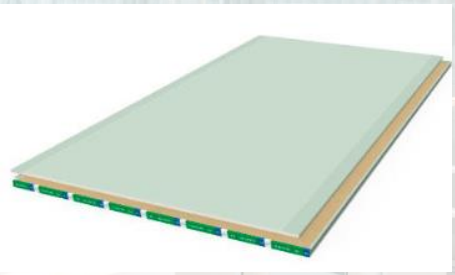
ENVIRONMENTAL PRODUCT DECLARATION

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

PLACO RH®



Date of issue:
2023-10-27
Revision date:
2024-03-08
Validity: 5 years
Valid until:
2028-10-27
Version: 2
Scope of the EPD®: Argentina

The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental Product Declaration has been verified by an independent third party.

Registration number
The International EPD® System:
S-P-07357

THE INTERNATIONAL EPD® SYSTEM

Manufacturers address:
Placo Argentina; Bolívar s/n° - Lote 67 – Parque Industrial – Chimbas - San Juan - Argentina

General information

Company information

Manufacturer: PLACO ARGENTINA SA SAINT GOBAIN PLACO, Bolívar s/n° - Lote 67 – Parque Industrial – Chimbas - San Juan - Argentina
Programme used: International EPD System **http://www.environdec.com/**
EPD registration number/declaration number: S-P-07357
PCR identification: EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declaration - core rules for the product category of construction product and The International EPD® System PCR 2019:14 version 1.2.3 for Construction products and Construction services.
Site of manufacture: PLACO ARGENTINA
Owner of the declaration: PLACO ARGENTINA SA SAINT GOBAIN PLACO
Product / product family name and manufacturer represented: PLACO RH ® - Moisture resistant plasterboard 9.2 kg/m² - 12.5 mm produced by PLACO ARGENTINA SA SAINT GOBAIN PLACO
UN CPC code: 37530 Articles of plaster or of composition based on plaster
Declaration issued: 2023-10-27 **Valid until:** 2028-10-27
Demonstration of verification: an independent verification of the declaration was made, according to ISO 14025:2010. This verification was external and conducted by the following third party based on the PCR mentioned above.
UN CPC code: 37530 Articles of plaster or of composition based on plaster
EPD Prepared by: LCA Team, Saint-Gobain Research Brasil.
Contact: Sartor, Lucas de Bona (lucas.sartor@saint-gobain.com); Exposito, Caio Cesar Dente (caio.exposito@saint-gobain.com).

The Functional Unit is: 1m² of installed* plasterboard 12.5 mm with a weight of 9.2 kg/m² with a useful life of 50 years.
*Installed in interior systems, for uses in humid environments and passage of pipes.

Declaration of Hazardous substances: (Candidate list of Substances of Very High Concern): none
Geographical scope of the EPD®: Argentina

The intended use of this EPD is for B2B communication.

Program	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 UNE-EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction Products, version 1.2.3
PCR review was conducted by: The Technical Committee of the International EPD© System President: Claudia A. Peña. Contact via info@environdec.com
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Pablo Arena (aparena@gmail.com) In case of recognized individual verifiers: Approved by: The International EPD© System
Procedure for follow-up of data during EPD validity involves third part verifier: ☒ Yes ☐ No

Product description

Product description and use

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 m² of installed plasterboard 12.5 mm with a weight of 9.2 kg/m² and an expected average service life of 50 years.

PLACO RH® consists of gypsum board industrially manufactured with a continuous laminating process of a mixture of gypsum, water and additives, between two sheets of green and ivory cardboard. RH plasterboard has properties that reduces surface water absorption, having excellent moisture resistance performance. Indicated for walls, partitions, ceilings and coverings in internal environment subject to intermittent humidity, such as kitchens, bathrooms and service areas.

Technical data/physical characteristics

EN classification	TS EN520+A1
Ignitability classification	P (BS-476 -Part-5)
Surface spread of flame	Class 1 (BS-476 -Part-7)
Thermal conductivity	0.24 W/(m.K) (EN 15283-1)

Description of the main product components and/or materials

Product components	Weight (%)	Post-consumer material weight (%)	Renewable material weight (%)
Placo RH	**100**	**0**	**1 - 10**
Gypsum	90 - 96	0	0
Additives	1 - 3	0	30 - 50
Facing	2 - 4	0	90 - 99

Product	Weight ($kg.m^{-2}$)
Total product weight	**9.2**

Packaging materials	Weight ($kg.m^{-2}$)	Weight (%) (versus the product)
Low-density polyethylene film	0.00032	< 1
Polypropylene strapping	0.00002	< 1
Paper label	0.00037	< 1
Gypsum cullets	0.02300	< 1

During the life cycle of the product any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has not been used in a percentage higher than 0.1% of the weight of the product. The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

LCA calculation information

EPD TYPE DECLARED	Cradle to grave and module D Product-specific (one product, one manufacturing site)
FUNCTIONAL UNIT	1 m² of installed board with a weight of 9.2 kg/m² and an expected average service life of 50 years
SYSTEM BOUNDARIES	Cradle to grave + Module D = (A + B + C) +D
REFERENCE SERVICE LIFE (RSL)	The Reference Service Life (RSL) of the Gypsum product is considered to be 50 years. This 50-year value is the amount of time that we recommend our products last for without refurbishment, and corresponds to standard building design life.
CUT-OFF RULES	Due to there are not enough information, the process energy and materials representing less than 1% of the whole energy and mass used are excluded (case do not cause significant impacts). The addition of all the inputs and outputs excluded arenot 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 has been avoided when possible. For the energy, the auxiliaries used and wastes generated during manufacturing a physical allocation based on mass was applied. Allocation criteria are based on mass. The polluter pays as well the modularity principles have been followed.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope includes: Argentina Data is collected from one production site in San-Juan, PLACO ARGENTINA SA SAINT GOBAIN PLACO Data collected for the year 2021. Cradle to grave study and module D. Background data: Ecoinvent 3.6 and GaBi ts 9.2
PRODUCT UN CPC CODE	37530 Articles of plaster or of composition based on plaster

According to EN 15804:2012+A2:2019, EPDs of construction products may not be comparable if they do not comply with this standard. According to ISO 21930, EPDs might not be comparable if they are from different programmes.

LCA scope

System boundaries (X=included, MND=module not declared)

	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	AR	AR	AR	AR	AR	-	-	-	-	-	-	-	AR	AR	AR	AR	AR
Specific data used	>90% GWP- GHG																
Variation products	One site one product																
Variation sites	One site one product																

Life cycle stages

Flow diagram of the Life Cycle

Product stage, A1-A3

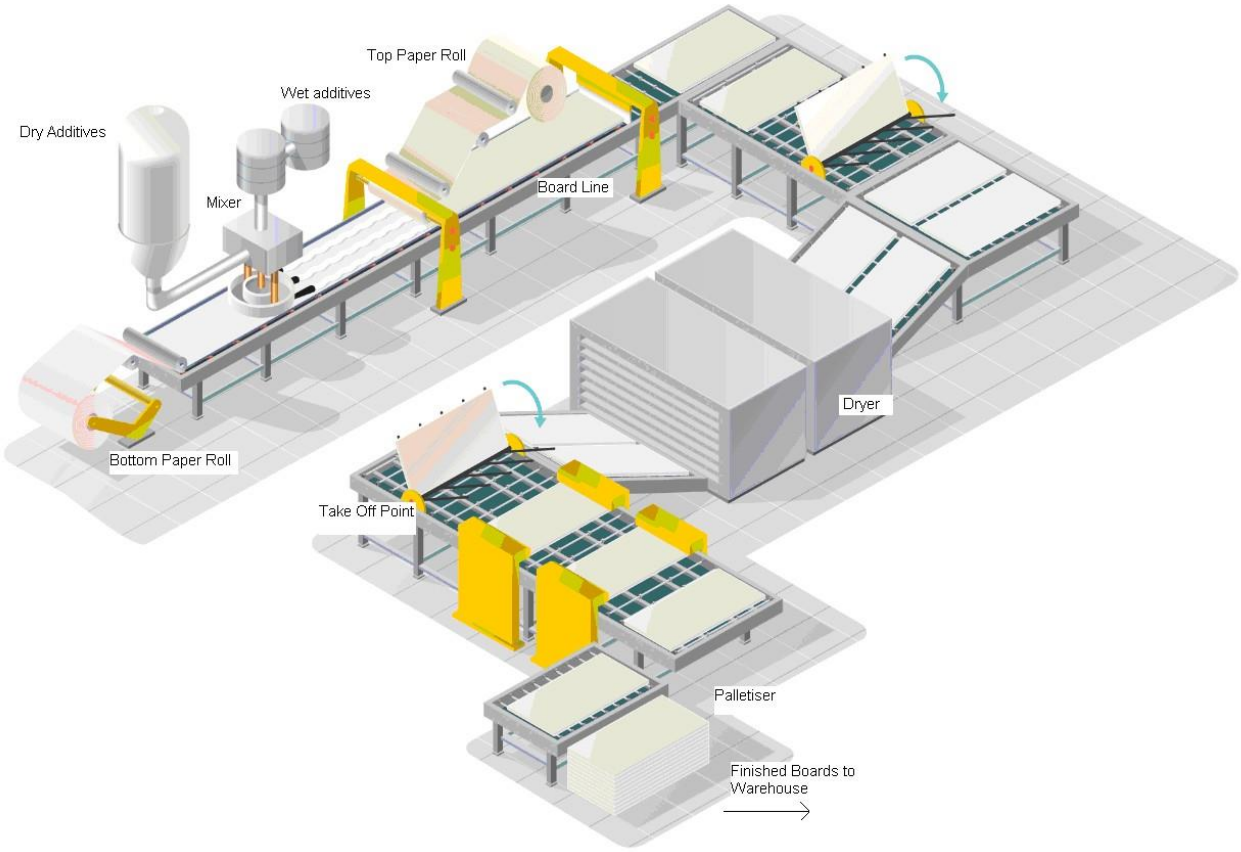
Description of the stage: the product stage of plaster products is subdivided into 3 modules A1, A2 and A3 respectively “Raw material supply”, “transport to manufacturer” and “manufacturing”.

A1, raw material supply.
This includes the extraction and processing of all raw materials and energy which occur upstream from the manufacturing process.

A2, transport to the manufacturer.
The raw materials are transported to the manufacturing site. The modelling includes road, boat and/or train transportations of each raw material.

A3, manufacturing.
This module includes the manufacture of products and the manufacture of packaging. The production of packaging material is taken into account at this stage. The processing of any waste arising from this stage is also included.

Manufacturing process flow diagram



Manufacturing in detail:
The initial materials are homogenously mixed to form a gypsum slurry that is spread via multiple hose outlets onto a paper liner on a moving conveyor belt. A second paper liner is fed onto the production line from above to form the plasterboard. The plasterboard continues along the production line where it is finished, dried, and cut to size.

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. A weighted average, based on sales volume for the building site is considered to obtain the average distance in this module. Transport is calculated on the basis of a scenario with the parameters described in the following table.

PARAMETER	VALUE (expressed per functional unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Long distance truck, maximum load weight of 28 t and consumption of 40 liters per 100 km
Distance	1110.62 km
Capacity utilisation (including empty returns)	100%
Bulk density of transported products	736 kg/m^3
Volume capacity utilisation factor	1589.76 kg of boards; 36.56 kg of gypsum culls

A5, installation into the building.
The accompanying table quantifies the parameters for installing the product at the building site. All installation materials and their waste processing are included.

PARAMETER	VALUE (expressed per functional unit)
Ancillary materials for installation (specified by materials)	Jointing compound 0.9 kg/m^2 board. Jointing tape 1.65 m/m^2 board. Screws 15 units/m^2 board
Water use	0 liters/m^2
Other resource use	None
Quantitative description of energy type (regional mix) and consumption during the installation process	None
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	Plasterboard: 0.46 kg (5%) Jointing Compound: 0.045 kg Jointing Tape: 0.0002 kg Screws: 0.0009 kg Gypsum culls: 0.00115 kg
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)	Plasterboard: 0.46 kg (5%) to landfill Screws: 0.0009 kg to landfill Jointing Compound: 0.045 kg to landfill Jointing Tape: 0.0002 kg to landfill Paper label: 0.00037 kg to landfill Polypropylene strapping: 0.000018 kg to landfill Gypsum culls: 0.023 kg to landfill
Direct emissions to ambient air, soil and water	None

- Wastage of products is 5%, which is assumed that 100% is sent to landfill 100 km away.
- Processing of packaging waste arising during the construction phase is included up to the end of waste state or disposal of final residues. The packaging used to protect plaster is 100% landfilled, so 100 km of transport to landfill site have been taken into account, this is an average distance from the product installation sites to landfills in the study region.

Use stage (excluding potential savings), B1-B7

Description of the stage:
The use stage, related to the building fabric includes:

B1, use or application of the installed product;
B2, maintenance;
B3, repair;
B4, replacement;
B5, refurbishment;
B6, operational energy use;
B7, operational water use.

Description of scenarios and additional technical information:
The product has a reference service life of 50 years. This assumes that the product will last in situ with no requirements for maintenance, repair, replacement or refurbishment throughout this period. Therefore, it has no impact at this stage. Gypsum products are not related to any electricity or water use during the operation of the building.

End-of-life stage, C1-C4

The de-construction and/or dismantling processes mainly use energy for mechanical operations.
The gypsum wastes are 100% landfilled. An average distance from the demolition site to landfills in the study region site have been taken into account.

PARAMETER	VALUE (expressed per functional unit)
Amount per kg of consumed fuel	0.0437 MJ/kg (diesel consumption in construction machine)
Collection process specified by type	100% collected with mixed deconstruction and demolition waste to landfill (including paper liner, board, screws and jointing tape)
Recovery system specified by type	100% is sent to municipal landfill
Disposal specified by type	10.13 kg to landfill
Assumptions for scenario development (e.g. transportation)	Gypsum board waste is transported 100 km by truck from deconstruction/demolition sites to landfill

The transport characteristics used in this stage (real payload, diesel consumption of the truck and percentage of empty return) correspond to the default values defined in the EN15804:2012+A2:2019 standard.

Reuse/recovery/recycling potential, D

100% of wastes are landfilled. There is no reuse nor recovery nor recycling of this product. Hence, no recycling benefits are reported on stage D.

LCA results

As specified in EN 15804:2012+A2:2019 and the PCR 2019:14 Construction Products, version 1.2.3. The environmental impacts are declared and reported using the baseline characterization factors are from the ILCD. Specific data has been supplied by the plant, and generic data come from Gabi and Ecoinvent databases. All emissions to air, water, and soil, and all materials and energy used have been included. The declared product is mined, manufactured and marketed 97% in Argentina and 3% in Chile and Uruguay.

According to the EN 15804:2012+A2:2019 standard, the LCIA results are relative expressions translating impacts into environmental themes such as climate change, ozone depletion, etc. (midpoint impact categories). Thus, the LCIA results do not predict impacts on category endpoints such as impact on the extinction of species or human health. In addition, the results do not provide information about the exceeding of thresholds, safety margins or risks.

All the results refer to a functional unit of 1 m^2 of installed plasterboard 12.5 mm with a weight of 9.2 kg/m^2 and an expected average service life of 50 years.

Environmental Impacts

		Product stage	Construction stage		Use stage							End of life stage				Reuse, Recovery Recycling
	Environmental indicators	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	D Reuse, recovery, recycling
	Climate Change [kg CO2 eq.]	**2.86E+00**	**4.92E-01**	**3.29E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4.53E-02**	**4.91E-02**	**0**	**8.50E-01**	**0**
	Climate Change (fossil) [kg CO2 eq.]	**3.50E+00**	**4.89E-01**	**3.18E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4.52E-02**	**4.88E-02**	**0**	**1.54E-01**	**0**
	Climate Change (biogenic) [kg CO2 eq.]	**-6.49E-01**	**-8.40E-04**	**1.03E-02**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5.97E-05**	**-8.22E-05**	**0**	**6.96E-01**	**0**
	Climate Change (land use change) [kg CO2 eq.]	**3.33E-03**	**3.98E-03**	**5.87E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9.94E-07**	**3.96E-04**	**0**	**4.42E-04**	**0**
	Ozone depletion [kg CFC-11 eq.]	**1.63E-07**	**5.91E-17**	**8.14E-09**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4.81E-18**	**8.98E-18**	**0**	**5.69E-16**	**0**
	Acidification terrestrial and freshwater [Mole of H+ eq.]	**7.08E-03**	**2.81E-03**	**9.43E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.33E-04**	**2.84E-04**	**0**	**1.10E-03**	**0**
	Eutrophication freshwater [kg P eq.]	**1.13E-04**	**1.49E-06**	**1.06E-05**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9.99E-09**	**1.49E-07**	**0**	**2.64E-07**	**0**
	Eutrophication freshwater [kg (PO4)3 eq.]	**3.46E-04**	**4.57E-06**	**3.25E-05**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3.07E-08**	**4.57E-07**	**0**	**8.10E-07**	**0**
	Eutrophication marine [kg N eq.]	**2.20E-03**	**1.36E-03**	**3.24E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2.48E-05**	**1.37E-04**	**0**	**2.84E-04**	**0**
	Eutrophication terrestrial [Mole of N eq.]	**2.35E-02**	**1.50E-02**	**3.34E-03**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2.71E-04**	**1.51E-03**	**0**	**3.12E-03**	**0**
	Photochemical ozone formation - human health [kg NMVOC eq.]	**5.45E-03**	**2.56E-03**	**7.51E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7.78E-05**	**2.59E-04**	**0**	**8.58E-04**	**0**
	Resource use, mineral and metals [kg Sb eq.]*	**6.77E-06**	**3.53E-08**	**3.88E-06**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.18E-09**	**3.96E-09**	**0**	**1.38E-08**	**0**
	Resource use, energy carriers [MJ]*	**5.72E+01**	**6.55E+00**	**4.72E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5.53E-01**	**6.53E-01**	**0**	**2.01E+00**	**0**
	Water deprivation potential [m³ world equiv.]*	**8.04E-01**	**4.40E-03**	**1.13E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9.38E-05**	**4.77E-04**	**0**	**1.61E-02**	**0**

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

Resources Use

	Resources Use indicators	Product stage	Construction stage		Use stage							End of life stage				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	D Reuse, recovery, recycling
	Use of renewable primary energy (PERE) [MJ]	**1.77E+00**	**3.68E-01**	**4.99E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.93E-03**	**3.78E-02**	**0**	**2.64E-01**	**0**
	Primary energy resources used as raw materials (PERM) [MJ]**	**7.51E+00**	**0.00E+00**	**3.75E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Total use of renewable primary energy resources (PERT) [MJ]	**9.28E+00**	**3.68E-01**	**8.74E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.93E-03**	**3.78E-02**	**0**	**2.64E-01**	**0**
	Use of non-renewable primary energy (PENRE) [MJ]	**5.71E+01**	**6.55E+00**	**4.71E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5.53E-01**	**6.56E-01**	**0**	**2.02E+00**	**0**
	Non-renewable primary energy resources used as raw materials (PENRM) [MJ]**	**1.21E-01**	**0.00E+00**	**6.05E-03**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Total use of non-renewable primary energy resources (PENRT) [MJ]	**5.72E+01**	**6.55E+00**	**4.72E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5.53E-01**	**6.56E-01**	**0**	**2.02E+00**	**0**
	Input of secondary material (SM) [kg]	**3.84E-01**	**0.00E+00**	**2.06E-02**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Use of renewable secondary fuels (RSF) [MJ]	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Use of non-renewable secondary fuels (NRSF) [MJ]	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Use of net fresh water (FW) [m^3]	**2.06E-02**	**4.26E-04**	**2.89E-03**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3.43E-06**	**4.40E-05**	**0**	**5.08E-04**	**0**

**For this study, both the product and its packaging are reported in the indicators "Use of renewable primary energy resources used as raw materials" ("PERM") and "Use of non-renewable primary energy resources used as raw materials" ("PENRM"). PERM and PENRM are reported as negative values where materials are recycled or recovered, but not when landfilled.

Waste Category & Output flows

		Product stage	Construction stage		Use stage							End of life stage				Reuse, recovery, recycling
	Waste Category & Output Flows	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	D Reuse, recovery, recycling
	Hazardous waste disposed (HWD) [kg]	**5.59E-07**	**3.05E-07**	**5.87E-08**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5.61E-11**	**3.03E-08**	**0**	**3.07E-08**	**0**
	Non-hazardous waste disposed (NHWD) [kg]	**4.68E-02**	**1.00E-03**	**7.23E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.37E-04**	**1.04E-04**	**0**	**1.01E+01**	**0**
	Radioactive waste disposed (RWD) [kg]	**1.01E-04**	**8.11E-06**	**2.80E-05**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6.35E-07**	**1.21E-06**	**0**	**2.29E-05**	**0**
	Components for re-use (CRU) [kg]	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Materials for Recycling (MFR) [kg]	**3.16E-01**	**0.00E+00**	**1.92E-02**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Material for Energy Recovery (MER) [kg]	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Exported electrical energy (EEE) [MJ]	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**
	Exported thermal energy (EET) [MJ]	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00E+00**	**0.00E+00**	**0**	**0.00E+00**	**0**

Information on biogenic carbon content

		Product stage
	Biogenic Carbon Content	**A1 / A2 / A3**
	Biogenic carbon content in product [kg]	**1.84E-01**
	Biogenic carbon content in packaging [kg]	**1.51E-03**

Note: 1 kg biogenic carbon is equivalent to 44/12 (approx. 3,67) kg CO_2.

LCA results interpretation

The following figure refers to a functional unit of 1 m² of installed plasterboard 12.5 mm with a weight of 9.2 kg/m² and for specific application of external building for an expected average service life of 50 years.

[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.

Global Warming Potential (Climate Change) (GWP)
For GWP, the biggest contribution to this environmental impact is from the production modules (A1 – A3). This is mainly because the sources of greenhouse gas emissions are predominant in this part of the life cycle. CO2 is generated upstream from the production of electricity and is also released on site by the combustion of diesel and natural gas. It is noted that other sections of the life cycle also contribute to the GWP, however, the production modules contribute to over 60% of the impacts in this category. Emissions from C (transport and disposal at the end of life), A4 (transport to clients) and waste disposal transportation in A5 (disposal after installation), respectively, generate the other percentages of greenhouse gas emissions.

Non-renewable resources consumptions
The consumption of non-renewable resources represents the highest value in the production modules. This is mainly due to natural gas consumption within the factory but also electricity grid and other non-renewable fuels, such as oil and petroleum (diesel fuel and propane) used to generate electricity for the manufacturing stage and to transport raw materials, finished product and waste. The contribution to this impact from the other modules is very small and mainly due to the non-renewable resources consumed during installation.

Energy Consumptions
Modules A1 – A3 have the highest contribution to total energy consumption. Energy is consumed in the form of electricity, diesel and natural gas during the manufacture of plasterboard.

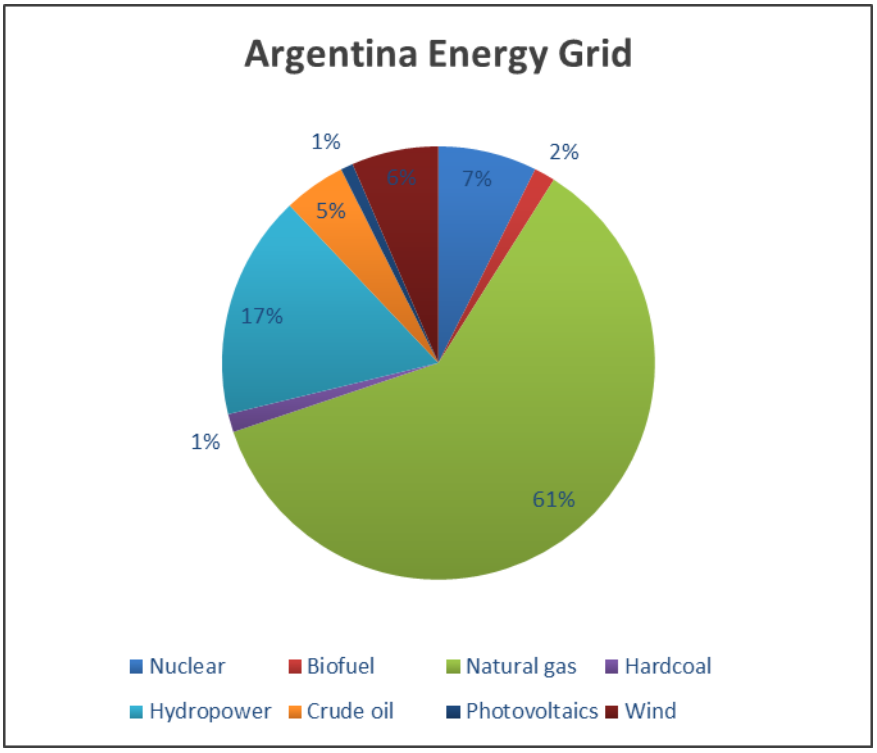
Water Consumption
Water is used within the manufacturing facility and therefore the highest contribution is in the production phase. The second highest contribution occurs in the installation site due to the water used on the joint components.

Waste Production
The largest contributor is the end-of-life module. This is because the 100% of the product is assumed to be sent to landfill once it reaches the end-of-life state.

Additional information

Electricity description

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of Electricity purchased by PLACO ARGENTINA SA SAINT GOBAIN PLACO Argentina
Geographical representativeness description	Split of energy sources in Argentina - Coal: 1% - Oil: 5% - Biofuel: 2% -Natural gas: 61% - Nuclear: 7% - Hydro: 17% - Photoelectrical: 1% - Wind: 6%
Reference year	2020
Type of data set	Cradle to gate from Thinkstep database
Source	International Energy Agency (IEA). Electricity Information - 2020
CO_2 emissions	0.57 kg CO_2 eq./kWh



Data quality

Inventory data quality is judged by geographical, temporal, and technological representativeness. To cover these requirements and to ensure reliable results, first-hand industry data crossed with LCA background datasets were used. The data was collected from internal records and reporting documents from PLACO ARGENTINA SA SAINT GOBAIN PLACO. After evaluating the inventory, according to the defined ranking in the LCA report, the assessment reflects good inventory data quality for the geographical, temporal and technological categories.

Differences from previous versions

Updating the description of the main product components and/or materials in the product description section.

Environmental impacts according to EN 15804:2012 + A1

The following tables presents results of 1 m^2 of installed PLACO RH® plasterboard, with a reference service life of 50 years according to EN 15804:2012 +A1.

	Product stage	Construction stage		Use stage							End of life stage				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	D Reuse, recovery, recycling
Global Warming Potential (GWP) [kg CO_2 eq.]	**3.43E+00**	**4.81E-01**	**3.11E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4.46E-02**	**4.81E-02**	**0**	**1.50E-01**	**0**
Ozone depletion (ODP) [kg R11 eq.]	**1.72E-07**	**7.88E-17**	**8.57E-09**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6.41E-18**	**1.20E-17**	**0**	**7.59E-16**	**0**
Acidification potential (AP) [kg R11 eq.]	**5.43E-03**	**1.92E-03**	**7.22E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.11E-04**	**1.94E-04**	**0**	**8.85E-04**	**0**
Eutrophication potential (EP) [kg Phosphate eq.]	**1.61E-03**	**4.83E-04**	**1.78E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8.81E-06**	**4.87E-05**	**0**	**9.97E-05**	**0**
Photochemical ozone creation [kg Ethene eq.]	**4.93E-04**	**6.66E-05**	**6.29E-05**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8.12E-06**	**6.83E-06**	**0**	**7.12E-05**	**0**
Abiotic depletion potential for non-fossil resources (ADP-elements) [kg Sb eq.]	**3.36E-04**	**3.99E-08**	**3.66E-05**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1.24E-09**	**4.43E-09**	**0**	**5.32E-08**	**0**
Abiotic depletion potential for fossil resources (ADP-fossil fuels) [MJ]	**5.58E+01**	**6.53E+00**	**4.21E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5.51E-01**	**6.53E-01**	**0**	**1.96E+00**	**0**

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