

Environmental Product Declaration

EPD of multiple products, based on a representative product, in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

GLASS MOSAIC

PENTA, HEX XL, SQUARE, HEX MALLA, HEX POLIURETANO, BRICK and PENNY

from **ONIX**

ONIX®

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products from a company
EPD registration number:	EPD-IES-0031831
Version date:	2026-06-23
Validity date:	2031-05-14

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 (EN 15804+A2) (2.0.1)
UN CPC code: 37117 <i>Paving blocks, bricks, tiles and other articles of pressed or moulded glass, of a kind used for building or construction purposes; leaded lights and the like; multicellular or foam glass in blocks, plates or similar forms</i>
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 . Chairs of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair).
c-PCR: c-PCR-009 Flat glass products used in buildings and other construction works (EN 17074) (c-PCR to PCR 2019:14) (1.0.0)

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: Ana de la Puente Salazar, IK Ingenieria
Approved by: International EPD System
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: Onix Cerámica S.L.U. - Av. Real de Extremadura, 23 – 12200 Onda, Castellón.

Contact:

- Rafa Giménez, r.gimenez@onixmosaico.com
- Celia Lacomba ce.lacomba@onixmosaico.com

Address and contact information of the LCA practitioner commissioned by the EPD owner, if applicable: The life cycle analysis has been carried out by SOSTEC.

Description of the organisation: ONIX is the manufacturer and owner of the EPD. Founded in 1999, the company bases its activity on design, innovation, and sustainability, and has established itself as a global leader in glass mosaic, with a production capacity of 3,500,000 m². Its industrial facilities have evolved from the start-up of the first electric furnace in the year 2000 to the construction of the sixth furnace planned for 2025. Currently, ONIX operates two production plants and a logistics centre in Spain.

The company is firmly committed to sustainability, manufacturing 100% recycled glass mosaic and using solar electricity sourced from photovoltaic energy in its production process.

ONIX glass mosaics stand out for their aesthetic versatility, variety of formats and finishes, and high technical performance, such as resistance to stains, abrasion, temperature changes, and chemical agents. The company offers customizable solutions for interior and exterior projects, and its products are present in internationally renowned works.

With a solid reputation in the global market, ONIX exports its products to more than 110 countries, positioning itself as an international benchmark in the manufacture of decoration, swimming pool, and wellness products.

Additional information on completed projects, the full product catalogue, collections, formats, and their technical specifications is available on the official website www.onixmosaico.com.

Product-related or management system-related certifications: ISO 50001:2018 Energy Management Systems (ES24/00000175).

Product information

Product name, identification and description: The products included in this LCA correspond to seven families of glass mosaic manufactured by ONIX at its production facilities in Spain. Each family differs in its geometry, format, support system, and auxiliary composition, while maintaining in all cases a common base of 100% recycled pre-consumer glass as the main component. All product ranges are manufactured using the same processes, raw materials and manufacturing technology, as well as the same machinery and production lines.

The families under study are PENTA, HEX XL, SQUARE, HEX MALLA, HEX POLIURETANO, BRICK, and PENNY. These glass mosaic families are high-performance architectural surfacing solutions which feature null water absorption, high resistance to thermal shocks, frost, and chemical agents. Their hygienic and antibacterial properties make them ideal for a wide range of applications, including interior and exterior walls, residential flooring, wellness and spa zones, and swimming pools.

Their formats and densities can be found in the following table:

Product Family	Format (mm/inches)	Density (kg/m ²)
PENTA	50 mm x 50 mm	11,6
HEX XL	ø 51,6 mm (2")	11,8
SQUARE	25x25 mm (1"x1")	9,1
HEX - MALLA	ø 31,75 mm (1,25")	9,5
HEX - POLIURETANO	ø 31,75 mm (1,25")	9,5
BRICK	25X50 mm (1" X 2")	10,9
PENNY	ø 19 mm (0,74")	9,7

The production process begins with grinding 100% recycled pre-consumer glass into powder, which is mixed with additives and pigments before being shaped via hydraulic pressing. The tiles are then decorated using glazes or digital inkjet technology and fired in ceramic roller. Finally, the mosaic undergoes rigorous quality selection before being assembled onto meshes and palletized for distribution.



ONIX®

Additional information is available on the official website www.onixmosaico.com.

UN CPC code: 37117 Paving blocks, bricks, tiles and other articles of pressed or moulded glass, of a kind used for building or construction purposes; leaded lights and the like; multicellular or foam glass in blocks, plates or similar forms.

Name and location of production site(s): The glass mosaic production plant is located in Onda (Spain).

Content declaration

The content declaration is relative to 1 m² of the reference product (9,1 kg/m²). This product has been selected as it has the highest production volume in mass within the range of products included in this declaration, making it the most representative and realistic scenario for the total pool of products represented. Consequently, the environmental profile accurately reflects the most frequent material flows and manufacturing processes, ensuring the representativeness of the entire product family.

Product content	Mass, kg	Post-consumer recycled material mass-% of product	Biogenic material mass-% of product	Biogenic material kg C/DU
Glass⁽¹⁾	8,93 8,88 – 11,48	0,00	0,00	0,00
Pigments	0,03 0,03 – 0,17	0,00	0,00	0,00
Other materials	0,14 0,11 – 0,45	0,00	0,00	0,00
Total	9,10 9,10 – 11,61	0,00	0,00	0,00

⁽¹⁾100% post-industrial scrap.

The packaging has been calculated from average annual consumption, providing a representative value for all products under study. As all products are distributed using standardized packaging, the average values reflect this common practice, despite minor variations between formats.

Packaging materials	Mass, kg	Mass % (versus the product)	Biogenic material kg C/DU
Carton board box	0,084	0,9%	0,04
Glue	0,001	< 0,1 %	0,00
Film	0,016	0,2%	0,00
Tape	< 0,001	< 0,1 %	0,00
Paper	< 0,002	< 0,1 %	<0,01
Pallet	0,114	1,2%	0,05
Total	0,215	2,3%	0,10

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

The products do not contain substances included in the *Candidate List of Substances of Very High Concern* (SVHC) in accordance with Regulation (EC) No. 1907/2006 (REACH) in concentrations exceeding 0,1% by weight. Furthermore, during their life cycle, no substances exceeding the limits established by current European legislation on human health and the environment are used or generated.

LCA information

Declared unit: 1 m² of the reference product.

This EPD covers several families of glass mosaic manufactured using the same production technology. Although SQUARE is presented as the reference product (highest production volume), each product has been modelled individually based on its specific composition.

Conversion factor to mass: 9,1 kg/m².

The thickness of the reference product SQUARE is approximately 4,5 mm. The families covered by the EPD have a thickness ranging from 4,3 to 5,5 mm.

Time representativeness: 2024.

Geographical scope:

- A1-A3: Spain
- A4-A5, C1-C4, D: Global

Database(s) and LCA software used:

- ecoinvent 3.10 database (compiled March 2024)
- SimaPro 9.6

Description of system boundaries: Cradle-to-gate with options, modules C1-C4, module D and optional modules A4 and A5 (A1-A3 + C1-C4 + D and additional modules A4 and A5).

Raw material suppliers are located in Spain, with all materials transported to the production plant by road.

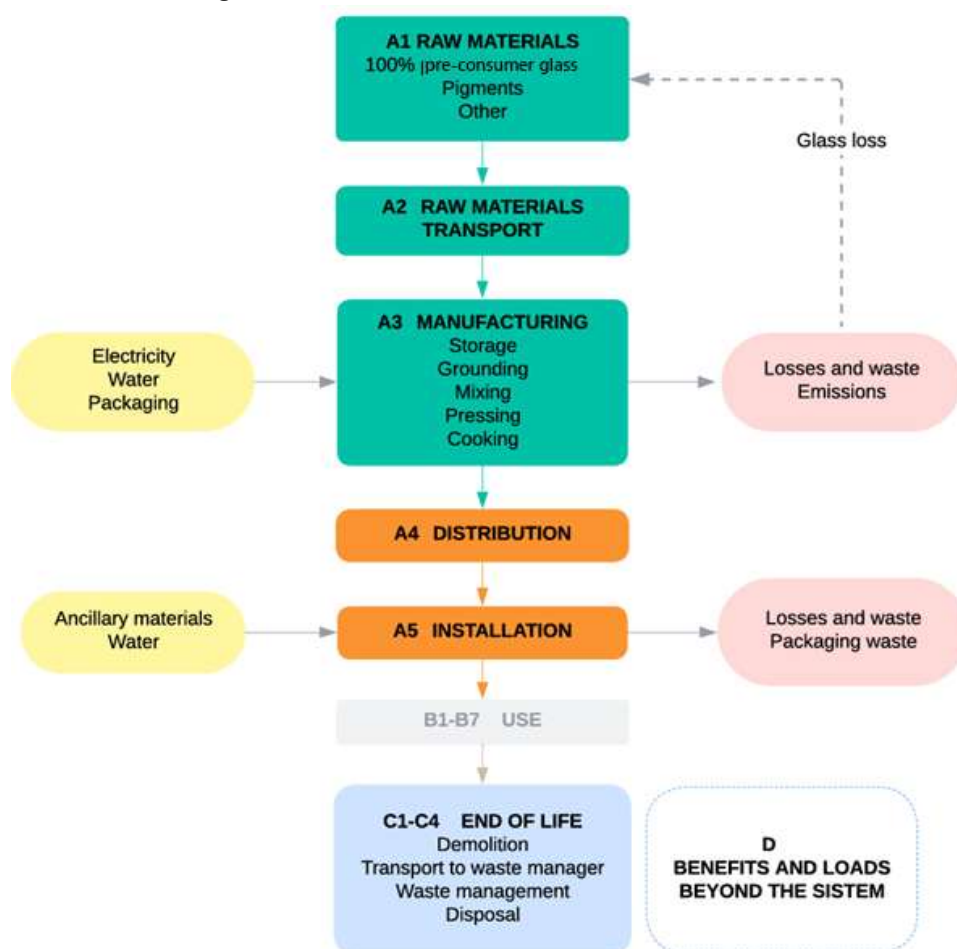
The production of glass mosaic from post-industrial recycled glass follows a continuous and controlled sequence. Raw materials are received, inspected, and laboratory-tested before grinding, where glass is milled to the required particle size using high-capacity mills. The glass powder is then mixed with additives and colorants, with density, moisture, and granulometry verified prior to pressing. The mixture is compacted in moulds using hydraulic presses to obtain raw tesserae. Decoration and glazing are applied using advanced digital technology, followed by firing in electric kilns. Finally, tesserae are assembled onto meshes, automatically boxed, palletized, and inventoried. Throughout the process, no hazardous emissions or waste are generated, and filtration systems are used at all stages.

Installation is manual and requires no energy consumption beyond standard tiling materials (cementitious adhesive, grout, and mixing water). No electricity is consumed during installation, only water for cleaning.

During the product's service life, no energy or water consumption occurs, and no maintenance, restoration, or replacement activities are required. Use Stages (B1–B7) modules are not declared as they fall outside the specific scope of this EPD.

The end-of-life scenario follows the default values established in the applicable PCR, considering glass mosaic as construction and demolition waste transported to an authorized landfill facility. A conservative approach assumes 100% landfilling, with no recovery or recycling processes, due to the product's nature and its integration into building systems.

Process flow diagram:



Product stage (A1-A3)

A1 Raw Material Supply: This module covers the extraction and processing of all raw materials and energy inputs. The core component of the product is 100% pre-consumer recycled glass. This stage includes the collection and treatment of the recycled glass, as well as the production of auxiliary materials such as pigments, additives, and the support systems used for the final assembly of the mosaic.

A2 Transport to Manufacturer: This module covers the transportation of all raw materials and components from suppliers located in Spain to the manufacturing site in Onda. In all cases, transport is conducted by road. The environmental impact assessment includes fuel consumption, vehicle emissions, and the associated logistics infrastructure.

A3 Manufacturing: This module covers the production of glass mosaic from recycled glass. Raw materials are grinded in high-capacity mills to achieve the required particle size. The resulting glass powder is mixed with additives and colorants, with density and moisture verified prior to the pressing stage. The mixture is then compacted in moulds using hydraulic presses. Advanced digital technology is applied for decoration and glazing, followed by firing in electric kilns. Finally, the product is assembled onto support systems, boxed, and palletized.

The process generates no hazardous emissions, and filtration systems are implemented at all stages. A portion of process losses (glass) is sent to authorized managers for reprocessing, while the remainder is managed as waste.

Electricity consumed at the manufacturing site is modeled using the market-based approach. A portion of the electricity consumed during the manufacturing process is generated on-site through ONIX's own photovoltaic installation. The remaining electricity demand is supplied by the external grid. This external supply has been modelled using the supplier-specific residual mix.

Emission factor for the electricity consumed at the manufacturing site (GWP-GHG)**	
Supplier Residual Mix* *(Electricity sources: 7% renewable, 38% nuclear, 30% natural gas, 25% others)	0,400 kg CO ₂ eq / kWh
On-site Photovoltaic Installation	1,87E-06 kg CO ₂ eq / kWh
Resulting Manufacturing Plant Mix* *(84% from Supplier; 16% from PV)	0,168 kg CO₂ eq / kWh

Distribution and installation stage (A4, A5)

A4 Transport to Construction Site: This module accounts for the delivery of the finished and packed glass mosaic products from the manufacturing plant to the final construction site. The geographical scope of this module is *Global*, and the calculations have been modelled based on the actual sales distances and distribution data from the reference year (2024). All products are transported by road and/or sea depending on the final destination, including fuel consumption and vehicle emissions associated with these routes.

Scenario information	Unit (per declared unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat etc.	Container ship 7.5-16 metric ton, EURO5 lorry 16-32 metric ton, EURO5 lorry
Distance	2744 km by ship 74 km by road (7.5-16 metric ton EURO5 lorry) 289 km by road (16-32 metric ton EURO5 lorry) - 289 km Europe 2818 km Rest of the world
Volume capacity utilisation factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaged products)	1

A5 Installation: The installation of the glass mosaic has been modelled according to the manufacturer's technical specifications. This stage is characterized by a manual application process, requiring no energy consumption. The installation process includes:

- Auxiliary materials (cementitious adhesives and grout) modeled using upstream EPDs to ensure conservative results. This approach prevents the underestimation of impacts and complies with PCR requirements by prioritizing data robustness where specific downstream modeling rules may differ.
- Water required for mixing the adhesive/grout and for the subsequent cleaning of the tiles.
- Following a conservative approach, 100% of the installation-related waste (product's packaging and material losses during installation) is assumed to be sent to a landfill.

Scenario information	Unit (per declared unit)
Ancillary materials	2 kg of adhesive cement 1 kg of grout
Water use	0,00133 m ³
Energy use	Not required
Waste outputs	0,001 m ³ of wastewater 0,22 kg of losses 0,218 kg of packaging waste

Scenario information	Unit (per declared unit)
Collection process specified by type	9,1 kg collected with missed construction waste
Recovery system specified by type	0 kg for recovery
Disposal specified by type	9,1 kg for final deposition
Assumptions for scenario development, e.g. transportation	16-32 metric ton, EURO5 lorry Distance: 80 km

Use stage (B1-B7)

B1–B7 Use Stage (Not declared): Modules B1 to B7 are not declared in this EPD. The glass mosaic is a passive product during its service life, with no significant environmental impacts associated with these stages. The product requires no operational energy, water consumption, or chemical inputs, and its high technical durability ensures that no maintenance, repair, replacement, or refurbishment activities are required throughout its lifecycle.

End of Life (C1-C4)

The end-of-life scenario has been modelled according to the default values established in PCR 2019:14 *Construction products* (v2.0.1). Considering the technical characteristics of the glass mosaic and its permanent integration into building systems, a conservative and realistic scenario is assumed, whereby 100% of the material is managed as inert construction and demolition waste destined for an authorized landfill facility.

C1 Deconstruction/Demolition: This module covers the removal of the glass mosaic during building renovation or demolition. Following the PCR default values, the mosaic is considered to be removed together with the building substrate using standard mechanical methods.

C2 Transport to Waste Processing: This module includes the transportation of the demolition waste to an authorized inert waste disposal facility. The transport is conducted by road over a representative distance of 80 km via a 16-32 tonne truck (EURO 5), as per the default parameters of the applicable PCR.

C3 Waste Processing: This module covers any sorting, crushing, or pre-treatment processes before final disposal. Since no processes for reuse, recycling, or energy recovery are considered, no specific impacts are attributed to this stage. Therefore, the impact associated with this module is 0.

C4 Disposal: This module accounts for the final disposal of the glass mosaic in an inert waste landfill. The impact assessment includes the energy use and emissions associated with the management of the landfill facility, representing the 100% disposal scenario for the product mass.

End-of-life parameters (1 m² of SQUARE)

C1 – Deconstruction / demolition	5 kWh/tonne = 0,046 kWh/m² Demolition/deconstruction of masonry, tiles, and paver blocks (Default value according to PCR 2019:14)
C2 – Transport to waste processing	80 km The product is sent to landfill (Default value according to PCR 2019:14)
C3 – Waste processing for reuse, recovery or recycling	0% = 0 kg/m² No pretreatment, recycling or energy recovery
C4 – Disposal	100% of product mass = 9,1 kg/m² Final disposal in inert landfill (most conservative scenario)

Benefits and Loads Beyond the System Boundary (D)

This module accounts for the potential benefits from recycling glass mosaic, energy recovery, or reuse of materials that offset environmental burdens in other systems. According to the end-of-life scenario considered, the impact associated to this module is 0.

Cut-off rules and exceptions

In accordance with EN 15804:2012+A2:2019/AC:2021, inputs may be excluded when they represent less than 1% of the renewable and non-renewable primary energy use or 1% of the mass of a unit process, with a maximum of 5% omitted per module. Missing data were completed using generic proxies and secondary data were selected based on technological, geographical, and temporal representativeness. Following these criteria, the following processes have been excluded from the system boundaries:

- **Auxiliary Activities:** Office maintenance, administrative consumables, and employee transport, as their environmental relevance falls below the 1% significance threshold.
- **Infrastructure:** The environmental load associated with the construction of the manufacturing plants, production of machinery, and long-term capital goods, as their impact per functional unit is negligible over their lifespan.

Data quality

Data quality was assessed in accordance with EN 15804:2012+A2:2019/AC:2021, EN 15941, ISO 14044, and PCR Construction products (v2.0.1).

- **Representativeness:** Primary data were collected between 01/01/2024 and 31/12/2024 at the manufacturing plants in Onda, Castellón (Spain), ensuring temporal and geographical representativeness.
- **Modelling:** Upstream processes and downstream processes were modelled using global or European datasets when more specific information was not available.
- **Verification:** Technological representativeness was ensured using actual production data from the manufacturing plants. All relevant flows were included, and primary data underwent internal verification, complemented by secondary data sourced from the ecoinvent 3.10 database (2024).
- **Rating:** Overall data quality is rated as “Good” (3.5), reflecting real-world production conditions while maintaining consistency with established LCA and EPD standards.

Allocation rules

- Energy consumption, water usage, and production losses generated at stage A3 have been allocated based on the plant's total production mass for the reference period, with values referring to 1 m² of finished product and its packaging.
- All manufacturing outputs are modeled following the *Polluter Pays Principle*. This means that the manufacturer assumes full environmental responsibility for the end-of-life of production waste.
- As no co-products are generated during the manufacturing process, no allocation of inputs or outputs between different product streams was necessary.
- Although the manufacturing process is distributed across two adjacent plants, they operate as a single integrated technical system. This approach eliminates the need to report variability between different manufacturing locations.
- The economic allocation factor applied to post-industrial (pre-consumer) glass modeling was calculated using Eurostat statistics based on market values from 2024. This methodology results in a fixed economic factor of 0,78, ensuring that the environmental load assignment remains consistent with the most recent official European financial data for this material stream. The intensity of the modelled post-industrial glass is 0,734 kg CO₂ eq / kg.

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	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	ES	ES	ES	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Share of primary data	23,31%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	33% ¹			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0,00%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: Stages declared , ND: Not declared stages

GLO: Global, ES: Spain

The share of primary data refers to the contribution of processes modelled with site-specific data to the total GWP-GHG results for A1–A3. 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.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of product - Energy	Collected data	EPD owner	2024	Primary data	22,66%
Manufacturing of product - Waste	Collected data	EPD owner	2024	Primary data	0,63%
Manufacturing of product - Other processes	Collected data	EPD owner	2024	Primary data	0,01%
Transport of raw materials to the production site	Database	Ecoinvent v3.10	2024	Secondary data	0,00%
Total share of primary data, of GWP-GHG results for A1-A3					23,31%

¹ The variations of each impact indicator results are included in the section “Environmental performance”.

Environmental performance

LCA results of the product(s) - main environmental performance results

As the representative scenario with the highest production volume, **SQUARE** is the declared variant for these results, ensuring a realistic environmental profile for the product group. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). 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.

Mandatory impact category indicators according to EN 15804 (EF 3.1)

Results per 1m ² of Declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	1,07E+01	6,84E-01	2,07E+00	1,56E-02	1,14E-01	0,00E+00	8,73E-02	1,67E-01
GWP-fossil	kg CO ₂ eq.	1,10E+01	6,84E-01	1,69E+00	1,55E-02	1,14E-01	0,00E+00	8,71E-02	1,89E-01
GWP-biogenic	kg CO ₂ eq.	-2,98E-01	2,30E-05	3,72E-01	6,06E-07	4,62E-06	0,00E+00	1,38E-04	-2,21E-02
GWP-luluc	kg CO ₂ eq.	3,36E-02	1,78E-05	4,78E-04	5,35E-07	3,32E-06	0,00E+00	1,16E-05	-7,05E-06
ODP	kg CFC 11 eq.	3,93E-07	1,26E-08	7,13E-09	2,45E-10	1,52E-09	0,00E+00	2,83E-09	8,80E-10
AP	mol H ⁺ eq.	8,86E-02	8,78E-03	7,54E-03	1,45E-04	3,09E-04	0,00E+00	1,01E-03	2,04E-03
EP-freshwater	kg P eq.	2,17E-04	5,63E-07	3,70E-05	1,47E-08	2,81E-07	0,00E+00	2,70E-06	6,57E-06
EP-marine	kg N eq.	1,48E-02	2,33E-03	1,53E-03	6,84E-05	1,12E-04	0,00E+00	2,62E-04	3,25E-04
EP-terrestrial	mol N eq.	1,75E-01	2,59E-02	1,70E-02	7,49E-04	1,23E-03	0,00E+00	2,82E-03	3,85E-03
POCP	kg NMVO C eq.	5,21E-02	7,57E-03	5,05E-03	2,23E-04	4,60E-04	0,00E+00	1,02E-03	1,15E-03
ADP-minerals&metals*	kg Sb eq.	2,23E-06	1,71E-08	1,77E-06	6,50E-10	6,74E-09	0,00E+00	2,38E-08	1,98E-08
ADP-fossil*	MJ	1,79E+02	8,80E+00	1,15E+01	2,05E-01	1,52E+00	0,00E+00	2,08E+00	2,16E+00
WDP*	m ³	3,35E+00	3,61E-03	-2,26E-01	1,62E-04	1,40E-03	0,00E+00	-1,21E+00	3,91E-01

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 experience with the indicator.

Biogenic carbon leaving the product system in module A5 or recovered energy leaving the product system in modules A5 and C have been balanced out already in modules A1-A3.

Additional mandatory and voluntary impact category indicators

Results per 1m ² of Declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ²	kg CO ₂ eq.	1,10E+01	6,79E-01	1,70E+00	1,55E-02	1,13E-01	0,00E+00	8,63E-02	1,65E-01

Global Warming Potential (greenhouse gases, additional mandatory indicator).
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 1m ² of Declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1,85E+01	2,59E-02	1,14E+00	4,51E-04	2,44E-03	0,00E+00	3,37E-02	1,43E-01
PERM	MJ	2,80E+00	0,00E+00	-2,80E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,13E+01	2,59E-02	-1,66E+00	4,51E-04	2,44E-03	0,00E+00	3,37E-02	1,43E-01
PENRE	MJ	1,79E+02	8,80E+00	1,15E+01	2,05E-01	1,52E+00	0,00E+00	2,08E+00	2,16E+00
PENRM	MJ	4,66E+00	0,00E+00	-8,21E-01	0,00E+00	0,00E+00	0,00E+00	-3,84E+00	0,00E+00
PENRT	MJ	1,84E+02	8,80E+00	1,07E+01	2,05E-01	1,52E+00	0,00E+00	-1,76E+00	2,16E+00
SM	kg	9,48E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	6,76E-02	2,07E-04	-4,58E-03	6,43E-06	5,10E-05	0,00E+00	-2,60E-02	9,24E-03

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

² 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.

Waste & Output flows

Waste indicators

Results per 1m ² of Declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7,50E-04	5,30E-05	3,45E-05	1,40E-06	1,04E-05	0,00E+00	1,36E-05	5,45E-06
Non-hazardous waste disposed	kg	1,85E-01	2,25E-04	2,22E+00	5,98E-06	6,50E-05	0,00E+00	9,21E+00	-6,50E-01
Radioactive waste disposed	kg	7,79E-04	6,78E-07	6,13E-06	1,05E-08	5,46E-08	0,00E+00	5,79E-07	-1,19E-06

Output flow indicators

Results per 1m ² of Declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	9,97E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	2,53E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional LCA results

Results per 1m ² of Declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Human toxicity, cancer	CTUh	2,81E-09	7,07E-11	1,22E-09	1,08E-12	9,53E-12	0,00E+00	9,35E-11	3,78E-10
Human toxicity, non-cancer	CTUh	2,93E-08	3,36E-09	1,01E-08	1,54E-11	7,49E-10	0,00E+00	2,38E-09	9,81E-10
Ecotoxicity, freshwater	CTUe	6,10E+01	3,06E-01	3,53E+00	7,08E-03	9,99E-02	0,00E+00	1,39E+00	-2,92E+00
Land use	Pt	4,78E+01	1,78E-02	7,82E+00	4,34E-04	6,20E-03	0,00E+00	5,01E+00	8,10E+00
Particulate matter	Disease inc.	7,84E-07	3,43E-08	1,07E-07	4,17E-09	7,58E-09	0,00E+00	1,58E-08	3,78E-08
Ionising radiation	kBqU-235eq	1,47E+00	1,03E-03	9,66E-03	1,83E-05	1,05E-04	0,00E+00	8,48E-04	-1,20E-03

Variation between products

The variations between products are shown below; these differences are primarily due to higher grammages or the specific composition of some of its components, depending on the product.

For most indicators, the greatest variation is found between HEX-MALLA and SQUARE. HEX-XL family shows the greatest variation relative to SQUARE in the GWP-biogenic indicator. For the GWP-luluc indicator, the greatest variation is associated with the HEX-PU family, whereas for the ODP category, the greatest variation is with BRICK.

Mandatory impact category indicators according to EN 15804 (EF 3.1), A-C

Indicator	Unit	% Variation between products
GWP-fossil	kg CO2 eq.	33%
GWP-biogenic	kg CO2 eq.	34%
GWP-luluc	kg CO2 eq.	25%
GWP-total	kg CO2 eq.	85%
ODP	kg CFC 11 eq.	40%
AP	mol H+ eq.	23%
EP-freshwater	kg P eq.	32%
EP- marine	kg N eq.	32%
EP-terrestrial	mol N eq.	31%
POCP	kg NMVOC eq.	38%
ADP-minerals&metals*	kg Sb eq.	172%
ADP-fossil*	MJ	33%
WDP*	m3	200%
GWP-GHG	kg CO2 eq.	33%

$$Variation (\%) = \frac{|V_A - V_B|}{\left(\frac{V_A + V_B}{2}\right)} \times 100$$

Abbreviations

Abbreviation	Definition
EN	European Norm (Standard)
ISO	International Organization for Standardization
EPD	Environmental Product Declaration
PCR	Product Category Rules
GPI	General Programme Instructions
CEN	European Committee for Standardization
CPC	Central Product Classification
EF	Environmental Footprint
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
SVHC	Substances of Very High Concern
DU	Declared Unit
GWP-total	Global Warming Potential – total (Climate change)
GWP-fossil	Global Warming Potential – fossil
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 (Photochemical ozone formation)
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (minerals and metals)
ADP-fossil	Abiotic depletion potential for fossil resources
WDP	Water (user) deprivation potential, deprivation-weighted water consumption
PERE	Use of renewable primary energy excluding 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 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 resources
SM	Use of secondary material
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Net use of fresh water

References

- CEN. (2019). *Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products (EN 15804:2012+A2:2019)*. European Committee for Standardization.
- ISO. (2006). *Environmental labels and declarations — Type III environmental declarations — Principles and procedures (ISO 14025)*. International Organization for Standardization.
- ISO. (2020). *Environmental management — Life cycle assessment — Requirements and guidelines (ISO 14044:2006/Amd 2:2020)*. International Organization for Standardization.
- Ecoinvent Association. (2023). *Ecoinvent Database v3.10*. <https://www.ecoinvent.org>
- EPD International. (2024). *General Programme Instructions of the International EPD® System, Version 5.0.1*. The International EPD® System. <https://www.environdec.com/resources/general-programme-instructions>
- EPD International. (2025). *Product Category Rules (PCR) 2019:14 Construction products, Version 2.0.1*. <https://www.environdec.com>
- EPD International. (2025). *c-PCR-009 Flat glass products used in buildings and other construction works (EN 17074) Version 1.0.0*. <https://www.environdec.com>
- SOSTEC (2026). Análisis de ciclo de vida para la elaboración de una EPD de múltiples productos. Mosaico vítreo ONIX.

Version history

Original Version of the EPD, 2026-05-15

Version 2, 2026-05-27. Cover image changed.

Version 3, 2026-06-23. The product description has been changed from "VITREOUS MOSAIC" to "Glass Mosaic".

