SAINT-GOBAIN GLASS

ENVIRONMENTAL PRODUCT DECLARATION

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

MAGNETRON COATED PLANILUX® 5 MM

(including COOL-LITE® and PLANITHERM® ranges)

Version: 1

Date of publication: 2025-06-20

Validity: 5 years

Date of validity: 2030-06-19

Scope of the EPD®: America and the Caribbean

EPD®
THE INTERNATIONAL EPD® SYSTEM

The International EPD® System
Programme operator: EPD International AB
www.environdec.com
Registration number: EPD-IES-0024689

ECO PLATFORM
EPD
VERIFIED

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

SAINT-GOBAIN

Programme information

PROGRAMME:	The International EPD® System
ADDRESS:	EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden
WEBSITE:	www.environdec.com
E-MAIL:	info@environdec.com

CEN standard **15804:2012+A2:2019/AC:2021** serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction Products, version 1.3.4 and its c-PCR-009 Flat glass products used in buildings and other construction works (EN17074:2019).

Prepared by: IVL Swedish Environmental Research Institute, EPD International Secretariat

UN CPC CODE: 3711 - Unworked glass, flat glass and pressed or moulded glass for construction; glass mirrors

PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.

President: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact - Contact via info@environdec.com

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

☐ EPD process certification ☒ EPD verification

Demonstration of verification: an independent verification of the declaration was made, according to ISO 14025:2010. This verification was external and conducted by the following third party based on the PCR mentioned above.

Third party verifier: Pablo Arena - aparena@gmail.com

Approved by: The International EPD© System

Procedure for follow-up of data during EPD validity involves third part verifier: ☒ Yes ☐ No

EPDs within the same product category but registered 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 version number up to the first two digits) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical DU/FU); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of Comparison. For further information about comparability, see EN 15804:2012+A2:2019/AC:2021 and ISO 14025:2006.

Product information

Company information

Manufacturer: Saint-Gobain Mexico, S.A. DE C.V

Production plants:
- Float glass production in Saint Gobain Glass Saltillo: Boulevard El Pinar 8340, Parque Industrial Alianza, 25300, Mexico
- Float glass production and magnetron coating in Saint Gobain Glass Cuautla: Parque Industrial Ayala, Av. Nicolás Bravo 5, 62741, Cuautla, México

Management system-related certification: Glass products are manufactured in production plants with an integrated management system certified according to ISO 9001:2015, ISO 14001:2015, and OHSAS 18001:2009 standards.

Owner of the declaration: Saint-Gobain Mexico, S.A. DE C.V

Product name and manufacturer represented: MAGNETRON COATED PLANILUX® 5 mm produced by Saint-Gobain Mexico, S.A. DE C.V

EPD® prepared by: Nicolas Tarallo Fournery (nicolas.fournery@saint-gobain.com), Sandra Perez-Jimenez (Saint-Gobain LCA central team), and Anna Beatriz Suppelsa (Saint-Gobain LCA central team).

The intended use of this EPD is for B2B communication.

Geographical scope of the EPD®: America and the Caribbean

EPD® registration number: EPD-IES-0024689

Declaration issued: 2025_06_20, **Date of validity:** 2030_06_19

Demonstration of verification: An independent verification of the declaration was made, according to ISO 14025:2010. This verification was external and conducted by the following third party based on the PCR mentioned above.

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

Product description and description of use

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 m² magnetron-coated PLANILUX® with 5 mm thickness and with a light transmittance of a maximum of 69%, depending on the coating range*, for an expected average service life of 30 years.

*Check Table 1, below, with examples of performance data

This EPD is an average of 2 glass production sites in Mexico. All the sites producing the magnetron coated clear glass 5 mm are considered.

For the flat glass substrate PLANILUX® 5 mm, the average calculated is a weighted arithmetic mean. For the magnetron process, the average calculated is an area arithmetic mean.

The magnetron coated clear glass manufactured by Saint-Gobain corresponds to the brands PLANITHERM®, COOL-LITE®, TIMELESS®, EKO®, CRYSTAL, BIOCLEAN, corresponding to high-performance regarding low-emissivity, solar-control, and surface properties. These coatings are deposited by vacuum cathodic pulverization, also known as magnetron sputtering, on PLANILUX® clear float glass.

Depending on the composition of these transparent coating layers, several different products can be produced, distinguishable by the thermal performance, spectrophotometric values, and processing characteristics.

PARAMETER	COOL-LITE® SKN 176 II *	COOL-LITE® ST 150 *	COOL-LITE® ST108 *
Visible parameters			
Light transmittance (LT) %	69%	46%	8%
External Light Reflexion (RLE) (%)	13%	20%	43%
Energetic parameters			
Energy Transmittance (ET) %	30%	38%	5%
Shading Coefficient (SC)	0.39	0.55	0.14

Table 1: Performance Data of magnetron coated glass 5 mm in 5c-12-6 configuration.

Coated glass is intended, in the vast majority of cases, to be incorporated into insulating glazing units. These coatings must be protected from mechanical and chemical damage by being positioned inside the cavity of the insulating glazing.

Performance data presented in the above table refers to an insulated glass unit in configuration 5c-12-6 (with the “c” indicating the position of the coating in the insulated glass unit). To obtain the performance data of a given product, please consult https://calumen.com.

*The coating process is adapted for specific products multiple times per week. As these variations do not lead to significant differences in environmental impacts, we report all coatings collectively to ensure consistency and maintain clarity in our reporting.

Declaration of the main product components and/or materials

The product is 100% glass CAS number 65997-17-3, EINECS number 266-046-0.

Description of the main components for 1 m² of Magnetron Coated PLANILUX® 5 mm.

PARAMETER	VALUE
Quantity of glass for 1 m² of product	12.5 kg
Thickness	5 mm
Packaging for the transportation and distribution	0 kg
Product used for the Installation	NA

Description of the main product components and/or materials:

Description of the main components and/or materials:

Product components	Weight (%)	Post-consumer material weight (%)	Weight biogenic carbon kg C/product or DU
Sand	40-50%	NA	NA
Cullet	20-30%	5%	NA
Sodium carbonate	10-15%	NA	NA
Limestone	5-10%	NA	NA
Other	5-10%	NA	NA
Sum	**100% (= 12.5 kg/m²)**	**5%**	**NA**
Packaging materials	**Weight (%)**	**Weight (%)**	**Weight biogenic carbon kg C/product or DU**
NA	NA	NA	NA

* More information at page 20.

There is no “Substance of Very High Concern” (SVHC) in concentration above 0.1% by weight, and neither does their packaging, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

LCA calculation information

TYPE OF EPD	Cradle to grave with options and optional module (A+B+C+D)
FUNCTIONAL UNIT/DECLARED UNIT	1 m^2 of magnetron coated PLANILUX® 5 mm with an 69% light transmittance for an expected average service life of 30 years.
SYSTEM BOUNDARIES	Mandatory module = A1-A3; C1-C4 and D Optional stages = A4-A5; B1-B7
REFERENCE SERVICE LIFE (RSL)	According to PCR EN 17074:2019, the reference service life is 30 years
CUT-OFF RULES	In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than the 5% of the whole mass and energy used, as well of the emissions to environment occurred. Therefore, according to EN 15804+A2, the energy used for the installation of 1m^2 of glass and the transport glass racks are included in the cut-off-rules. Flows related to human activities such as employee transport are excluded. The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
ALLOCATIONS	Pre-consumer cullet from downstream processing has a contribution to overall income less than 1%. Thus, according to § 6.4.3.2 of the EN 15804+A2 standard, no other impact is considered. Except from pre-consumer cullet which benefits from a particular status, no other co-products are taken into account therefore, there is no other allocation. The polluter pays and the modularity principles as well have been followed
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope: America and the Caribbean Data are collected from the Cuautla and Saltillo sites produced in Mexico. Data collected for the year: 2023. The information collected comes from the production of magnetron coated PLANILUX® by Saint-Gobain Mexico, S.A. DE C.V
BACKGROUND DATA SOURCE	Database from Sphera 2023.2 and ecoinvent v.3.9.1
SOFTWARE	LCA for Expert (Gabi) 10

According to EN 15804+A2, the EPD of construction products may not be comparable if they do not comply with this standard. According to ISO 21930:2017, EPD might not be comparable if they are from different programs.

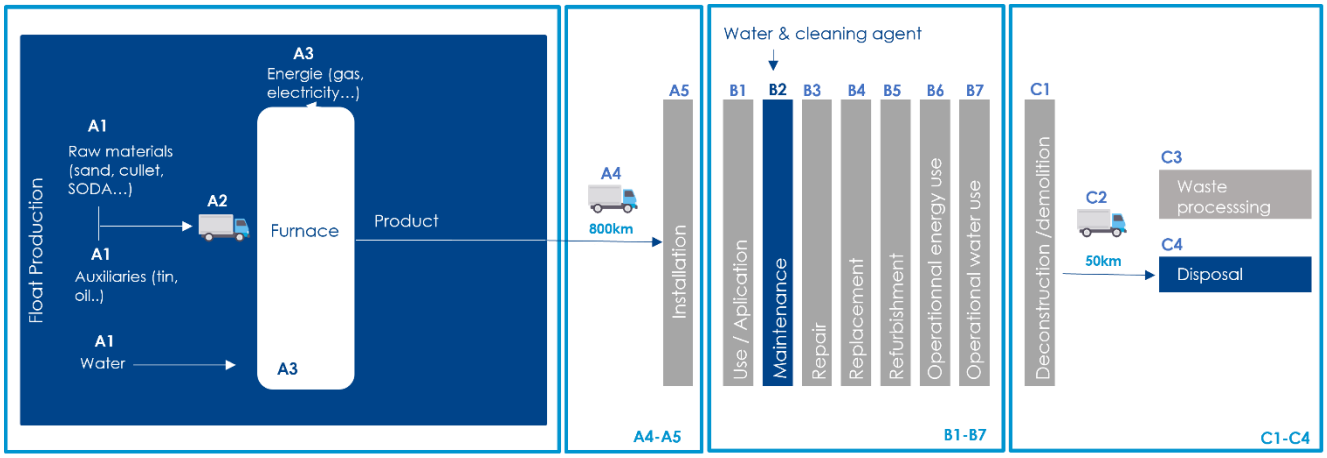
LCA scope

System boundaries (X=included. MND=module not declared)

	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
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	X	X	X	X	X	X	X	X	X	X	X	X
Geography	Mexico			America and the Caribbean													
Specific data used	74% GWP-GHG																
Variation products	0 %																
Variation sites	-10 to 2%																

According to the PCR, the variation for the GWP indicators (GWP-GHG) has been calculated for the different sites and compared to the product groups formed as averages (similar products from different plants). The variation between the different manufacturing sites and the average is from -10% to 2%. The variation of the sites comes from energy efficiency and the energy mix of the countries.

Life cycle stages



Note: The entire life cycle is taken into account, but only the stages shown in blue in the above diagram have a non-zero contribution to the various indicators reported.

A1-A3, Product stage

Description of the stage:

For flat glass A1 to A3 represents the production of glass in the float and the subsequent coating process on the magnetron line, usually located in the same facility, from cradle to gate.

Description of the stage: the product stage of flat glass is subdivided into 3 modules A1, A2 and A3 respectively “Raw material supply”, “transport to manufacturer” and “manufacturing”.

Description of the scenarios and other additional technical information:

A1, Raw materials supply

This includes the extraction and processing of all raw materials and energy which occur upstream from the manufacturing process.

A2, Transport to the manufacturer

The raw materials are transported to the manufacturing site. The modelling includes road, boat and/or train transportations of each raw material.

A3, Manufacturing

This module includes the manufacture of products and the manufacture of packaging. The production of packaging material is taken into account at this stage. The processing of any waste arising from this stage is also included.

The product stage includes the extraction and processing of raw materials and energies, transport to the manufacturer, manufacturing and processing of flat glass.

Float glass process

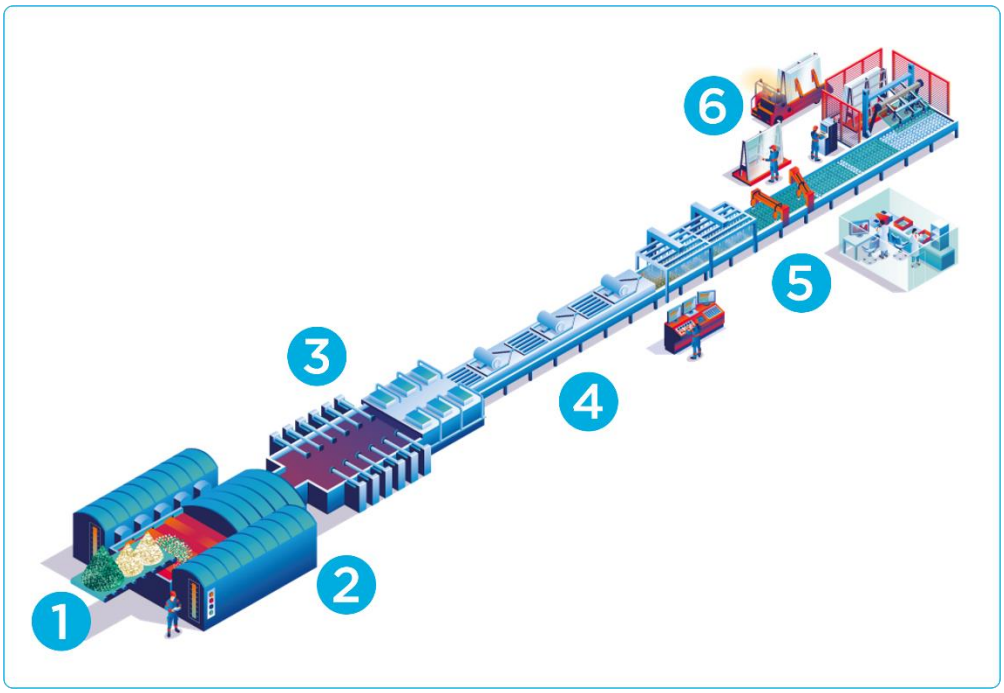


Figure 1 : *Synthetic diagram of float glass process*

1. BATCH MIXER: Mix of raw materials (silica, soda ash, lime, feldspar and dolomite) to which is added recycled glass (cullet) and other compounds depending on the desired color and properties.
2. FUSION: Raw materials are melted at 1,550°C in a furnace. Thermal energy from flames can be recovered in regenerator.
3. FLOAT: The molten glass is fed into a bath of molten tin. The glass floats on this flat surface and is drawn off in a ribbon. Serrated wheels, or top rolls, pull and push the glass sideways depending on the desired thickness (from 2 to 19 millimeters).
4. ANNEALING LEHR: The glass is lifted onto conveyor rollers and passes through a controlled cooling tunnel measuring more than 100 meters in length. Approximately 600°C at the start of this step, the glass exits the lehr at room temperature.
5. CUTTING AND STACKING: The glass is automatically cut lengthwise and crosswise to produce panel glass from 1 to 20 square meters. The sheets of glass are raised by vacuum frames that then place them on glass stillages.
6. QUALITY: Automatic inspections and regular samples are taken to check the quality of the glass at each step in the glassmaking process.
7. STORAGE AND TRANSPORTATION: The stillages are placed on storage racks in the warehouse. Note that flat glass is transported on dedicated racks, used many times. According to EN15804+A2, these racks are not included in the life cycle of the product.
8. ENVIRONMENT: Use of recycled cullet, installation of pollution abatement systems and closed-circuit management of water: every measure is taken to limit the consumption of energy, extraction of natural resources, production of waste and emissions into the atmosphere.

It should be noted that no losses are observed during stage A1-A3. In fact, all the losses are reinjected into the float glass production system.

Magnetron coating process

The magnetron coating is applied separately from the production of flat glass.

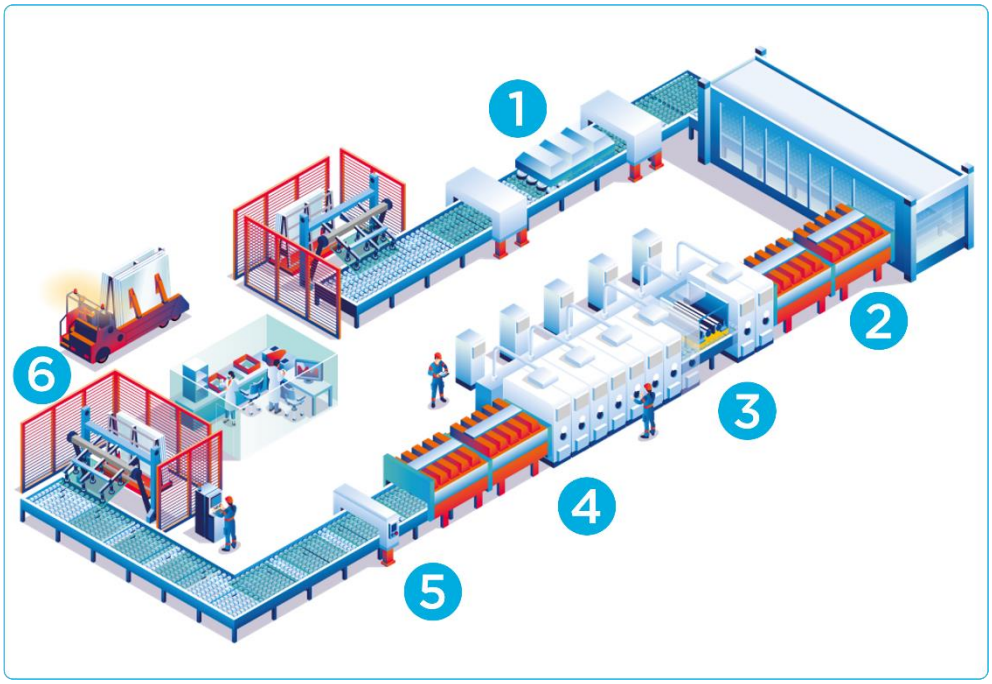


Figure 2 : *Synthetic diagram of magnetron coating*

1. GLASS PREPARATION: Flat glass sheets are first scrubbed, washed then conveyed to the coater's entry airlock
2. AIRLOCK : Each glass sheet enters the airlock, where pressure is reduced from atmospheric to vacuum. At the coater exit, this operation is reversed.
3. MAGNETRON PROCESS : In the coater, the glass is coated with nanometric layers: an ionized gas is projected onto blocks of targeted raw material, tearing off its molecules, which are then deposited on the glass.
4. LAYER STACKING: Interchangeable compartments facilitate the ordering of film layers according to the desired functionalities: thermal insulation (silver films), anti-reflective, self-cleaning, anti-corrosion, etc.
5. QUALITY CONTROL: The product's optical quality is inspected using cameras. Further tests check the mechanical and chemical properties.
6. STACKING AND STORAGE: the glass sheets are lifted by suction-cup stackers or by robots and placed on stillages to be stored in the warehouse.

It should be noted that no losses are observed during stage A1-A3. In fact, all the losses are reinjected into the float glass production system.

A4-A5, Construction process stage

The construction process is divided into 2 modules: A4, transport to the building site and A5, installation in the building.

Description of the scenarios and additional technical information:

A4, Transport to the building site:

This module includes transport from the production gate to the building site. Transport is calculated based on a scenario with the parameters described in the following table:

PARAMETER	VALUE
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Freight truck - "GLO: Truck-trailer ts: EURO 6 A-C, 34-40 t gross weight / 27 t payload capacity" Reference year of data set: 2022. Data source: Sphera Professional Database Ship - "GLO: Container ship, 5.000 to 200.000 dwt payload capacity, deep sea » Reference year of data set: 2022. Data source: Sphera Professional Database
Distance	657 km by truck 551 km by boat
Capacity utilisation (including empty returns)	100% of the capacity in volume
Bulk density of transported products*	30% of empty returns in mass
Volume capacity utilisation factor	2500 kg/m3

A5, Installation in the building:

The accompanying table quantifies the parameters for installing the product at the building site. All installation materials and their waste processing are included.

PARAMETER	VALUE / DESCRIPTION
Ancillary materials for installation (specified by materials)	According to PCR NF EN 17074, nonancillary materials considered
Water use	None
Other resource use	According to EN 15804+A2, the energy needed during the installation is less than 0.1% of the total life cycle energy. It's included in the cut-off-rules.
Quantitative description of energy type (regional mix) and consumption during the installation process	None
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	According to PCR EN 17074, no waste is considered as well as no packaging waste.
Output materials (specified by type) as results of waste processing at the building site e.g., of collection for recycling, for energy recovering, disposal (specified by route)	None

PARAMETER	VALUE / DESCRIPTION
Direct emissions to ambient air, soil and water	None

B1-B7, Use stage (excluding potential savings)

The use stage is divided into the following modules:

- B1: Use
- B2: Maintenance
- B3: Repair
- B4: Replacement
- B5: Refurbishment
- B6: Operational energy use
- B7: Operational water use

Description of the scenarios and additional technical information:

B2, Maintenance:

PARAMETER	VALUE
Maintenance process	Water and cleaning agent
Maintenance cycle	Annual average
Ancillary materials for maintenance (e.g. cleaning agent, specify materials)	cleaning agent: 0.001 kg/m² of glass/year
Wastage material during maintenance (specify materials)	0 kg
Net fresh water consumption during maintenance	0.2 kg/m² of glass/year
Energy input during maintenance	None required during product lifetime

The product has a reference service life of 30 years. This assumes that the product will last in situ with no requirements for repair, replacement or refurbishment throughout this period. Therefore, it has no impact at this stage, except for maintenance.

According to PCR EN 17074, only the maintenance by cleaning glass with water and cleaning agent is included in this study.

C1-C4, End of Life Stage

This stage includes the next modules:

- C1, Deconstruction, demolition
- C2, Transport to waste processing
- C3, Waste processing for reuse, recovery and/or recycling
- C4, Disposal

Description of the scenarios and additional technical information:
End of life scenario used in this study is:

100% of glass is landfilled and the distance to the landfill site considered is 50 km.

PARAMETER	VALUE/DESCRIPTION
Thickness (mm)	6
Collection process specified by type	12.5 kg

Recovery system specified by type	0 kg
Disposal specified by type	12.5 kg
Assumptions for scenario development (e.g. transportation)	50 km to landfill

D, Reuse/recovery/recycling potential

Module D quantifies the potential costs and benefits of end-of-life recovery. The end-of-life scenario used is 100% landfill. The declared module D is null.

LCA results

As specified in EN 15804:2012+A2:2019/AC:2021 and the PCR 2019:14 Construction Products, version 1.3.4. The environmental impacts are declared and reported using the baseline characterization factors are from the ILCD. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant (Production data of 20XX). Characterisation factors EN15804 based on EF 3.1.

According to the EN 15804:2012+A2:2019/AC:2021 standard, the LCIA results are relative expressions translating impacts into environmental indicators (midpoint impact categories). Thus, 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

All emissions to air, water, and soil, and all materials and energy used have been included.

All result tables refer to a functional unit/declared unit of 1 m² of magnetron coated PLANILUX® and an expected average service life of 30 years.

Disclaimer 1: 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 following indicators:

- Resource use, mineral and metals [kg Sb eq.]

- Resource use, energy carriers [MJ]

- Water deprivation potential [m³ world equiv.]

Disclaimer 2: The following optional indicators are not declared:

- Ecotoxicity freshwater [CTUe]

- Particulate Matter emissions [Disease incidence]

- Cancer human health effects [CTUh]

- Ionizing radiation - human health [kBq U235 eq.]

- Non-cancer human health effects [CTUh]

- Land Use [Pt]

Disclaimer 3: It is recommended to not use the results of modules A1-A3 (A1-A5 for services) without considering the results of module C.

Environmental Impacts

Environmental indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				REUSE, RECOVERY RECYCLING
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Climate Change - total [kg CO_2 eq.][1]	1.73E+01	6.11E-01	0	0	1.45E-01	0	0	0	0	0	0	3.70E-02	0	1.97E-01	0
Climate Change (fossil) [kg CO_2 eq.]	1.73E+01	6.05E-01	0	0	1.31E-01	0	0	0	0	0	0	3.65E-02	0	1.87E-01	0
Climate Change (biogenic) [kg CO_2 eq.]	1.95E-02	1.24E-03	0	0	4.51E-03	0	0	0	0	0	0	8.51E-05	0	9.88E-03	0
Climate Change (land use change) [kg CO_2 eq.]	1.46E-02	4.53E-03	0	0	9.62E-03	0	0	0	0	0	0	3.44E-04	0	5.46E-04	0
Ozone depletion [kg CFC-11 eq.]	2.92E-07	5.13E-14	0	0	1.09E-08	0	0	0	0	0	0	3.25E-15	0	7.03E-16	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	9.35E-02	4.95E-03	0	0	9.33E-04	0	0	0	0	0	0	4.27E-05	0	1.36E-03	0
Eutrophication freshwater [kg P eq.]	8.29E-05	1.81E-06	0	0	1.34E-05	0	0	0	0	0	0	1.36E-07	0	3.26E-07	0
Eutrophication marine [kg N eq.]	1.88E+00	1.22E-03	0	0	3.01E-04	0	0	0	0	0	0	1.42E-05	0	3.50E-04	0
Eutrophication terrestrial [Mole of N eq.]	3.56E-01	1.36E-02	0	0	1.99E-03	0	0	0	0	0	0	1.72E-04	0	3.85E-03	0
Photochemical ozone formation - human health [kg NMVOC eq.]	1.01E-01	3.42E-03	0	0	5.60E-04	0	0	0	0	0	0	3.66E-05	0	1.06E-03	0
Resource use, mineral and metals [kg Sb eq.]	1.70E-05	3.29E-08	0	0	1.42E-06	0	0	0	0	0	0	2.41E-09	0	1.71E-08	0
Resource use, energy carriers [MJ]	2.37E+02	8.17E+00	0	0	2.40E+00	0	0	0	0	0	0	5.05E-01	0	2.49E+00	0
Water deprivation potential [m^3 world equiv.]	9.03E-01	5.84E-03	0	0	4.47E-01	0	0	0	0	0	0	4.28E-04	0	1.99E-02	0

[1] The total global warming potential (GWP-total) is the sum of GWP fossil, GWP biogenic, and GWP land use change.

Resources Use

Resources Use indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				D REUSE, RECOVERY, RECYCLING
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Use of renewable primary energy (PERE) [MJ]	1.54E+01	4.77E-01	0	0	7.96E-01	0	0	0	0	0	0	3.58E-02	0	3.26E-01	0
Primary energy resources used as raw materials (PERM) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ][2]	1.54E+01	4.77E-01	0	0	7.96E-01	0	0	0	0	0	0	3.58E-02	0	3.26E-01	0
Use of non-renewable primary energy (PENRE) [MJ]	2.37E+02	8.19E+00	0	0	2.42E+00	0	0	0	0	0	0	5.07E-01	0	2.49E+00	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0	0	0	0	6.53E-01	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ][4]	2.37E+02	8.19E+00	0	0	3.07E+00	0	0	0	0	0	0	5.07E-01	0	2.49E+00	0
Input of secondary material (SM) [kg]	1.11E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	1.22E-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	1.44E-19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m^3]	2.29E-02	5.27E-04	0	0	1.04E-02	0	0	0	0	0	0	3.94E-05	0	6.27E-04	0

[2] The option B from ANNEX 3 in the PCR 2019:14 Construction Products, version 1.3.2 is used for how to separate the use of primary energy into energy used as raw material and energy used as energy carrier

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				D REUSE, RECOVERY, RECYCLING
Waste Category & Output Flows	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed (HWD) [kg]	1.06E-03	2.95E-11	0	0	4.89E-06	0	0	0	0	0	0	1.87E-12	0	3.79E-08	0
Non-hazardous waste disposed (NHWD) [kg]	1.64E+00	1.10E-03	0	0	1.20E-01	0	0	0	0	0	0	7.30E-05	0	1.25E+01	0
Radioactive waste disposed (RWD) [kg]	3.65E-04	1.04E-05	0	0	5.19E-06	0	0	0	0	0	0	6.55E-07	0	2.83E-05	0
Components for re-use (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported thermal energy (EET) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Additional voluntary indicators from EN 15804 (according to ISO 21930:2017)

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				REUSE, RECOVERY RECYCLING
Environmental indicators	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
GWP-GHG [kg CO_2 eq.][3]	1.73E+01	6.11E-01	0	0	1.41E-01	0	0	0	0	0	0	3.70E-02	0	1.88E-01	0

[3] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Information on biogenic carbon content

	PRODUCT STAGE
Biogenic Carbon Content	**A1 / A2 / A3**
Biogenic carbon content in product [kg]	0
Biogenic carbon content in packaging [kg]	0

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

There is no biogenic carbon in glass products. Every thickness considered in this EPD has the same value for biogenic carbon 0 kg C. Moreover, there is no packaging considered for glass products.

Electricity information

The factories based in Cuautla and Saltillo uses the following electricity description:

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of Electricity purchased by Saint-Gobain Glass production plant
Geographical & technical representativeness	Share of energy sources of Mexico residual mix: Oil: 44.81% Natural Gas: 43.48% Hard Coal: 4.91% Nuclear: 1.87% Waste: 4.94%
Reference year	2023
Type of dataset	ecoinvent dataset
Source	Ecoinvent 3.9.1
CO_2 emission kg CO_2 eq. / kW (residual mix)	0.794 kg of CO_2 eq/kWh Based on GWP-GHG indicator

The factories based in Saltillo and Cuautla, Mexico, use electricity with a Guarantee of Origin certificate (GO's). The amount of electricity purchased with GO's covers 66% of the electricity consumption on the manufacturing site.

TYPE OF INFORMATION	DESCRIPTION
Location	Electricity purchased by Saint-Gobain Glass Mexico
Share of electricity covered by Guarantee of origin	66% of the energy consumption is covered by the GO
Energy sources for electricity	Share of energy sources: 100% Photovoltaic
Type of dataset	Cradle to gate from Sphera databases
Source	Guarantee of Origin certificate of 2023: Declaración de Conformidad de Garantía de Origen de la Energía - TÜV Rheinland de México S.A. de C.V. Contrato de Suministro Eléctrico – ST GOBAIN GLASS Cuautla
CO_2 emission kg CO_2 eq. / kWh (Guarantee of Origin)	0.08 kg of CO_2 eq/kWh Based on GWP-GHG indicator

The Guarantee of Origin is valid for at least the upcoming year and Saint-Gobain Glass makes a commitment to buy Guarantees of Origin for the full validity period of the EPD. If the electricity mix changes during the EPD validity in a way that has an impact on the results or other contents of the EPD, the rules of the GPI will be followed.

Health transparency

Concerning the indoor air quality, magnetron coated flat glass is an inert material that doesn't release any inorganic & organic compounds, in particular no VOC (volatile organic compounds).

Additional information:

Data quality

Inventory data quality is judged by geographical, temporal, and technological representativeness. To cover these requirements and to ensure reliable results, first-hand industry data crossed with LCA background datasets were used. The data was collected from internal records and reporting documents. After evaluating the inventory, according to the defined ranking in the LCA report, the assessment reflects good inventory data quality.

Geographic representativity	Technical representativity	Temporal representativity
3.7	2.0	2.0

Saint-Gobain's sustainability roadmap

At Saint-Gobain, we strive to build a more sustainable and inclusive world. Therefore, to establish our sustainability approach, we have set objectives to reach by 2030 in our key focus areas:

- Reducing CO_2 emissions by 33 % for scope 1 and scope 2, and 16 % for scope 3 compared to 2017 levels
- Advancing a circular economy model by decreasing non-valorised production residue by 80 %, increasing the avoidance of virgin raw materials by 30%, and using 100 % recyclable packaging with at least 30 % recycled or bio-sourced content
- Conducting life-cycle assessments for all our product ranges
- Decreasing industrial water withdrawal by 50 % and eliminating water discharge in areas with a high risk of water scarcity

Saint-Gobain approach for Sustainable Construction

For us, over their whole life cycle, buildings should enhance people's health & wellbeing while having reduced footprint on the planet. They should offer better economic value and quality for the developers, owners and occupants.

The following information might be of help for green building certification programs:

RECYCLED CONTENT

(Required for LEED v4.1 Materials and Resources - Sourcing of raw materials)

Recycled content: proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content.

- Post-consumer material: material generated by households or commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. In practice, in the case of flat glass, all material coming from glass recycling collection schemes falls under this category, i.e. glass waste from end-of-life vehicles, construction and demolition waste, etc.

- Pre-consumer material: material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

  In the case of flat glass, this waste originates from the processing or re-processing of glass that takes place before the final product reaches the consumer market. Pre-

consumer waste flat glass is made of cut-offs, losses during laminating, bending and other processing, including the manufacture of insulating glass units or automotive windscreens.

Cullet generated in the furnace plant, and which is reintroduced into the furnace cannot be considered as pre-consumer recycled content, since there was never an intent to discard it and therefore it would never have entered the solid waste stream.

Saint-Gobain Glass intends to continue the increase of recycled material in its products.

RESPONSIBLE SOURCING

(Required for BREEAM International new construction 2016 – MAT 03 Responsible sourcing)

All Saint-Gobain Glass Industry sites with a glassmaking furnace, are ISO 14001 certified.

All internal Saint-Gobain Glass quarries are certified ISO 14001, as its SAINT-GOBAIN SAMIN (sand) in France. Many Saint-Gobain Glass raw material suppliers are certified ISO 14001. Our policy consists in encouraging the sourcing of raw materials extracted or made in sites certified ISO 14001 (or the equivalent).

For any other question / document / certification, please contact our local sales teams.

References

1. EN 15804:2012+A1:2013: Sustainability of construction works - Environmental product declarations - Core rules ffor the product category of construction products
2. EN 15804:2019+A2 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
3. EPD International, General Program Instructions (GPI) for the international EPD® (version 4.0) www.environdec.com
4. The International EPD System PCR 2019:14 Construction products and Construction services. Version 1.3.4
5. c-PCR-009 Flat glass products (EN 17074)
6. European Chemical Agency, Candidate List of substances of very high concern for Authorization. https://echa.europa.eu/candidate-list-table
7. LCA report, Information for the Environmental Product Declaration of glass products, January 2025.