

Environmental Product Declaration

of multiple products, based on the average results of the product group, in accordance with ISO 14025:2006, ISO 21930:2017 and EN 15804:2012+A2:2019/AC:2021 for:

GLASS BRICK by VETROFOND S.r.l.

from



VETROFOND S.r.l.

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-0031487:001
Version date:	2026-04-30
Validity date:	2031-04-30



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
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:
<input checked="" type="checkbox"/> Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: <i>Guido Croce</i> Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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:

Vetrofond S.r.l.

Address:

Via Belvedere, 86 – 31032 Casale Sul Sile (TV) – Italy

Contact:

Mrs. Favotto Laura - Vetrofond@vetrofond.it

Address and contact information of the LCA practitioner commissioned by the EPD owner:

AMBIENTE ITALIA SRL,

Via Carlo Poerio, 39 – 20129 Milano (MI) – Italy

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Description of the organisation:

Vetrofond was founded about 50 years ago in Murano by the will of Mr. Moretti Giancarlo, in 1978 he moved the factory to the current site in Casale sul Sile, on a property of about 17,000 square meters. At this job site we are 45 employees.

Vetrofond is an artistic glasswork primarily focused on the production of glass for lighting, using the exclusive techniques of the Murano tradition. The blown glass technique is defined as such because master craftsmen expand and shape the glass by blowing air into a long metal pipe connected to it, following the age-old tradition of glassmaking. This ancient process, combined with the experience and skill of master glassmakers, transforms simple glass into true artistic masterpieces, each unique in its kind. The production process is carried out by highly specialized personnel, as acquiring the necessary craftsmanship and expertise requires years of practice and experience. Over the years, Vetrofond has preserved its knowledge while experimenting with new techniques, enabling it to remain at the forefront of lighting glass production and positioning itself among the leading glassworks. Alongside blown glass production, the company also manufactures cast glass, creating glass bricks used in both the construction industry and interior architecture.

The main productions are:

- Decorative Mouth Blow Glass for lighting like: Chandelier, Suspension and similar applications;
- Solid cast glass like: bricks or glass rods.

PRODUCT INFORMATION

Product name:

Glass brick VETROFOND.

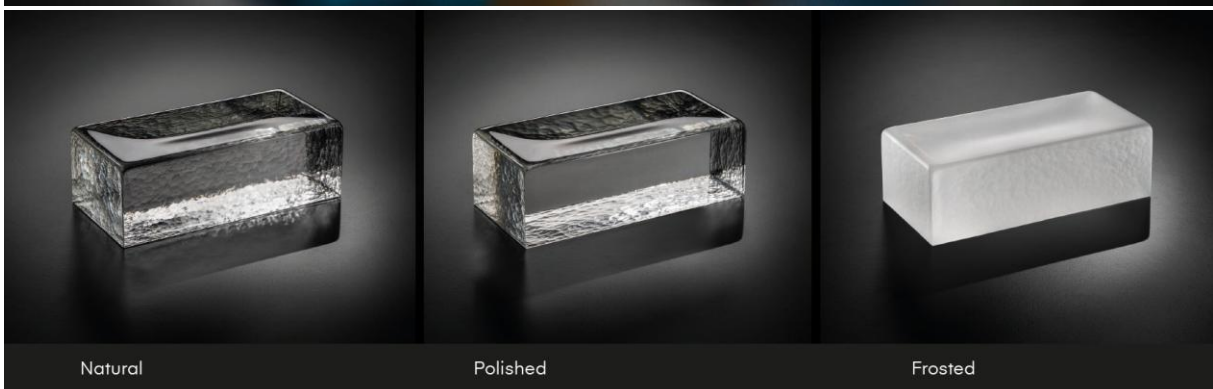
Product identification:

The glass bricks covered by this EPD belong to the same product family manufactured by Vetrofond. The products included in this EPD are identified by internal article codes, ensuring traceability within the product family. The products differ in size (as reported in the table below), as well as in color and surface finish. The product is available in various colors and complies with the following standard dimensions:

Geographic area	Brick	Half brick	Weight (Brick)
	L x W x H [mm]	L x W x H [mm]	[kg]
USA	194 x 92 x 57	92 x 92 x 57	2,5
AUSTRALIA	230 x 110 x 76	110 x 110 x 76	4,7
EUROPE	246 x 116 x 53	116 x 116 x 53	3,7

	L	W	H	Weight
TOLERANCES	± 1 mm	± 1 mm	± 3 mm	± 2 %

Visual representation of the product



Natural

Polished

Frosted

UN CPC code:

37117 - Paving blocks, bricks, tiles and other articles of pressed or moulded glass.

Product description:

The manufacturing process of the glass bricks includes the following main stages:

- **Raw Materials Preparation**
The primary raw materials consist of silica sand, soda ash, and selected minerals and metal oxides used to achieve the required glass composition and colour.
- **Batch Mixing**
The raw materials are dosed and mixed according to predefined formulations to ensure consistent chemical composition.
- **Melting Process**
The batch is introduced into the furnace and melted at high temperature. The melting phase typically takes place overnight to ensure complete fusion and homogenization of the glass mass.
- **Glass Casting**
The molten glass is manually or mechanically extracted from the furnace and poured into iron moulds designed to achieve the required dimensions and geometry.
- **Forming**
The glass takes the shape of the mould and begins the initial solidification phase.
- **Annealing (Controlled Cooling)**
After demoulding, the glass bricks are placed in an annealing kiln (firing temper) where they are cooled slowly under controlled temperature conditions for approximately 10 hours to relieve internal stresses.
- **Surface Finishing (if applicable)**
Depending on product specification, additional finishing operations may be performed, including:
 - Natural finish (as-cast)
 - Frosted finish
 - Polishing of selected surfaces
- **Quality Control**
Each glass brick is subject to 100% inspection to verify:
 - Dimensional conformity
 - Visual quality
 - Surface integrity
 - Compliance with internal quality procedures
- **Packaging**
Conforming products are packaged according to company procedures to ensure protection during storage and transportation.

Technical properties:

Criteria	Standard	Result
Max cold water absorption %	-	0,0
Initial rate of absorption (kg/m ² min)	-	0,0
Liability to efflorescence	-	Nil
Lime pitting liability	-	Nil
Average compression resistance	UNI EN 772-1	397 N/mm
Thermal conductivity	UNI EN 10077-1	0,974 + 0,036 W(m K)
Linear thermal dilatation coefficient	UNI EN ISO 10545-8	10,2 – 10,6 (10°C)
Mohs hardness	UNI EN 101	3
Vickers hardness	-	520 HV 0,5
Armoured bullet proof	UNI EN 1063	Cal. 357 magnum armoured bullet

Fire resistance	M.I. Circ. 91 del 14/09/1961	REI 60
Thermal shock resistance	UNI EN ISO 10545-9	No deterioration after 12 cycles

Name and location of production site:

VETROFOND S.r.l., Via Belvedere, 86 - 31032 – Casale Sul Sile (TV) - Italy

References to any relevant websites for more information or explanatory materials:

Further information on the products is available on the website www.vetrofond.it.

CONTENT DECLARATION

Product

The VETROFOND glass bricks are available in different colours and dimensions. However, no significant variations in raw material formulation or production processes occur within the declared product range; therefore, the environmental impacts are representative 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/product or declared unit
Silica sand	< 0,57	0,000	0,000	0,000
Soda ash	< 0,26	0,000	0,000	0,000
Calcium carbonate	< 0,075	0,000	0,000	0,000
Sodium nitrate	< 0,045	0,000	0,000	0,000
Borax pentahydrate	< 0,03	0,000	0,000	0,000
Cryolite	< 0,01	0,000	0,000	0,000
Hydrated alumina	< 0,02	0,000	0,000	0,000
Antimony trioxide	< 0,01	0,000	0,000	0,000
Colouring agents	< 0,001	0,000	0,000	0,000
TOTAL	1,000	0,000	0,000	0,000

Packaging

The primary packaging used in the shipment of the product (distribution packaging) has been considered in the LCA

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material*, kg C/product or declared unit
Wooden pallets	0,011	1,1%	0,006
Cardboard	0,017	1,7%	0,006
TOTAL	0,028	2,8%	0,030

* 1 kg biogenic carbon is equivalent to 44/12 kg of CO₂

The products do not contain any declarable quantities of substances listed on the Candidate List of Substances of Very High Concern for Authorization (REACH, EC No. 1907:2006).

LCA INFORMATION

Declared unit:

1 kg of average glass brick, product by VETROFOND S.r.l.

Time representativeness:

The data used correspond to the year 2024, a period with representative production data.

Geographical scope:

Product manufactured in Italy and distributed globally, although the LCA study was conducted with European parameters

Database(s) and LCA software used:

Database Ecoinvent 3.11,

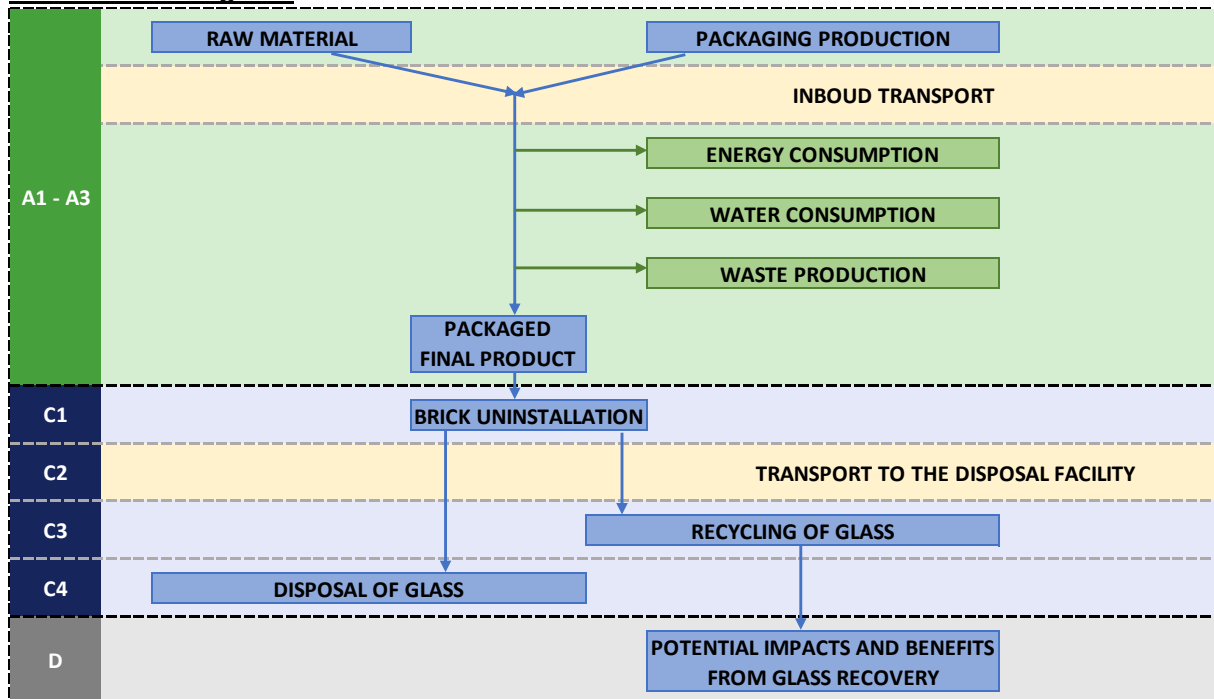
LCA software SimaPro 10.2.0.2.

Description of system boundaries:

Cradle to gate, modules C1–C4 and module D (A1 - A3 + C + D).

The end-of-life scenario assumes manual dismantling for Module C1; a transport distance of 50 km between the disposal site and the end-of-life treatment facility for Module C2; 78.2% of the product allocated to recovery in Module C3; and 21.8% allocated to disposal in Module C4. For Module D, a benefit is assumed from the fraction of the brick sent to recovery, considering a 90% recovery efficiency.

Process flow diagram:



Representativeness, quality and selection of data:

Site-specific data were used for the manufacturing stage. In this LCA study, specific data were collected from the manufacturing facility in Casale Sul Sile (TV), Italy. When specific data were not available, generic data from internationally recognized databases were used. The use and end-of-life stage of the EPD reflects the geographical area considered. There is a single production site for all studied products, which is therefore representative in terms of technology. There is less than 10% variation from the mean

for all core LCIA indicators. The EPD uses background data from the Ecoinvent database v. 3.11, 2025. The quality of the relevant data used for the EPD, in terms of time and geography representativeness according to EN 15804:2012+A2:2019, Annex E, E2 is mostly very good, while a good level has been achieved for technological representativeness. No poor or very poor quality data were identified among the relevant datasets.

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	IT			-	-	-	-	-	-	-	-	-	Global				Global
Share of primary data	> 80% GWP - GHG			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

*ND: not declared module

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-A5	GWP-GHG contribution for A1 – A5
Raw material production	Company data, Database	Ecoinvent v3.11	2024	Secondary data	0%	17,6%
Packaging production	Company data, Database	Ecoinvent v3.11	2024	Secondary data	0%	0,2%
Raw material and packaging transport	Company data, Database	Ecoinvent v3.11	2024	Primary data	100%	0,4%
Manufacturing consumption	Company data, Database	Ecoinvent v3.11	2024	Primary data	100%	80,8%
Direct air emissions	Company data, Database	Ecoinvent v3.11	2024	Primary data	100%	0,0%
Waste production	Company data, Database	Ecoinvent v3.11	2024	Secondary data	0%	1,0%
Total share of primary data, of GWP – GHG results for A1 – A3					81,2%	100%

Energy information:

Market based approach electricity mix based on Italian residual electricity mix from Ecoinvent for the year 2024 has been used – 0,68 kgCO₂ eq/kWh.

Cut-off rules:

As general rule, according to the criteria of the reference standard 95% of the total inflows (mass and energy) used in the manufacturing process have been included in the LCA. In addition, at least 95% of the environmental impacts of each module have been considered. There has been no relevant exclusion.

Allocation rules applied:

In accordance with the PCR criteria, the allocation of system inputs and outputs was based on physical properties (mass). This allocation criterion was applied to energy, transportation, and waste. The quantities of the various materials used and produced in the manufacturing process are derived from measurements taken at the plant. No by-products are generated in the manufacture of the product.

Study limitations:

The LCA did not include:

- All equipment with a useful life of more than 3 years, because it is considered capital equipment and its impact on the declared unit is insignificant.
- The construction of plant buildings and other capital assets.
- Staff business travel: nor staff travel to and from work.
- Research and development activities.

ENVIRONMENTAL PERFORMANCE

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

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

Indicator	Unit	A1 - A3	C1	C2	C3	C4	D
GWP - Total	kg CO ₂ eq.	9,95E+00	0,00E+00	9,52E-03	1,23E-02	2,13E-03	5,98E-01
GWP - Fossil	kg CO ₂ eq.	9,92E+00	0,00E+00	9,51E-03	7,36E-03	2,12E-03	5,94E-01
GWP - Biogenic	kg CO ₂ eq.	2,09E-02	0,00E+00	6,27E-06	4,91E-03	9,93E-06	4,01E-03
GWP - Luluc	kg CO ₂ eq.	4,25E-03	0,00E+00	3,16E-06	3,79E-06	5,34E-07	5,44E-05
ODP	kg CFC-11 eq.	3,51E-07	0,00E+00	2,07E-10	4,80E-11	7,14E-11	1,01E-08
AP	mol H ⁺ eq.	3,07E-02	0,00E+00	3,05E-05	1,61E-05	2,39E-05	6,36E-03
EP - Freshwater	kg P eq.	1,18E-03	0,00E+00	6,49E-07	1,24E-06	3,66E-06	2,94E-05
EP - Marine	kg N eq.	9,98E-03	0,00E+00	1,03E-05	9,26E-06	5,97E-06	1,04E-03
EP - Terrestrial	mol N eq.	1,10E-01	0,00E+00	1,12E-04	5,39E-05	6,42E-05	1,27E-02
POCP	kg NMVOC eq.	3,26E-02	0,00E+00	4,63E-05	1,71E-05	2,33E-05	3,13E-03
ADPE	kg Sb eq.	1,13E-04	0,00E+00	3,20E-08	1,76E-08	3,56E-09	1,78E-07
ADPF	MJ, net calorific value	1,38E+02	0,00E+00	1,35E-01	4,70E-02	5,02E-02	4,13E+00
WDP	m ³ world eq. deprived	1,29E+00	0,00E+00	6,83E-04	3,76E-03	-2,58E-02	1,48E-01
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.	9,94E+00	0,00E+00	9,52E-03	9,06E-03	2,13E-03	9,94E+00

Resource use indicators

Indicator	Unit	A1 - A3	C1	C2	C3	C4	D
PERE	MJ, net calorific value	3,66E+00	0,00E+00	2,20E-03	5,81E-03	9,66E-04	1,78E-01
PERM	MJ, net calorific value	1,14E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ, net calorific value	4,80E+00	0,00E+00	2,20E-03	5,81E-03	9,66E-04	1,78E-01

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.

PENRE	MJ, net calorific value	3,29E+01	0,00E+00	1,35E-01	4,70E-02	5,02E-02	4,13E+00
PENRM	MJ, net calorific value	1,05E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ, net calorific value	1,38E+02	0,00E+00	1,35E-01	4,70E-02	5,02E-02	4,13E+00
SM	kg	4,28E-02	0,00E+00	6,03E-05	7,03E-05	1,61E-05	6,34E-05
RSF	MJ, net calorific value	6,73E-03	0,00E+00	7,91E-07	7,47E-07	3,04E-07	3,92E-04
NRSF	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	3,18E-02	0,00E+00	1,69E-05	8,99E-05	-6,00E-04	3,46E-03

Waste indicators

Indicator	unit	A1 - A3	C1	C2	C3	C4	D
HWD	Kg	2,27E-01	0,00E+00	1,93E-04	3,89E-04	7,96E-05	4,53E-03
NHWD	Kg	5,65E+00	0,00E+00	4,14E-03	1,48E-01	7,08E-01	3,52E-01
RWD	kg	5,46E-05	0,00E+00	3,97E-08	1,63E-07	1,53E-08	1,38E-06

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	4,55E-03	0,00E+00	1,61E-06	7,25E-01	8,02E-07	7,02E-06
MER	kg	3,45E-06	0,00E+00	8,56E-09	3,54E-09	1,05E-09	5,43E-07
EEE	MJ, net calorific value	6,97E-02	0,00E+00	2,65E-05	3,99E-03	2,39E-05	9,63E-04
ETE	MJ, net calorific value	3,52E-01	0,00E+00	3,25E-05	1,49E-03	4,66E-05	5,70E-02

Additional end-of-life scenarios

The following tables show the environmental impact of the end-of-life stages, if 100% of 1 kg of product is incinerated or recycled

End-of-life scenario with 100% recycling (per declared unit)					
Indicator	Unit	C1	C2	C3	C4
GWP - Total	kg CO ₂ eq.	0,00E+00	9,52E-03	1,57E-02	0,00E+00
GWP - Fossil	kg CO ₂ eq.	0,00E+00	9,51E-03	9,42E-03	0,00E+00
GWP - Biogenic	kg CO ₂ eq.	0,00E+00	6,27E-06	6,28E-03	0,00E+00
GWP - Luluc	kg CO ₂ eq.	0,00E+00	3,16E-06	4,85E-06	0,00E+00
ODP	kg CFC-11 eq.	0,00E+00	2,07E-10	6,13E-11	0,00E+00
AP	mol H ⁺ eq.	0,00E+00	3,05E-05	2,06E-05	0,00E+00
EP - Freshwater	kg P eq.	0,00E+00	6,49E-07	1,59E-06	0,00E+00
EP - Marine	kg N eq.	0,00E+00	1,03E-05	1,18E-05	0,00E+00
EP - Terrestrial	mol N eq.	0,00E+00	1,12E-04	6,89E-05	0,00E+00
POCP	kg NMVOC eq.	0,00E+00	4,63E-05	2,19E-05	0,00E+00
ADPE	kg Sb eq.	0,00E+00	3,20E-08	2,25E-08	0,00E+00
ADPF	MJ, net calorific value	0,00E+00	1,35E-01	6,01E-02	0,00E+00
WDP	m ³ world eq. deprived	0,00E+00	6,83E-04	4,80E-03	0,00E+00

End-of-life scenario with 100% depletion (per declared unit)					
Indicator	Unit	C1	C2	C3	C4
GWP - Total	kg CO ₂ eq.	0,00E+00	9,52E-03	0,00E+00	9,79E-03
GWP - Fossil	kg CO ₂ eq.	0,00E+00	9,51E-03	0,00E+00	9,74E-03
GWP - Biogenic	kg CO ₂ eq.	0,00E+00	6,27E-06	0,00E+00	4,55E-05
GWP - Luluc	kg CO ₂ eq.	0,00E+00	3,16E-06	0,00E+00	2,45E-06
ODP	kg CFC-11 eq.	0,00E+00	2,07E-10	0,00E+00	3,28E-10
AP	mol H ⁺ eq.	0,00E+00	3,05E-05	0,00E+00	1,10E-04
EP - Freshwater	kg P eq.	0,00E+00	6,49E-07	0,00E+00	1,68E-05
EP - Marine	kg N eq.	0,00E+00	1,03E-05	0,00E+00	2,74E-05
EP - Terrestrial	mol N eq.	0,00E+00	1,12E-04	0,00E+00	2,95E-04
POCP	kg NMVOC eq.	0,00E+00	4,63E-05	0,00E+00	1,07E-04
ADPE	kg Sb eq.	0,00E+00	3,20E-08	0,00E+00	1,63E-08
ADPF	MJ, net calorific value	0,00E+00	1,35E-01	0,00E+00	2,30E-01
WDP	m ³ world eq. deprived	0,00E+00	6,83E-04	0,00E+00	-1,18E-01

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
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

- a) General Programme Instructions for the Internacional EPD® System. Version 5.0.1 (Date 2025-02-27)
- b) PCR 2019:14 Construction products, version 2.0.1 Date 2025-06-05. Valid until: 2030-04-07
- c) UNE-EN ISO 14025:2010. Environmental labels and declarations. Type III environmental declarations. Principles and procedures (ISO 14025:2006).
- d) UNE-EN ISO 14040:2006/A1:2021. Environmental management. Life cycle assessment. Principles and framework. Amendment 1 (ISO 14040:2006/Amd 1:2020).
- e) UNE-EN ISO 14044:2006/A2:2021. Environmental management. Life cycle assessment. Requirements and guidelines. Amendment 2 (ISO 14044:2006/Amd 2:2020).
- f) Cycle Assessment report for the Environmental Product Declarations for VETROFOND glass brick, February 2026. Rev. 00.

VERSION HISTORY

Original Version of the EPD, 2026-04-30

