

Environmental Product Declaration



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

Curtain wall systems

from

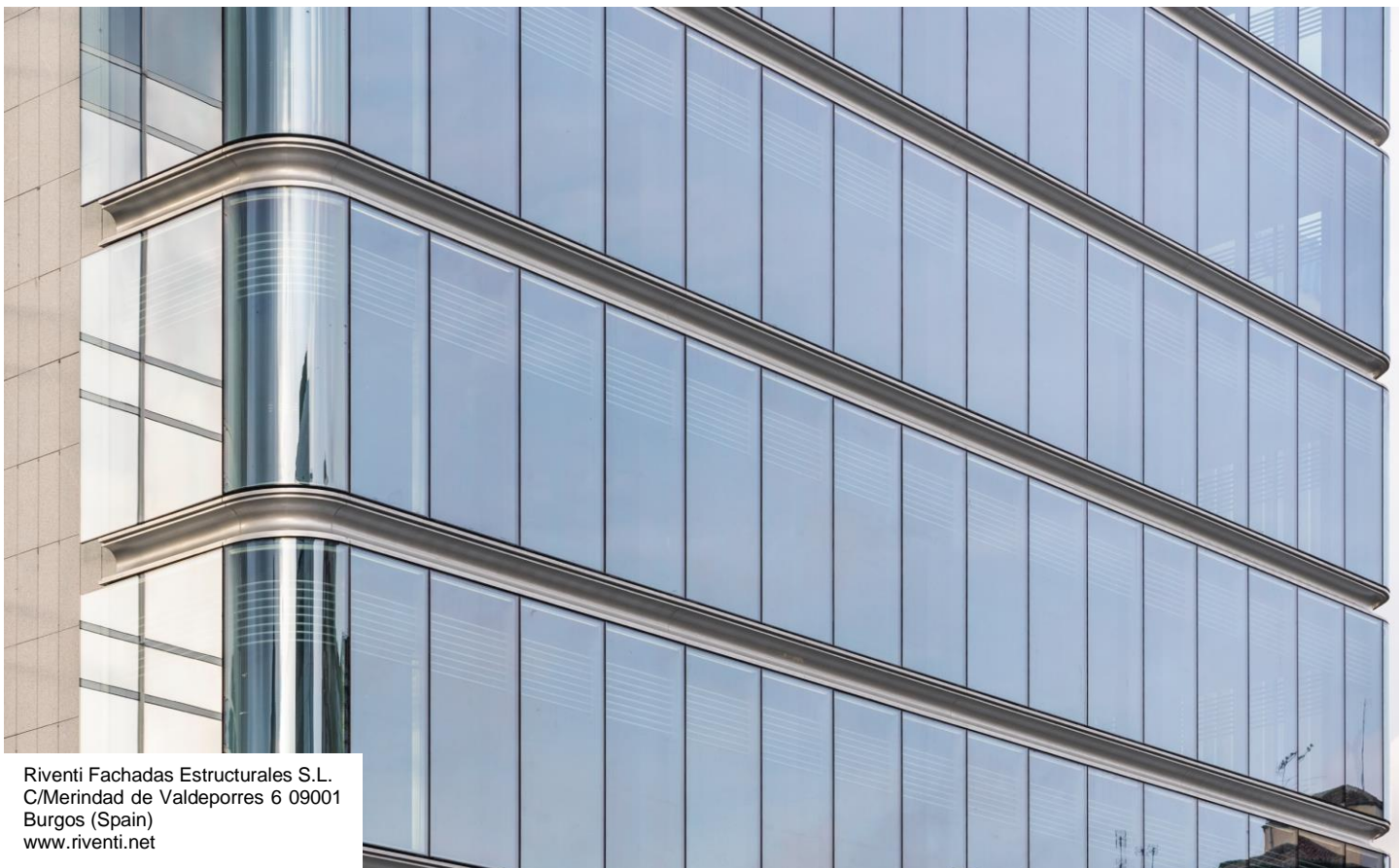
Riventi Fachadas Estructurales S.L.



The EPD covers multiple products: R70ST, R50T and R50SG

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-01078
Publication date:	2017-10-25
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Valid until:	2028-01-10

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



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products version 1.2.4
PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña. The review panel may be contacted via info@environdec.com .
Life Cycle Assessment (LCA)
LCA accountability: Maria Feced, Re-Viu info@re-viu.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by accredited certification body Third-party verification: Eva Larzabal, Tecnalia R&I Certificacion, SL info@tecnaliacertificacion.com Tecnalia R&I Certificacion, SL is an approved certification body accountable for the third-party verification The certification body is accredited by: ENAC nº125/C-PR283 accreditation
Procedure for follow-up of data during EPD validity involves third party verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have 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 and ISO 14025.

Company information

Owner of the EPD: Riventi Fachadas Estructurales S.L.

Contact: nuriajorge@riventi.net

Description of the organisation:

Riventi Fachadas Estructurales is a company with a large trajectory in the field of design, manufacture and assembly of curtain wall and singular façades. Its beginnings go back to the 1960's, when founder Adelaido Rilova started his successful professional career in one of the forerunner Spanish firms in Façade Engineering. Since then, there have been many advances and progress experienced by this corporation run by Guillermo Rilova, which has opted for a model based on respect for the architect's work, understanding of project intentions and joint collaboration between professionals from different disciplines.

The façade solutions offered by Riventi meet the most demanding requirements in the field of energetic and environmental efficiency, as well as in the assembly processes. Our systems have been industrialized with the adequate tools and methods to optimize the impact of the production process.

A meticulous working methodology and great technical skills have provided the firm with a solid project management reputation, being capable of adequately facing large projects. A great capacity to adapt to the technical demand of the latest designs has given us the leading role in our sector. We continuously add innovative solutions that integrate a broad range of materials.

Riventi channels all efforts towards progress in the field of construction, taking quality as the main value of multiple innovative solutions, and environmental sustainability as an objective in all its processes.

Product-related or management system-related certifications:

Riventi is a symbol of quality. All our systems are already patented and have the CE certifications as they meet the demands of the competent European organisms. Riventi has been certified by Bureau Veritas, according to standard ISO 9001:2015. This certification acknowledges internationally the whole team's effort and dedication to offer efficient answers to our clients' needs and underlines the firm's commitment to continuous improvement.

Quality control is one of the most important stages for a project's success. Riventi is certified by Dow Corning, the largest structural silicone producer worldwide, as a member of the Quality Bond for the application of its products on structural glazing solutions. Having this certificate means a wider guarantee for our clients to apply structural silicone on their curtain-wall façade projects. Down Corning audits periodically our sealing process to ensure the required quality level.

Name and location of production site:

Riventi Fachadas Estructurales S.L.

C/Merindad de Valdeporres 6 09001 Burgos (Spain)

Product information

This EPD covers the entire range of profiles for the configurations of curtain wall system manufactured by Riventi Fachadas Estructurales R50T, R50SG and R70ST.

Since the variation between the products is more than 10%, the highest result per indicator is declared in the EPD.

Product description and identification:

Curtain wall systems for façade consisting on a wide range of mullions and transoms which adapt themselves to different aesthetic and constructive requirements, on any architectural proposal through an integral solution. The Riventi systems for light façade are of aluminium.

The product is compliant with the product standard EN 13830 of Curtain walling.

In this EPD, stick systems constructive configuration are included.

Stick systems are the most traditional, are composed by the juxtaposition of profiles, mullions and transoms, generally forming a grid. Its design allows to incorporate opaque, semitransparent or transparent panels. The transportation and assembly on site is done individually for each component. There are variations that differ from one another in the way of fixing the panels to the grid:

- Fixing with a placket is the case of the **R50T** system, by means of pressure joints, retain the panel against the supporting structure.
- **R50SG**. What characterizes this model is the direct fixing of the glazing to the profiles by means of a aluminium cramp integrated and glued with structural silicone in the area of the double glazing spacer, without the necessity of a perimeter frame.
- **R70ST**. This model is characterized by the fixation of the glass-sheet or opaque panels to the joinery by means of a structural-silicone-glued frame, always without shift. R70ST is the most adequate system to integrate elements in the façade, such as walkways or double glass skins.

R50T System



R50SG System



R70ST System



TECHNICAL FEATURES	R50T	R50SG	R70ST
Maximum glazing thickness	50mm	50mm	50mm
Transmittance. Ucw from (W/m ² .K)	1.2 (W/m ² .K)	1.2 (W/m ² .K)	1.2 (W/m ² .K)
Waterproof (UNE-EN 12155:2000)	RE ₂₁₀₀	RE ₂₁₀₀	R ₁₂₀₀
Airproof (UNE-EN 12153:2000)	AE ₇₅₀	AE ₇₅₀	E ₉₀₀
Wind load resistance (UNE-EN 12179:2001)	APTO (2204Pa, -3035 Pa)	APTO (2204Pa, -3035 Pa)	APTO (2204Pa, -3035 Pa)

The following variations for each configuration are included in the EPD, concerning the profile size (mullions and transoms) and if the four quadrants are of glass (called glass) or three quadrants of glass and one of composite (called composite). The numbering refers to the profiles measures (V=vertical and H=horizontal), in mm.:

R50T	R50SG	R70ST
R50T_GLASS R50-V130 / R50-H70	R50SG_GLASS R50-V130 / R50-H100	R70ST_GLASS RV-103 / R-103H
R50T_GLASS R50-V70 / R50-H40	R50SG_GLASS R50-V70 / R50-H40	R70ST_GLASS RV-100 / R-100H
R50T_GLASS R50-V220 / R50-H190	R50SG_GLASS R50-V220 / R50-H190	R70ST_GLASS RV-103 / R-103H lacquered
R50T_COMPOSITE R50-V130 / R50-H70	R50SG_COMPOSITE R50-V130 / R50-H100	R70ST_COMPOSITE RV-103 / R-103H
R50T_COMPOSITE R50-V70 / R50-H40	R50SG_COMPOSITE R50-V70 / R50-H40	R70ST_COMPOSITE RV-100 / R-100H
R50T_COMPOSITE R50-V220 / R50-H190	R50SG_COMPOSITE R50-V220 / R50-H190	

UN CPC code: UN CPC 54710 Glazing Services

Geographical scope: Spain and Europe for upstream and core processes and Europe for downstream processes.

LCA information

Functional unit: 1 m² of curtain wall, consisting of a mullion and a transom, both of one linear meter, joined at their central point and dividing the surface into four quadrants.

Reference service life: 30 years according to EN 17074:2020 Product Category Rules for Flat Glass Products and EN 17213:2020 Product Category Rules for Windows and Pedestrian Doorsets.

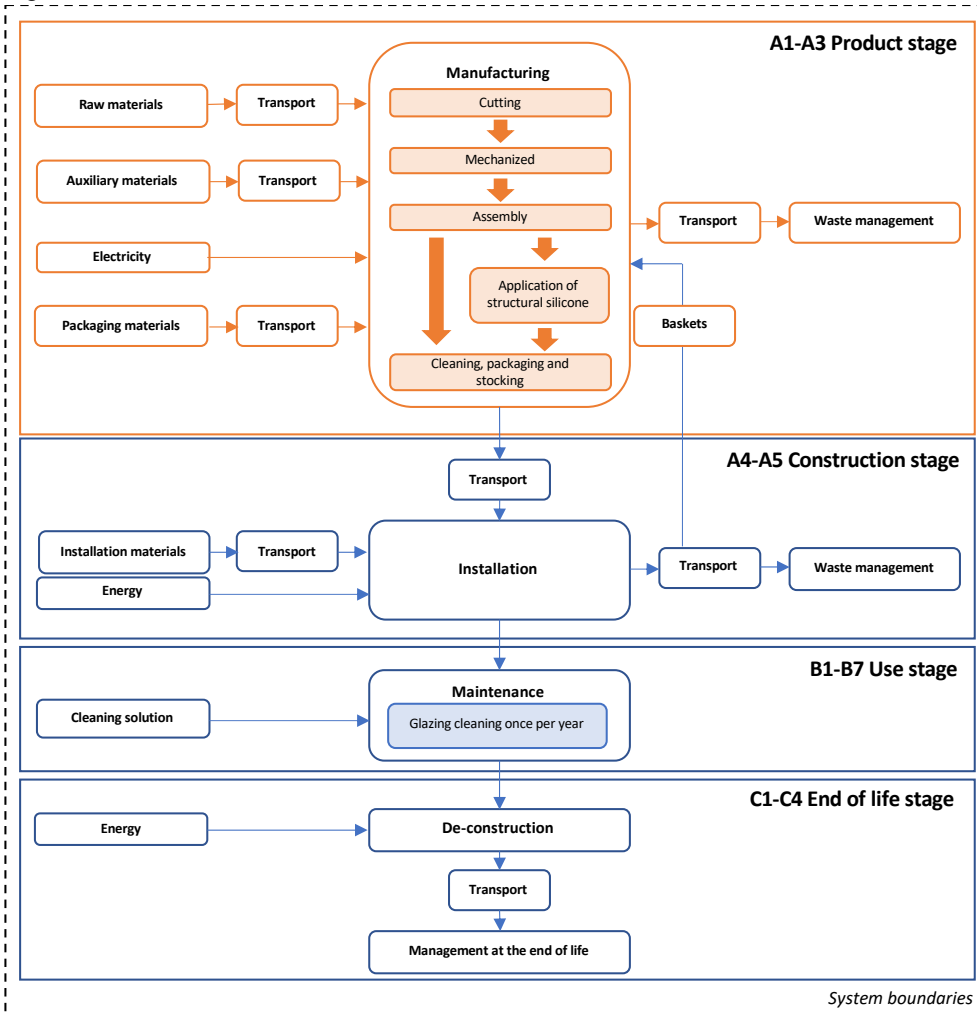
RSL information	Unit
Reference service life	30 years
Declared product properties	The declared products have the properties determined by the product standard EN 13830
Design application parameters	The product is installed by Riventi
Assumed quality of work, when installed in accordance with the manufacturer's instructions	The quality of the work complies with the product standard EN 13830
Outdoor environment	The products comply with the product standard EN 13830 requirements
Indoor environment	-
In-use conditions	The product shall be used under conditions that comply with Riventi's instructions and product standard EN 13830
Maintenance	Regular cleaning. Components RSL is larger than the design life (30 years). Likewise, glazing can be replaced in case of breakage due to external agents.

Time representativeness: 2021

Database and LCA software used: ecoinvent v3.8 EN15804 add-on v.3 y openLCA 1.11.0

Description of system boundaries: Cradle to grave and module D (A + B + C + D)

System diagram:



Manufacturing process: All the elements involved in the façade system are manufactured according to the manufacturing plans provided by the Riventi technical office. The normal cutting and machining processes are carried out within the company and through numerical control machinery, a cutting center, double-head machines, a 4- and 5-axis machining center, which guarantee manufacturing accuracy as provided in the plans.

The assembly of profiles and added elements such as fittings, weather stripping, etc., on the façade profiles is carried out manually by specialized personnel within the company following the indications of the plans made by the Riventi technical office. Once the elements are assembled, they are palletized and correctly strapped for loading on trucks and delivery to the construction site.

More information: www.riventi.net

Data quality: Specific data are referred to the manufacturing process of products produced by Riventi and are temporal and technologically representative.

Allocation: a physical allocation based on installed surface is done by assigning inputs and outputs of the system to the total square metres of façade produced.

Assumptions:

- The baskets, the main packaging used in Riventi and manufactured in Riventi by means of steel bars, have an estimate of 200 uses.
- For the manufacturing process, the 2021 specific electricity mix from the electricity supplier was considered.

Cut-off criteria: No cut-off criteria have been applied since all mass and energy inputs and outputs have been included.

LCA scenarios and additional technical information

A4-A5 Construction process stage: the packed product is transported by truck to the construction site. The distance of the curtain wall works in 2021 is assumed.

In the installation, a crane is used, the materials necessary for the installation on the façade are consumed and packaging waste is generated. The baskets are returned to Riventi for reuse, assigning to the installation only that proportional part calculated based on the uses.

A4 Transport	
Parameters	Units per Functional Unit
Fuel type and consumption of vehicle, type of vehicle used for transport	Diesel: 0,037 kg/tkm Truck 16-32 tonnes EURO VI
Distance	120 km
Capacity utilization (including empty returns)	85%
Bulk density of transported product	250 kg/m ³

A5 Installation	
Parameters	Units per Functional Unit
Ancillary materials for installation	Silicone: 0,0065-0,41 kg/m ² Rock-wool: 0,47 kg/m ² EPDM rubber: 0,02-0,05 kg/m ² Galvanized steel: 0,10 kg/m ²
Water use	-
Other resource use	-
Quantitative description of energy type and consumption during the installation process	Diesel: 48,3 MJ/m ² Electricity: 1,69 kWh/m ²
Waste produced on the building site before waste processing, generated by the product's installation	Cardboard: 0,1 kg/m ² Plastics: 0,16 kg/m ² EPS: 0,3 kg/m ² Baskets. Ferrous waste: 0,005 kg/m ²
Output materials as result of waste processing at the building site	Cardboard: recycling Plastics: energy recovery EPS: disposal Baskets. Ferrous waste: recycling when it can't be reused any more
Direct emissions to ambient air, soil and water	-

B1-B7 Use stage: Only module B2 Maintenance is considered relevant for the product type according to EN 17074:2020 Product Category Rules for Flat Glass Products and EN 17213:2020 Product Category Rules for Windows and Pedestrian Doorsets.

B2 Maintenance	
Parameters	Units per Functional Unit
Maintenance process	Cleaning
Maintenance cycle	Once per year
Ancillary materials for maintenance	Detergent: 0,1 litres/cycle and m ²
Material waste generated during maintenance	-
Water use	0,2 litres/cycle and m ²
Energy consumption during the maintenance	-

C1-C4 End of life stage: End of life scenario according to EN 17074:2020 Product Category Rules for Flat Glass Products and EN 17213:2020 Product Category Rules for Windows and Pedestrian Doorsets. It is assumed that the same amount of energy is used in the de-construction as in the installation.

C1-C4 End of life stage	
Parameters	Units per Functional Unit
Collection process	Glass, Steel and aluminium collected separately. Other materials collected as mixed construction waste, mainly plastics.
Recovery system	Glass: 30% recycling Metals: 95% recycling Plastics and others: 95% energy recovery
Disposal	Glass: 70% disposal Metals: 5% disposal Plastics and others: 5% disposal
Assumptions for scenario development	De-construction: Diesel: 48,3 MJ/m ² Electricity: 1,69 kWh/m ² Waste transported to management by truck: 50 km

Module D: Loads from recycling, reuse and energy recovery of materials that are not accounted for as part of the product's life cycle and the benefits based on the avoided production of raw materials and energy have been evaluated.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	ES EU	ES EU	ES	ES	ES	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – products	-39%-0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – sites	Not applicable			-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Content information

The content information refers to the average of the 17 products included in the EPD.

Product components	Weight, kg	Post-consumer material, weight-%
Aluminium	7.73	15%
Glazing	33.79	0%
Steel	1.72	0%
EPDM	0.54	0%
PVC	0.04	0%
Polyamide	0.23	0%
Silicone	0.32	0%
Butyl tape	0.03	0%
Composite	0.88	0%
EPS	0.08	0%
Rock-wool	0.47	0%
TOTAL	45.82	2.5%

Packaging materials	Weight, kg	Weight-% (versus the product)
Plastic	0.45	1.0%
Steel	1	2.2%
Cardboard	0.1	0.2%
TOTAL	1.55	3.4%

Packaging uses cardboard and EPS reused from internal remnants and packaging of raw materials. The steel corresponds to the baskets, the main packaging element, which are manufactured and reused by Riventi about 200 times.

The product does not contain biogenic carbon. The biogenic carbon content in the packaging represents less than 5% of the weight of the total product.

No substance on the "Candidate List of Substances of Very High Concern for authorisation" derived under REACH is present either above the limits for registration with the European Chemicals Agency or in excess of 0.1 weight-% of the product.

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1,75E+02	1,06E+00	8,57E+00	0	5,68E-01	0	0	0	0	0	4,98E+00	4,35E-01	8,31E+00	2,44E-01	-2,75E+01
GWP-biogenic	kg CO ₂ eq.	5,93E-01	1,89E-03	-7,05E-03	0	2,33E-03	0	0	0	0	0	1,62E-02	7,74E-04	-1,75E-05	2,06E-03	-1,59E-01
GWP-luluc	kg CO ₂ eq.	1,51E+00	4,25E-04	6,63E-03	0	1,25E-04	0	0	0	0	0	4,75E-03	1,74E-04	4,03E-04	6,62E-04	-4,34E-01
GWP-total	kg CO ₂ eq.	1,77E+02	1,06E+00	8,54E+00	0	5,71E-01	0	0	0	0	0	5,00E+00	4,36E-01	8,31E+00	2,46E-01	-2,81E+01
ODP	kg CFC 11 eq.	1,91E-05	2,46E-07	1,69E-06	0	2,79E-08	0	0	0	0	0	9,83E-07	1,01E-07	6,49E-08	7,62E-08	-2,75E-06
AP	mol H ⁺ eq.	1,32E+00	3,01E-03	6,37E-02	0	2,37E-03	0	0	0	0	0	5,07E-02	1,24E-03	3,18E-03	1,93E-03	-2,26E-01
EP-freshwater	kg P eq.	6,61E-02	7,00E-05	9,87E-04	0	6,48E-05	0	0	0	0	0	3,37E-04	2,87E-05	1,41E-04	2,31E-05	-1,13E-02
EP-marine	kg N eq.	2,01E-01	6,13E-04	2,34E-02	0	3,19E-04	0	0	0	0	0	2,12E-02	2,52E-04	1,28E-03	9,08E-04	-3,38E-02
EP-terrestrial	mol N eq.	2,14E+00	6,67E-03	2,56E-01	0	3,41E-03	0	0	0	0	0	2,32E-01	2,74E-03	1,20E-02	7,43E-03	-3,53E-01
POCP	kg NMVOC eq.	5,92E-01	2,49E-03	7,08E-02	0	2,21E-03	0	0	0	0	0	6,29E-02	1,02E-03	2,99E-03	2,10E-03	-9,92E-02
ADP-minerals&metals*	kg Sb eq.	2,02E-03	3,61E-06	2,50E-05	0	3,77E-06	0	0	0	0	0	3,54E-06	1,48E-06	9,60E-06	6,39E-07	-1,35E-04
ADP-fossil*	MJ	1,09E+03	1,23E+00	2,10E+01	0	1,06E+00	0	0	0	0	0	7,90E+00	5,03E-01	1,87E+00	5,08E-01	-1,32E+02
WDP*	m ³	1,31E+02	7,82E-02	3,00E+00	0	5,59E-01	0	0	0	0	0	3,73E-01	3,21E-02	2,41E-01	2,03E-01	-3,57E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	1,76E+02	1,06E+00	8,57E+00	0	5,68E-01	0	0	0	0	0	4,98E+00	4,36E-01	8,31E+00	2,44E-01	-2,79E+01
PM	Disease incidence	1,25E-05	6,72E-08	1,33E-06	0	1,94E-08	0	0	0	0	0	1,23E-06	2,76E-08	2,53E-08	3,55E-08	-2,40E-06
IR*	kBq U235 eq.	2,24E+01	8,29E-02	8,61E-01	0	2,68E-02	0	0	0	0	0	6,57E-01	3,40E-02	5,07E-02	2,59E-02	-4,91E+00
ETP-fw*	CTUe	3,97E+01	5,38E-01	8,94E-01	0	4,58E-02	0	0	0	0	0	3,74E-01	2,21E-01	1,21E-01	9,37E-02	-2,81E+00
HTP-c*	CTUh	2,75E-07	3,42E-10	5,93E-09	0	1,37E-10	0	0	0	0	0	1,33E-09	1,40E-10	1,53E-09	1,11E-10	-6,40E-08
HTP-nc*	CTUh	2,31E-05	2,00E-08	1,47E-07	0	9,83E-09	0	0	0	0	0	5,63E-08	8,19E-09	1,04E-07	4,50E-09	-3,90E-06
SQP*	dimensionless	3,69E+02	1,36E+01	6,98E+00	0	2,94E-01	0	0	0	0	0	2,16E+00	5,60E+00	5,21E-01	8,64E+00	-4,27E+01

Acronyms: GWP-GHG = Global Warming Potential; PM = Particulate Matter emissions; IR = Ionizing radiation, human health; ETP-fw = Eco-toxicity – freshwater; HTP-c = Human toxicity, cancer effect; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality

* Disclaimer for IR: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

* Disclaimer for ETP-fw, HTP-c, HTP-nc and SQP: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Use of resources

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	4,13E+02	1,73E-01	4,79E+00	0	1,62E-01	0	0	0	0	0	2,87E+00	7,10E-02	3,59E-01	6,35E-02	-1,09E+02
PERM	MJ	4,55E+01	5,67E-02	1,73E+00	0	9,90E-02	0	0	0	0	0	3,16E-01	2,33E-02	1,60E-01	3,16E-02	-4,81E+00
PERT	MJ	4,58E+02	2,30E-01	6,52E+00	0	2,61E-01	0	0	0	0	0	3,18E+00	9,43E-02	5,19E-01	9,50E-02	-1,14E+02
PENRE	MJ	1,43E+03	1,57E+00	3,14E+01	0	1,81E+00	0	0	0	0	0	1,47E+01	6,44E-01	2,68E+00	5,99E-01	-2,08E+02
PENRM	MJ	1,31E+03	1,46E+01	8,33E+01	0	1,56E+01	0	0	0	0	0	6,04E+01	6,00E+00	1,63E+00	4,87E+00	-1,95E+02
PENRT	MJ	2,74E+03	1,62E+01	1,15E+02	0	1,74E+01	0	0	0	0	0	7,51E+01	6,64E+00	4,31E+00	5,47E+00	-4,03E+02
SM	kg	1,15E+01	1,64E-02	2,07E-01	0	1,41E-02	0	0	0	0	0	6,82E-02	6,74E-03	3,76E-02	5,90E-03	-3,42E-01
RSF	MJ	2,33E+00	4,91E-03	6,44E-02	0	6,22E-03	0	0	0	0	0	1,50E-02	2,02E-03	1,15E-02	1,28E-03	5,07E-02
NRSF	MJ	3,47E+00	1,99E-02	1,64E-01	0	8,68E-03	0	0	0	0	0	1,01E-01	8,19E-03	9,69E-03	3,36E-02	-3,28E-01
FW	m ³	3,07E+00	1,86E-03	7,02E-02	0	1,43E-02	0	0	0	0	0	8,77E-03	7,64E-04	5,65E-03	4,77E-03	-8,32E-01
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

Waste production and output flows

Waste production

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,03E+02	3,61E-01	4,90E+00	0	3,45E-01	0	0	0	0	0	1,66E+00	1,48E-01	7,95E-01	1,18E-01	-5,37E+01
Non-hazardous waste disposed	kg	1,76E+01	8,35E-01	5,67E-01	0	1,86E-02	0	0	0	0	0	7,74E-02	3,43E-01	5,66E-02	2,77E+01	-1,99E+00
Radioactive waste disposed	kg	2,06E-01	3,23E-04	6,62E-03	0	2,57E-04	0	0	0	0	0	4,70E-03	1,33E-04	5,07E-04	8,95E-05	-4,82E-02

Output flows

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	1,00E+00	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	6,47E+00	1,37E-02	2,67E-01	0	1,13E-02	0	0	0	0	0	4,68E-02	5,62E-03	2,43E+01	3,51E-03	-4,61E-01
Materials for energy recovery	kg	8,67E-02	0	2,17E-01	0	0	0	0	0	0	0	0	0	3,50E+00	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,87E+01
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,81E+01

Additional environmental information

The use of glazing with high thermal performance has repercussions on the total impact of the building throughout its service life, since it contributes significantly to the reduction of energy consumption in buildings.

Riventi curtain wall systems are made of non-degradable materials; therefore, they have long durability with little maintenance. It is expected that the replacement of the systems by new ones is due to performance update requirements or aesthetic requirements, rather than operational problems. If necessary, it is advisable to dismantle and treat the waste according to the materials used.

Differences versus previous versions

- GPI update, from version 2.5 to version 4.0.
- PCR update, from PCR 2012:01 Construction Products and Constructions services Version 2.2 to PCR 2019:14 Construction products Version 1.2.4.
- Ecoinvent database version update, from v3.2 to v3.8 EN15804 add-on v.3.
- LCA software update, from Simapro to openLCA 1.11.0.
- The products included in the EPD are the same with the exception of Modular RDS glass and composite products.
- Since the EPD can only present one results table and since the variation between products is more than 10%, the EPD results correspond to the highest value for each indicator, referred to the product that has more impact.
- Scope update. The EPD covers the whole life cycle and module D instead of modules A1-A3 and A4-A5.
- The recycled content of the aluminium profile and the composite are considered in the calculation as specific data are available.

References

General Programme Instructions of the International EPD® System. Version 4.0.

UNE-EN 17074:2020 Glass in building - Environmental product declaration - Product category rules for flat glass products

UNE-EN 17213:2020 Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets

UNE-EN 15804:2012+A2:2020/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

PCR 2019:14 Construction products Version 1.2.4

VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD01501

TECNALIA R&I CERTIFICACION S.L., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:

TECNALIA R&I CERTIFICACION S.L., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:

RIVENTI FACHADAS ESTRUCTURALES, S.L.
C/ Meriendad de Valdeporres, 6
09001 BURGOS (Burgos) - SPAIN

for the following product(s):
para el siguiente(s) producto(s):

Sistema muro cortina con 3 configuraciones: R50T, R50SG y R70ST
Curtain wall system with three configurations: R50T, R50SG and R70ST

with registration number **S-P-01078** in the International EPD[®] System (www.environdec.com).
con número de registro S-P-01078 en el Sistema International EPD[®] (www.environdec.com).

it's in conformity with:
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **General Programme Instructions for the International EPD[®] System v.4.0**
- **PCR 2019:14 Construction products (EN 15804:A2) v.1.2.4**
- **UN CPC 54710 Glazing services**



Carlos Nazabal Alsua
Manager

Issued date / Fecha de emisión:	25/10/2017
Update date / Fecha de actualización:	11/01/2023
Valid until / Válido hasta:	10/01/2028
Serial N ^o / N ^o Serie:	EPD0150101-E

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