bitumen liquid membrane designed for rapid waterproofing and protection of basements, foundations, roofs, planter boxes, and under-tile areas, suitable for heavy-duty applications.



UN CPC code: 351 Paints, varnishes and other related products

Product description:

HYPERDESMO®-PB-1K FC is a one-component, fast-curing, self-leveling, bitumen-extended polyurethane liquid-applied membrane that cures rapidly throughout—even at low temperatures and low humidity—to form a hydrophobic, elastic, and durable waterproofing and protective coating with minimal bubbling formation. Manufactured by ALCHIMICA S.A., it is based on pure elastomeric hydrophobic polyurethane resin extended with chemically polymerised virgin bitumen, providing outstanding mechanical properties, high elongation, tensile and tear strength, high abrasion resistance, and excellent chemical resistance. The product complies with ASTM C836 and allows multi-layer application by brush, spatula, or airless spray. The membrane achieves excellent adhesion to a wide range of substrates—including concrete and reinforced concrete, bituminous surfaces, and polyurethane insulation foams—making it suitable for waterproofing and protection of basements, foundations, roofs (including inverted roof insulation build-ups), planter boxes, under-tile applications such as balconies and wet rooms, and general purpose heavy-duty jobs.

HYPERDESMO®-PB-1K FC is CE-certified (2928-CPR-111) according to the European Standard EN 1504-2:2004 for concrete surface protection systems. It offers very high elongation (>800%), tensile strength >2 N/mm², broad service temperature resistance (–40°C to +80°C, with shock resistance up to 150°C), proven thermal resistance (EOTA TR011), strong pull-off bond strength (≥1.5 N/mm²), and effective humidity barrier properties with low water absorption (<1.0%). Produced under ISO 9001, ISO 14001, and ISO 45001 management systems, it ensures consistent quality and reliability for demanding fast-track waterproofing and protection applications.

Brief description of main processes of manufacturing: The manufacturing process begins with the accurate weighing of raw materials to ensure the correct formulation. The materials are then transferred to the mixing units, where they are thoroughly stirred. The duration of the mixing stage is adjusted according to the specific characteristics of the product. Parameters such as mixing speed and temperature are carefully controlled to optimize the process.

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

Product name: **HYPERDESMO®-PB-MONO**

Product identification: **HYPERDESMO®-PB-MONO** is an economic one-component polyurethane-bitumen liquid membrane designed for flashing, waterproofing and protection of vertical surfaces, roofs, and structural elements, applicable in one or two coats.



UN CPC code: 351 Paints, varnishes and other related products

Product description:

HYPERDESMO®-PB-MONO is a one-component, thixotropic, bitumen-extended polyurethane liquid-applied membrane that cures rapidly by reaction with ambient humidity to form a hydrophobic, elastic, and durable waterproofing and protective coating, designed as an economic solution allowing single-coat or two-coat application. Manufactured by ALCHIMICA S.A., it is based on pure elastomeric hydrophobic polyurethane resin extended with chemically polymerised virgin bitumen, providing outstanding mechanical properties, high elongation, tensile and tear strength, high abrasion resistance, and excellent

chemical resistance. Its thixotropic nature makes it ideal for application on vertical surfaces and complex shapes without running or bubbling, and it can be applied by brush, spatula, or airless spray. The membrane achieves very strong adhesion to a wide range of substrates—including concrete and reinforced concrete, cementitious substrates, gypsum and cement boards, asphalt membranes, light metal or fibrous cement roofing, and bituminous surfaces—making it suitable for flashing, waterproofing and protection of roofs, planter boxes, basements, foundations, and closed spaces with high humidity.

HYPERDESMO®-PB-MONO offers high elongation (>400%), tensile strength of 5 N/mm², broad service temperature resistance (–40°C to +80°C, with shock resistance up to 150°C), proven thermal resistance (EOTA TR011), accelerated weathering performance (ASTM G53, 1000 hours), and serves as an effective humidity and radon gas barrier with low water absorption (<1.5%). Produced under ISO 9001, ISO 14001, and ISO 45001 management systems, it ensures consistent quality and reliability for demanding waterproofing and protection applications.

Brief description of main processes of manufacturing: The manufacturing process begins with the accurate weighing of raw materials to ensure the correct formulation. The materials are then transferred to the mixing units, where they are thoroughly stirred. The duration of the mixing stage is adjusted according to the specific characteristics of the product. Parameters such as mixing speed and temperature are carefully controlled to optimize the process.

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

Product name: **HYPERDESMO®-PB-2K**

Product identification: **HYPERDESMO®-PB-2K** is a two-component polyurethane-bitumen liquid membrane designed for heavy-duty waterproofing and protection of roofs, green roofs, planter boxes, foundations, basements, water tanks, and infrastructure works, with proven root resistance and crack-bridging performance.



UN CPC code: 351 Paints, varnishes and other related products

Product description:

HYPERDESMO®-PB-2K is a two-component (1:1 by volume), fast-curing, bitumen-extended polyurethane liquid-applied membrane that produces a highly elastic, durable waterproofing and protective coating with excellent crack-bridging capability and root resistance. Manufactured by ALCHIMICA S.A., it is based on a pure elastomeric hydrophobic polyurethane resin extended with chemically polymerised virgin bitumen, providing excellent mechanical properties, exceptionally high elongation, tensile and tear strength, high abrasion resistance, and good chemical resistance. Its two-component formulation allows the creation of thick, bubble-free membranes in a single coat, while unused quantities can be stored for later use, and its low modulus delivers outstanding substrate crack-bridging performance. The membrane achieves excellent adhesion to a wide range of substrates—including concrete and reinforced concrete, fibrous cement, mosaic, cement roof tiles, old acrylic and asphalt coats, wood, corroded metal, galvanized steel, gypsum and cement boards, polyurethane insulation foams, and asphalt

membranes—making it suitable for waterproofing and protection of basements, foundations, roofs (including inverted roof insulation build-ups), green roofs and planter boxes, bathrooms and balconies

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 solvent-based bitumen extended polyurethane liquid-applied waterproofing membrane.

The composition of the product is expressed in mass (%) per declared unit.

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
PU-Prepolymer	4.07E-01	2.18E-01	4.24E-01	0
Asphalt	4.03E-01	1.96E-01	4.27E-01	0
Fillers	3.14E-02	0.00E+00	4.02E-01	0
Solvent	1.47E-01	1.32E-01	1.73E-01	0
Additives	1.08E-02	4.00E-04	2.99E-02	0

Packaging materials	Mass-kg (per declared unit)	Mass-% (versus the product)
Steel bucket	8.54E-02	<9%
Cardboard box	3.72E-03	<0.4%
Polyethylene LDPE film	1.01E-03	<0.1%
Wood (pallets)	2.19E-02	<2.2%

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)*
0.12	

* Residual Greek Mix: **DAPEEP Report 2024** In accordance with section 1.4 of PCR 2019: 14 “Construction Products” version 2.0.1, 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 a solvent-based bitumen extended polyurethane liquid-applied waterproofing membrane.

Time representativeness: The data used for the analysis refer to the year 2025

Geographical scope: Global

Database(s) and LCA software used: Ecoinvent database v.3.11, OpenLCA v.2.6 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

Production begins with the supply of materials, which includes the manufacture of essential raw components.

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.

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

A3: Manufacturing

The process commences with the weighing of the raw materials. Subsequently, the materials are transferred to the mixing units, where they are stirred to achieve homogenization. The duration of this mixing stage is determined according to the specific characteristics of the product.



Concerning **electricity** mix, the national residual energy mix (2024) as published in DAPEEP SA was used.

C1: De-construction, demolition

Demolition of water-based bitumen-extended liquid-applied waterproofing coatings takes place with the whole demolition of the building/ construction. Thus, it is assumed that the energy used for the demolition of water-based bitumen-extended liquid-applied waterproofing coatings has minor significance and the environmental impact of this module is set to be zero.

C2: Transportation of waste

A distance of 80 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 water-based bitumen-extended liquid-applied waterproofing coatings will be landfilled and the environmental impact of this module is set to be zero.

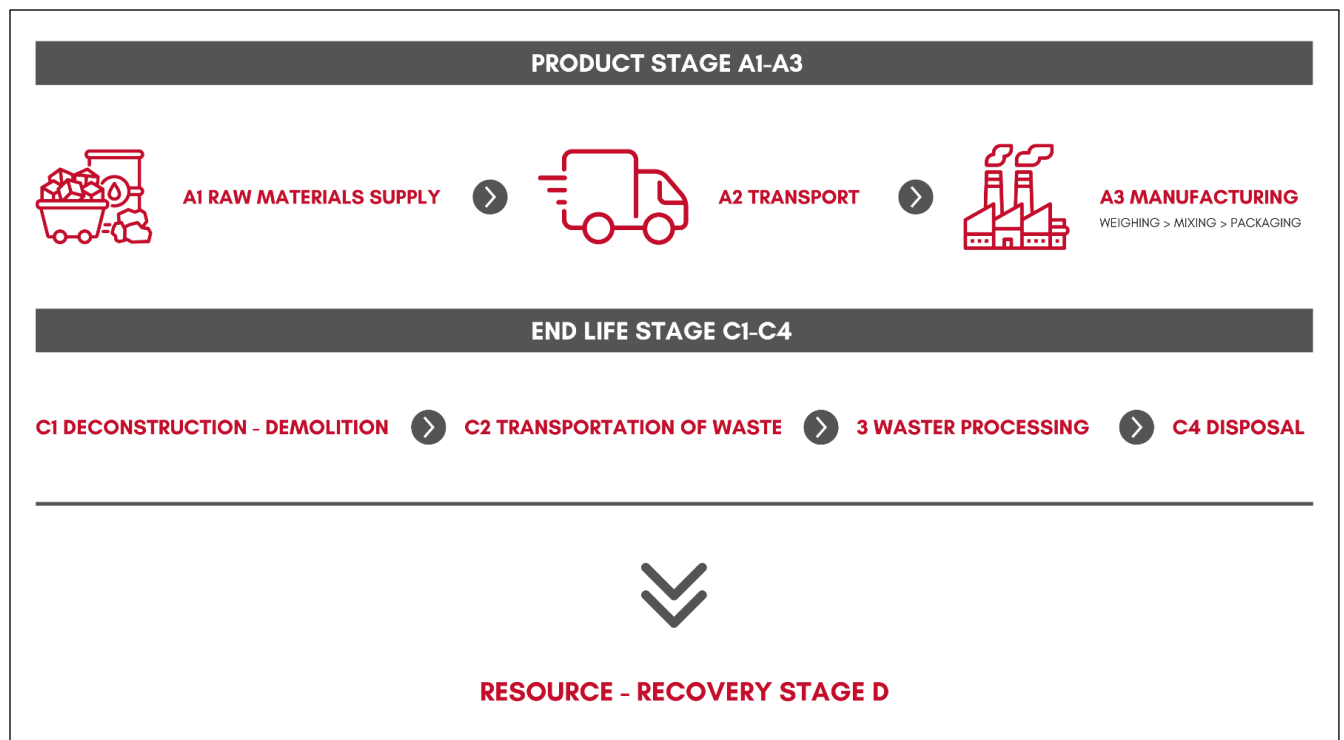
C4: Disposal

This module includes the final disposal of the discarded product. As mentioned above, 100% of the end-of-life waste of water-based bitumen-extended liquid-applied waterproofing coatings will be landfilled.

D: Resource-Recovery stage

Since the product is only disposed of, there are no benefits deriving from the re-use or recycling of the product after its end-of-life stage

System diagram:



Additional LCA information

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	7.79%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	28.13%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

X=included, ND=Module Not Declared

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 2025. These data were collected from the company's internal records.

Generic data were obtained using the OpenLCA v2.6 software, with datasets sourced from the Ecoinvent v3.11 database.

Data Quality Information according to EN 15941:2024

Period of Data Collection: 01/01/2025 – 31/12/2025

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

Market scope: Global market

Technology: Production includes weighing, mixing and packaging operations using electric energy and diesel forklifts. 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 2025.

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 polyols	Database	Ecoinvent v3.11	2024	Generic data	0.00%
Production of solvent	Database	Ecoinvent v3.11	2024	Generic data	0.00%
Production of raw materials and packaging	Database	Ecoinvent v3.11	2024	Generic data	0.00%
Transport of raw materials & packaging	Database	Ecoinvent v3.11	2024	Primary data	7.69%
Generation of electricity used in manufacturing of product	DAPEEP SA	Residual energy mix	2024	Primary data	0.1%
Total share of primary data, of GWP-GHG results for A1-A3					7.79%

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

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	2.24E+00	0.00E+00	1.11E-02	0.00E+00	6.26E-03	0.00E+00
GWP-fossil	kg CO ₂ eq.	2.22E+00	0.00E+00	1.07E-02	0.00E+00	6.25E-03	0.00E+00
GWP-biogenic	kg CO ₂ eq.	4.62E-03	0.00E+00	5.03E-06	0.00E+00	1.69E-06	0.00E+00
GWP-luluc	kg CO ₂ eq.	1.62E-02	0.00E+00	4.18E-04	0.00E+00	3.22E-06	0.00E+00
ODP	kg CFC 11 eq.	9.05E-08	0.00E+00	4.16E-10	0.00E+00	1.81E-10	0.00E+00
AP	mol H ⁺ eq.	1.18E-02	0.00E+00	3.46E-05	0.00E+00	4.43E-05	0.00E+00
EP-freshwater	kg P eq.	8.43E-04	0.00E+00	8.78E-07	0.00E+00	5.17E-07	0.00E+00
EP-marine	kg N eq.	3.43E-03	0.00E+00	1.54E-05	0.00E+00	1.69E-05	0.00E+00
EP-terrestrial	mol N eq.	3.11E-02	0.00E+00	1.30E-04	0.00E+00	1.84E-04	0.00E+00
POCP	kg NMVOC eq.	1.05E-02	0.00E+00	4.98E-05	0.00E+00	6.60E-05	0.00E+00
ADP-minerals&metals*	kg Sb eq.	4.06E-05	0.00E+00	4.18E-08	0.00E+00	0.00E+00	0.00E+00
ADP-fossil*	MJ	4.74E+01	0.00E+00	1.54E-01	0.00E+00	0.00E+00	0.00E+00
WDP*	m ³	1.11E+00	0.00E+00	1.14E-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

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	2.24E+00	0.00E+00	1.11E-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

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	5.98E+00	0.00E+00	3.34E-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	5.98E+00	0.00E+00	3.34E-03	0.00E+00	1.42E-03	0.00E+00
PENRE	MJ	4.75E+01	0.00E+00	1.57E-01	0.00E+00	1.39E-01	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-02	0.00E+00
PENRT	MJ	4.75E+01	0.00E+00	1.57E-01	0.00E+00	1.53E-01	0.00E+00
SM	kg	5.77E-01	0.00E+00	1.74E-04	0.00E+00	7.16E-05	0.00E+00
RSF	MJ	1.36E-01	0.00E+00	1.56E-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	m ³	2.75E-02	0.00E+00	4.00E-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

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	1.60E-01	0.00E+00	2.61E-04	0.00E+00	1.14E-04	0.00E+00
NHWD	kg	4.10E+00	0.00E+00	1.59E-03	0.00E+00	1.66E-03	0.00E+00
RWD	kg	6.55E-05	0.00E+00	3.27E-08	0.00E+00	2.38E-08	0.00E+00

Output flow 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
MFR	kg	4.48E-01	0.00E+00	1.10E-04	0.00E+00	5.91E-05	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.62E-09	0.00E+00
EEE	MJ	6.79E-02	0.00E+00	1.43E-05	0.00E+00	9.19E-06	0.00E+00
EET	MJ	2.67E-02	0.00E+00	2.36E-05	0.00E+00	5.95E-06	0.00E+00

Additional impacts

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
ETP-fw	CTUe	1.22E+02	0.00E+00	5.68E-02	0.00E+00	2.10E-02	0.00E+00
HTP-nc*	CTUh	4.89E-08	0.00E+00	1.19E-10	0.00E+00	2.76E-11	0.00E+00
HTP-c*	CTUh	5.59E-09	0.00E+00	2.47E-12	0.00E+00	2.83E-11	0.00E+00
IRP**	kBq U235 eq.	2.49E-01	0.00E+00	1.35E-04	0.00E+00	9.78E-05	0.00E+00
PM	Disease Incidence	1.06E-07	0.00E+00	1.03E-09	0.00E+00	1.01E-09	0.00E+00
SQP*	Dimensionless	2.22E+00	0.00E+00	1.63E-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	46.98%
GWP-fossil	46.73%
GWP-biogenic	98.47%
GWP-luluc	101.5%
GWP-GHG	46.91%
ODP	48.20%
AP	80.27%
EP-freshwater	56.38%
EP-marine	115.25%
EP-terrestrial	121.63%
POCP	45.23%
ADP-minerals&metals*	53.36%

ADP-fossil*	41.95%
WDP*	66.83%

Resource use indicators - Variations

Indicator	Variations %
PERE	91.24%
PERM	00.00%
PERT	91.24%
PENRE	41.97%
PENRM	00.00%
PENRT	41.97%
SM	174.29%
RSF	100.90%
NRSF	00.00%
FW	67.75%

Waste indicators – Variations

Indicator	Variations %
HWD	40.04%
NHWD	136.10%
RWD	83.54%

Output flow indicators – Variations

Indicator	Variations %
CRU	0.00%
MFR	93.13%
MER	0.00%
EEE	96.93%
EET	82.73%

Additional impacts - Variations

Indicator	Variations %
ETP-fw	92.13%
HTP-nc*	260.57%
HTP-c*	85.76%
IRP**	82.36%
PM	60.73%
SQP*	231.46%

Interpretation

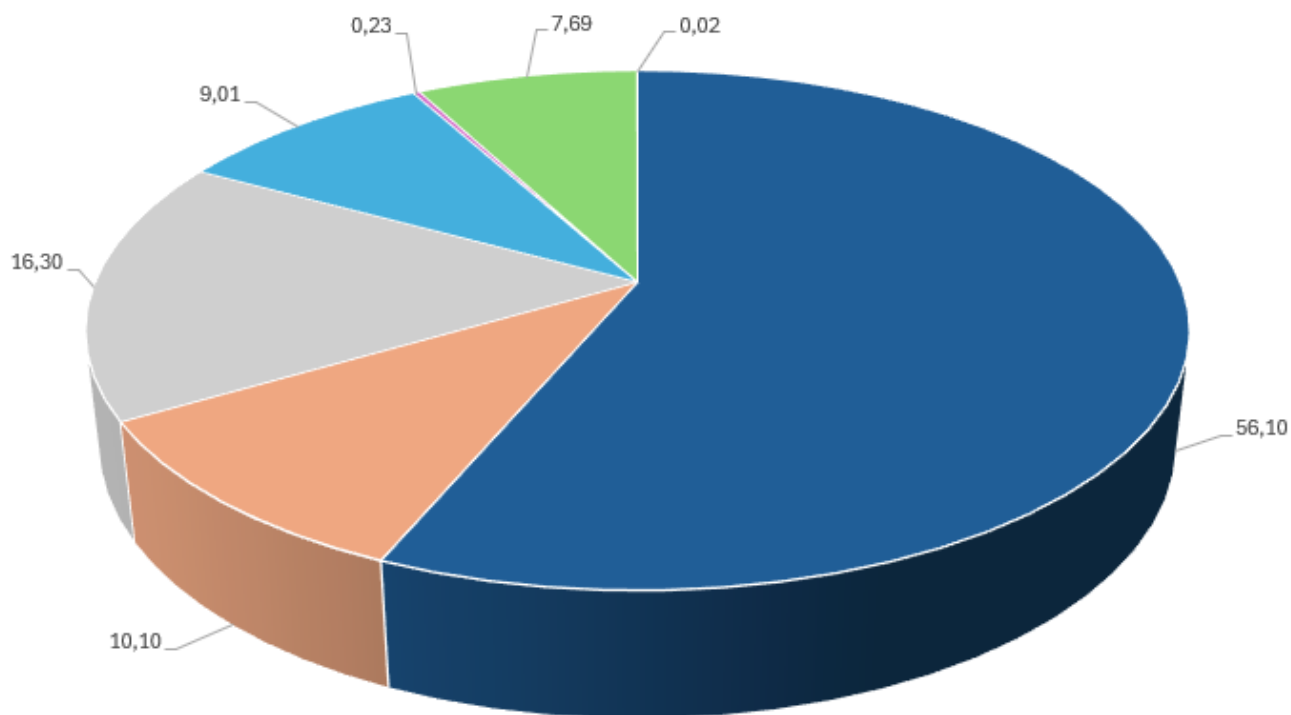
The majority of the total Global Warming Potential (GWP) is associated with upstream processes (Module A1), primarily due to the extraction and processing of raw materials. In particular, the production of polyols and solvent represents the most significant contribution. In contrast, the production of the final product (Module A3) has a relatively minor impact on the overall GWP.

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.

Global Warming Potential Contribution



- polyols production
- solvent production
- raw materials production
- packaging materials production
- Electricity and fuels
- transportation
- packaging and waste treatment

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 14020:2022 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 2024 from Renewable Energy Sources Operator & Guarantees of Origin (DAPEEP SA)

Version history

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