Environmental Product Declaration

In accordance with EN 15804
and ISO 14025

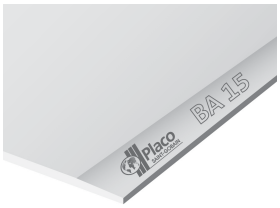
Thermosilence F

Date of publication: 2016-05-30. Validity: 3 years. Valid until: 2019-05-30. Based on PCR 2014:13 Insulation materials. Scope of the EPD®: Spain and Portugal.

EPD® registration number: S-P-00886
Ecoplatform registration number:
ECO EPD 00000355

ARLIBLOCK
TERMOACUSTICO

LANA MINERAL



BA 15

THERMOSILENCE

SAINT-GOBAIN

ISOVER SAINT-GOBAIN · Placo SAINT-GOBAIN · weber SAINT-GOBAIN · GLASSOLUTIONS SAINT-GOBAIN · CLIMALIT PLUS®

General information

Manufacturer: Isover-Saint Gobain Ibérica SL, Saint Gobain Placo Ibérica SA, Weber-Saint Gobain Ibérica SL. Calle Príncipe de Vergara 132. 28002 Madrid.
Programme used: The International EPD® System. More information at www.environdec.com
EPD® registration number: S-P-00886
Ecoplatform registration number: ECO EPD 00000355
PCR identification: PCR Multiple CPC codes Insulation materials version 1.0 (2014:13)
Product name and manufacturer represented: Thermosilence F; Saint Gobain Ibérica SL
Owner of the declaration: Saint Gobain Ibérica SL
EPD® prepared by: Alberto Rubio and Jaime de Luis (Weber-Saint Gobain Ibérica), Nicolás Bermejo (Isover- Saint Gobain Ibérica) and Silvia Bailo (Saint Gobain Placo Ibérica SA)
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Declaration issued: 2016-05-30, **valid until**: 2019-05-30

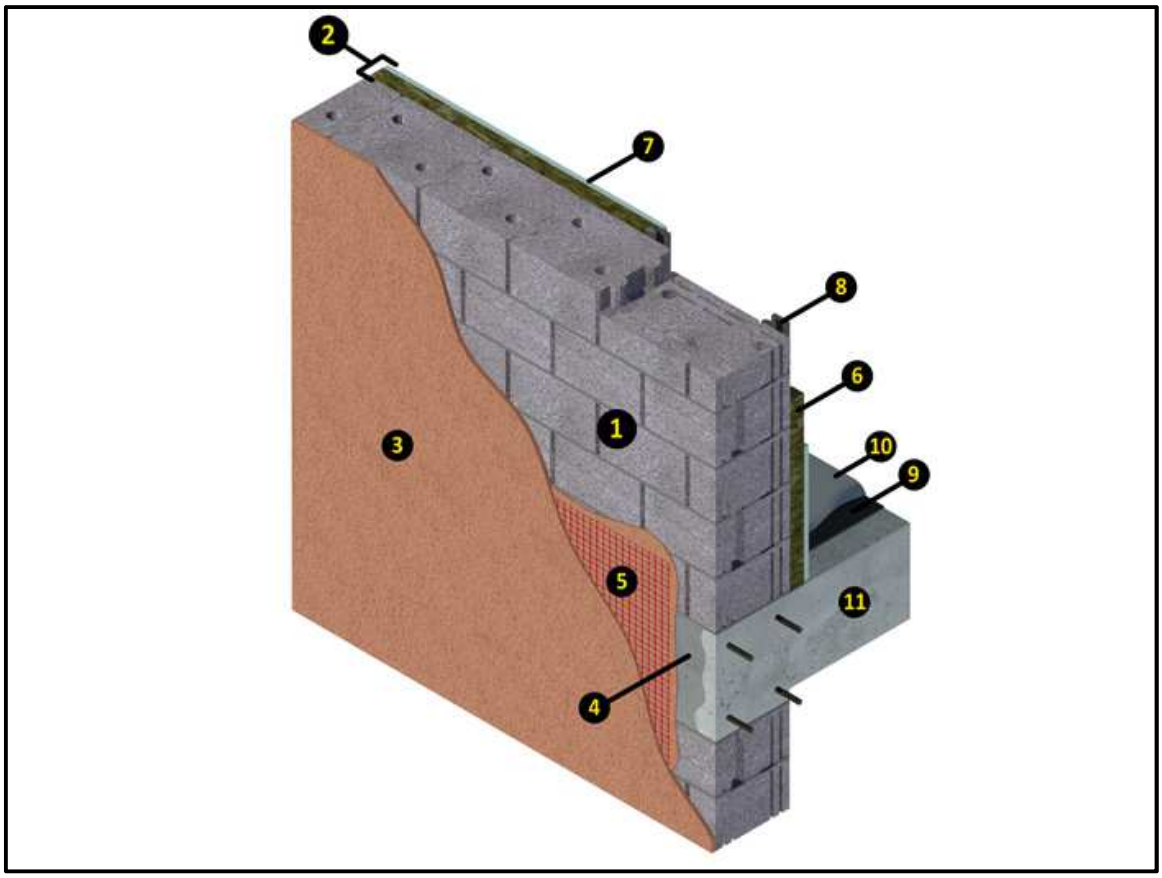
EPD program operator	The International EPD® System. Operated by EPD® International AB. www.environdec.com.
PCR review conducted by	The Technical Committee of the International EPD® System
LCA and EPD® performed by Isover Saint Gobain Ibérica, Weber Saint Gobain Ibérica and Saint Gobain Placo Ibérica SA	
Independent verification of the environmental declaration and data according to standard EN ISO 14025:2010 Internal ☐ External ☒	
Verifier accredited by The International EPD® System Marcel Gómez Ferrer Marcel Gómez Consultoria Ambiental (www.marcelgomez.com) Tlf 0034 630 64 35 93 Email: info@marcelgomez.com Approved by: The International EPD® System	
www.isover.es **www.weber.es** **www.placo.es**	

Product description

Product description and description of use:

This Environmental Product Declaration (EPD®) describes the Environmental impacts of 1 m² of Thermosilence F with a thermal resistance of 1,0 $K*m^2*W^{-1}$.

THERMOSILENCE F is a façade cladding system of Saint-Gobain both with high acoustic-thermal insulation and fire protection composed of a cladding with Laminated ***Gypsum Plasterboard Placo BA 15***, ***Isover Arena*** mineral wool and ***Arliblock® Termoacústico*** 25 cm. The combination of the most innovative products from Isover, Weber and Placo allows obtaining the solution with the best performance in the market.



1. **Arliblock® Termoacústico 25**
2. Placo Prima System sheeting wall
3. High performance mineral coating **Weber.therm clima** mortar
4. **Weber FX** adhesion bridge and absorption regulator
5. **Weber.therm malla 200** glass fibre net
6. **Arena's** mineral wool
7. **BA 15** Laminated Gypsum Board with 15 mm of thickness
8. M 48 downpipe from Placo
9. Perimetral rail R48 from Placo
10. Expanded polyethylene anti-impact sheet
11. Floating pavement over acoustic insulation with self-levelling **weber.floor rapid** mortar
12. Floor framing

Main components

ARLIBLOCK® TERMOACÚSTICO 25
Light block manufactured with expanded clay Arlita® Leca®, cement, natural stone and water.

ARENA MINERAL WOOL
Semirigid panels and rolls of **Arena** mineral wool, hydrophobic, without coating. Designed to reach the highest thermal and acoustic properties in construction.

BA 15
Laminated Gypsum Board with double facing cardboard and natural origin gypsum heart.

Descriptive report

Self-holding sheeting wall with **BA 15** Laminated Gypsum Board of 15 mm of thickness and **Arena** Mineral Wool, in panels or rolls of 50 mm of thickness, specifically developed to use in constructions with high acoustic insulation requirements, with a thermal conductivity of 0,035 W/(m•K), A1 class fire reaction, and **Arliblock® Termoacústico** block with 25 cm of thickness prefabricated with Arlita® Leca® expanded clay. The system is filled by its exterior side with 10 mm of **Weber.therm clima** and by its interior side with 5 cm of **Weber.rev hidro** mortar, being the total weight of the system 259,80 Kg/m^2, and it is composed by a holding metallic structure where a **BA 15** Laminated Gypsum Board is screwed by its internal side. The thickness of the finished sheeting wall is 365 mm. Proportional parts of screws, plasters and tape for junctions, anchoring for floor and roof, etc. Completely finished, ready to prime and decorate. Mineral wool heart of 100 mm of thickness. Variable total width of the unit. Assembly of the holding framework unit following UNE 102043.

Technical data/physical characteristics (for a thickness of 38 cm including 10 cm of Arena insulation panel). For technical data/ physical characteristics as well as environmental profile of the product with 15 cm of Arena insulation panel please go to Annex I

Thermal resistance of Thermosilence F: **4,25 $K.m^2.W^{-1}$** (UNE EN 12667)
Thermal conductivity of Thermosilence F (for Arena insulation panel): **0,035 W/(m·K)** (UNE EN 12667)
Reaction to fire (for Arena insulation panel): Euroclass **A1** (UNE EN 13501-1)
Acoustic properties (for Arena insulation panel): **AW 0,7** (UNE EN ISO 354)
Water vapour transmission (for Arena insulation panel): **μ=1** (UNE EN 12086)

Description of the main components and/or materials for 1 m^2 of Thermosilence F (with 10 cm of insulation panel) with a thermal resistance of 1 $K.m^2.W^{-1}$ for the calculation of the EPD® (8,94 cm of thickness). In order to obtain the results for the real thickness of the system (38 cm) results must be multiplied by 4,25.

PARAMETER	VALUE
Quantity of Arliblock® Termoacústico	52,36 Kg
Quantity of Isover Arena insulation panel	0,495 Kg
Thickness of wool	23,53 mm
Quantity of Placo BA 15 laminated gypsum board	2,581 Kg
Quantity of Weber.therm clima coating mortar	3,529 Kg
Quantity of Weber.therm.hidro coating mortar	2,118 Kg
Quantity of Weber.therm malla 200 glass fibre net	0,046 Kg
Packaging for the transportation and distribution	Polyethylene: negligible Wood pallet: reused Paper for the label: negligible
Products used for the Installation	Placo M48 Montante vertical: 0,143 Kg Placo R48 Perimetral rail: 0,111 Kg Screws: 0,004 Kg Joint filler: 0,082 Kg Water: 0,039 l

During the life cycle of the product any hazardous substance listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization[1]" has been used in a percentage higher than 0,1% of the weight of the product.

[1] http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

LCA calculation information

FUNCTIONAL UNIT	Providing a thermal insulation on 1 m² of product with a thermal resistance of 1 $K.m^2.W^{-1}$
SYSTEM BOUNDARIES	Cradle to Grave: Mandatory stages = A1-3, A4-5, B1-7, C1-4. Optional stage = D not taken into account
REFERENCE SERVICE LIFE (RSL)	50 years
CUT-OFF RULES	In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than the 5% of the whole mass and energy used, as well of the emissions to environment occurred. Flows related to human activities such as employee transport are excluded. The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
ALLOCATIONS	Allocation criteria are based on mass
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Spain and Portugal 2015

- “EPDs of construction products may be not comparable if they do not comply with EN 15804"
- “Environmental Product Declarations within the same product category from different programs may not be comparable”

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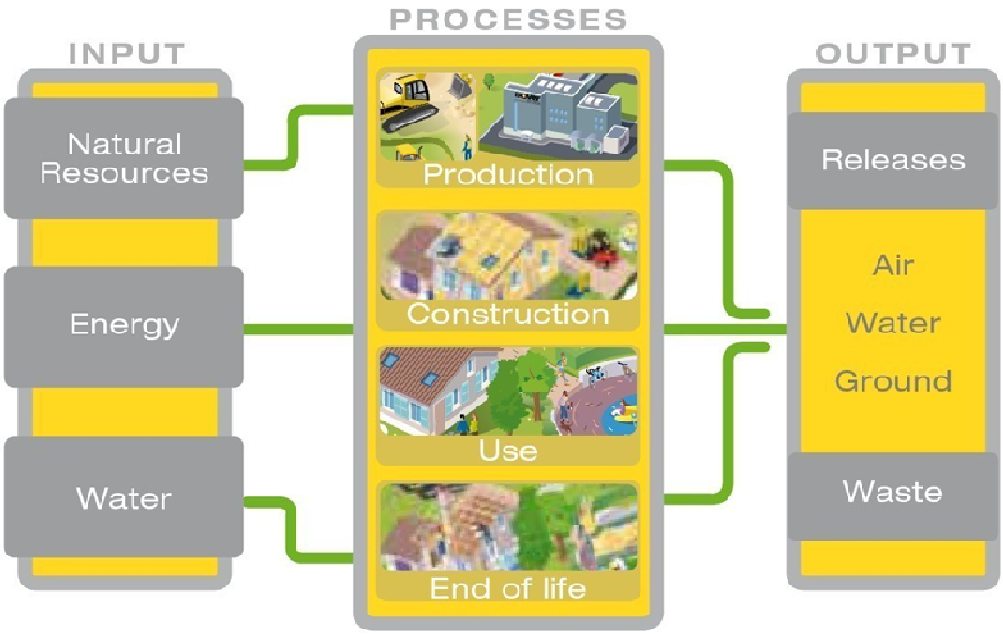
Life cycle stages

Flow diagram of the Life Cycle



Product stage, A1-A3

Description of the stage: the product stage of Thermosilence F is subdivided into 3 modules A1, A2 and A3 respectively “Raw material supply”, “transport” and “manufacturing”.

The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15 804 standard. This rule is applied in this EPD®.

Description of the scenarios and other additional technical information:

A1, Raw materials supply
This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process: Arliblock® Termoacústico, Isover Arena, Placo BA15, Weber.therm clima, Weber.FX and Weber.therm malla 200.

A2, Transport to the manufacturer
The raw materials are transported to the manufacturing site. In our case, the modelling include: road and boat transportations (average values) of each raw material.

A3, Manufacturing
This module includes the manufacturing of the components of the product and their packaging.

Construction process stage, A4-A5

Description of the stage: the construction process is divided into 2 modules: A4, transport to the building site and A5, installation in the building.

A4, Transport to the building site: this module includes transport from the production gate to the building site.
Transport is calculated on the basis of a scenario with the parameters described in the following table.

PARAMETER	VALUE/DESCRIPTION
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	**Average truck trailer with a 16-32t payload, diesel consumption of 26 litres for 100 km**
Distance	**Arliblock® 12: 50 Km** **Isover Arena insulation panel: 450 Km** **Placo BA 15 laminated gypsum board: 428 Km** **Weber.rev hidro mortar: 500 Km** **Installation materials (screws, etc):50 km**
Capacity utilisation (including empty returns)	**100 % of the capacity in volume** **% of empty returns assumed in Ecoinvent 3.1**
Bulk density of transported products	**Arliblock® Termoacústico 25: 890 Kg/m^3** **Isover Arena insulation panel: 14,7 Kg/m^3** **Placo BA 15 laminated gypsum board: 738 Kg/m^3** **Thermosilence F whole system: 684 kg/m^3**
Volume capacity utilisation factor	**1**

A5, Installation in the building: this module includes:

- Waste produced during the installation of the product (see value in percentage shown in the next table). These losses are sent to landfill.
- Additional manufacturing processes done in order to compensate losses
- Packaging waste processing, which are 100% collected and recycled

PARAMETER	VALUE/DESCRIPTION
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	2,0 %
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal (specified by route)	Product packaging waste is 100% collected and recycled. Following a conservative methodology Thermosilence F losses are considered to be landfilled.

Use stage (excluding potential savings), B1-B7

Description of the stage: the use stage is divided into the following modules:

- B1: Use
- B2: Maintenance
- B3: Repair
- B4: Replacement
- B5: Refurbishment
- B6: Operational energy use
- B7: Operational water use

Description of the scenarios and additional technical information:

Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. Therefore Thermosilence F has no impact (excluding potential energy savings) on this stage.

End of Life Stage, C1-C4

Description of the stage: this stage includes the next modules:

C1, Deconstruction, demolition
The de-construction and/or dismantling of insulation products take part of the demolition of the entire building. In our case, the environmental impact is assumed to be very small and can be neglected

C2, Transport to waste processing
The model use for the transportation (see A4, transportation to the building site) is applied.

C3, Waste processing for reuse, recovery and/or recycling
The product is considered to be landfilled without reuse, recovery or recycling.

C4, Disposal
Thermosilence F is assumed to be 100% landfilled.

Description of the scenarios and additional technical information:

End of life:

PARAMETER	VALUE/DESCRIPTION
Collection process specified by type	**61,47 Kg** (collected with mixed construction waste)
Recovery system specified by type	No re-use, recycling or energy recovery
Disposal specified by type	**61,47 Kg** landfilled
Assumptions for scenario development (e.g. transportation)	Average truck trailer with a 16-32t payload, diesel consumption of 26 litres for 100 km 50 km of average distance to landfill

Reuse/recovery/recycling potential, D

Description of the stage: module D has not been taken into account.

LCA results

LCA model, aggregation of data and environmental impact are calculated from Simapro 8 software. CML impact method has been used, together with Ecoinvent 3.1 database to obtain the inventory of generic data. EDIP 2003 impact model has been used for the calculation of waste production indicators.

Raw materials and energy consumption for Isover-Saint Gobain, Placo-Saint Gobain and Weber-Saint Gobain products, as well as transport distances have been taken directly from the manufacturing plants in Spain in 2014. Note that the results refer to 1 m^2 of Thermosilence F with a thermal resistance of 1 $K.m^2.W^{-1}$. To obtain the environmental results of the real thickness of the product (38 cm) please multiply the results shown by 4,25.

ENVIRONMENTAL IMPACTS

Parameters	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Global Warming Potential (GWP) - *kg CO2 equiv/FU*	2,14E+01	1,13E+00	1,79E+00	0	0	0	0	0	0	0	Irrelevant	5,16E-01	0	5,10E-01	MND[2]
	The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.														
Ozone Depletion (ODP) *kg CFC 11 equiv/FU*	1,41E-06	2,08E-07	1,64E-07	0	0	0	0	0	0	0	Irrelevant	9,48E-08	0	1,43E-07	MND
	Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons), which break down when they reach the stratosphere and then catalytically destroy ozone molecules.														
Acidification potential (AP) *kg SO2 equiv/FU*	8,67E-02	4,66E-03	7,71E-03	0	0	0	0	0	0	0	Irrelevant	2,10E-03	0	3,69E-03	MND
	Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.														
Eutrophication potential (EP) *kg (PO4)3- equiv/FU*	1,81E-02	9,96E-04	2,53E-03	0	0	0	0	0	0	0	Irrelevant	4,55E-04	0	9,85E-04	MND
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.														
Photochemical ozone creation (POPC) *Ethene equiv/FU*	3,94E-03	1,97E-04	6,91E-04	0	0	0	0	0	0	0	Irrelevant	8,88E-05	0	1,61E-04	MND
	Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.														
Abiotic depletion potential for non-fossil resources (ADP-elements) - *kg Sb equiv/FU*	2,28E-05	3,68E-06	5,78E-06	0	0	0	0	0	0	0	Irrelevant	1,68E-06	0	6,13E-07	MND
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - *MJ/FU*	1,91E+02	1,81E+01	2,24E+01	0	0	0	0	0	0	0	Irrelevant	8,27E+00	0	1,27E+01	MND
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

[2] MND= Module Not Declared

RESOURCE USE															
Parameters	Product stage	Construction process stage		Use stage							End of life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - *MJ/FU*	2,57E+01	2,14E-01	1,43E+00	0	0	0	0	0	0	0	Irrelevant	9,86E-02	0	3,67E-01	MND
Use of renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) *MJ/FU*	2,57E+01	2,14E-01	1,43E+00	0	0	0	0	0	0	0	Irrelevant	9,86E-02	0	3,67E-01	MND
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - *MJ/FU*	1,91E+02	1,81E+01	2,24E+01	0	0	0	0	0	0	0	Irrelevant	8,27E+00	0	1,27E+01	MND
Use of non-renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/FU*	1,91E+02	1,81E+01	2,24E+01	0	0	0	0	0	0	0	Irrelevant	8,27E+00	0	1,27E+01	MND
Use of secondary material Kg/FU	6,73E-02	0	0	0	0	0	0	0	0	0	Irrelevant	0	0	0	MND
Use of renewable secondary fuels- *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels - *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water - *m3/FU*[3]	1,25E-01	3,81E-03	8,78E-01	0	0	0	0	0	0	0	Irrelevant	1,49E-03	0	1,18E-02	MND

[3] Neither the use of water in turbinage or cooling during the production of hydraulic and nuclear electricity have been taken into account.

WASTE CATEGORIES

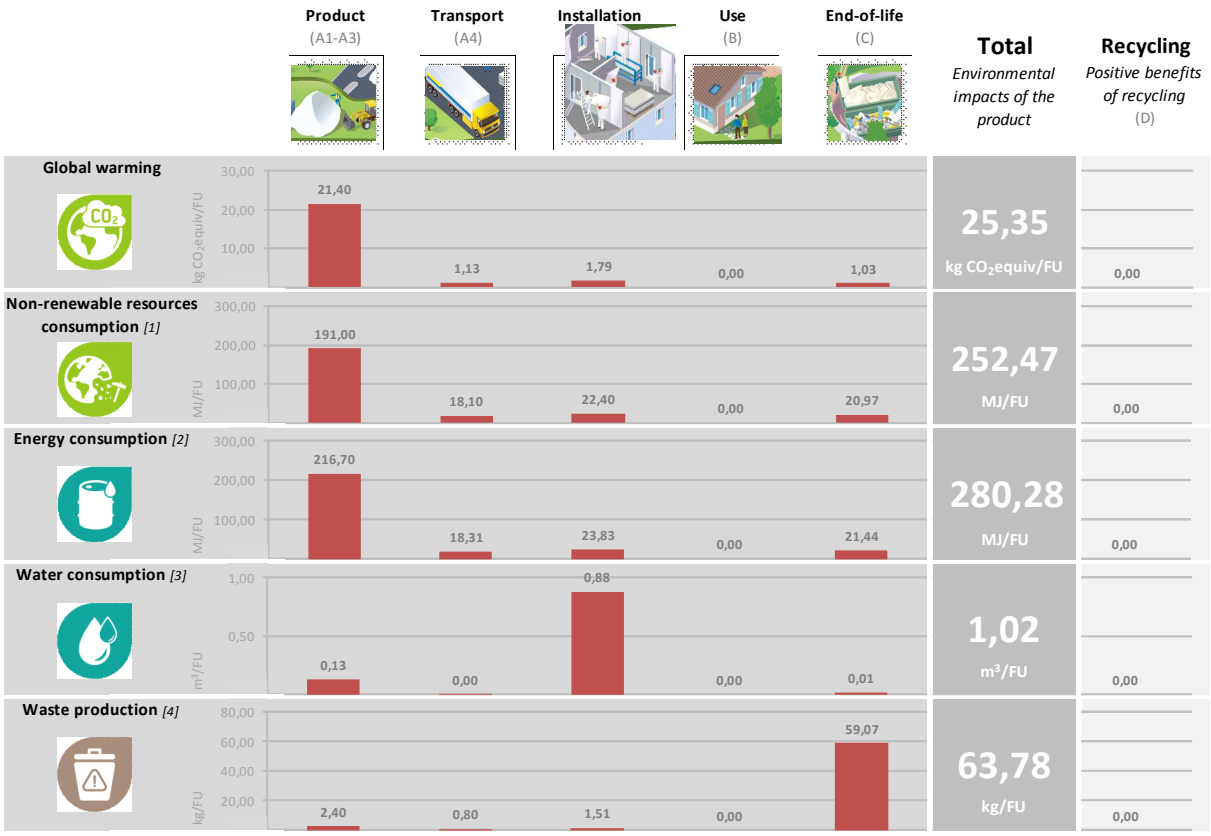
Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Hazardous waste disposed *kg/FU*	1,47E-04	1,03E-05	1,52E-04	0	0	0	0	0	0	0	Irrelevant	4,69E-06	0	9,09E-06	MND
Non-hazardous waste disposed *kg/FU*	2,40E+00	8,01E-01	1,51E+00	0	0	0	0	0	0	0	Irrelevant	3,66E-01	0	5,87E+01	MND
Radioactive waste disposed *kg/FU*	8,55E-04	1,17E-04	6,96E-05	0	0	0	0	0	0	0	Irrelevant	5,37E-05	0	8,50E-05	MND

OTHER OUTPUT FLOWS

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Components for re-use *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MND
Materials for recycling *kg/FU*	2,69E-02	1,67E-06	7,81E-02	0	0	0	0	0	0	0	Irrelevant	6,17E-06	0	0	MND
Materials for energy recovery *kg/FU*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND
Exported energy *MJ/FU*	0	0	0	0	0	0	0	0	0	0	Irrelevant	0	0	0	MND

LCA interpretation

The Product stage (A1-A3) is the life cycle stage with the biggest impact, since it represents more than 76% of the whole impact of the product for the next impact categories: Global warming, Non-renewable resources consumption, energy and water consumption.
Waste production is mainly produced during the End of life stage (93% of the whole impact). This is due to the fact that 100% of the product is landfilled at the end of its service life.



[1] This indicator corresponds to the abiotic depletion potential of fossil resources.
[2] This indicator corresponds to the total use of primary energy.
[3] This indicator corresponds to the use of net fresh water.
[4] This indicator corresponds to the sum of hazardous, non-hazardous and radioactive waste disposed.

Additional information

The electricity production mix considered for A1-A3 product stage is the Spanish electricity production mix in 2014[4].

The composition of the electricity production mix used is detailed in the next figure.
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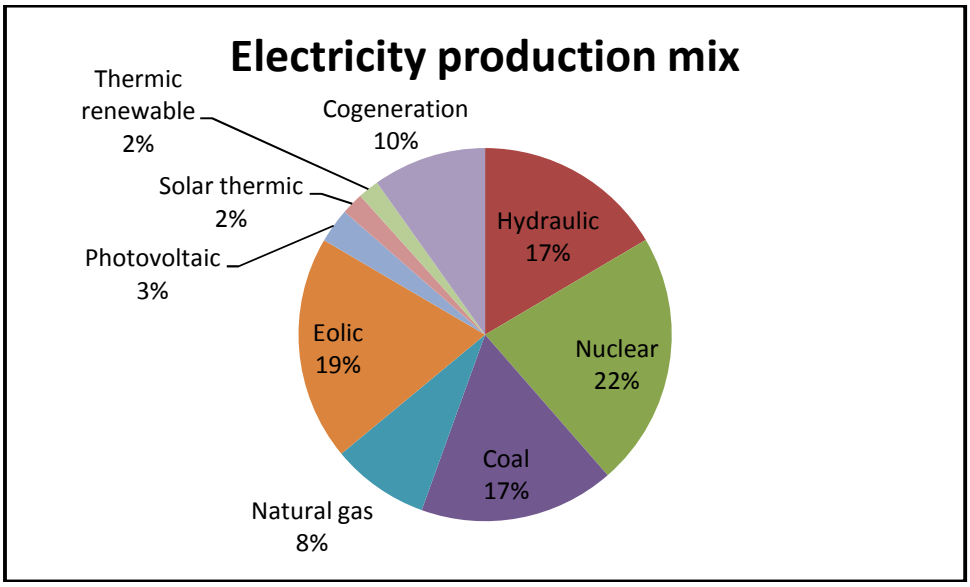

Annex I Thermosilence F (15 cm of insulation panel)

In this annex technical data and physical characteristics, as well as the environmental profile of the life cycle of Thermosilence F (with 15 cm of Isover Arena insulation panel), are shown.

Thermal resistance of Thermosilence F: **5,68 K.m².W^{-1}** (UNE EN 12667)
Thermal conductivity of Thermosilence F (for Arena insulation panel): **0,035**: **0,41 W/(m·K)** (UNE EN 12667)
Reaction to fire (for Arena insulation panel): Euroclass **A1** (UNE EN 13501-1)
Acoustic properties (for Arena insulation panel): **AW 0,7** (UNE EN ISO 354)
Water vapour transmission (for Arena insulation panel): **μ=1** (UNE EN 12086)

Description of the main components and/or materials for 1 m^2 of Thermosilence F (with 15 cm of insulation panel) with a thermal resistance of 1 K.m^2.W^{-1} for the calculation of the EPD® (7,57 cm of thickness). In order to obtain the results for the real thickness of the system (43 cm) results must be multiplied by 5,68.

[4] Source: Red Eléctrica Española.

PARAMETER	VALUE
Quantity of Arliblock® Termoacústico	39,18 Kg
Quantity of Isover Arena insulation panel	0,555 Kg
Thickness of wool	26,41 mm
Quantity of Placo BA 15 laminated gypsum board	1,931 Kg
Quantity of Weber.therm clima coating mortar	2,641 Kg
Quantity of Weber.therm.hidro coating mortar	1,585 Kg
Quantity of Weber.therm malla 200 glass fibre net	0,034 Kg
Packaging for the transportation and distribution	Polyethylene: negligible Wood pallet: reused Paper for the label: negligible
Products used for the Installation	Placo M48 Montante vertical: 0,107 Kg Placo R48 Perimetral rail: 0,083 Kg Screws: 0,003 Kg Joint filler: 0,062 Kg Water: 0,029 l

ENVIRONMENTAL IMPACTS

Parameters	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Global Warming Potential (GWP) - *kg CO2 equiv/FU*	1,65E+01	8,59E-01	1,35E+00	0	0	0	0	0	0	0	Irrelevant	3,88E-01	0	3,85E-01	MND[5]
The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.															
Ozone Depletion (ODP) *kg CFC 11 equiv/FU*	1,11E-06	1,57E-07	1,24E-07	0	0	0	0	0	0	0	Irrelevant	7,13E-08	0	1,08E-07	MND
Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons), which break down when they reach the stratosphere and then catalytically destroy ozone molecules.															
Acidification potential (AP) *kg SO2 equiv/FU*	6,10E-02	3,53E-03	5,84E-03	0	0	0	0	0	0	0	Irrelevant	1,58E-03	0	2,78E-03	MND
Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.															
Eutrophication potential (EP) *kg (PO4)3- equiv/FU*	1,49E-02	7,55E-04	1,91E-03	0	0	0	0	0	0	0	Irrelevant	3,42E-04	0	7,43E-04	MND
Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.															
Photochemical ozone creation (POPC) *Ethene equiv/FU*	3,10E-03	1,49E-04	5,21E-04	0	0	0	0	0	0	0	Irrelevant	6,68E-05	0	1,22E-04	MND
Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.															
Abiotic depletion potential for non-fossil resources (ADP-elements) - *kg Sb equiv/FU*	1,85E-05	2,79E-06	4,36E-06	0	0	0	0	0	0	0	Irrelevant	1,26E-06	0	4,63E-07	MND
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - *MJ/FU*	1,51E+02	1,37E+01	1,69E+01	0	0	0	0	0	0	0	Irrelevant	6,22E+00	0	9,55E+00	MND
Consumption of non-renewable resources, thereby lowering their availability for future generations.															

[5] MND= Module Not Declared

RESOURCE USE

Parameters	Product stage	Construction process stage		Use stage							End of life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - *MJ/FU*	2,04E+01	1,62E-01	1,09E+00	0	0	0	0	0	0	0	Irrelevant	7,42E-02	0	2,77E-01	MND
Use of renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) *MJ/FU*	2,04E+01	1,62E-01	1,09E+00	0	0	0	0	0	0	0	Irrelevant	7,42E-02	0	2,77E-01	MND
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - *MJ/FU*	1,51E+02	1,37E+01	1,69E+01	0	0	0	0	0	0	0	Irrelevant	6,22E+00	0	9,55E+00	MND
Use of non-renewable primary energy used as raw materials *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/FU*	1,51E+02	1,37E+01	1,69E+01	0	0	0	0	0	0	0	Irrelevant	6,22E+00	0	9,55E+00	MND
Use of secondary material *kg/FU*	7,55E-02	0	0	0	0	0	0	0	0	0	Irrelevant	0	0	0	MND
Use of renewable secondary fuels- *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels - *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water - *m3/FU*	9,80E-02	2,51E-03	1,00E-02	0	0	0	0	0	0	0	Irrelevant	1,27E-03	0	8,90E-03	MND

WASTE CATEGORIES

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Hazardous waste disposed *kg/FU*	1,16E-04	7,78E-06	1,14E-04	0	0	0	0	0	0	0	Irrelevant	3,53E-06	0	6,86E-06	MND
Non-hazardous waste disposed *kg/FU*	1,82E+00	6,07E-01	1,14E+00	0	0	0	0	0	0	0	Irrelevant	2,75E-01	0	4,44E+01	MND
Radioactive waste disposed *kg/FU*	6,74E-04	8,90E-05	5,28E-05	0	0	0	0	0	0	0	Irrelevant	4,04E-05	0	6,41E-05	MND

OTHER OUTPUT FLOWS

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Components for re-use *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MND
Materials for recycling *kg/FU*	2,05E-02	5,53E-07	6,39E-02	0	0	0	0	0	0	0	Irrelevant	7,68E-08	0	0	MND
Materials for energy recovery *kg/FU*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND
Exported energy *MJ/FU*	0	0	0	0	0	0	0	0	0	0	Irrelevant	0	0	0	MND

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