AGC GLASS EUROPE

ENVIRONMENTAL AND HEALTH PRODUCT DECLARATION

Pyrobel 25

Fire resistant glass

In accordance with ISO 14025:2006, EN 15804+A1:2014 and its French national complement NF EN15804/CN:2016

September 2020

1. Warning

Information from this declaration are provided under AGC Glass Europe responsibility according to the standards EN 15804+A1:2014 and the French national complement NF EN15804/CN:2016.

Any total or partial use of the information provided in this document shall at least be accompanied by an explicit reference to this EPD as well as its issuer. The latter can provide the original document upon request.

EN 15804+A1 from CEN has been used as Product Category Rules (PCR).

2. Reading guide

Environmental impacts results, resource use indicators as well as waste and output flows are presented in scientific writing with three significant digits.

All positive values (> 0) reflect environmental impacts and negative values (< 0) refer to environmental benefits. This approach applies to all modules, including module D. Where module D has a results higher than zero, it is an additional impact.

3. Comparability of EPD for construction products

Environmental product declarations may not be comparable if they do not comply with EN15804+A1.

Chapter *5.3 Comparability of EPD construction products* from EN15804+A1 norm defines the required conditions under which the construction products can be compared, on the basis of the information provided by the EPD:

A comparison of the environmental performance of construction products, based on their EPDs, shall be based on the use of the products and their impacts on the building, and shall account for the entire life cycle of the product (i.e. include all information modules).

4. General information

Name and address of the manufacturer	AGC Glass Europe Avenue Jean Monnet 4 B-1348 Louvain-la-Neuve sustainability@eu.agc.com
Production sites	This EPD is representative of Pyrobel range which is the fire resistant glass sold by AGC Glass Europe in France. AGC Glass Europe operates 2 production sites in Europe providing fire resistant glass to French and European market. Results from this EPD reflects data collected from all these sites, representing 100% of the production.
Reference year	Foreground data collected from AGC sites is representative of the 2018 calendar year.
Type of EPD	☐ Cradle to factory gate ☐ Cradle to grave ☒ Cradle to grave + module D
	☐ Collective ☒ Individual, covering AGC Glass Europe range of products
Verifier name	Cécile Beaudard (Solinnen)
Program operator	**FDES INIES** www.inies.fr Address : Association HQE, 4 avenue du Recteur Poincaré – 75016 Paris – France
Publication date	September 2020
Expiration date	September 2025
Target audience	This EPD is primarily intended for business-to-business communication, although they might be consulted by end consumers as well (business-to-consumer).

Commercial references covered by the EPD

Reference product is a Pyrobel 25. It is a fire resistant glass made of five layers of float glass and four intumescent layers.
It is a real product representative of a main market share of Pyrobel range of products.

This EPD also covers other products from Pyrobel/Pyrobelite range that have a close structure. These products have environmental impacts within a range of +/ 40% compared to the reference product studied. The table below summarizes products covered.

Table 1 : Pyrobel products covered by this EPD

Product	EPD Pyrobel 25
Pyrobelite 7	
Pyrobel 8	
Pyrobel 8 EG	
Pyrobelite 9EG	
Pyrobelite 10	
Pyrobelite 12	
Pyrobelite 12 EG	
Pyrobelite 13	
Pyrobel 16	
Pyrobel 16 EG	
Pyrobel 17N	X
Pyrobel 17N EG	X
Pyrobel 19H	
Pyrobel 21	X
Pyrobel 21 EG	X
Pyrobel 23H	X
Pyrobel 25	X
Pyrobel 25 EG	X
Pyrobel 28H	X
Pyrobel 30	
Pyrobel 30 EG	
Pyrobel 30 EG2	
Pyrobel 33H	X
Other thicker Pyrobel references	

Legend

X	Other references covered by this EPD
X	Reference product of this EPD
	Other references not covered by this EPD

5. Functional unit and product description

5.1. Description of the functional unit

The functional unit is to provide 1 m² of fire-resistant glass to be used as a glazing product with a fire resistance class EI ≥ 45 minutes according to EN 13501-2 over a 30 years reference service life.

EN 13501-2 defines different type of fire resistance: EW and EI, explained besides.

The associated number corresponds to the period during which the product ensures the fire resistance.

A product EI45 and EW60 will thus ensure integrity and insulation for 45 minutes and integrity and radiation limitation for 60 minutes.

EW 'Integrity and Radiation Limitation'

No flames, smoke, gas. Limited heat transfer, restricted to no more than 15kW/m².

EI 'Integrity and Insulation'

No flames, smoke, gas. No heat transfer.

The associated reference flow is a 1 m² Pyrobel 25 glass.

Note 1: The reference service life of the product is set to 30 years. This period does not reflect real product lifetime, which is generally defined by building refurbishment. It does not refer to product guarantee neither. This period reflects a standard duration of use considered in glazing EPDs.

5.2. Product description

The reference product is a Pyrobel 25, which is a glass pane made of five float sheets and four intumescent layers.

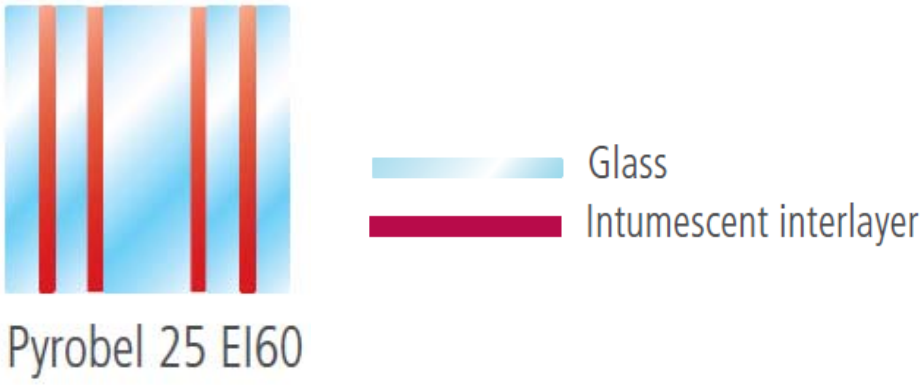


Figure 1 : Pyrobel 25 structure

More information available on www.agc-pyrobel.com

5.3. Description of the product usage

Fire resistant glass can be used either as component of an external glazing or as internal partition. These products provide safe conditions in case of fire to allow safe escape from building users and act as fire barrier to slow down fire propagation and help fire fighters.
Compared to other fire resistant materials, glass allows a visual connection and let light going through.

The product is CE marked with the following characteristics.

Table 2 : Pyrobel 25 characteristics

Properties	Symbol	Pyrobel 17N	Pyrobel 17N EG	Pyrobel 21	Pyrobel 21 EG	Pyrobel 23H	Pyrobel 25	Pyrobel 25 EG	Pyrobel 28H	Pyrobel 33H
Thermal transmission (according to EN 673)	U_g (W/m².K)	5.4	5.2	5.2	5.1	5.4	5.1	5.0	5.0	NPD
Light Transmission (EN 410)	Tv (%)	86	85	80	79	83	82	82	78	NPD
Light Reflection (EN 410)	ρv (%)	8	8	7	7	8	7	7	7	NPD
Solar factor (EN 410)	g (%)	71	68	65	61	66	66	64	60	NPD
Direct airborne sound insulation (EN 12578)	Rw (C;Ctr) (dB)	39 (0;-3)	40 (-1;-3)	38 (0;-3)	40 (-1;-3)	39 (0;-3)	40 (-1;-3)	43 (-1;-4)	41 (0;-3)	NPD
Resistance to fire (EN13501-2)		EI45 / EW60	EI45 / EW60	EI45 / EW60	EI45 / EW60	EI45	EI60	EI60	EI60	EI60
Reaction to fire (EN 13501-1)		A2 – s1, d0	NPD	A2 – s1, d0	NPD	NPD	A2 – s1, d0	NPD	NPD	NPD
Bullet resistance (EN 1063)		NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD
Burglar resistance (EN 356)		NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD
Pendulum body impact resistance (EN 12600)		1B1	1B1	1B1	1B1	1B1	1B1	1B1	1B1	1B1

5.4. Other technical features not included in the functional unit

Fire resistant glass let light go through and offers views to the building users.

5.5. Description of the product main components and/or material

Pyrobel 25 is made of five sheets of soda-lime float glass and four intumescent interlayers. These interlayers are made of sodium silicate and water.

Table 3 : Pyrobel 25 composition

Product composition	Pyrobel 25
Float glass (soda-lime) Mass (kg) Mass (% final product)	 50 kg 79%
Intumescent layer (sodium silicate and water) Mass (kg) Mass (% final product)	 13.2 kg 21%
Packaging Wooden box Steel – nails form wooden box Paper and cardboard LDPE film	 828 g/m² 16.9 g/m² 38.3 g/m² 0.5 g/m²

5.6. Substances from REACH candidate list

Pyrobel/Pyrobelite product range covered by this EPD does not contain any substance from REACH candidate list according to REACH regulation (more than 0.1%)

5.7. Reference service life description

The reference service life (RSL) of fire resistant glass is 30 years.

Table 4 : Reference conditions of product use justifying RSL

Parameter	Value
Reference service life	30 years
Declared product properties (when leaving the production site) and finishing	These properties are defined in laminated glass definition standard EN ISO 12543:2011 - *Glass in building. Laminated glass and laminated safety glass. Evaluation of conformity*
Theoretical application parameters (if imposed by the producer), including references to the appropriate use practices	These information are detailed in the standard NF DTU 39:2006 *Building works – Glazing and Mirror Glass Works*, which defines the specifications for the implementation of glazing and installation of glazing products (new construction, renovation, refurbishment, maintenance) performed on site in all types of buildings.
Alleged quality of the construction work, when the installation is made in accordance with the manufacturer's instructions	

Parameter	Value
Exterior environment (for exterior applications), e.g. weather resistance, pollutants, UV and wind exposure, building orientation, shade, temperature	
Interior environment (for interior applications), e.g. temperature, humidity, chemicals exposure	
Use conditions, e.g. usage frequency, mechanical exposure	
Maintenance, e.g. required frequency, type and quality and replacement of replaceable components	

6. Life cycle stages

This EPD is a cradle to grave study, with module D (benefits beyond the system boundaries).
Life cycle stages regarding product installation (A5) and product use (B1-B7) are modelled based on Glass in building product category rules EN 17074:2019.

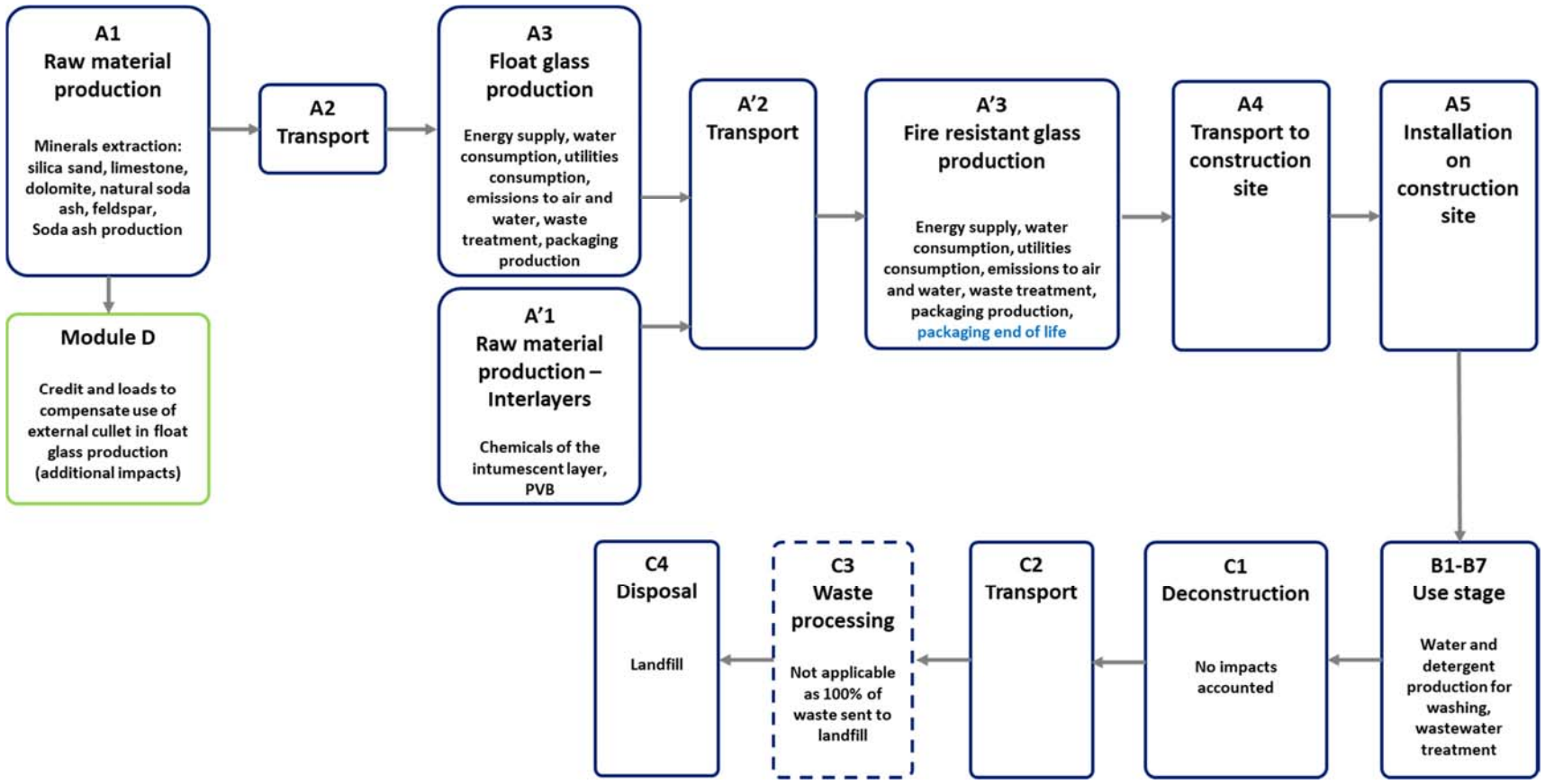


Figure 2 : Life cycle overview

6.1. Production stage, module A1-A3

Module A1-A3 covers the production and transport of raw materials used for fire resistant glass production. It also covers consumptions and emissions from intumescent layer processing such as energy and water consumption, water effluents, wastes treatment. It also covers production and end of life of packaging, as indicated in EN 17074.

Fire resistant glass production process involves the following steps:

- Float glass loading
- Washing
- Intumescent layer pouring
- Curing
- Assembling of several subparts, glass sheets and in some cases PVB layers
- Autoclaving

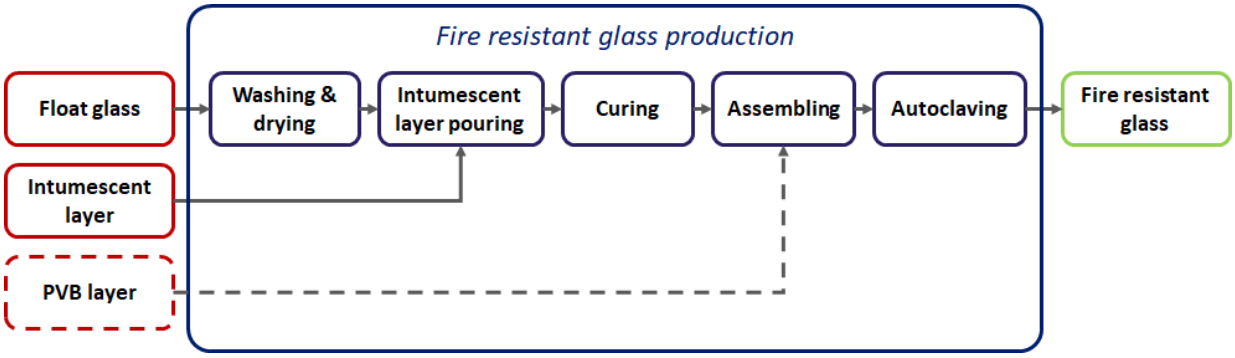


Figure 3 : Fire resistant glass processing stage

Allocations

A1: Float glass production impacts are allocated based on mass. Impacts per m² are then derived based on float glass thickness and glass density.

A3: Consumptions and emissions from fire resistant glass processing have been allocated based on intumescent subpart area. These subparts are made of a float glass and an intumescent layer.

These allocation comply with the flat glass product category rule EN 17074:2019.

6.2. Construction stage, module A4-A5

1. Transport to the construction site

Transport to construction site considers an average distance of 688 km. This value reflects the weighted average distance between AGC plants and Paris. Fire resistant glass is transported by regular diesel trailers of 24.7 tonnes net load. Pyrobel products are packaged in wooden boxes called “end caps”.

Table 5 : Transport to construction site

Parameter	Value	Unit
Vehicle description	24.7	Tonne | Diesel truck - EURO 5 – cargo, 40 t gross payload
Distance to construction site	688	km
Utilisation rate (including empty return)	67	%
Empty return	14.7	%

Average load and utilisation rate correspond to the average European values for european transport[1].

2. Installation on site

Following EN 17074:2019, no ancillary materials is considered for the glass to be installed and packaging end of life is accounted in module A3.

6.3. Use stage, module B1-B7

1. Description

The only module from the use stage considered is B2 “maintenance”. This stage corresponds to glass cleaning with water and detergent.

Repair (B3), replacement (B4) and refurbishment (B5) are not considered. Under normal conditions of use, fire resistant glass does not need any of these operations.

Finally, fire resistant glass does not emit any substances neither to the air nor to water during its use (B1).

2. Maintenance parameters

Following EN 17074:2019, the average annual water consumption is 0.2 litres per square meter of glass (i.e. 6 litres/m² over the whole life cycle) and an annual detergent consumption of 10 g/m² (300 g/m² over the whole life cycle). The majority of this water (75%) is considered as discharged to sewer grid and further treated in a wastewater treatment plant. The remaining 25% is considered as evaporated.

Table 6 : Glass maintenance

Parameter (whole life cycle)	Value	Unit
Water consumption for maintenance	6	litres
Detergent consumption	300	g
Waste water discharge to WWTP	4.5	litres

[1] *Road freight transport vademecum – 2010 report*, European Commission, 2011

6.4. End of life stage, module C1-C4

No mechanical operation is considered as regards dismantling and demolition (module C1).
End of life includes:

- C2: transport to waste treatment site ;
- C3: waste treatment ;
- C4: landfilling of demolition wastes.

End of life scenario is based on worst case scenario, considering that 100% of the fire resistant glass is sent to landfill for inert material in the end of life.

Table 7 : End of life scenarios

Parameter	Value	Unit
Waste glass sent to landfill	100	%
Transport to landfill (truck)	50	km
Waste glass recycled	0	%

All glass wastes are transported by diesel truck with a net payload of 22 tonnes.

6.5. Benefits and loads beyond system boundaries, module D

Benefits and loads beyond system boundaries refer to the following parameters.

1. **Additional loads due to external cullet use in module A1**

In this EPD, benefits from recycling is already accounted at production stage in module A1 through primary data. Indeed, external cullet used for float glass production limits the environmental impacts from module A1. Hence, module D only acts as a load beyond system boundaries, balancing the environmental benefits included in module A1.
If looking at the benefits from recycling formula , module D is here referring to a negative net output flow, referring to the cullet use during float glass production. Module D is thus an additional impact corresponding to the net consumption of cullet, which is not compensated during other life cycle stages.
When using the module D formula, this additional impact is calculated as

Module D additional load = MS (IV-IS)

This additional impact is calculated as:

- The additional production of batch raw materials (silica sand, soda ash, dolomite etc.).
- The energy overconsumption due to non-use of cullet. Indeed, virgin raw material requires 25% more energy than cullet to be melted.
- Increase of CO_2 emission from decarbonisation due to the substitution of cullet by carbonated raw materials (soda ash, limestone, dolomite)

NF EN15804/CN:2016 details the calculation rule of material recovery.

$$BenefNetRecycl = MSval\ (IVval - ISval) - MS\ (IV - IS)$$

With:

Symbol	Description	Value
MS_{val}	Mass of secondary material actually recovered from the mass of collected stock	0 kg/kg float glass
IV_{val}	Inventory of production of the material substituted by the recovered secondary material in the downstream system using the material	Not assessed (worst case scenario for the end of life)
IS_{val}	Inventory of production of secondary material ready for use in the downstream system from the stock	Not assessed (worst case scenario for the end of life)
MS	Mass of secondary material introduced into the product object of assessment during its manufacture	0.854 kg/kg float glass
IV	Inventory of production of the blank material used to produce the product object of assessment in the absence of material recovery of the material	See details below
IS	Inventory of production of the secondary material ready for use to produce the product objects of assessment	

IV – IS normally refers to the inventory of production of the virgin raw materials minus the production of the secondary raw material. In case of flat glass, the point of substitution, i.e. when recycled material and virgin ones have similar properties, is achieved, when the glass has been (re)melted. Indeed, next to the avoided raw material production, the use of cullet also has an influence on the melting process (lower energy consumption and no decarbonisation), as described in annex D from EN 17074:2019.

2. Exclusion of recycled or valorised materials from module A3

Other materials sent to recycling are coming from module A3, for which EN 15804+A1 excludes their benefits and loads calculation from module D. The following materials have thus no benefits and loads beyond system boundaries:

- PVB losses from production process
- Production wastes sent to recycling: steel, wood, cardboard, plastic, sludge
- Wood and steel from packaging (end caps)
- Paper sheet used as packaging between two products

Furthermore, energy from waste incineration or electricity from landfilling is not accounted in module, since the wastes also come from module A3.

Note:
Environmental impacts reported in module D as a positive value (> 0) are additional environmental impacts to be added to the cradle to grave results. Conversely, negative values (< 0) are environmental benefits reducing the cradle to grave impacts.

7. Information regarding life cycle assessment calculation

Table 8 : Information regarding life cycle assessment calculation

PCR used	ISO 14025:2006 (published in July 2006) NF EN 15804+A1:2014 (published in April 2014) NF EN 15804/CN:2016 (published in June 2016) EN 17074:2019 (published in October 2019)
System boundaries	Cradle to grave, including module D
Allocations	A1: mass based A3: area based
Primary data representativeness	*Geographical representativeness* Primary data collected from the 2 sites from AGC Glass Europe producing fire resistant glass, representing 100% of the production. Distribution in France. *Time representativeness* Primary data collected refer the whole 2018 calendar year. *Technological representativeness* Primary data collected from all the AGC Glass Europe.
Background data representativeness	GaBi version 9.2.1.68 and the associated Service Pack 40 database have been used for the modelling and the calculation of this EPD. All background data have been created or updated during the last 10 years.
Cut-off criteria	All product components and packaging have been considered in the study. In case of insufficient input data, proxy have been used to estimate environmental impacts.
Variability	Results variability for the products covered by this EPD is lower than 40% for the reference indicators from NF EN 15804/CN:2016: - Global Warming Potential - Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - Non-hazardous wastes disposed Results variability has also been assessed for other environmental indicators from EN 15804+A1 and is also lower than 40% for all of them.

8. Life cycle assessment results

Table 9 : Environmental impacts

Environmental impacts	Production stage	Construction stage		Use stage							End of life stage				Total life cycle	D Benefits and loads beyond system boundaries
	Total A1-A3 Production	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Reparation	B4 Replacement	B5 Refurbishment	B6 Use of energy	B7 Use of water	C1 Deconstruction	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming Potential kg CO_2 eq/FU	9.90E+01	2.82E+00	0	0	8.26E-02	0	0	0	0	0	0	2.40E-01	0	8.61E-01	1.03E+02	3.08E+00
Ozone layer depletion potential kg CFC 11 eq/FU	6.65E-08	4.60E-16	0	0	8.29E-09	0	0	0	0	0	0	3.97E-17	0	4.74E-15	7.48E-08	3.87E-09
Acidification kg SO_2 eq/FU	3.21E-01	6.44E-03	0	0	2.00E-04	0	0	0	0	0	0	1.40E-03	0	5.48E-03	3.34E-01	5.85E-03
Eutrophication kg $(PO_4)^{3-}$ eq/FU	4.86E-02	1.51E-03	0	0	4.79E-05	0	0	0	0	0	0	3.50E-04	0	6.16E-04	5.11E-02	1.05E-03
Photochemical oxidant creation potential Ethene eq/FU	2.26E-02	6.57E-04	0	0	8.52E-03	0	0	0	0	0	0	1.13E-04	0	4.15E-04	3.23E-02	4.52E-04
Abiotic resource depletion - Elements kg Sb eq/FU	7.66E-05	2.06E-07	0	0	3.00E-08	0	0	0	0	0	0	1.78E-08	0	8.69E-08	7.69E-05	3.19E-07
Abiotic resource depletion - Fossil MJ/FU	1.30E+03	3.81E+01	0	0	2.86E+00	0	0	0	0	0	0	3.29E+00	0	1.22E+01	1.35E+03	3.18E+01
Abiotic resource depletion – Elements (including NF 15804/CN) kg Sb eq/FU	7.65E-05	2.05E-07	0	0	2.95E-08	0	0	0	0	0	0	1.77E-08	0	8.36E-08	7.68E-05	3.16E-07
Air pollution m^3/FU	5.72E+03	1.22E+02	0	0	4.25E+02	0	0	0	0	0	0	1.49E+01	0	1.04E+02	6.39E+03	1.66E+02
Water pollution m^3/UF	2.94E+01	6.35E-01	0	0	3.93E-02	0	0	0	0	0	0	5.48E-02	0	1.50E-01	3.03E+01	1.38E+00

Table 10 : Resource use

Resource use	Production stage	Construction stage		Use stage							End of life stage				Total life cycle	D Benefits and loads beyond system boundaries
	Total A1-A3 Production	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Reparation	B4 Replacement	B5	B6 Use of energy	B7 Use of water	C1 Deconstruction	C2 Transport	C3 Waste processing	C4 Disposal		
Renewable primary energy as energy carrier *(MJ/FU)*	2.24E+02	2.15E+00	0	0	4.71E-01	0	0	0	0	0	0	1.85E-01	0	1.65E+00	2.28E+02	6.57E-01
Renewable primary energy resources used as raw materials *(MJ/FU)*	1.46E+01	0	0	0	0	0	0	0	0	0	0	0	0	0	1.46E+01	0
Total use of renewable primary energy resources *(MJ/FU)*	2.38E+02	2.15E+00	0	0	4.71E-01	0	0	0	0	0	0	1.85E-01	0	1.65E+00	2.43E+02	6.57E-01
Non-renewable primary energy resources as energy carrier *(MJ/FU)*	1.49E+03	3.83E+01	0	0	2.89E+00	0	0	0	0	0	0	3.30E+00	0	1.26E+01	1.55E+03	3.23E+01
Non-renewable primary energy resources used as raw materials *(MJ/FU)*	2.21E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	2.21E-02	0
Total use of non-renewable primary energy resources *(MJ/FU)*	1.49E+03	3.83E+01	0	0	2.89E+00	0	0	0	0	0	0	3.30E+00	0	1.26E+01	1.55E+03	3.23E+01
Use of secondary material *(kg/FU)*	4.66E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	4.66E+00	0
Use of renewable secondary fuels *(MJ/FU)*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels *(MJ/FU)*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water *(m^3/FU)*	2.98E-01	2.49E-03	0	0	2.47E-03	0	0	0	0	0	0	2.15E-04	0	3.17E-03	3.06E-01	6.52E-03

Table 11 : Waste categories

Waste categories	Production stage	Construction stage		Use stage							End of life stage				Total life cycle	D Benefits and loads beyond system boundaries
	Total A1-A3 Production	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Reparation	B4 Replacement	B5	B6 Use of energy	B7 Use of water	C1 Deconstruction	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposal *(kg/FU)*	3.59E-06	1.78E-06	0	0	2.10E-05	0	0	0	0	0	0	1.54E-07	0	1.92E-07	2.67E-05	7.02E-08
Non-hazardous waste disposal *(kg/FU)*	2.08E+00	5.85E-03	0	0	5.54E-03	0	0	0	0	0	0	5.05E-04	0	6.33E+01	6.54E+01	1.02E-01
Radioactive waste disposal *(kg/FU)*	7.51E-02	4.73E-05	0	0	1.43E-05	0	0	0	0	0	0	4.08E-06	0	1.43E-04	7.53E-02	1.23E-04

Table 12 : Output flows

Output flows	Production stage	Construction stage		Use stage							End of life stage				Total life cycle	D Benefits and loads beyond system boundaries
	Total A1-A3 Production	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Reparation	B4 Replacement	B5	B6 Use of energy	B7 Use of water	C1 Deconstruction	C2 Transport	C3 Waste processing	C4 Disposal		
Components for reuse - kg/FU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for recycling - kg/FU	4.92E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	4.92E+00	0
Materials for energy recovery - kg/FU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (MJ/FU)	1.46E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	1.46E+00	0
Exported thermal energy (MJ/FU)	2.71E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	2.71E+00	0
Exported energy - Process Gas (MJ/FU)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

9. Additional information

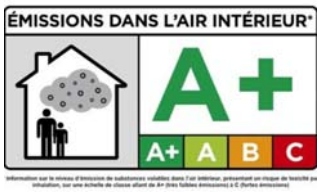
9.1. Release of hazardous substances into indoor air, soil and water during the use stage

9.1.1. Indoor air

- **VOC and formaldehyde emissions**

No substances of the "Candidate List of Substances of Very High Concern for Authorisation (or SVHC)", exceeding the concentration in article threshold (0.1%), in the declared unit.

Fire resistant glass products Pyrobelite and Pyrobel are all certified A+ according to the French certification system.



- **Reaction to fungal and bacterial growth**

Not tested. Glass is a mineral inert material. It is not by itself a medium for micro-organisms growth.

- **Natural radioactive emissions from construction products**

Not tested.

- **Emission of particulates and fibres emissions**

Not tested.

9.1.2. Water and soil

Not tested. The product is not in contact with water intended for human consumption.

9.2. Product contribution to indoor wellbeing

9.2.1. Product characteristics regarding hygrothermal comfort

The relevant technical characteristics for a Pyrobel 25 are given in the table below.

Table 13 : Hygrothermal properties

Properties	Symbol	Value
Thermal transmission (according to EN 673)	U_g (W/m².K)	5.1
Solar factor (EN 410)	g (%)	66

Source: CE marking

9.2.2. Product characteristics regarding acoustics

Pyrobel 25 has good acoustic insulation properties thanks to its laminated structure. The relevant parameter to assess it is the direct airborne sound insulation R_w (C; C_{tr}) = 40 (-1 ; -3) dB.

Source: CE marking

9.2.3. Product characteristics regarding visual comfort

Being part of the building envelope or used as internal partition, glass contributes to visual comfort by providing natural light and reducing artificial lighting needs. The light transmission value of a Pyrobel 25 is 82%.

Source: CE marking

9.2.4. Product characteristics as regarding odours

Not tested. Glass is a mineral inert material, not able to release any odour during its use.

More information available on www.yourglass.com

And in the « Sustainability » section of our environmental website www.agc-glass.eu/en/sustainability