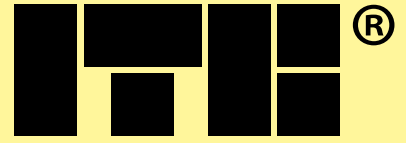
 glass system

Enviromental Product Declaration



GSW Office systems

Owner of the EPD

Glass System Technologies S.A.

📍 Marcina Kasprzaka 4
01-211 Warsaw, Poland
☎ tel.: +48 22 243 24 20
🌐 www.glasssystem.com
✉ k.lewicka@glasssystem.com

EPD Program Operator

Instytut Techniki Budowlanej (ITB)

📍 Filtrowa 1
00-611 Warsaw, Poland
🌐 www.itb.pl
✉ energia@itb.pl

ITB is the verified member of The European Platform for EPD program operators and LCA practitioner www.eco-platform.org



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Basic information

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804+A2 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment and their aspects verified by the independent body according to ISO 14025. Basically, comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804+A2.

Life cycle analysis (LCA):

A1-A3, C1-C4 and D modules in accordance with EN 15804+A2 (Cradle-to-Gate with options)

The year of preparing the EPD:

2026

Service Life:

25 years

PCR:

ITB-PCR A

Declared unit:

1 m²

Reasons for performing LCA:

B2B

Representativeness:

Polish, European, 2024

Manufacturer

Glass System Technologies S.A. is a Warsaw-based manufacturer of glass wall systems and doors for office architecture. Founded in 2012, the company is committed to continuous innovation and the delivery of high-quality glass systems that meet rigorous technical standards. Its product portfolio encompasses glass wall and door systems that combine outstanding aesthetics with unlimited access to natural light, superior acoustic comfort, and fire safety performance.



figure 1. The view of factory located at Warsaw

Products description and application

The environmental declaration covers aluminum profiles used in the construction of the following internal partition systems: GSW Office (a single glazed system), GSW Office Plus (a double glazed system). The glass wall systems have been tested in accordance with the guidelines of EAD 210005-00-505 for the purposes of issuing the European Technical Assessment (ETA), which enables the marking of products with the CE mark. Thanks to this, they can be used throughout the European Union.



figure 2. GSW Office and GSW Office Plus partition layout

table 1. Specification of products covered by the declaration

Product	Class	Dimensions	Other
GSW Office data in document ETA-16/0446 PL	classless	Maximum height: 3400 mm (width without restrictions)	Finish: • raw aluminium • silver anodised • polished anodised • black anodised • special anodised (on request)
GSW Office Plus data in document ETA-17/1050 PL	classless	Maximum height: 4000 mm (width without restrictions)	
GSW Office LT data in document 02392-23-Z00NZE-B	classless	Maximum height: 2800 mm (width without restrictions)	

All additional technical information about the product is available on the manufacturer's [website](#) and catalogues.

LIFE CYCLE ASSESSMENT (LCA)

general rules applied

Unit

The declared unit is 1 m² of GSW Office systems.

Note: for each specific type of system, the EPD provides conversion factors from representative data of the impacts of 1 m² to specific data of a given product type.

System boundary

The life cycle analysis of the declared products covers "Product Stage" A1-A3, C1-C4+D modules in accordance with EN 15804+2 and ITB PCR A (cradle to gate with options). Energy and water consumption, emissions as well as information on generated wastes were inventoried and were included in the calculation. It can be assumed that the total sum of omitted processes does not exceed 2% of all impact categories. In accordance with EN 15804+A2, machines and facilities (capital goods) required for the production as well as transportation of employees were not included in LCA.

Allocation

The allocation rules used for this EPD are based on general ITB's PCR A. Production of products is a technological process managed by the office located in Warsaw, Poland. Allocation of impact is done on a product mass basis (100% of whole production). All impacts from raw materials (88% is glass, 11% aluminum and 1% polymers) are allocated in A1 module of the LCA, the input contributing more than 0.5% to the overall mass or energy of the system have been omitted. It is estimated that the sum of any excluded flows contribute less than 1% to the impact assessment categories. The manufacturing of required machinery and other infrastructure is not considered in the LCA. 100% of impacts from production were inventoried and allocated to product covered by this declaration. Module A2 includes transport of raw materials such as aluminum and glass from suppliers to assembling place (based on verified data). Energy supply was inventoried and 100% was allocated to the product assessed. Emissions in the factory are assessed using national KOBiZE 2024 emission factors for energy carriers.

System limits

100% input materials and 100% energy consumption (electricity, heat) was inventoried in the manufacturing plant and were included in provided declaration. In the assessment, all significant parameters from gathered production data are considered, i.e. all material used per formulation profile, utilized thermal energy, and electric power consumption, direct production waste. Tires consumption for transport was not taken into account. It is assumed that the total sum of omitted processes does not exceed 2% of all impact categories. In accordance with EN 15804 machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees. Different types of glass may have specific environmental factors to be converted from the reference profile (Table 5) according to the table (Table 4).

Modules A1 and A2: Raw materials supply and transport

The aluminium material come from specific suppliers (Extral and Cortizo with specific impact covered by EPDs). General environmental profiles from Plastics Europe were used. For glass known impact from EPDs were used. Data on transport (100% of input material) of the different input products to the manufacturing plants were inventoried in detail and modelled by assessor. For calculation purposes European fuel averages are applied.

Module A3: Production

The production process A3 includes processes as presented in figure 3.

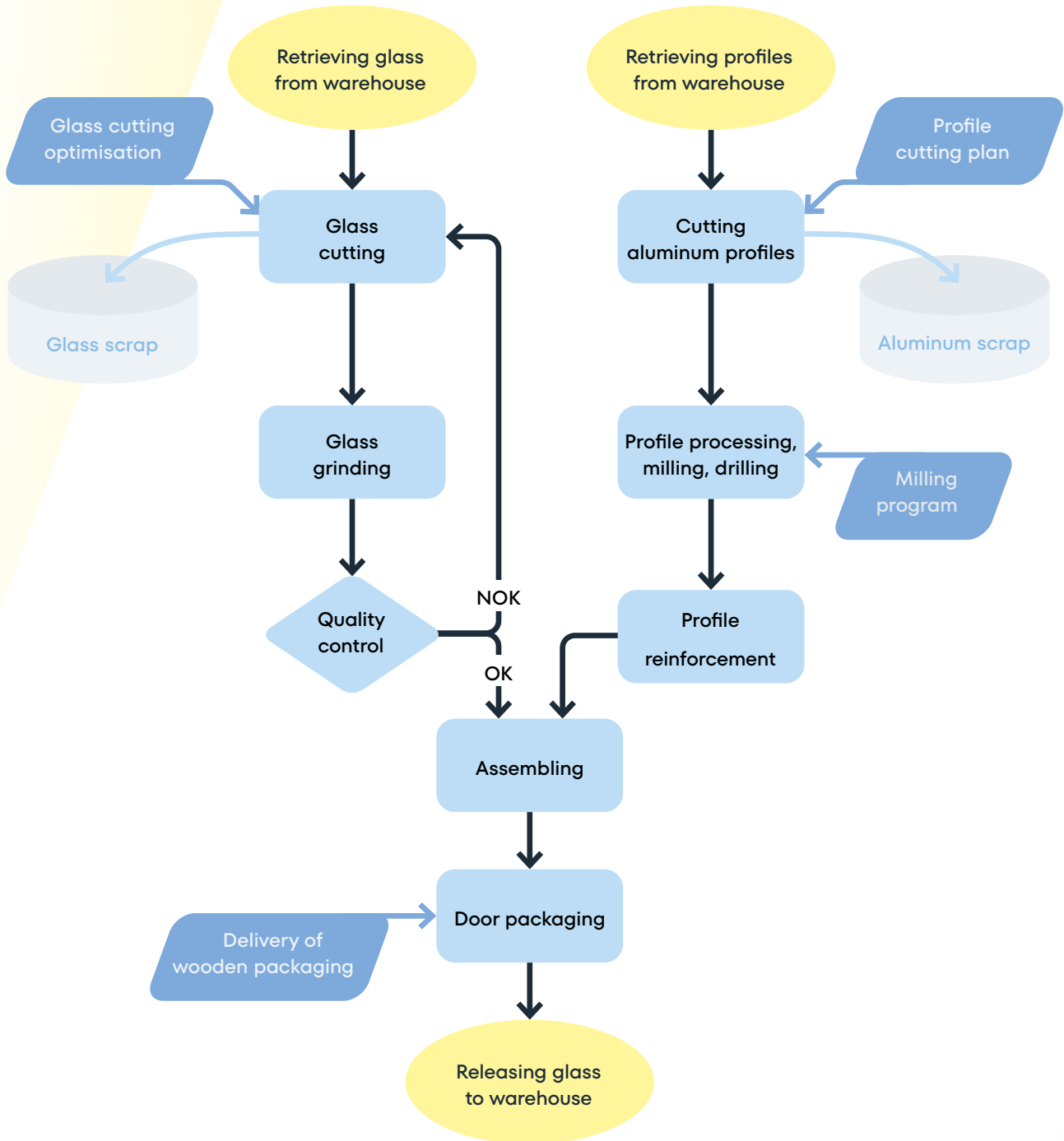


figure 3. A basic scheme of the GSW Systems product manufacturing process

Modules C1-C4 and D: End-of-life (EOL)

The end-of-life scenario for all products has been generalized. Aluminium is considered as infinitely recyclable material. Typically is recovered by demolition contractors, who sell the recovered material as a scrap (material recovery rate in analysed case is 98%). According to the scenario, 0.2 MJ of the energy is set to recover the profile from the material derived from the demolition was assumed (electric small equipment). It is assumed that at the end of life the transport distance from the product deconstruction place to waste processing (C2) is 50 km on > 16 t loaded lorry with 75% capacity utilization and fuel consumption of 35 l per 100 km. Materials recovered from dismantled products are recycled (98%) and landfilled (2%) according to the treatment practice of construction waste as presented in Table 2. The reuse, recovery and recycling potential for a new product system is considered beyond the system boundaries (module D) based on net scrap approach.

table 2. End-of-life scenario for the products components

Material	Recycling %	Landfilling %	Energy recovery %
Steel products	96	4	0
Glass	98	2	0

Electricity at end-of-life (module C) has been modelled using an average Polish electricity mix as the location where the product reaches end-of-life is unknown.

Data collection period

The data for manufacture of the declared products refer to period between 01.01.2024 – 31.12.2024 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Data quality

The data selected for LCA originate from ITB-LCI questionnaires completed by producer. No specific data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency are judged as good. The background data for the processes come from the following resources: database Ecoinvent v.3.11 and KOBiZE (Polish electricity mix and combustion factors for fuels). KOBiZE data is supplemented with Ecoinvent data on the national electricity mix impact where no specific indicator data is provided. Specific (LCI) data quality analysis was a part of the input data verification. The time related quality of the data used is valid (5 years).

Assumptions and estimates

The impacts of the representative of the products were aggregated using weighted average.

Calculation rules

LCA was performed using ITB-LCA tool developed in accordance with EN15804+A2. Emission of greenhouse gases was calculated using the IPCC GWP method with a 100-year horizon. Emission of acidifying substances, emission of substances to water contributing to oxygen depletion, emission of gases that contribute to the creation of ground-level ozone, abiotic depletion, and ozone depletion emissions where all calculated with the EF 3.1. method. No mass balance approach was used. Biogenic content less than 5%.

Additional information

Polish electricity mix used is 0.597 kg CO₂/kWh (KOBiZE 2023). European electricity mix used is 0.43 kg CO₂/kWh (Ecoinvent v3.11, RER).

LIFE CYCLE ASSESSMENT (LCA) Results

Declared unit

The declaration refers to declared unit (DU) – 1 m² of the products manufactured by Glass System Technologies S.A. The following life cycle modules (Table 3) were included in the analysis. The evaluation results for the specific products are given in Tables 5-8.

table 3. System boundaries for the environmental characteristic of the LED Modules products.

Environmental assessment information (MD – Module Declared, MND – Module Not Declared, INA – Indicator Not Assessed)

Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MD	MD	MD	MD	MD

The method of converting the environmental impact for any specific/selected glass product

The LCA impacts in the Table 4-7 are presented per unit of product system - 1 m². In order to convert LCA to a specific product the conversion factor should be used. Then the value of the LCA impact may be found on the proportion of the specific product thickness and the impact of 1 m².

table 4. Conversion factor for specific system products

Systems		System with remelt aluminum profile (1 m ²)	System with standard aluminum (1 m ²)
GSW Office	GSW Office Vision 55.1 / 55.2 Si	1.0	1.2
	GSW Office Vision 66.2 / 66.2 Si	1.2	1.3
	GSW Office Vision 66.2 / 66.2 Si ORAE	0.7	0.9
	GSW Office Vision 88.2 / 88.2 Si / 106.2 Si	1.5	1.7
	GSW Office Grid 55.1 / 55.2 / 55.2 Si	1.0	1.3
	GSW Office Grid 66.2 / 66.2 Si	1.2	1.4
	GSW Office Grid 66.2 / 66.2 Si ORAE	0.7	0.9
	GSW Office Grid 88.2 / 88.2 Si / 106.2 Si	1.5	1.7
GSW Office LT	GSW Office LT 44.1 (44.2 Si)	0.8	0.9
	GSW Office LT 55.1 (55.2 Si)	1.0	1.2
	GSW Office LT 66.2 (66.2 Si)	1.2	1.3
	GSW Office LT 66.2 (66.2 Si) ORAE	0.7	0.9
GSW Office Plus	GSW Office Plus Vision 55.1 (55.2 Si) + 55.1 (55.2 Si)	2.0	2.4
	GSW Office Plus Vision 55.1 (55.2 Si) + 66.2 (66.2 Si)	2.2	2.5
	GSW Office Plus Vision 55.1 (55.2 Si) + 66.2 (66.2 Si) ORAE	1.7	2.1
	GSW Office Plus Vision 66.2 (66.2 Si) + 66.2 (66.2 Si)	2.3	2.7
	GSW Office Plus Vision 66.2 (66.2 Si) ORAE + 66.2 (66.2 Si) ORAE	1.4	1.8
	GSW Office Plus Vision 88.2 Si (88.2, 106.2 Si) + 88.2 Si (88.2, 106.2 Si)	2.9	3.3
	GSW Office Plus Vision 88.2 Si (88.2, 106.2 Si) + 66.2 (66.2 Si) ORAE	2.2	2.6
	GSW Office Plus endoGrid 66.2 (66.2 Si) + 66.2 (66.2 Si)	2.3	2.8
	GSW Office Plus endoGrid 66.2 (66.2 Si) ORAE + 66.2 (66.2 Si) ORAE	1.5	1.9
	GSW Office Plus egzoGrid 44.1 (44.2 Si) + 44.1 (44.2 Si)	1.6	2.1
	GSW Office Plus egzoGrid 44.1 (44.2 Si) + 55.1 (55.2 Si)	1.8	2.3
	GSW Office Plus egzoGrid 55.1 (55.2 Si) + 55.1 (55.2 Si)	2.0	2.6
	GSW Office Plus egzoGrid 66.2 (66.2 Si) + 66.2 (66.2 Si)	2.4	2.9
	GSW Office Plus egzoGrid 66.2 (66.2 Si) ORAE + 66.2 (66.2 Si) ORAE	1.5	2.0
	GSW Office Plus endoFin 66.2 (66.2 Si) + 66.2 (66.2 Si)	2.3	2.8
	GSW Office Plus endoFin 66.2 (66.2 Si) ORAE + 66.2 (66.2 Si) ORAE	1.5	1.9
	GSW Office Plus endoLight 66.2 (66.2 Si) + 66.2 (66.2 Si)	2.4	2.7
	GSW Office Plus endoLight 66.2 (66.2 Si) ORAE + 66.2 (66.2 Si) ORAE	1.5	1.8

Table 5. Life cycle assessment (LCA) results for specific product – environmental impacts – GSW Office systems (DU: 1 m²)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO ₂	4.02E+01	7.09E-01	2.56E+00	4.35E+01	1.13E-02	5.84E-01	1.04E+01	3.70E-03	-9.77E-01
Greenhouse potential - fossil	eq. kg CO ₂	3.94E+01	7.08E-01	2.56E+00	4.27E+01	1.10E-02	5.82E-01	1.04E+01	3.69E-03	-9.59E-01
Greenhouse potential - biogenic	eq. kg CO ₂	5.33E-01	4.53E-04	2.72E-03	5.37E-01	3.20E-04	1.99E-03	3.66E-04	9.40E-06	-6.59E-03
Global warming potential - land use and land use change	eq. kg CO ₂	2.32E-01	2.35E-04	2.32E-04	2.33E-01	3.84E-06	2.28E-04	2.77E-04	3.48E-06	-1.29E-02
Stratospheric ozone depletion potential	eq. kg CFC 11	1.04E-06	1.54E-08	2.91E-08	1.08E-06	2.24E-10	1.35E-07	2.15E-05	1.49E-09	-6.43E-07
Soil and water acidification potential	eq. mol H+	2.46E-01	2.27E-03	2.02E-02	2.69E-01	1.22E-04	2.36E-03	2.02E-01	3.47E-05	-9.33E-03
Eutrophication potential - freshwater	eq. kg P	6.36E-03	4.84E-05	2.86E-03	9.27E-03	2.08E-05	3.91E-05	1.19E-05	3.43E-07	-4.71E-04
Eutrophication potential - seawater	eq. kg N	4.86E-02	7.66E-04	2.74E-03	5.21E-02	1.76E-05	7.13E-04	1.48E-01	1.21E-05	-8.90E-04
Eutrophication potential - terrestrial	eq. mol N	5.64E-01	8.33E-03	2.40E-02	5.96E-01	1.49E-04	7.78E-03	1.17E+00	1.32E-04	-8.78E-03
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.40E-01	3.45E-03	8.49E-03	1.52E-01	4.16E-05	2.38E-03	2.86E-01	3.84E-05	-3.05E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	3.72E-05	2.44E-06	9.02E-07	4.05E-05	5.34E-08	2.06E-06	3.97E-07	8.45E-09	-2.29E-03
Abiotic depletion potential - fossil fuels	MJ	6.22E+02	1.00E+01	4.02E+01	6.72E+02	1.86E-01	8.63E+00	1.67E+00	1.01E-01	-1.22E+01
Water deprivation potential	eq. m ³	1.78E+01	5.26E-02	6.47E-01	1.85E+01	3.84E-03	3.99E-02	1.37E-01	3.21E-04	-9.77E-01

Table 6. Life cycle assessment (LCA) results for specific product – environmental impacts - GSW Office systems (DU: 1 m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	disease incidence	INA	INA	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA	INA	INA

Table 7. Life cycle assessment (LCA) results for specific product – environmental impacts – GSW Office systems (DU: 1 m²)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	9.33E+01	1.63E-01	2.34E+00	9.58E+01	1.38E-02	1.24E-01	3.05E-02	8.78E-04	-3.69E+00
Consumption of renewable primary energy resources used as raw materials	MJ	8.49E-01	0.00E+00	0.00E+00	8.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.99E-04
Total consumption of renewable primary energy resources	MJ	9.41E+01	1.63E-01	2.34E+00	9.66E+01	1.38E-02	1.24E-01	3.05E-02	8.78E-04	-3.70E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	6.18E+02	1.00E+01	4.02E+01	6.68E+02	1.86E-01	8.64E+00	-1.84E+02	1.01E-01	-1.21E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	4.02E+00	0.00E+00	0.00E+00	4.02E+00	0.00E+00	0.00E+00	1.86E+02	0.00E+00	-7.46E-03
Total consumption of non-renewable primary energy resources	MJ	6.22E+02	1.00E+01	4.02E+01	6.72E+02	1.86E-01	8.64E+00	1.67E+00	1.01E-01	-1.22E+01
Consumption of secondary materials	kg	3.41E+00	4.49E-03	3.25E-03	3.42E+00	1.70E-05	2.89E-03	7.53E-04	2.12E-05	-3.94E-03
Consumption of renew. secondary fuels	MJ	1.77E-02	5.89E-05	1.32E-05	1.78E-02	9.45E-08	3.19E-05	1.02E-05	5.55E-07	-2.71E-05
Consumption of non-renewable secondary fuels	MJ	5.36E-03	0.00E+00	0.00E+00	5.36E-03	1.50E-04	0.00E+00	0.00E+00	0.00E+00	-9.25E-04
Net consumption of freshwater	m ³	4.12E-01	1.21E-03	2.36E-02	4.37E-01	5.04E-05	1.09E-03	1.47E-03	1.11E-04	-2.13E-02

Table 8. Life cycle assessment (LCA) results for specific product – environmental impacts – GSW Office systems (DU: 1 m²)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	3.24E+00	1.44E-02	2.81E-01	3.54E+00	1.92E-06	9.69E-03	1.20E-07	1.07E-04	-2.15E-01
Non-hazardous waste	kg	4.47E+00	3.09E-01	1.41E+01	1.89E+01	9.98E-05	1.72E-01	3.13E-01	1.51E-03	-1.38E-01
Radioactive waste	kg	8.41E-03	2.96E-06	4.87E-06	8.42E-03	1.39E-07	6.45E-07	8.89E-06	6.71E-07	-1.76E-04
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	-3.43E-07
Materials for recycling	kg	3.54E-01	1.20E-04	1.23E-03	3.55E-01	1.92E-07	2.67E-05	1.11E-05	2.02E-07	-6.95E-05
Materials for energy recovery	kg	3.43E-06	6.37E-07	3.16E-07	4.38E-06	1.68E-09	2.16E-07	1.39E-07	2.40E-09	-6.48E-06
Exported Energy	MJ	2.35E+00	4.39E-03	1.00E-02	2.37E+00	5.54E-04	0.00E+00	1.70E+00	0.00E+00	-2.00E-06

Verification

The process of verification of this EPD is in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

The basis for LCA analysis was EN 15804+A2 and ITB PCR A

Independent verification corresponding to ISO 14025 (sub clause 8.1.3.)

external

internal

External verification of EPD: Halina Prejzner, PhD. Eng.

LCI data, audit and verification: Michał Chwedaczuk, M.Sc. Eng.

LCA data verification: Michał Piasecki, PhD., D.Sc., Eng.

Note 1: The declaration owner has the sole ownership, liability, and responsibility for the information provided and contained in EPD. Declarations of construction products may not be comparable if they do not comply with EN 15804+A2. For further information about comparability, see EN 15804+A2 and ISO 14025.

Note 2: ITB is a public Research Organization and Notified Body (EC Reg. no 1488) to the European Commission and to other Member States of the European Union designated for the tasks concerning the assessment of building products' performance. ITB acts as the independent, third-party verification organization (see ISO 17025/17065/17029). ITB-EPD program is recognized and registered member of The European Platform - Association of EPD program operators and ITB-EPD declarations are registered and stored in the international ECO-PORTAL.

Normative references

- ITB PCR A General Product Category Rules for Construction Products
- ISO 14025 Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation
- EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- KOBiZE Wskaźniki emisyjności CO₂, SO₂, NO_x, CO i pyłu całkowitego dla energii elektrycznej.
- Ecoinvent.org

LCA, LCI, input data verification

Michał Piasecki, PhD. D.Sc

Qualified electronic signature

Head of Thermal Physic, Acoustic and
Environment Department

Agnieszka Winkler-Skalna, PhD.

Qualified electronic signature



Instytut Techniki Budowlanej



Instytut Techniki Budowlanej

00-611 Warsaw, Filtrowa 1

Thermal Physics, Acoustics and Environment Department

02-656 Warsaw, Ksawerów 21

CERTIFICATE No 907/2026 of TYPE III ENVIRONMENTAL DECLARATION

Products:

GSW Office systems

Manufacturer:

Glass System Technologies S.A.

Marcina Kasprzaka 4, 01-211 Warsaw, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804+A2

Sustainability of construction works.

Environmental product declarations.

Core rules for the product category of construction products.

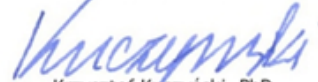
This certificate, issued on 30th January 2026 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics
and Environment Department


Agnieszka Winkler-Skalna, PhD



Deputy Director
for Research and Innovation


Krzysztof Kuczyński, PhD

Warsaw, January 2026