Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 and EN 16783 for:

INSULATION BOARDS WITH PIR FOR BUILDINGS

from

EUROPERFIL S.A.

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-07206
Publication date:	2022-11-23
Date of revision:	2023-03-07
Valid until:	2027-11-21

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

CEN standard EN 15804 and EN 16783 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): *PCR 2019:14 Construction products, version 1.11 Published on 2021.02.05, valid until: 2024.12.20 and c-PCR-005 Thermal insulation products, version 2019-12-20*
PCR review was conducted by:
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: TECNALIA R&I Certificación S.L. Auditor: Cristina Gazulla Santos Accredited by: ENAC. Accreditation no. 125/C-PR283
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

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

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Europerfil
Polígono Industrial de Cervera. Avda. Vall d'Aran, s/n
25200 Cervera (Lleida) España

Contact: Moises Alvarez Rodriguez; moises.alvarez@europerfil.com.

Description of the organisation: EUROPERFIL S.A. is dedicated to the manufacture of profiles, steel sandwich panels and innovative constructive solutions of metal closure for any type of building.

Product-related or management system-related certifications: ISO 14001 and ISO 9001

Name and location of production site(s):

- Name: Europerfil S.A.
  Location: Polígono Industrial de Cervera. Avda. Vall d'Aran, s/n 25200 Cervera (Lleida), España

Product information:
Products name: This EPD covers three products: PIR insulating sheet with glass veil, bituminous PIR insulating sheet and PIR aluminum 2U insulating sheet.

Product identification: This EPD covers three products of the insulating PIR sheet family produced at EUROPERFIL S.A production site located in Cervera (Lleida). A 60 mm thickness has been assumed for every product. Results of the Life Cycle Assessment (LCA) will be presented for each product.

Products description:

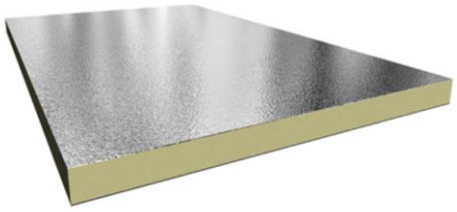
1. **EUROAISLANTE PIR with Glass Veil:** Polyisocyanurate (PIR) insulating board coated, on both sides, with glass veil for application as a support for waterproofing in metal deck roofs, both in new roofs and for rehabilitation. It has a declared thermal resistance value (R_D) of 2,20 m² K/W.

PIR with Glass Veil

2. **EUROAISLANTE PIR bituminous:** Insulating sheet of polyisocyanurate (PIR) coated, on the upper face, with an oxyasphalt complex and, inferiorly, with glass veil, for application as a support for the waterproofing of metal roofs type deck, both in new roofs and for rehabilitation. It has a declared thermal resistance value (R_D) of 2,20 m² K/W.

PIR bituminous

3. **EUROAISLANTE PIR aluminium 2U**: Polyisocyanurate (PIR) insulating sheet coated on both sides with 50-micron aluminum sheet for application as a support for waterproofing in metal deck roofs, both in new roofs and for rehabilitation. It has a declared thermal resistance value (R_D) of 2,60 m² K/W.



PIR aluminium 2U

UN CPC code: There is no a sufficiently precise CPC code, and the tariff code is 39.09.50.90.

Geographical scope: Global.
Products under study are produced in Cervera (Spain) but can be used at a global scale.

LCA information

Declared unit: one square metre (m²) of PIR insulating plate with a thermal resistance between* 2.20 m² K/W and 2.60 m² K/W, and a thickness of 60 mm. For the calculation of the declared unit, an application of 2,56 kg/m² has been considered for the EUROAISLANTE PIR with Glass Veil, 2,60 kg/m² for the EUROAISLANTE PIR bituminous and 2,24 kg/m² for the EUROAISLANTE PIR aluminium 2U.

* EUROAISLANTE PIR veil glass and EUROAISLANTE PIR bituminous, 2,20 m² K/W. EUROAISLANTE PIR aluminium 2U, 2,60 m² K/W.

Reference service life: Not applicable.

Time representativeness: All specific data related to the production plants and used for the study date from 2021.

Database(s) and LCA software used: The primary inventory data has been obtained from EUROPERFIL S.A. corresponding to the three PIR sheets produced in the manufacturing site of EUROPERFIL S.A.for the year 2021.

The secondary data has been extracted from the generic Ecoinvent version 3.8 database, included in the SimaPro v9.3.0.2.1 software and internationally recognized. Wherever possible, inventory data relating to the specific study countries, or in its absence from Europe in general, has been selected. These have been used for the stage of production and transport of raw materials, as well as for electricity generation or waste management processes, over which the manufacturer has no direct influence.

Description of system boundaries: Cradle to gate with modules C1–C4 and module D, (A1–A3 + C + D) has been chosen. Therefore, this EPD report considers the scope “cradle to gate with end of life of the product”, covering the modules of extraction and processing of raw materials (A1), their transportation to the production plant (A2), the average sheet steel family product manufacturing process (A3), end of life (C1-C4) and potential benefits and loads from the reuse and recycling of the foam glass aggregate at its end of life (D).

As permitted by UNE-EN 16789:2017, remaining life cycle stages (modules A4-A5 and B1-B7) have been excluded from the study as not being relevant for this product.

Therefore, since the aluminium can be identified and separated from the rest of the materials at its end of life, the end of life of the product and possible benefits from material recovery of the EUROPERFIL S.A. product shall be included in the EPD (i.e., modules C1-C4 and D).

For an EPD of type “a) Cradle to gate with module C1-C4 and module D”, the PCR 2019:14 requires that a declared unit must be used, and the inclusion of reference service life is optional.

Applicable lifecycle stages with the system boundaries and processes are described below.

• Product stage (A1-A3):

- Raw material supply (A1): This module considers the extraction and processing of raw materials used for the manufacture of the product. Moreover, raw materials’ packaging enabling transportation to the production plant is included. Likewise, the production of the energy necessary for the manufacturing process (electricity, diesel, and other fuels) is also taken into account.
- Transport of the raw materials (A2): This module consists of the transportation of all raw materials covered by module A1, from the extraction, production, and treatment site to the factory, considering the specific distances of each material supplier.
- Manufacturing of insulating board (A3): This module refers to the production process of the products at the production site. It includes the combustion of fuels (diesel) and the water consumed during the manufacturing process. It also considers the waste generated from the production process: the treatment and transport from the production plant to the waste manager.

  PU flexible foams are manufactured through a continuous slabstock production process. In the continuous process, the foam rises within seconds after mixing the ingredients on a moving conveyor and then solidifies. The foam blocks are typically cut at a length of 2,5 meters, cured and stored for further processing.

  Finally, it considers the packaging used for distribution: the production of the primary and secondary packaging of the product (LDPE film, wood slats and LDPE stretch film), and the transport of this packaging from suppliers to the EUROPERFIL S.A. factory.

• End of life stage (C):

- Deconstruction or demolition (C1): This module considers the impacts of deconstruction process. In that case has been neglected as it is a minor impact compared to the building demolition.
- Transport to the waste processing site (C2): This module considers a default distance of 50 km between the building where the product was installed and the waste manager facility.
- Waste processing (C3): This module includes the reconditioning of aggregate insulating PIR sheet waste for recycling. This module presents zero impact values given the impacts of the recycling process are imputed in the following system, according to the polluter pays principle.
- Disposal (C4): This module includes the final discharge of waste that has not been destined for recovery or treatment processes.

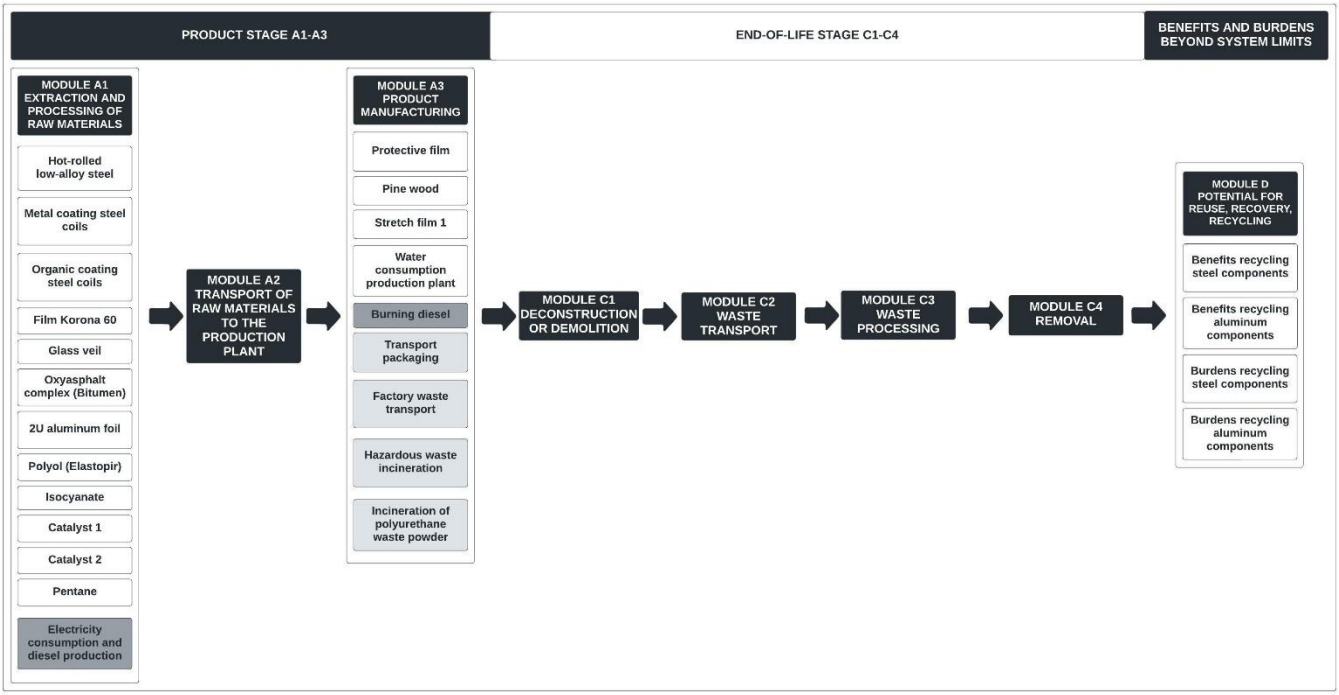
Parameter	Units per declared Unit (m^2)	Vail glass	Bituminous	Aluminium 2U
Waste collection process, specified by type	kg collected separately	2,56	2,60	2,24
	kg collected mixed with demolition waste	0,00	0,00	0,00

Recovery process waste, specified by type	kg for reuse	0,00	0,00	0,00
	kg for recycling	0,00	0,00	2,13
	kg for energy recovery	0,00	0,00	0,00
Waste disposal	kg to landfill	2,56	2,60	0,11
Considerations for scenarios development	Distance to waste manager (km)	50,0	50,0	50,0

The module collects the most likely scenarios based on the best knowledge currently available.

• Benefits and loads beyond the system boundary (D): This module analyses the benefits and burdens related to the processes of recovery, reuse or recycling of waste from the product under study at their end of life, which could form part of the life cycle of a new product.

System diagram:



More information:
Company website for more information: https://www.europerfil.com/
Name and contact information of LCA practitioner:

Lavola – Anthesis Group
Rambla de Catalunya, 6, planta 2, 08007 Barcelona
+34 938 515 055
www.anthesisgroup.com

Cut-off rules:
In accordance with the provisions of the PCR 2019:14 construction products, version 1.11 and the standard UNE-EN 15804:2012+A2:2020, all the inflows and outflows (mass and energy) per module have been included, assuming that maximum could be left outside 5%.

The "polluter pays" principle has been applied.

In addition, the following processes have not been included in the scope of the study:

- Manufacture of equipment used in production, buildings, or any other assets.

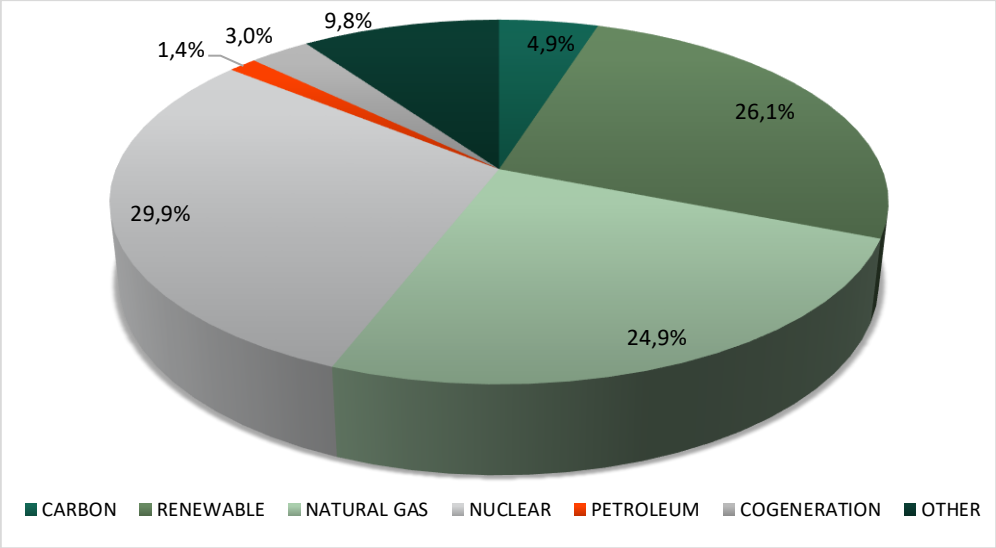
- Business trips.
- Maintenance activities at the production plants and research and development.
- Transportation of personnel to and within the plants.
- Diffuse particle emissions during the transport and storage of raw materials.

Hypotheses and considerations applied:
The hypotheses assumed during the study are detailed below:

- All specific data used in the present study corresponds to 2021.
- An electrical mix corresponding to the company's consumption has been modeled according to the data of its energy supplier (TOTALENERGIES ELECTRICIDAD Y GAS ESPAÑA, S.A.U.), assigning the impact value to each resulting kWh.
- It has been assumed that all truck transport complies with the EURO 5 emission standard, when carried out within European territory.
- 50 km distance has been assumed for the transport of waste from the deinstallation point to the waste manager's plant.
- Average production losses derived from the production process of the product have been considered. These have been applied as input to the consumption of raw materials and their transport to the production plant.
- Both for electricity consumption, as for the rest of the plant consumption, as well as for the generation of waste, an allocation of loads per mass per kg of insulating PIR sheet produced has been made.
- Regarding the transport of raw materials (module A2), specific distances have been introduced by supplier and material indicated by EUROPERFIL S.A..
- For the waste of the different products of PIR insulating sheets, a 100% end of life destined for landfill has been assumed. Except for aluminum PIR sheet, the end of life of which is specified below.
- For the 2U aluminium PIR insulation sheet, the following hypothesis has been assumed: As specified in ANNEX C (Single Market for Green Products - The Product Environmental Footprint Pilots - Environment - European Commission (europa.eu)), An end-of-life situation has been assumed for aluminium of 95% for the recycling process. For the remaining 5%, it has been considered landfill destination.

Additional information:
Since the average electricity consumption of the production plants exceeds the threshold of 30% of the total energy consumption of product stage A1-A3, the resulting electricity mix considered for the study is shown below, divided by its energy sources, as required in the UNE EN 15804:2012+A2 (2020) standard and the *PCR 2019:14 Construction products, version 1.11 Published on 2021.02.05.*

In relation to its contribution to the environmental impacts of the product, the production of 1 kWh of electricity consumed by the average production plant of EUROPERFIL S.A. in 2021 generated 0,203 kg of CO_2 eq. emissions.



Data quality requirements:

In this study, data quality requirements established by ISO 14025 standards and reference PCRs "PCR 2019:14 Construction products, version 1.11 *Published on 2021.02.05* and the c-PCR-005 Thermal insulation products, version 2019-12-20, both defined in The International EPD® System program and the EN 15804:2012 + A2:2019 standard. Likewise, being products intended for thermal insulation, their study must follow the guidelines of the specific regulation EN 16783 Thermal insulation products.

Data has been evaluated through a data quality matrix based on the Product Environmental Footprint Category rules criterion for the data quality management, as it is established in the UNE-EN 15804:2012+A2. As a result of the data quality matrix, it is quantified that the gathered data achieves a good level of quality (3.63 out of 5) in a range of very poor (1), poor (2), medium (3), good (4) and very good (5).

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

	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	EU	EU	EU	ND	ND	ND	ND	ND	ND	ND	ND	ND	EU	EU	EU	EU	EU
Specific data used	>95% For modules A1-A3 it comes from specific LCI data					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	There is no variation					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	The product is produced at the same plant					-	-	-	-	-	-	-	-	-	-	-	-

Content information

EUROAISLANTE PIR WITH GLASS VEIL			
Product components	**Weight (%)**	**Post-consumer material, weight (%)**	**Renewable material, weight-%**
GLASS VEIL	23,44	0	0
POLYOL	22,73	0	0
ISOCIANATE	47,74	0	0
FOAM STABILIZER 1	0,64	0	0
FOAM STABILIZER 2	0,45	0	0
BLOWING AGENT	5,00	0	0
TOTAL	1 kg	0 kg	0 kg
Packaging materials	**Weight (%)**	**Post-consumer material, weight (%)**	**Renewable material, weight-%**
PIR DOWELS	0,33	0	0
LDPE FILM	0,253	0	0
TOTAL	5,9E-03 kg	0 kg	0 kg

EUROAISLANTE PIR BITUMINOUS			
Product components	**Weight (%)**	**Post-consumer material, weight (%)**	**Renewable material, weight-%**
GLASS VEIL	11,54	0	0
OXYASPHALT COMPLEX	13,08	0	0
POLYOL	22,38	0	0
ISOCIANATE	47,00	0	0
FOAM STABILIZER 1	0,63	0	0
FOAM STABILIZER 2	0,44	0	0
BLOWING AGENT	4,92	0	0
TOTAL	1 kg	0 kg	0 kg
Packaging materials	**Weight (%)**	**Post-consumer material, weight (%)**	**Renewable material, weight-%**
PIR DOWELS	0,33	0	0
LDPE FILM	0,253	0	0
TOTAL	5,9E-03 kg	0 kg	0 kg

EUROAISLANTE PIR ALUMINUM 2U			
Product components	**Weight (%)**	**Post-consumer material, weight (%)**	**Renewable material, weight-%**
ALUMINIUM FOIL	12,32	43,0	0
POLYOL	26,03	0	0
ISOCIANATE	54,67	0	0
FOAM STABILIZER 1	0,73	0	0
FOAM STABILIZER 2	0,52	0	0
BLOWING AGENT	5,73	0	0
TOTAL	1 kg	0 kg	0 kg
Packaging materials	**Weight (%)**	**Post-consumer material, weight (%)**	**Renewable material, weight-%**
PIR DOWELS	0,33	0	0
LDPE FILM	0,253	0	0
TOTAL	5,9E-03 kg	0 kg	0 kg

None of the components present in the final product are included in the "Candidate List of Substances of Extreme Concern in the authorization procedure" of the REACH regulation.

Environmental Information

The environmental information related to the analysed products has been calculated with the SimaPro software version 9.3.0.2.1. As required by PCR 2019:14, construction products version 1.11, the characterization factors indicated in Annex C of the EN 15804:2012+A2 standard have been used to estimate the potential environmental impacts (method EN 15804 + A2 Method V1.02 / EF 3.0 normalization and weighting set). With respect to the results corresponding to the rest of the parameters under study, the following methodologies have been used: EDIP to calculate waste production, CED (Cumulative Energy Demand) to calculate energy use and inventory data for output flows.

The environmental results corresponding to the life cycle of each product of EUROPERFIL S.A. of the insulating PIR sheet family with a 60 mm thickness are shown below. These are divided by modules, covering the stages defined above in the system boundary section (A1-A3+C1-C4+D), and considering all the impact categories required by the PCR 2019:14 Construction products, version 1.11.

Estimated impact results are only relative statements that do not indicate impact category endpoints, exceedances of assessed thresholds, safety margins, or risks.

Results for the insulating PIR sheet with Glass Veil

Considering a functional unit of one square metre (m²) of PIR sheet with a thickness of 60 mm and application factor of 2,56 Kg/m².

Potential environmental impact – mandatory indicators according to EN 15804

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1,04E+01	1,39E-01	3,72E-01	1,09E+01	0	1,77E-02	0	1,35E-02	0
GWP-biogenic	kg CO_2 eq.	5,51E-02	8,11E-06	6,28E-05	5,52E-02	0	1,03E-06	0	8,23E-05	0
GWP-luluc	kg CO_2 eq.	8,62E-03	1,12E-06	3,02E-05	8,66E-03	0	1,43E-07	0	4,89E-06	0
GWP-total	kg CO_2 eq.	1,04E+01	1,39E-01	3,72E-01	1,09E+01	0	1,77E-02	0	1,36E-02	0
ODP	kg CFC 11 eq.	1,75E-06	3,29E-08	1,61E-08	1,80E-06	0	4,20E-09	0	2,40E-09	0
AP	mol H^+ eq.	6,22E-02	4,82E-04	8,37E-04	6,35E-02	0	6,14E-05	0	1,26E-04	0
EP-freshwater	kg P eq.	5,63E-04	7,09E-08	1,22E-06	5,65E-04	0	9,05E-09	0	1,62E-07	0
EP-marine	kg N eq.	1,67E-02	1,54E-04	3,68E-04	1,72E-02	0	1,97E-05	0	5,20E-05	0
EP-terrestrial	mol N eq.	1,23E-01	1,70E-03	3,89E-03	1,28E-01	0	2,16E-04	0	5,70E-04	0
POCP	kg NMVOC eq.	4,04E-02	4,62E-04	1,04E-03	4,19E-02	0	5,89E-05	0	1,58E-04	0
ADP-minerals&metals*	kg Sb eq.	3,22E-06	6,02E-09	9,70E-09	3,23E-06	0	7,68E-10	0	6,14E-10	0

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
ADP-fossil*	MJ	2,22E+02	1,96E+00	1,37E+00	2,25E+02	0	2,51E-01	0	1,80E-01	0
WDP*	m^3	8,97E+00	-3,29E-04	2,25E-02	8,99E+00	0	-4,19E-05	0	4,49E-04	0
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

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	1,01E+01	1,38E-01	3,69E-01	1,06E+01	0	1,76E-02	0	1,34E-02	0

Voluntary additional indicators have not been declared.

Use of resources

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,22E+01	3,01E-03	3,07E-02	1,22E+01	0	3,84E-04	0	4,24E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1,22E+01	3,01E-03	3,07E-02	1,22E+01	0	3,84E-04	0	4,24E-03	0
PENRE	MJ	1,79E+02	2,09E+00	9,68E-01	1,82E+02	0	2,66E-01	0	1,91E-01	0
PENRM	MJ	5,91E+01	0	4,97E-01	5,96E+01	0	0	0	0	0
PENRT	MJ	2,38E+02	2,09E+00	1,46E+00	2,41E+02	0	2,66E-01	0	1,91E-01	0
SM	kg	0	0	8,45E-03	8,45E-03	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	2,34E-01	5,39E-06	5,99E-04	2,35E-01	0	6,87E-07	0	2,16E-05	0
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									

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:201
3.

Waste production and output flows

Waste production

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,09E-04	5,16E-06	2,33E-06	1,17E-04	0	6,59E-07	0	3,84E-07	0
Non-hazardous waste disposed	kg	4,09E-01	1,03E-04	8,20E-03	4,17E-01	0	1,31E-05	0	2,56E+00	0
Radioactive waste disposed	kg	4,67E-04	1,41E-05	5,91E-06	4,87E-04	0	1,79E-06	0	1,13E-06	0

Output flows

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	2,18E-03	2,18E-03	0	0	0	0	0
Materials for energy recovery	kg	0	0	6,24E-02	6,24E-02	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0

Results' interpretation

Module A1 of Extraction and processing of raw materials is the one that presents a greater contribution in nine of the ten modules of the life cycle of the PIR insulating sheet with glass veil, with a maximum impact on the category of freshwater eutrophication (99.74%), and a minimum for the category of production of non-hazardous waste (13.73%).

The isocyanate is the raw material that contributes the most to the total impact on seven of the impact categories analyzed. It has a maximum value in the category of ozone depletion with a contribution of 88.95%. In contrast, it presents its minimum value in the category of abiotic depletion potential for non-fossil resources, where it has a contribution of 38,74% on the total of this category.

The glass veil, together with the polyol, are the next two raw materials with the greatest impact. Concretely, polyol has its highest contribution in the eutrophication category (45.41%). On the contrary, in the category of ozone depletion is where it has a lower impact (0.73%). Regarding the glass veil, the greatest impact is in the category of depletion of mineral resources (48.16%). On the other hand, it has its lowest impact in the category of ozone depletion, where it has a contribution of only 6.48%.

Module A2 has a low or negligible contribution depending on the impact category evaluated, with a maximum value close to 4.38% for the hazardous waste production indicator.

Module A3 presents a low environmental contribution in the impact categories evaluated, below 3.39% for the different categories.

Module C1 it has been considered negligible, so there are no associated impacts.

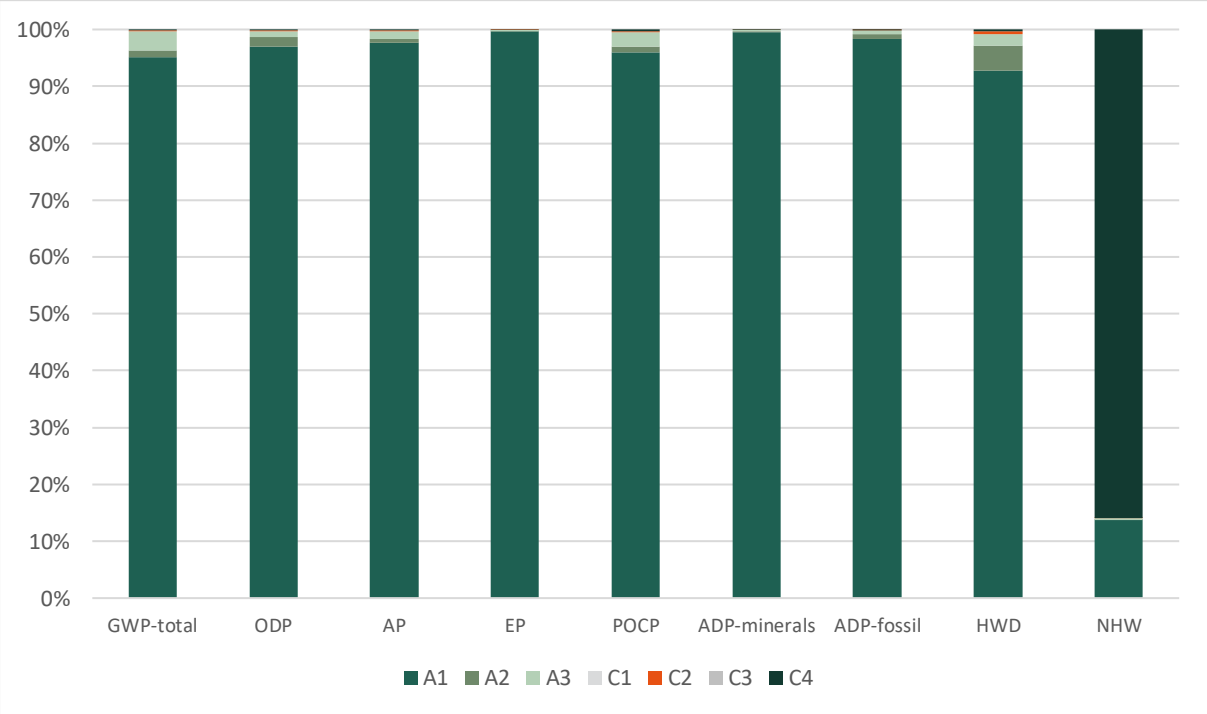
Module C2 has a very low contribution in the impact categories evaluated. Specifically, it has its maximum value in the impact category of hazardous waste production, which reaches a value of 0.56%.

Module C3, presents zero impact values given the impacts of recycling are imputed in the following system, according to the polluter pays principle.

Module C4 has a low contribution in most of the impact categories evaluated except for the non-hazardous waste production category, where it reaches a value of 85.99% of the total impact category.

Finally, module D does not present any benefit beyond the limits of the system, since no recycling, reuse or recovery process has been considered for any of the components that make up the product.

In the following figure, a graphic of the contribution of the different stages over the considered impact categories is shown.



Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	Not applicable*

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

*As the mass of the packaging is under 5% of the product mass, the amount of biogenic carbon contained in the packaging is not represented, according to UNE-EN 15804:2012+A2:2020.

Results for the insulating bituminous PIR sheet

Considering a functional unit of one square metre (m²) of PIR sheet with a thickness of 60 mm and application factor of 2,60 Kg/m².

Potential environmental impact – mandatory indicators according to EN 15804

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	9,96E+00	1,46E-01	3,77E-01	1,05E+01	0	1,80E-02	0	1,37E-02	0
GWP-biogenic	kg CO_2 eq.	4,82E-02	8,54E-06	6,38E-05	4,82E-02	0	1,05E-06	0	8,36E-05	0
GWP-luluc	kg CO_2 eq.	7,52E-03	1,18E-06	3,07E-05	7,55E-03	0	1,45E-07	0	4,96E-06	0
GWP-total	kg CO_2 eq.	1,00E+01	1,46E-01	3,78E-01	1,05E+01	0	1,80E-02	0	1,38E-02	0
ODP	kg CFC 11 eq.	1,87E-06	3,47E-08	1,64E-08	1,92E-06	0	4,26E-09	0	2,43E-09	0
AP	mol H^+ eq.	5,90E-02	5,08E-04	8,50E-04	6,03E-02	0	6,24E-05	0	1,28E-04	0
EP-freshwater	kg P eq.	5,34E-04	7,47E-08	1,24E-06	5,35E-04	0	9,19E-09	0	1,65E-07	0
EP-marine	kg N eq.	1,61E-02	1,62E-04	3,73E-04	1,66E-02	0	2,00E-05	0	5,28E-05	0
EP-terrestrial	mol N eq.	1,10E-01	1,79E-03	3,95E-03	1,16E-01	0	2,20E-04	0	5,79E-04	0
POCP	kg NMVOC eq.	3,89E-02	4,87E-04	1,05E-03	4,04E-02	0	5,99E-05	0	1,60E-04	0
ADP-minerals&metals*	kg Sb eq.	2,62E-06	6,34E-09	9,85E-09	2,64E-06	0	7,80E-10	0	6,23E-10	0
ADP-fossil*	MJ	2,25E+02	2,07E+00	1,39E+00	2,28E+02	0	2,54E-01	0	1,82E-01	0
WDP	m^3	8,88E+00	-3,46E-04	2,28E-02	8,91E+00	0	-4,26E-05	0	4,56E-04	0
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

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	9,64E+00	1,45E-01	3,75E-01	1,02E+01	0	1,79E-02	0	1,36E-02	0

Voluntary additional indicators have not been declared.

Use of resources

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,17E+01	3,17E-03	3,12E-02	1,17E+01	0	3,90E-04	0	4,30E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1,17E+01	3,17E-03	3,12E-02	1,17E+01	0	3,90E-04	0	4,30E-03	0
PENRE	MJ	1,74E+02	2,20E+00	9,83E-01	1,77E+02	0	2,70E-01	0	1,94E-01	0
PENRM	MJ	6,71E+01	0	5,04E-01	6,76E+01	0	0	0	0	0
PENRT	MJ	2,41E+02	2,20E+00	1,49E+00	2,45E+02	0	2,70E-01	0	1,94E-01	0
SM	kg	0	0	8,58E-03	8,58E-03	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	2,30E-01	5,68E-06	6,08E-04	2,31E-01	0	6,98E-07	0	2,19E-05	0
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

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,06E-04	5,44E-06	2,37E-06	1,14E-04	0	6,69E-07	0	3,90E-07	0
Non-hazardous waste disposed	kg	3,60E-01	1,09E-04	8,32E-03	3,69E-01	0	1,33E-05	0	2,60E+00	0
Radioactive waste disposed	kg	5,18E-04	1,48E-05	6,00E-06	5,39E-04	0	1,82E-06	0	1,15E-06	0

Output flows

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0	0

[2] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Material for recycling	kg	0	0	6,13E-04	6,13E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	1,75E-02	1,75E-02	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0

Results' interpretation

Module A1 of Extraction and processing of raw materials is the one that presents a higher contribution in almost all the life cycle of the bituminous PIR insulating sheet, with a maximum impact on the category of freshwater eutrophication (99.72%), and a minimum for the category of production of non-hazardous waste (12.14%).

Isocyanate is the raw material that contributes the most to the total impact on eight of the impact categories analyzed. It has a maximum value in the category of ozone depletion with a contribution of 83.55%. In contrast, it presents its minimum value in the category of freshwater eutrophication, where it has a contribution of 43,61% on the total of this category.

The glass veil, together with the polyol, are the next two raw materials with the greatest impact. Specifically, polyol has its highest contribution in the category of eutrophication (47.90%). On the contrary, in the category of depletion of the ozone layer presents is where it has a lower impact (0.69%). The greatest impact of the glass veil is in the category of depletion of mineral resources (29.54%). On the other hand, it has its smallest impact in the category of ozone depletion, where it has a contribution of only 3.04%.

Module A2 has a low or negligible contribution according to the impact category evaluated, with a maximum value close to 4.74% for the hazardous waste production indicator.

Module A3 presents a low environmental contribution in the impact categories evaluated, below 3.59% for the different categories.

Module C1 has been considered negligible, so there are no associated impacts.

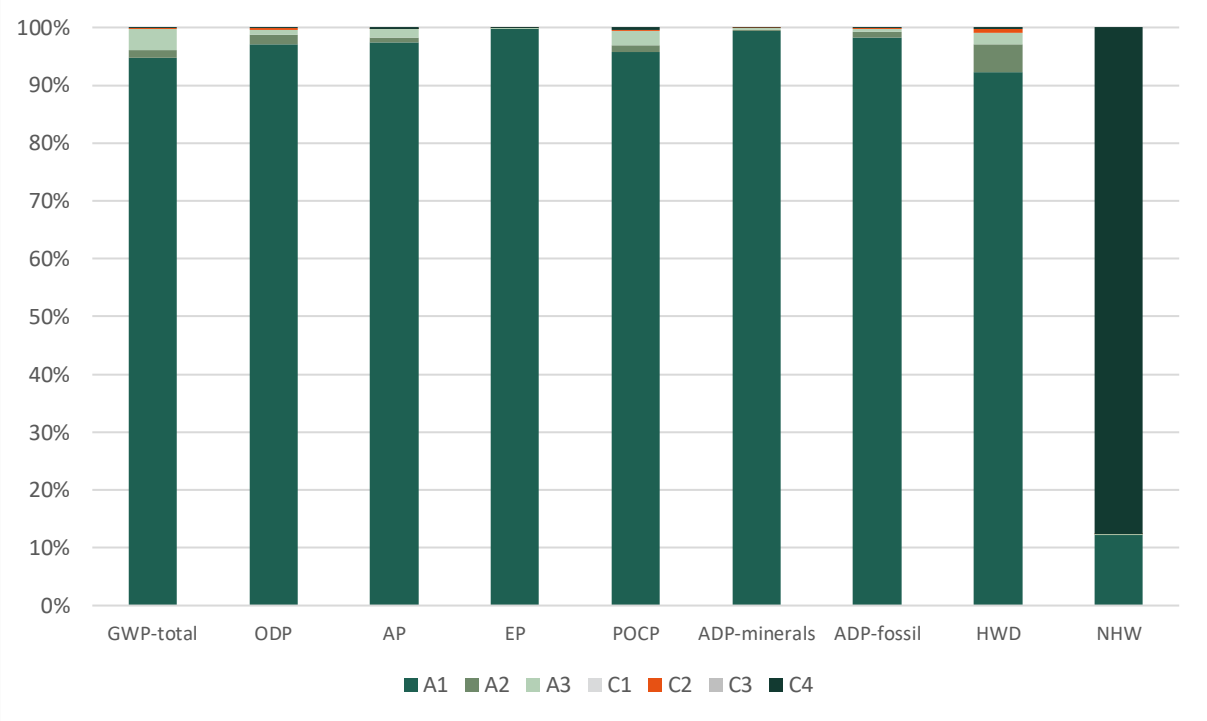
Module C2 has a very low contribution in the impact categories evaluated. Specifically, it has its maximum value in the impact category of hazardous waste production, which reaches a value of 0.58%.

Module C3, it presents zero impact values given the impacts of recycling are imputed in the following system, according to the polluter pays principle.

Module C4 has a low contribution in most of the impact categories evaluated except for the non-hazardous waste production category, where it reaches a value of 87.58% of the total impact category.

Finally, module D does not present any benefit beyond the limits of the system, since no recycling, reuse or recovery process has been considered for any of the components that make up the product.

In the following figure, a graphic of the contribution of the different stages over the considered impact categories is shown.



Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	Not applicable*

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

*As the mass of the packaging is under 5% of the product mass, the amount of biogenic carbon contained in the packaging is not represented, according to UNE-EN 15804:2012+A2:2020.

Results for the insulating sheet PIR aluminum 2U

Considering a functional unit of one square metre (m²) of PIR sheet with a thickness of 60 mm and application factor of 2,24 Kg/m².

Potential environmental impact – mandatory indicators according to EN 15804

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1,05E+01	6,52E-02	3,25E-01	1,09E+01	0	1,55E-02	0	1,06E-02	-8,96E-01
GWP-biogenic	kg CO_2 eq.	4,87E-02	3,81E-06	5,50E-05	4,88E-02	0	9,04E-07	0	6,45E-05	-5,10E-03
GWP-luluc	kg CO_2 eq.	3,38E-02	5,27E-07	2,64E-05	3,38E-02	0	1,25E-07	0	3,83E-06	-2,29E-02
GWP-total	kg CO_2 eq.	1,06E+01	6,52E-02	3,25E-01	1,10E+01	0	1,55E-02	0	1,06E-02	-9,24E-01
ODP	kg CFC 11 eq.	1,77E-06	1,55E-08	1,41E-08	1,80E-06	0	3,67E-09	0	1,88E-09	-9,69E-08
AP	mol H^+ eq.	6,45E-02	2,26E-04	7,32E-04	6,54E-02	0	5,38E-05	0	9,84E-05	-5,97E-03
EP-freshwater	kg P eq.	5,74E-04	3,34E-08	1,07E-06	5,75E-04	0	7,92E-09	0	1,27E-07	-5,01E-05
EP-marine	kg N eq.	1,64E-02	7,25E-05	3,22E-04	1,68E-02	0	1,72E-05	0	4,08E-05	-6,35E-04
EP-terrestrial	mol N eq.	1,08E-01	7,98E-04	3,40E-03	1,12E-01	0	1,89E-04	0	4,47E-04	-7,00E-03
POCP	kg NMVOC eq.	4,05E-02	2,17E-04	9,06E-04	4,16E-02	0	5,16E-05	0	1,24E-04	-2,67E-03
ADP-minerals&metals*	kg Sb eq.	2,49E-05	2,83E-09	8,49E-09	2,49E-05	0	6,72E-10	0	4,81E-10	7,31E-07
ADP-fossil*	MJ	2,21E+02	9,24E-01	1,20E+00	2,23E+02	0	2,19E-01	0	1,41E-01	-1,43E+01
WDP*	m^3	8,78E+00	-1,54E-04	1,97E-02	8,80E+00	0	-3,67E-05	0	3,51E-04	-5,74E-02
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

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG[3]	kg CO_2 eq.	1,02E+01	6,48E-02	3,23E-01	1,06E+01	0	1,54E-02	0	1,05E-02	-8,92E-01

Voluntary additional indicators have not been declared.

Use of resources

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,75E+01	1,42E-03	2,69E-02	1,75E+01	0	3,36E-04	0	3,32E-03	-5,96E+00
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1,75E+01	1,42E-03	2,69E-02	1,75E+01	0	3,36E-04	0	3,32E-03	-5,96E+00
PENRE	MJ	1,87E+02	9,81E-01	8,47E-01	1,89E+02	0	2,33E-01	0	1,49E-01	-1,52E+01
PENRM	MJ	4,90E+01	0	4,35E-01	4,94E+01	0	0	0	0	0
PENRT	MJ	2,36E+02	9,81E-01	1,28E+00	2,38E+02	0	2,33E-01	0	1,49E-01	-1,52E+01
SM	kg	0	0	7,39E-03	7,39E-03	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	2,57E-01	2,53E-06	5,24E-04	2,58E-01	0	6,02E-07	0	1,69E-05	-4,17E-02
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

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,51E-03	2,43E-06	2,04E-06	2,52E-03	0	5,76E-07	0	3,01E-07	9,06E-04
Non-hazardous waste disposed	kg	7,21E-01	4,85E-05	7,17E-03	7,28E-01	0	1,15E-05	0	2,01E+00	-2,31E-01
Radioactive waste disposed	kg	5,01E-04	6,61E-06	5,17E-06	5,13E-04	0	1,57E-06	0	8,87E-07	-9,21E-05

[3] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Output flows

Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	8,42E-04	8,42E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	2,41E-02	2,41E-02	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0

Results' interpretation

Module A1 of Extraction and processing of raw materials is the one that presents a higher contribution in almost all the life cycle of the 2U aluminium PIR insulation sheet, with a maximum impact on the category of depletion of mineral resources, with a contribution of 99.95%. On the other hand, it presents its minimum contribution in the category of production of non-hazardous waste (26.36%).

Isocyanate has a maximum value in the category of ozone depletion with a contribution of 88.35%. In contrast, it presents its minimum value in the category of production of hazardous waste, where it has a contribution of 3,40% on the total of this category.

Aluminum foil has its highest contribution in the hazardous waste production category (96.21%), this being the raw material with the highest impact on this category. On the contrary, in the category of ozone depletion is where it has a lower impact (7,30%). The highest impact of polyol is in the freshwater eutrophication category (44,64%). On the other hand, it has its smallest impact in the category of ozone depletion, where it has a contribution of only 0.73%.

Module A2 has a low or negligible contribution according to the impact category evaluated, with a maximum value close to 0.86% for the ozone depletion indicator.

Module A3 presents a low environmental contribution in the impact categories evaluated, below 2.98% for the different categories.

In module C1, it has been considered that there are no impacts, since they are negligible compared to the demolition of the building.

Module C2 has a very low contribution in the impact categories evaluated. Specifically, it has its maximum value in the category of impact of depletion of the ozone layer, which reaches a value of only 0.20%.

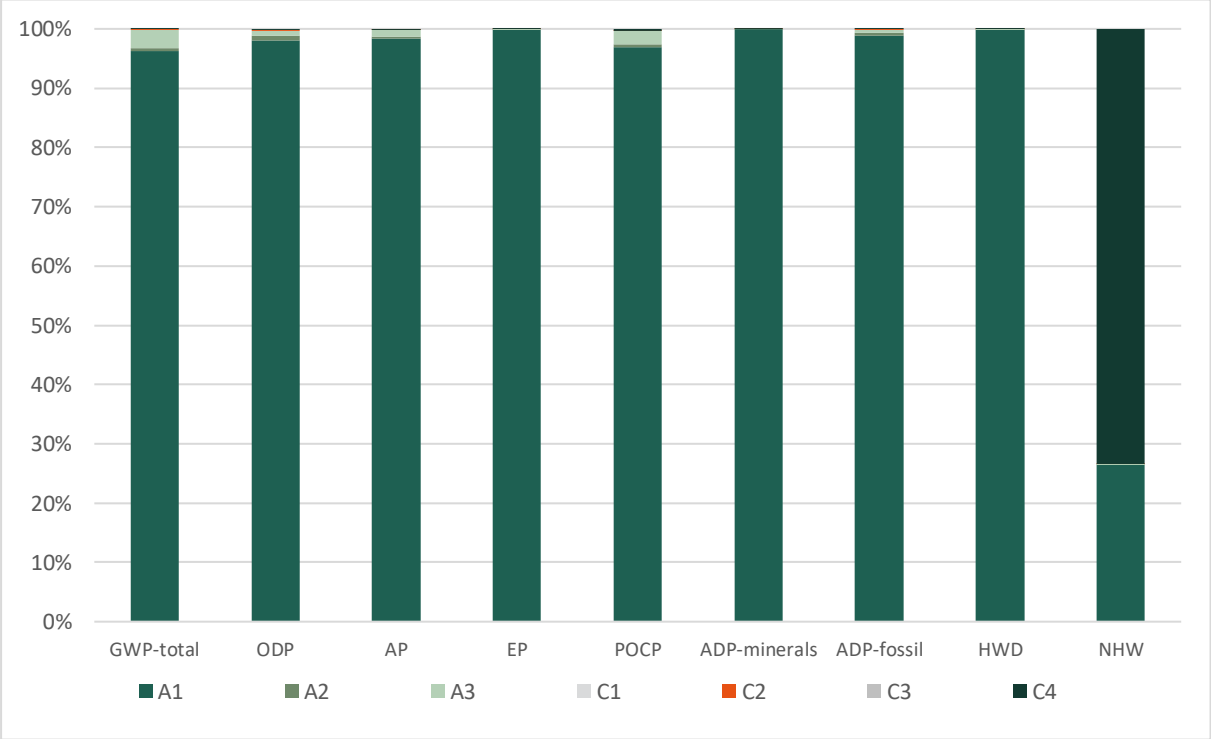
Module C3, presents zero impact values given the impacts of recycling are imputed in the following system, according to the polluter pays principle.

Module C4 has a low contribution in most of the impact categories evaluated except for the non-hazardous waste production category, where it reaches a value of 73.37% of the total impact category.

Finally, module D presents a maximum reduction value in the category of depletion of fossil resources, where it reaches a value of -1,43E+01 MJ/m² of product. The next category where there is a higher

benefit beyond the limits of the system is the category of global warming potential (-8,96E-01 Kg CO_2 eq./m² of product).

In the following figure, a graphic of the contribution of the different stages over the considered impact categories is shown.



Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	Not applicable*

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

*As the mass of the packaging is under 5% of the product mass, the amount of biogenic carbon contained in the packaging is not represented, according to UNE-EN 15804:2012+A2:2020.

Revision of the EPD

The revision of this EPD is only due to a recent change in the company's corporate image.

References

- The Product Category Rules (PCR) “PCR 2019:14 Construction products, version 1.11 published on 5 February 2021, valid until 20 December 2024” based on the European standard UNE-EN 15804:2012+A2:2020.
- UNE-EN ISO 14040:2006 – Environmental management – Life Cycle Assessment – Principles and framework
- UNE-EN ISO 14044:2006 – Environmental management – Life Cycle Assessment – Requirements
- UNE-EN ISO 14025:2006- Labels and environmental declarations.
- ISO/TR 14047: 2003 – Environmental management – Life Cycle Assessment – LCI application examples
- ISO/TS 14048: 2003 – Environmental management – Life Cycle Assessment – Data inventory
- ISO/TR 14049: 2000 – Environmental management – Life Cycle Assessment – Examples of application of objectives and scope and inventory analysis
- UNE-EN 15804:2012+A2: Sustainability in construction. Product environmental statements. Commodity category rules for construction products.
- UNE-EN 16783 Thermal insulation products. Product Category Rules (RCP) for products manufactured and formed in situ, intended for the preparation of environmental product declarations.

VERIFICATION STATEMENT CERTIFICATE

CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD08002

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:*

EUROPERFIL, S.A.
Avda. Vall d'Aran, s/n
Polígono Industrial de Cervera
25200 CERVERA (Lleida) - SPAIN

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

Insulation boards with a core of rigid polyurethane (PIR) for buildings.
Paneles aislantes de poliisocianurato (PIR) para construcción.

with registration number **S-P-07206** in the International EPD® System *(www.environdec.com).*
*con número de registro **S-P-07206** 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.3.01.**
- **PCR 2019:14 Construction products (EN 15804:A2) v.1.11.**
- **c-PCR-005 Thermal insulation products (EN 16783:2017) version 2019-12-20.**
- **UN CPC code no available for this product.**

Carlos Nazabal Alsua
Manager

Issued date / *Fecha de emisión:*	23/11/2022
Update date / *Fecha de actualización:*	23/11/2022
Valid until / *Válido hasta:*	21/11/2027
Serial Nº / *Nº Serie:*	EPD0800200-E

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

El presente certificado está sujeto a modificaciones, suspensiones temporales y retiradas por TECNALIA R&I CERTIFICACION.
This certificate is subject to modifications, temporary suspensions and withdrawals by TECNALIA R&I CERTIFICACION.

El estado de vigencia del certificado puede confirmarse mediante consulta en www.tecnaliacertificacion.com.
The validity of this certificate can be checked through consultation in www.tecnaliacertificacion.com.

CERTIFICACIÓN ISO 17065 Nº125 / C-PR283

EPD®

www.environdec.com