

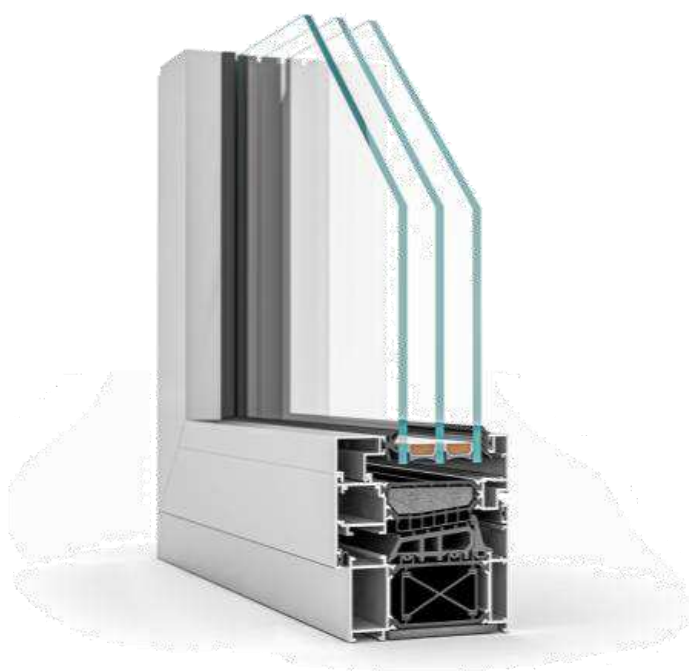
Environmental Product Declaration

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

HITEP THERMAL BREAK PROFILE.

CPC 369 – “Other plastic products”

From the company **Sistemas Técnicos del Accesorio y Componentes S.L. (STAC)**



Programme:	The International EPD® System, www.envirodec.com
Programme Operator:	EPD International AB
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An EPD must provide up-to-date information and must be updated if conditions change. The stated validity is therefore subject to continued registration and publication in: www.envirodec.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

ISO 21930 and CEN standard EN 15804 4 serve as the basis for the Product Category Rules (PCRs)

Product Category Rules (PCRs): PCR 2019:14 Construction products, version 1.2.4

The PCR review has been directed by:

The Technical Committee of the International EPD® System. The full membership list is available at www.environdec.com. Responsibility: Claudia A. Peña, Universidad de Concepción, Chile.

The review panel can be contacted via the following email: info@environdec.com.

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

☒ External ☐ Internal

Coverage

☐ Certification of the EPD Process ☒ Verification of the EPD

Independent third-party verifier:

Tecnalia R&I Certificacion, SL

info@tecnaliacertificacion.com

Accredited by: ENAC nº125/C-PR283.

The follow-up procedure during the validity of the EPD involves the participation of a third-party verifier:

☒ Yes ☐ no

The owner of the EPD has sole ownership and responsibility for the EPD. EPDs within the same product category, but registered in different EPD programmes, or not complying with EN 15804, cannot be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or based on fully aligned PCRs or PCRs versions; cover products with identical functions, technical performance and usage (e.g. identical declared/functional units); have equivalent system boundaries and data descriptions; apply equivalent data quality requirements, data collection methods, and assignment methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content statements; and be valid at the time of comparison. For more information on comparability, see EN 15804 and ISO 14025.

Company Information

EPD Owner: Sistemas Técnicos del Accesorio y Componentes S.L.

Description of the organisation STAC, Sistemas Técnicos del Accesorio y Componentes S. L., Technical Systems of Accessory and Components Ltd, is a company that specialises in the manufacturing of products for the aluminium fenestration sector. Across its 5 separate divisions, STAC is meticulous in all aspects of the design of their products and attempts to respond to the quality and innovation demands of the modern-day market. For this, STAC boasts some of the best facilities for the various manufacturing lines and a highly-skilled team of technical experts, as well as their vast experience which has seen the company become one of the market leaders in the sector. These divisions are:

- STAC HARDWARE DIVISION: Manufacture of hardware and accessories for windows and doors
- STAC SEALING PROFILES DIVISION: Manufacture of extruded and co-extruded polymer profiles
- STAC INSULATING PROFILES DIVISION: Production of polyamide profiles
- STACBOND COMPOSITE PANEL DIVISION: Manufacture of composite panels
- STACBOND COIL COATING DIVISION: Coil coating and processing

STAC is a world reference brand in the manufacture of polyamide profiles. STAC has been developing products for aluminium profile systems and curtain walls, as well as polyamide profiles and seals, since 2007.

STAC has the following standards and certifications:

- ATG Document of Technical Suitability
- ISO 9001 and ISO 14001



Image1. ISO 9001, ISO 14001 and ATG certifications
STAC INSULATING PROFILES DIVISION

Production site: Polígono industrial Picusa s/n. 15900 A Matanza, Padron, A Coruna (Spain).

Contact: For more information on these or other products please contact: Miguel Garcia Olivar.

Materials and R&D Manager e-mail: laboratorio@stac.es

Product Information

Name of Product: Thermal break profile, PA66 with 25% high thermal efficiency fibreglass.

Product description: The thermal break profile is made of PA66 reinforced with 25% fibreglass and high thermal efficiency. These profiles are used as a thermal insulating material, sandwiched between the exterior and interior aluminium profiles of doors and windows, which acts as a barrier to minimize the energy transfer between the exterior and the interior.



Image2. Polyamide profiles. Profiles with and without heat-adhesive bead. Profiles in the window frame.

STAC profiles can have a thermo-adhesive bead inserted in their dovetail to provide the transverse tension and shear strength that would be lost during the lacquering process.

The technical characteristics of the profiles are as follows:

General	Density	g/cm3	ISO 1183-1	1.03 ± 0,05
	Fibreglass content	%	ISO 3451-1	25 ± 2,5
Mechanical	Tensile strength	MPa	ISO 527 2-4	≥ 50
	Tensile Elastic Modulus	MPa	ISO 527 2-4	≥ 2800
	Break elongation	%	ISO 527 2-4	≥ 3
	Impact resistance	KJ/m2	ISO 179-1/2n	≥ 20
	Shore D hardness	-	ISO 868	75 ± 5
Thermal	Melting point	°C	ISO 3146 ISO 11357-3	≥ 250

UN CPC Code: According to the UN-CPC product classification system, the code for the product manufactured by STAC is CPC 369 –" Other plastic products."

LCA Information

Declared unit: "1 kg of thermal break profile, Hitep", in two variations: with and without thermo-adhesive bead. Given that the difference in impacts is less than 10% between both versions of the product, the results are declared for the option with thermo-adhesive bead, as it is the most representative product, based on production.

Reference service life: The useful life baseline is not relevant for this EPD.

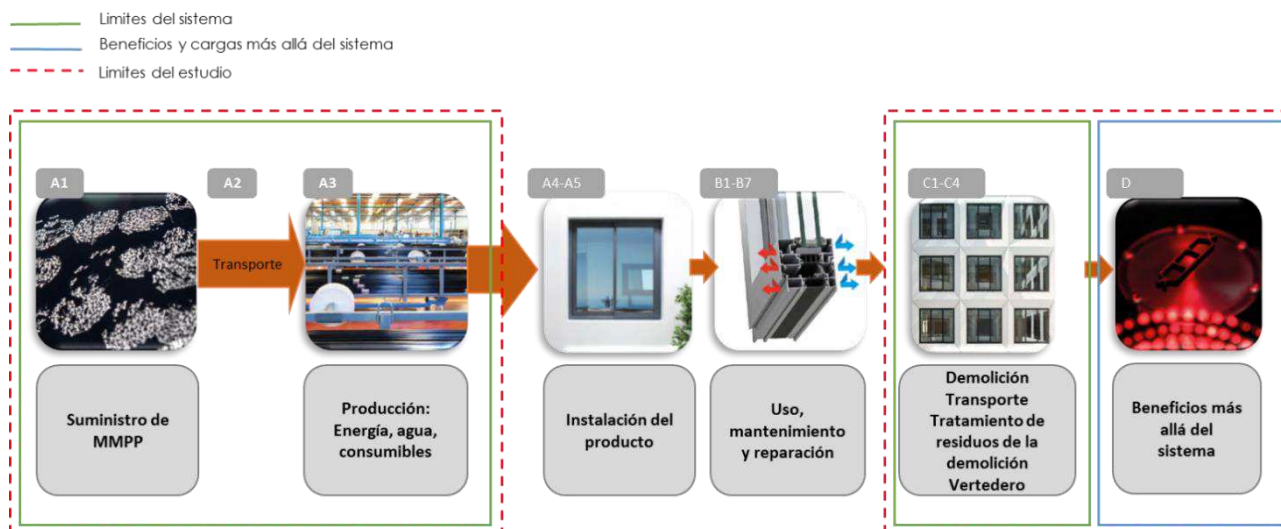
Geographic scope: The scope of this EPD is international.

Time representativeness: The collection of factory data (primary data) corresponds to the period 01/01/2021 to 31/12/2021. The electric mix corresponds to the year 2021. In this study, no generic data sets older than 10 years have been used. Technology coverage is typical or medium.

Database and LCA software used: All data used to model the process and obtain the Lifecycle Inventory is specific data and is representative of the different processes implemented during the manufacturing process for 2021. The data has been measured directly at the production plant. In addition, Ecoinvent 3.8, the most complete and highest quality European life cycle inventory database, has been used, as this database contains the most extensive and up-to-date information and its scope coincides with the geographical, technological and temporal scope of the present project. The LCA has been modelled using SIMAPRO 9.3.0.3.

Description of system boundaries: According to UNE-EN 15804_2012+A2_2020 (March 2020) and PCR 2019:14 CONSTRUCTION PRODUCTS (version 1.2.4) the system limit is "cradle to gate", including modules C1 – C4 and module D (A1 – A3 + C + D). The optional life cycle stages A4-A5, B1-B7 have not been considered in this study.

System diagram:



Manufacturing process: The production method for Hitep thermal break profiles consists, broadly speaking, of the following stages:

1. Reception of raw materials, pellets.
2. Supply and mixing of raw materials.
3. Dehumidifying the mixture.

4. Gasification of the mixture.
5. Input and advance of the mixture through the extruder machine (transport, melting and compression process).
6. Molten polymer passes through the extrusion nozzle to convert the polymer mass into the required cross-section.
7. Profile solidification by a special calibration process that provides a cross-linked configuration of glass fibres and a degree of polymer crystallization that is ideal for good mechanical performance.
8. Insert the heat-adhesive bead, if required.
9. Labelling (traceability codes, logos, date of manufacture, etc.).
10. Saw cut.
11. Packaging, labelling and palletising.

Life Cycle Analysis Author: IK ingeniería
 Av. Cervantes 51, Edif. 10, planta 5, Dpto. 7
 48970 Basauri, Bizkaia (Spain)

Data quality: The environmental impact of Thermal Break Profile, Hitep has been calculated based on the international standards ISO 14025 for the elaboration of environmental product declarations, ISO 14040 and ISO 14044 for the elaboration of life cycle analysis, UNE-EN 15804:2012+ A2:2020 (March 2020) and PCR Product Category Rules - "2019:14 Construction Products" (Version 1.2.4) of CPC 3511.

Data was collected from 01/01/2021 to 31/12/2021 and is representative of that year. Supply data for raw material, transport to manufacturing and production plant (modules A1-A3) are based on consumption data specific to the Padrón plant. The software used for the Life Cycle Analysis calculation was SIMAPRO v9.3.0.3. together with the Ecoinvent 3.8 database. The characterization factors used are those established in EN15804: 2012 + A2:2019.

The quality of the data used meets the following requirements:

- **Temporal Coverage:** Data collection was performed during the period 01-01-2021 to 31-12-2021. The generic data used is current and was obtained from Ecoinvent 3.8 databases, a database that is less than 10 years old (www.ecoinvent.org).
- **Geographical coverage:** The data used is representative of the region where the product under analysis is developed. Data collection was obtained from the plant located in Padrón. For generic data, it was analysed whether the data set was representative of the process or material used. The Ecoinvent 3.8 database, which has global emission standards, was used for transport.
- **Technical Coverage:** Reflects the physical reality of the declared product or group of products. Data from all stages of the life cycle are characteristic of these products. The generic data was obtained from the Ecoinvent 3.8 database and represents technological processes similar to those used for the production of fuels, production of raw materials, auxiliary materials and transport.

Estimations: The principle of modularity has been followed, as has the 'polluter pays' principle. The following estimates have been made in this EPD:

- The manufacturing process for capital equipment, replacement parts and / or maintenance items with a life cycle over three years were not included.
- The environmental impact of the infrastructure for general management, office, laboratories and headquarters operations is not included.
- Impact caused by people (their work, commuting, etc.) was not taken into consideration.
- It does not include the consumption of natural gas for sanitary hot water showers and heating system for the comfort of the people.
- The processes associated with the production of fuels are intrinsically included in the indicators of the Ecoinvent database used in the realization of the LCA.
- The temporal validity horizon given to the collected data is 1 year.
- The environmental impact of external transport was calculated for Class EURO5 trucks in the Ecoinvent 3.8 database. These wagons were chosen to produce the most realistic scenario possible.

Cut-off criteria: ISO 14025 and PCR 2019:14 "Construction products" (version 1.2.4) indicate that life cycle inventory data should include a minimum of 95% of total inputs (materials and energy). This cut-off rule does not apply to hazardous materials and substances. No cut-off criteria have been applied in this study.

Load Assignment: Energy consumption, auxiliary materials, maintenance consumables and waste generated at the plant are allocated by units of weight.

Greenhouse gas emissions from the use of electricity at the manufacturing stage: The energy mix corresponds to a specific supplier mix, in medium voltage (considering direct emissions and losses in the network) and is based on data from 2021.

Electric mix	Quantity	Units
Supplier specific mix	4,63E-01	Kg CO2-eqv/kWh

Declared modules, geographical scope, use of specific data (in the GWP-GHG indicator) and variation of data:

	Product stage			Construction stage		Use stage							End-of-life stage				Resource Recovery stage
	Raw materials supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operating energy use	Operating water use	Deconstruction demolition	Transport	Waste treatment	Disposal	Potential for: Re-use Recovery Recycling
Modules	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Declared modules	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	SP	SP	SP	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO	GLO
Specific data	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	0.01 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ND Not declared

Content Information

Product components	Per 1 kg		
	Weight, Kg	Post-consumer material, % by weight	Renewable material, % by weight
Polyamide with 25% FG	9,68E-01	0.00 %	0.00 %
Additives	3,23E-02	0.00 %	0.00 %
TOTAL	1,00E+00	0.00 %	0.00 %

Packaging materials	Weight, Kg	Weight % (relative to product)
Film	3,12E-03	0.31 %
wood	3,56E-03	0.36 %
Steel	8,72E-02	8.72 %
Labels:	1,43E-04	0.01 %
TOTAL	9,40E-02	9.38 %

Packaging: The product is transported to customers, in cages and protected with plastic film. None of the substances included in the REACH list of substances of extreme concern are present in profiles manufactured by STAC either above the threshold for registration with the European Chemicals Agency or above 0.1 % (w/w).

LCA scenarios and additional technical information

In order to establish the end-of-life scenarios, UNE-EN 17213:2020, Windows and Doors has been used as a reference. Environmental Product Declaration. Product category rules for windows and pedestrian doorsets. In Annex B.3:

Dismantling / Demolition (Module C1): This is not considered relevant, as the disassembly corresponds to the window itself.

Transport to Disposal site (Module C2): It is estimated that, for the transport of the waste generated to the disposal site, with a collection rate of 100% of the deconstruction or demolition (Module C2), an authorized truck (EURO 5) must travel a maximum distance of 50 km.

Treatment and Disposal at End of Useful Life (Modules C3 and C4): According to UNE-EN 17213:2020, plastic components of metal windows are 5% landfill and 95% energy recovery.

Recycling Potential (Module D): Module D, contains the values from the energy recovery in module C4, i.e. the production of electricity and heat from the burning of the material.

LCA End-of-life scenarios

Processes	Per declared unit	
Waste collection process specified by type	0.00	Kg collected separately
	1.00	Kg collected with mixed construction waste
Recovery system specified by type	0.00	Kg for reuse
	0.00	Kg for recycling
	0.95	Kg for energy recovery
Landfill specified by type	0.05	Kg for final disposal
Assumptions for scenario development (e.g. transport)	Truck 16-32 metric tons, EURO5 Diesel consumption: 0.03 kg / km. Distance: 50 km	

Environmental Information

Potential environmental impact – mandatory indicators in accordance with EN 15804

Results per declared unit							
Indicator	Units	A1-A3	C1	C2	C3	C4	D
GWP-Fossil	kg CO ₂ Eq.	7,04E+00	0,00E+00	8,31E-03	0,00E+00	2,23E+00	-6,29E-01
GWP-Biogenic	kg CO ₂ Eq.	-1,25E-02	0,00E+00	7,48E-06	0,00E+00	3,05E-04	-3,42E-02
GWP-luluc	kg CO ₂ Eq.	6,22E-03	0,00E+00	3,26E-06	0,00E+00	4,38E-05	-2,57E-03
GWP-Total	kg CO ₂ Eq.	7,04E+00	0,00E+00	8,32E-03	0,00E+00	2,24E+00	-6,66E-01
ODP	kg CFC11 Eq.	1,90E-07	0,00E+00	1,92E-09	0,00E+00	1,51E-08	-3,06E-07
AP	mol H ⁺ eq.	3,15E-02	0,00E+00	3,37E-05	0,00E+00	5,71E-04	-7,05E-03
EP-freshwater	kg PO ₄ ³⁻ eq.	5,82E-04	0,00E+00	1,79E-07	0,00E+00	4,21E-06	-3,55E-04
EP-freshwater	kg P eq.	1,90E-04	0,00E+00	5,83E-08	0,00E+00	1,37E-06	-1,16E-04
EP-Marine	kg N eq.	8,55E-03	0,00E+00	1,01E-05	0,00E+00	2,46E-04	-9,55E-04
EP-terrestrial	mol N eq.	6,55E-02	0,00E+00	1,11E-04	0,00E+00	2,60E-03	-1,09E-02
POCP	kg NMVOC Eq.	2,06E-02	0,00E+00	3,40E-05	0,00E+00	6,63E-04	-3,40E-03
ADP-minerals&metals*	kg Sb eq.	3,40E-05	0,00E+00	2,89E-08	0,00E+00	3,62E-07	-9,87E-06
ADP-Fossil*	MJ	9,97E+01	0,00E+00	1,26E-01	0,00E+00	4,41E-01	-5,28E+01
WDP	m ³ eq	4,45E+00	0,00E+00	3,76E-04	0,00E+00	2,62E-02	-2,51E-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 declared unit						
Indicator	A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	7,05E+00	0,00E+00	8,29E-03	0,00E+00	2,23E+00	-6,36E-01

Use of resources

Results per declared unit							
Indicator	Units	A1-A3	C1	C2	C3	C4	D
PERE	MJ	3,39E+00	0,00E+00	1,77E-03	0,00E+00	4,04E-02	-4,62E+00
PERM	MJ	6,85E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,07E+00	0,00E+00	1,77E-03	0,00E+00	4,04E-02	-4,62E+00
PENRE	MJ	7,64E+01	0,00E+00	1,26E-01	0,00E+00	4,41E-01	-5,28E+01
PENRM	MJ	2,33E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	9,97E+01	0,00E+00	1,26E-01	0,00E+00	4,41E-01	-5,28E+01
SM	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	1,09E-01	0,00E+00	1,40E-05	0,00E+00	1,10E-03	-1,89E-02
Acronyms	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 declared unit							
Indicator	Units	A1-A3	C1	C2	C3	C4	D
Hazardous waste eliminated	Kg	1,65E-04	0,00E+00	3,28E-07	0,00E+00	1,63E-06	-5,44E-05
Non-hazardous waste eliminated	Kg	4,75E-01	0,00E+00	6,47E-03	0,00E+00	8,58E-02	-5,88E-02
Radioactive waste eliminated	Kg	1,46E-04	0,00E+00	8,50E-07	0,00E+00	1,52E-06	-1,84E-04

¹ The indicator includes all greenhouse gases included in the total GWP, but excludes absorption and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. Therefore, this indicator is the same as the GWP indicator originally defined in EN 15804: 2012+ A1: 2013.

Output flows

Results per declared unit							
Indicator	Units	A1-A3	C1	C2	C3	C4	D
Components for reuse	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	Kg	1,52E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for energy recovery	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,50E-01	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,75E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,51E+01

Information on biogenic carbon content

With regard to biogenic carbon, as shown in the content declaration table, since the product does not contain biogenic carbon and the mass of biogenic carbon containing materials in the packaging is less than 5%, the declaration of biogenic carbon content is omitted.

Additional Information

For more information on these or other services visit the website: <https://www.stac.es/descargas> or contact us at the following email: laboratorio@stac.es

Information related to sectoral EPDs

This is an individual EPD®.

Differences from previous versions

This is the first version of the EPD®.

References

- General Programme Instruction of the International EPD®System. Version 4.0
- ISO 14020:2000 Environmental labels and declarations-General principles.
- ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures.
- ISO 14040:2006 Environmental Management-Life Cycle Assessment-Principles and framework.
- ISO 14044:2006 Environmental Management-Life Cycle Assessment-Requirements and guidelines.
- PCR 2019 :14 Construction products (EN 15804: A2) version 1.2.4.
- EN 15804:2012+A2:2019 Sustainability of construction works-Environmental Product Declarations-Core rules for the product category of construction products.

VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD02602

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:

SISTEMAS TÉCNICOS DEL ACCESORIO Y COMPONENTES, S.L. (STAC)
Polígono Industrial Picusa, s/n
15900 PADRON (A Coruña) - SPAIN

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

Thermal bridge break profile HITEP
Perfil de rotura de puente térmico HITEP

with registration number **S-P-06198** in the International EPD® System (www.environdec.com).
con número de registro S-P-06198 en el Sistema Internacional 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**
- **CPC 369 Other plastics products**

Issued date / Fecha de emisión:	26/10/2022
Update date / Fecha de actualización:	26/10/2022
Valid until / Válido hasta:	25/10/2027
Serial Nº / Nº Serie:	EPD0260200-E



Carlos Nazabal Alsua
Manager

This certificate is not valid without its related EPD.
Este certificado no es válido sin su correspondiente EPD.

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This certificate is subject to modifications, temporary suspensions and withdrawals by TECNALIA R&I CERTIFICACION.

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The validity of this certificate can be checked through consultation in www.tecnaliacertificacion.com.

