ENVIRONMENTAL PRODUCT DECLARATION
in accordance with ISO 14025 and EN 15804

Product	SlimPatio 68 Sliding Door

Declaration holder	Euro America Windows
Publisher and programme holder	European Aluminium
Declaration number	EPD EUROPEAN ALUMINIUM 2019 – Euro America Windows
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Weblink	www.euroamericawindows.com

1. General information

Owner of the declaration	Euro America Windows Oude Liersebaan 266 B- 2570 Duffel, Belgium
Programme holder	European Aluminium AISBL (previously European Aluminium Association AISBL) Avenue de Broqueville, 12 B - 1150 Brussels Belgium Dr Gerd Götz, Director General
PCR used for the verification	EAA Product Category Rules (PCR) for Aluminium Building Products – version of 30 January 2013
Verification	EN15804 serves as core PCR completed by EAA PCR Verification of the EPD by an independent third party in accordance with ISO 14025 ☐ Internally ☒ Externally
Verifier	Carl-Otto Nevén NEVÉN Miljökonsult/Environmental Cons. Carl-Otto Neven
Declaration number	EPD EUROPEAN ALUMINIUM 2019 – REYNAERS 12
Declared Unit	1 m^2 of SlimPatio 68 sliding door
Product group covered and applicability	This EPD covers two-vent SlimPatio SP 68 sliding aluminium doors. These EPD results have been calculated from a modelling tool developed by thinkstep via an i-report in GaBi 6. Among the SlimPatio SP 68 sliding doors, two representative products have been selected and corresponding EPD results have been calculated based on specific bill of materials. These two products refer to double glazing sliding doors and triple glazing sliding doors. The results generated by this EPD-data software can be considered as a good proxy to model the doors designed by Reynaers and fabricated by their European distributors.
Liability	The owner of the declaration is liable for the underlying manufacturing information and evidence; European Aluminium, i.e. the programme holder, is not be liable in this respect.

2. Product

2.1. Product description and application

This Environmental Product Declaration (EPD) is for business to business communication. This EPD refers to the SlimPatio 68 sliding door. SlimPatio 68 is a highly insulated sliding system with ultra slim profiles and a concealed frame that combines comfort with elegance. The integrated innovative technologies guarantee ultimate performance with regard to wind-, water tightness and thermal insulation. This sliding system offers a wide range of opening possibilities, allowing for the design freedom required to create contemporary living spaces and combining ultimate brightness with maximum comfort.

EPD results have been calculated for the 2 representative sliding doors made of two operable vents with various openings, described in Table 1.

Table 1. List of representative products for the Slim Patio SP 68 sliding doors

ID	Size (W x H)	Glazing	Surface area (m^2)
1	3 m x 2.18 m	Double	6.54
2	3 m x 2.18 m	Triple	6.54

EPD results have been calculated for two representative products: one double glazed sliding door (2*6 mm = 12 mm of glass) with various openings and one triple glazed sliding door (3 * 4 mm = 12 mm of glass) with various openings.

2.2. Technical data

The most relevant technical data are reported in Table 2.

Table 2. Most relevant technical data

Category	Description & value	Standards
Thermal Insulation	Uf-value down to 2.4/m²K depending on the frame/vent combination.	EN ISO 10077-1; EN ISO 10077-2
Acoustic performance	Sound reduction Index (Rw) up to 40 depending on glazing.	EN ISO 140-3; EN ISO 717-1
Air tightness	Class 4	EN 12207
Water tightness	Class 8A	EN 12208
Wind load resistance	Class C5	EN 12211; EN 12210

For the most up-to-date values of the technical data, please refer to the product specifications available on the Reynaers website (see the specifications of Slim Patio SP 68 sliding door products in the section www.reynaers.com/consumers/our-products).

2.3. Relevant Standards for market Applications

Most relevant standards for applications of aluminium window or door products in buildings are EN 14351-1 (performances) & EN 12519 (terminology).

2.4. Delivery status and packaging

The sliding doors are supplied with appropriate protection and transport equipment, e.g. racks. Occasionally, the aluminium profiles can be protected with a thin adhesive plastic film. This packing is not considered in this EPD study.

2.5. Sliding door fabrication (foreground processes)

The sliding door fabrication consists mainly of the following operations:

1. Aluminium profile preparation mainly via sawing, milling and gluing. Those aluminium profiles are powder coated and thermally broken profiles.
2. Frame production by assembling the various profiles via corner connections and fixing via gluing and/or crimping. Connectors used by Reynaers are composed of aluminium die cast.
3. Positioning and fixing the various gaskets.
4. The fittings integration
5. The fixing of the glazing unit via the glazing bead.

The contribution of the fabrication process to the overall production impact of the window or door is below the cut-off rule of 5%. Hence, no specific LCA modelling has been done on that process step, except a scrap rate of 3% for the aluminium profile which has been considered.

2.6. Main background processes

The main production processes are reported in Figure 1.

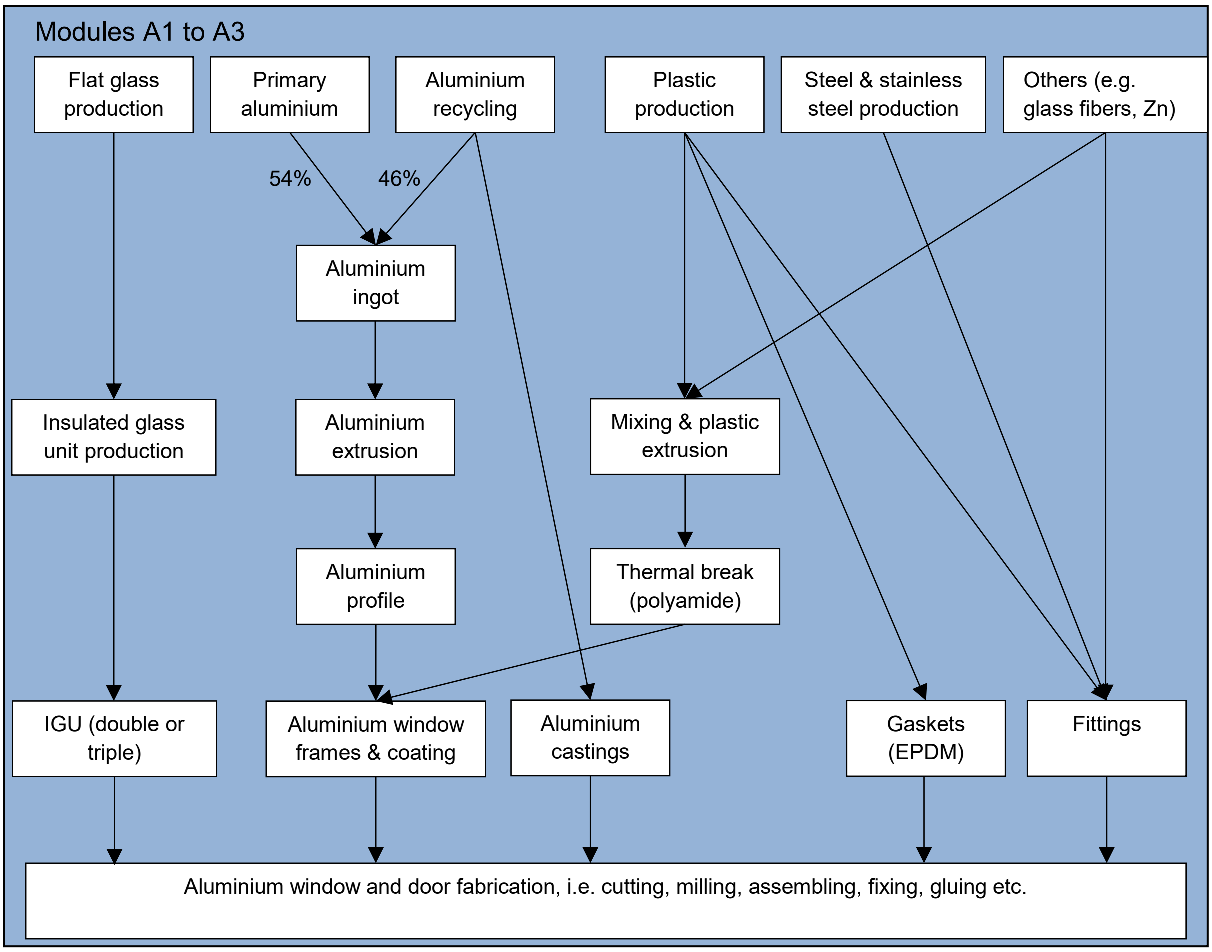

Figure 1. Main production processes and components of aluminium doors and windows

The aluminium profile production has been modelled using European Aluminium LCI datasets (year 2010) for the primary aluminium production, extrusion, recycling and remelting as described in the Environmental profile report developed by European Aluminium. The aluminium ingot (i.e. the billet) production has assumed that aluminium originated for 54% from primary aluminium and 46% from recycling which corresponds to the average recycling input rate of aluminium produced in Europe.

For the other components and materials production, e.g. thermal break, gaskets, glass unit or fittings, datasets from the GaBi database have been used (version GaBi 6, SP27, 2015). The powder coating of aluminium profile has been modelled using GaBi datasets as well.

2.7. Health and safety aspects during production and installation

There are no critical health and safety aspects during the production of aluminium doors. The pre-treatments used for the pre-treatment of aluminium profile do not contain chromium, and this process is followed by a coating process realised using a powder without VOC.

There are no relevant aspects of occupational health and safety during the further processing and installation of Reynaers sliding doors. Under normal installation, no measurable environmental impacts can be associated with the use of Reynaers aluminium sliding doors. The appropriate safety measures need to be taken at the building site, especially if installation takes place on a high-rise building.

2.8. Further processing, use and reference service life

SlimPatio SP 68 sliding doors are customised building products which are ready to be installed on the building site. This EPD does not cover the downstream process to install the product at the building site.

During use, the indoor air quality, i.e. VOC emission, is not affected by aluminium sliding doors / VOC from aluminium windows/.

Since the use phase is not modelled, no specific information can be given about the Reference Service Life. In normal use, aluminium building products are not altered or corroded over time. A regular cleaning (e.g. once a year) of the product suffices to secure a long service life. However, the use of highly alkaline (pH >10) or highly acidic (pH < 4) cleaning solutions should be avoided.

In practice, a service life of 50 years can be assumed in normal use for such application /DURABILITY/ with the exception of the IGU (Insulated Glass Unit) which needs to be replaced usually after 30 years due to a slow degradation of its insulating properties.

In case of fire, aluminium is a non-combustible construction material (European Fire Class A1) in accordance to EN 13501 as well as Directive 96/603/EC, and does not therefore make any contribution to fire.

2.9. End of life stage

At the end-of-life stage, aluminium sliding doors should be specifically dismantled and collected in order to be treated since they include several materials which can be efficiently recycled or can be used for energy recovery.

In particular the aluminium profiles are systematically dismantled and sent for recycling. This high collection rate has been confirmed by a study done by Delft University showing that large aluminium pieces like aluminium profiles are systematically collected thanks to their intrinsic economic value /EAA DELFT/. Hence, a collection rate of 96% was used for the profiles.

Gaskets, thermal breaks and hardware are collected together with the aluminium profiles and are then treated through shredding and sorting with the aluminium profile. The glazing unit, however, is not systematically collected at the building renovation or demolition site. Indeed, the glazing unit is still often broken on site and is then sent to landfilling. In some European countries, the glazing unit is specifically collected and sent to recycling, e.g. in the Netherlands. Hence, two extreme end of life scenarios have been used for flat glass: 99% recycling or 100% landfilling. Table 3 reports the main parameters of the End of life scenario for the various materials and components of the sliding door.

Table 3. Parameters of the end of life scenarios for the main materials and components

Component/material	Collection rate	Typical treatment	Overall recycling rate
Aluminium frame	96%	Shredding, sorting & recycling	92%
Thermal break (e.g. PA)	99%	Shredding, sorting & incineration	/
Gaskets (e.g. EPDM)	99%	Shredding, sorting & incineration	/
Fittings (metal-based)	99%	Shredding, sorting & recycling	90%
Glass – scenario 1	99%	Shredding, sorting & recycling	90%
Glass – Scenario 2	0%	100% landfilling	

In the case of scenario 1, only a small fraction of the product (1%) is then considered as landfilled in the LCA model. From collected aluminium scrap (96%) up to the recycled aluminium ingot (92%), it is assumed as a conservative estimate that 7% of the aluminium metal is lost. Hence, the overall recycling rate of aluminium has been fixed to 92%.

The waste code for aluminium in accordance with the European Waste Catalogue (EWC) is 17 04 02. Figure 2 reports the main processes and parameters used for the end of life stage modelling.

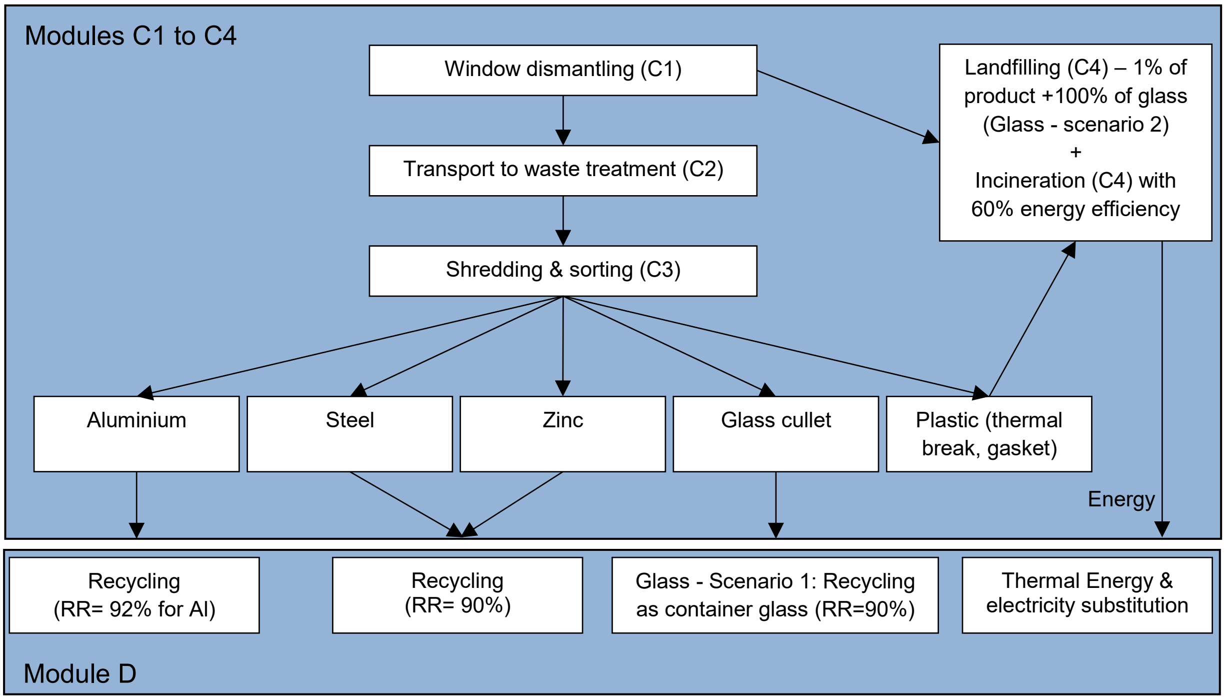

Figure 2. Main processes and parameters for the end of life stage modelling

3. LCA: Calculation rules

3.1. Product size, Bill of Materials and declared unit

EPD calculations have been done for the two sliding doors described under point 2.1. The Bill of Materials of the two representative products are reported in Table 4. The declared unit corresponds to 1 m^2 of sliding door.

The EPD results are reported for the two representative products in the 2 annexes of this EPD.

Table 4. Bill of Materials (kg) of the declared unit for the 2 representative products

Reference	1	2
Type	Double-glazed	Triple-glazed
Glass	24.750	24.75
Aluminium frame	7.230	7.45
Thermal break (PA)	0.605	0.72
Gasket	0.599	0.67
Fitting and others	0.770	0.70
Total	**33.954**	**34.29**

3.2. System boundaries

Type of EPD: Cradle to gate – with options

The production stage (modules A1-A3) includes processes that provide materials and energy input for the system, manufacturing and transport processes up to the factory gate, as well as waste processing.

For the end of life, a collection rate of 99% is assumed and directed to recycling (module D). The 1% lost product is modelled through landfilling (module C4). Considering the few losses along the recycling chain, it is assumed that 92% of the Al material is effectively recycled as new ingot. Hence, an end of life recycling rate of 92% is used within module D to reflect the benefits of recycling through the substitution principle.

According to the PCR document, modules C1, C2 and C3 shall be addressed in the EPD. Since aluminium products covered in these EPDs are intermediate building products for which it is difficult to define deconstruction and transport scenarios, it has been decided not to cover these three modules. For building products made of aluminium, the contribution of these modules is below the 5% cut-off rule and their omission can be considered as reasonable.

3.3. Estimates and assumptions

It has been assumed that the aluminium profiles were composed of a mix of 54% primary aluminium and 46% recycled aluminium. Such mix represents the typical sourcing of aluminium in Europe, all markets included. Alloying elements were not considered and a pure aluminium profile has been assumed as a proxy. Alloy used by Reynaers is composed of at least 98% of Aluminium. Hence, such assumption appears adequate.

3.4. Cut-off criteria

No specific data were collected and used to model the fabrication stage, which has a limited impact on the full life cycle profile of windows, doors or curtain walls. The impact of fabrication operations is below the cut-off rules of 5%. Nevertheless, a scrap rate of 3% at the fabrication stage has been used into the LCA model.

All other known operating data was taken into consideration in the analysis, except for modules C1, C2 and C3 which were not calculated. Based on the long experience of data collection within the European Aluminium Industry, it can be estimated that the ignored processes or flows contribute to much less than 5% to the impact categories under review.

3.5. Background data

GaBi 6 2014 – the software system for comprehensive analysis developed by thinkstep (previously PE International) – was used for modelling the life cycle for the production of the aluminium sliding doors. Generic GaBi 6 data sets have been used for energy, transport and consumables. For the aluminium primary production, recycling and sheet production, the datasets described in the environmental profile report of European Aluminium have been used /EAA EPR/.

3.6. Foreground data and EPD-data tool

The modelling efforts were focussed on the identification of representative products and the proper calculation and consideration of the BoM of the representative products within the LCA model.

No specific process data have been collected considering that their impact on the whole product life cycle is limited. In most cases, the sliding door fabrication is not performed by Reynaers but by their distributors disseminated in Europe which sell and install Reynaers systems on the European market. Hence, collecting data on this process step is also very challenging. In any case, energy and consumables used at the fabrication stage are below the cut-off rule of 5% and were not considered. A scrap rate of 3% at fabrication stage was anyway considered in the model.

3.7. Data quality

The data quality can be considered as good. The LCA models have been checked and most relevant flows are considered. Technological, geographical and temporal representativeness is appropriate. The use of collective data can be considered as a reasonable proxy for the Reynaers aluminium systems.

3.8. Allocation

Any aluminium scrap produced along the fabrication chain is sent back to recycling. This recycling loop has been modelled in the GaBi model so that the aluminium sliding door is the only product exiting the gate. Hence, the production process does not deliver any co-products.

At the end-of-life stage, the aluminium sliding door is sent to an EoL treatment which is modelled according to the scenario reported in section 2.9. The environmental burdens and benefits of recycling and energy recovery are calculated in module D accordingly.

3.9. Comparability

As a general rule, a comparison or evaluation of EPD data is only possible when all of the data to be compared has been drawn up in accordance with EN 15804 and the building context or product-specific characteristics are taken into consideration.

4. LCA scenarios and additional technical information

Modules A4, A5 and B1-B7 are not taken into consideration in this Declaration. The modules C1-C3 are not calculated. In module A1, a recycled metal content of 46% is assumed. Hence, end of life credits are calculated in Module D based on a net aluminium recycling of 92% at end of life minus 46% at production stage, i.e. a quantity representing 46% of the aluminium content of the door. It is assumed that the inherent properties are conserved through recycling, i.e. quality factor is kept to one.

Module C1 to C3 shall be calculated in “Cradle to Grave” EPD or for integration in Building assessment.

Table 5. Modules addressed in the EPD study (X: module declared, Y: module required by PCR but not calculated, MND: module not declared)

Production			Installation		Use stage							End-of-Life				Next product system
Raw material supply (extraction, processing, recycled material)	Transport to manufacturer	Manufacturing	Transport to building site	Installation into building	Use / application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport to EoL	Waste processing for reuse, recovery or recycling	Disposal	Reuse, recovery or recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	Y	Y	Y	X	X

5. LCA results

The LCA results are reported in the 2 annexes.

List of abbreviations: GWP: Global warming potential; ODP: Ozone layer depletion potential; AP: Acidification potential of land and water; EP: Eutrophication potential; POCP: Photochemical oxidation potential; ADPE: Abiotic depletion potential (elements); ADPF: Abiotic depletion potential (fossil fuels); PERE: Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM: Use of renewable primary energy resources used as raw materials; PERT: Total use of renewable primary energy resources; PENRE: Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM: Use of non-renewable primary energy resources used as raw materials; PENRT: Total use of non-renewable primary energy resources; SM: Use of secondary materials; RSF: Use of renewable secondary fuels; NRSF: Use of non- renewable secondary fuels; FW: Use of net fresh water; HWD: Hazardous waste disposed; NHWD: Non-hazardous waste disposed; RWD: Radioactive waste disposed; CRU: Components for re-use; MFR: Materials for recycling; MER: Materials for energy recovery; EEE: Exported electrical energy; EET: Exported thermal energy.

6. LCA interpretation

- Aluminium sliding door production – Modules A1 to A3.

The majority of the environmental impacts come from the aluminium profile and to a lesser extent from the glazing unit. Hence, most indicators are influenced by the mass of aluminium in the declared unit: The higher the aluminium mass, the higher the indicator. Within the aluminium production processes, the primary aluminium production is dominant, especially the alumina production and the electrolysis. The recycled ingot production, which presents a much lower impact than the primary ingot production, is used in Module A1-A3 for the fraction of aluminium coming from recycling (46%). The extrusion process which transforms ingot, i.e. billets, into profile is much less significant. The LCA modelling and the impact of the primary aluminium production is detailed in the environmental profile report /EAA EPR/.

The impact of the other components, e.g. thermal break, gaskets and fittings, is less significant due to their low contribution to the BoM.

- End of life stage: modules C4 and module D

Parameters reported in Table 3 were used to model the end of life stage.

Module C4: In the case of the glass recycling scenario, the contribution of module C4 (disposal) is very limited compared to modules A1-A3 and module D. However, in case of the glass landfilling scenario, the mass of non-hazardous waste disposed becomes significant, i.e. corresponding at least to the mass of the glazing unit.

Module D: The environmental benefits come not only from the recycling of aluminium and metal fittings but also from glass recycling in case of scenario 1. About 30% to 50% of GWP savings are obtained in Module D compared to the value calculated for module A1-A3. The energy indicators follow the same trends. Additional benefits are also resulting from the energy recovery from EPDM and thermal break.

These calculations show the relevance to consider Module D in the full assessment of sliding doors in the building context.

7. References

CEN/TR 15941	Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data; CEN/TR 15941:2010
DIRECTIVE 96/603/EC	COMMISSION DECISION of 4 October 1996 establishing the list of products belonging to Classes A ' No contribution to fire '
DURABILITY	Aluminium and Durability - Towards Sustainable Cities, edited by Michael Stacey, Published by Cwningen Press, November 2014 ISBN 978-0-9930162-0-2 (available at http://www.world-aluminium.org/publications/)
EAA DELFT	COLLECTION OF ALUMINIUM FROM BUILDINGS IN EUROPE - A Study by Delft University of Technology – 2004, available at http://european-aluminium.eu/media/1628/collection-of-aluminium-from-buildings-in-europe.pdf
EAA EPR	Environmental Profile Report for the European Aluminium Industry - April 2013- Data for the year 2010, available at http://european-aluminium.eu/media/1329/environmental-profile-report-for-the-european-aluminium-industry.pdf
EAA PCR	Product Category Rules (PCR) for Aluminium Building Products – version of 30 Jan 2013, available at http://european-aluminium.eu/resource-hub/epd-programme-according-to-en15804/
EN 1026	Windows and doors. Air permeability. Test method
EN 1027	Windows and doors. Watertightness. Test method
EN 12207	Windows and doors. Air permeability. Classification
EN 12208	Windows and doors. Watertightness. Classification
EN 12210	Windows and doors. Resistance to wind load. Classification
EN 12211	Windows and doors. Resistance to wind load. Test method
EN 12519	Windows and pedestrian doors — Terminology
EN 12519	Windows and pedestrian doors — Terminology
EN 14351-1	Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics
EN 15804	Sustainability of construction works –Environmental Product Declarations – Core rules for the product category of construction products
EN 1627	Pedestrian doorsets, windows, curtain walling, grilles and shutters. Burglar resistance. Requirements and classification
EN 1630	Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance to manual burglary attempts
EN 573-3	Aluminium and aluminium alloys – Chemical composition and form of wrought products – Part 3: Chemical composition and form of products
EN ISO 10077-1	Thermal performance of windows, doors and shutters -- Calculation of thermal transmittance -- Part 1: General
EN ISO 10077-2	Thermal performance of windows, doors and shutters -- Calculation of thermal transmittance -- Part 2: Numerical method for frames
EN ISO 14025	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
EN ISO 140-3	Acoustics -- Measurement of sound insulation in buildings and of building elements -- Part 3: Laboratory measurements of airborne sound insulation of building elements
EN ISO 14040	Environmental management - Life cycle assessment - Principles and framework
EN ISO 14044	Environmental management - Life cycle assessment - Requirements and guidelines
EN ISO 717-1	Acoustics -- Rating of sound insulation in buildings and of building elements -- Part 1: Airborne sound insulation
GABI 6	GaBi 6.3 dataset documentation for the software-system and databases, LBP, University of Stuttgart and PE INTERNATIONAL AG, Leinfelden-Echterdingen, 2013 (http://documentation.gabi-software.com/)
NEN 6069	Beproeving en klassering van de brandwerendheid van bouwdelen en bouwproducten (fire resistance testing and classification of building elements and products)
RECYCLING IN EN15804	TACKLING RECYCLING ASPECTS IN EN15804 – paper presented at the « LCA & Construction » conference in Nantes 10-12 July 2012
VOC from Al windows	Evaluation of Volatile Organic Compounds and aldehydes emitted by a “thermolacquered aluminium window posed (White QUALICOAT)" according to ISO 16000, Bureau Veritas Laboratoires, Report N°1200410-1 (E12-002890)

Annex 1: Slim Patio SP 68 sliding door – double glazed – two vents (various openings)

Reference	1
Width of the door [m]	3
Height of the door [m]	2,18
Fraction of transparent area (%)	82,5%
Glazing Unit	Double glazing (2 X 6 mm of glass)

Bill of Materials of the declared unit in kg	
Glass	24.750
Aluminium frame	7.230
Thermal break (PA)	0.605
Gasket	0.599
Fitting and others	0.770
Total	33.954

Per m2 of sliding door							
ENVIRONMENTAL IMPACTS				ass landfilling - doub		lass recycling - doubl	
Parameter		Unit	A1-3	C4	D	C4	D
GWP	Global warming potential	[kg CO2-eq.]	1.01E+02	4.50E+00	-2.85E+01	4.22E+00	-4.34E+01
ODP	Ozone layer depletion potential	[kg CFC11-eq.]	1.96E-06	2.57E-11	-1.44E-06	2.11E-11	-1.44E-06
AP	Acidification potential of land and water	[kg SO2-eq.]	2.95E-01	5.13E-03	-1.13E-01	3.42E-03	-1.95E-01
EP	Eutrophication potential	[kg PO43--eq.]	5.02E-02	6.64E-04	-6.54E-03	4.17E-04	-1.77E-02
POCP	Photochemical oxidation potential	[kg ethene-eq.]	5.75E-02	3.04E-04	-7.05E-03	1.39E-04	-4.74E-03
ADPE	Abiotic depletion potential (elements)	[kg Sb-eq.]	5.87E-04	7.70E-07	-7.67E-05	6.72E-07	-1.03E-03
ADPF	Abiotic depletion potential (fossil fuels)	[MJ]	1.22E+03	7.03E+00	-3.04E+02	3.42E+00	-4.55E+02
RESOURCE USE				Glass landfilling		Glass recycling	
Parameter		Unit	A1-3	C4	D	C4	D
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	2.00E+02	7.69E-01	-1.23E+02	4.08E-01	-1.26E+02
PERM	Use of renewable primary energy resources used as raw materials	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	Total use of renewable primary energy resources	[MJ]	2.00E+02	7.69E-01	-1.23E+02	4.08E-01	-1.26E+02
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	1.39E+03	7.58E+00	-4.01E+02	3.83E+00	-5.56E+02
PENRM	Use of non-renewable primary energy resources used as raw materials	[MJ]	2.22E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	Total use of non-renewable primary energy resources	[MJ]	1.42E+03	7.58E+00	-4.01E+02	3.83E+00	-5.56E+02
SM	Use of secondary materials	[kg]	3.26E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	Use of non- renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	[m3]	5.34E-01	1.02E-02	-2.50E-01	9.57E-03	-2.87E-01
END OF LIFE STAGE (ouput materials from Module C1)				Glass landfilling		Glass recycling	
Material collected separately			kg	**8.43**		**33.18**	
for recycling (e.g. metals & glass)			kg	7.23		31.98	
for energy recovery (e.g. gaskets & thermal break)			kg	1.20		1.20	
Material for landfilling			kg	**25.52**		**0.77**	
WASTE			Glass landfilling			Glass recycling	
Parameter		Unit	A1-3	C4	D	C4	D
HWD	Hazardous waste disposed	[kg]	3.24E-03	2.70E-06	-1.20E-04	1.51E-06	-2.86E-03
NHWD	Non-hazardous waste disposed	[kg]	1.20E+01	2.15E+01	-6.32E+00	1.01E+00	-6.88E+00
RWD	Radioactive waste disposed	[kg]	6.73E-02	2.19E-04	-3.98E-02	1.63E-04	-4.17E-02
OUTPUT FLOWS		Unit	Glass landfilling			Glass recycling	
CRU	Components for re-use	[kg]	0.00E+00			0.00E+00	
MFR	Materials for recycling	[kg]	6.75E+00			2.71E+01	
MER	Materials for energy recovery	[kg]	1.16E+00			1.16E+00	
EEE	Exported electrical energy	[MJ]	5.70E+00			5.70E+00	
EET	Exported thermal energy	[MJ]	1.32E+01			1.32E+01	

Annex 2: Slim Patio SP 68 sliding door – triple glazed – two vents (various openings)

Reference	2
Width of the door [m]	3
Height of the door [m]	2,18
Fraction of transparent area (%)	82.5%
Glazing Unit	Triple glazing (4+4+4 mm of glass)

Bill of Materials of the declared unit in kg	
Glass	24.75
Aluminium frame	7.45
Thermal break (PA)	0.72
Gasket	0.67
Fitting and others	0.70
Total	34.29

Per m2 of sliding door							
ENVIRONMENTAL IMPACTS				lass landfilling - tripl		lass recycling - triple	
Parameter		Unit	A1-3	C4	D	C4	D
GWP	Global warming potential	[kg CO2-e	1.03E+02	4.70E+00	-2.94E+01	4.42E+00	-4.44E+01
ODP	Ozone layer depletion potential	[kg CFC11-	2.02E-06	2.56E-11	-1.48E-06	2.10E-11	-1.48E-06
AP	Acidification potential of land and water	[kg SO2-e	3.01E-01	5.15E-03	-1.17E-01	3.44E-03	-1.99E-01
EP	Eutrophication potential	[kg PO43--	5.07E-02	7.21E-04	-6.74E-03	4.74E-04	-1.79E-02
POCP	Photochemical oxidation potential	[kg ethen	5.86E-02	3.16E-04	-7.28E-03	1.50E-04	-4.97E-03
ADPE	Abiotic depletion potential (elements)	[kg Sb-eq.	5.88E-04	7.00E-07	-7.67E-05	6.02E-07	-1.03E-03
ADPF	Abiotic depletion potential (fossil fuels)	[MJ]	1.25E+03	6.86E+00	-3.14E+02	3.24E+00	-4.64E+02
RESOURCE USE				Glass landfilling		Glass recycling	
Parameter		Unit	A1-3	C4	D	C4	D
PERE	Use of renewable primary energy excluding	[MJ]	2.06E+02	7.39E-01	-1.27E+02	3.77E-01	-1.30E+02
PERM	Use of renewable primary energy resources	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	Total use of renewable primary energy reso	[MJ]	2.06E+02	7.39E-01	-1.27E+02	3.77E-01	-1.30E+02
PENRE	Use of non-renewable primary energy exclu	[MJ]	1.44E+03	7.38E+00	-4.14E+02	3.62E+00	-5.69E+02
PENRM	Use of non-renewable primary energy resou	[MJ]	2.53E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	Total use of non-renewable primary energy	[MJ]	1.46E+03	7.38E+00	-4.14E+02	3.62E+00	-5.69E+02
SM	Use of secondary materials	[kg]	3.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	Use of non- renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	[m3]	5.59E-01	1.08E-02	-2.58E-01	1.01E-02	-2.95E-01
END OF LIFE STAGE (ouput materials from Module C1)				Glass landfilling		Glass recycling	
Material collected separately			kg	**8.84**		**33.59**	
	for recycling (e.g. metals & glass)		kg	7.45		32.20	
	for energy recovery (e.g. gaskets & thermal break)		kg	1.39		1.39	
Material for landfilling			kg	**25.45**		**0.70**	
OUTPUT FLOWS AND WASTE				Glass landfilling		Glass recycling	
Parameter		Unit	A1-3	C4	D	C4	D
HWD	Hazardous waste disposed	[kg]	3.70E-03	2.58E-06	-1.19E-04	1.39E-06	-2.86E-03
NHWD	Non-hazardous waste disposed	[kg]	1.23E+01	2.14E+01	-6.49E+00	9.16E-01	-7.05E+00
RWD	Radioactive waste disposed	[kg]	6.95E-02	2.11E-04	-4.12E-02	1.53E-04	-4.30E-02
OUTPUT FLOWS		Unit	Glass landfilling			Glass recycling	
CRU	Components for re-use	[kg]	0.00E+00			0.00E+00	
MFR	Materials for recycling	[kg]	6.95E+00			2.74E+01	
MER	Materials for energy recovery	[kg]	1.33E+00			1.33E+00	
EEE	Exported electrical energy	[MJ]	6.11E+00			6.11E+00	
EET	Exported thermal energy	[MJ]	1.42E+01			1.42E+01	