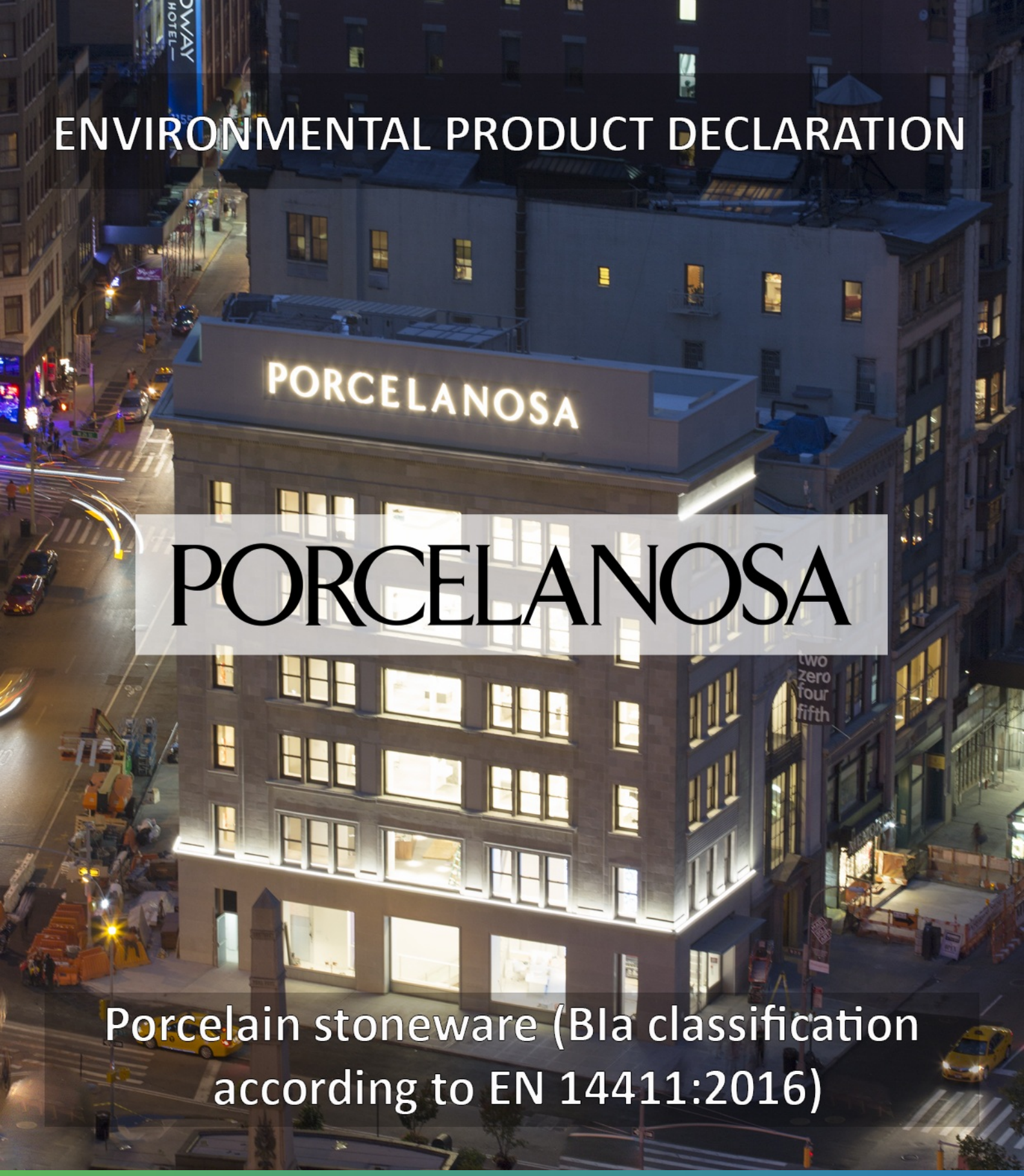

ENVIRONMENTAL PRODUCT DECLARATION

PORCELANOSA

Porcelain stoneware (BIa classification according to EN 14411:2016)

DAPcons®.NTe.244

DECLARACIÓN AMBIENTAL DE PRODUCTO
ENVIRONMENTAL PRODUCT DECLARATION

EPD of multiple products

According to the standards:
ISO 14025 and UNE-EN 15804:2012+A2:2020/AC:2021

cateb Arquitectura Tècnica Barcelona

ECO PLATFORM EPD VERIFIED

dapcons®

DECLARACIÓN AMBIENTAL DE PRODUCTO
ENVIRONMENTAL PRODUCT DECLARATION

EPD of multiple products

DAPcons®.NTe.244

According to the standards:

ISO 14025 and UNE-EN 15804:2012+A2:2020/AC:2021

GENERAL INFORMATION

Product

Porcelain stoneware (BIa classification according to EN 14411:2016)

Company

PORCELANOSA

Product description

The Porcelain Stoneware product includes different families of glazed and unglazed ceramic products within absorption group BIa (shaped by dry pressing with water absorption ≤0.5%). The results presented in this declaration refer to an average product that encompasses various series. The average product has been calculated based on the weight per square meter of the different included series, weighted by the production volume during the period studied. The formats considered within the scope of this declaration have a thickness ranging from 8.5 mm (14.81 kg/m^2) to 14 mm (28.47 kg/m^2), with an average weight of 23.04 kg/m^2.

Reference RCP

UNE-EN 17160:2019 Product category rules for ceramic tiles.

Production plant

Production plants of PORCELANOSA (Plant 1 and Plant 3)
CARRETERA N-340, KM 56
12540 VILLARREAL – Castellón
Spain

Validity

From: 21/07/2025 Until: 21/07/2030

The validity of DAPcons®.NTe.244 is subject to the conditions of the regulation DAPcons®. The current edition of this DAPcons® is the one that appears in the registry maintained by Cateb; for informational purposes, it is included on the Program website www.dapcons.com

EXECUTIVE SUMMARY

Porcelain stoneware (BIa classification according to EN 14411:2016)

DAPconstruction® Programme Operator
Environmental Product Declarations in the Construction sector
www.dapcons.com

Programme Manager
Colegio de la Arquitectura Técnica de Barcelona (Cateb)
Bon Pastor, 5 · 08021 Barcelona www.cateb.cat

Owner of the declaration
PORCELANOSA, S.A.U.
Ctra. Nacional 340, Km 56'2 12540 - VILA-REAL/VILLARREAL (España)
www.porcelanosa.com

Author of the Life cycle assessment:
ReMa-INGENIERÍA, S.L.
Calle Crevillente, 1, entlo., 12005 - Castelló, España

Declared product

Porcelain stoneware (BIa classification according to EN 14411:2016)

Geographic representation

The raw materials used in the product are of global origin. The product is manufactured at Porcelanosa's Plants 1 and 3 (Villarreal, Castellón – Spain) and distributed worldwide.

Variability between different products

The variability of the impact categories in stages A1-A3 among the different products included in this declaration is 45%.

Declaration number

DAPcons®.NTe.244

Issue date

13/05/2024

Validity

This verified declaration authorizes its holder to carry the logo of the operator of the ecolabelling program DAPconstruction®. The declaration is applicable exclusively to the mentioned product and for five years from the date of registration. The information contained in this statement was provided under the responsibility of: **PORCELANOSA, S.A.U.**

Programme Administrator Signature

Celestí Ventura Cisternas. President of Cateb

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Verifier Signature

DAVID PORRAS MELENDEZ. MARCEL GOMEZ CONSULTORIA AMBIENTAL SL. Verifier accredited by the administrator of the DAPcons® Programme

DAVID PORRAS MELENDEZ - DNI 47767487Y
DAVID PORRAS MELENDEZ - DNI 47767487Y 21.07.2025 16:21:02 +0200

ENVIRONMENTAL PRODUCT DECLARATION

1. PRODUCT DESCRIPTION AND USE

The product included is an average Porcelain Stoneware that comprises different models of glazed and unglazedceramic tiles within absorption group BIa according to UNE-EN 14411:2016: shaped by dry pressing with water absorption ≤0.5%.

The formats considered within the scope of this study have a thickness ranging from 8.5 mm (14.81 kg/m^2) to 14 mm (28.47 kg/m^2), with an average weight of 23,04 kg/m^2.

The results presented in this declaration refer to an average product that represents a variety of series. The average product has been calculated based on the weight per square meter of the different series included, weighted according to the production during the year studied.

The main recommended use for this product is as floor paving and/or wall and façade cladding, for both indoor and outdoor applications.

The CPC code of the products is 37310 – Ceramic tiles and flagstones, glazed or unglazed.

1.1 Content information

Product components

The components of the BIa tile are:

Clays: 37–47%
Feldspars: 35–45%
Sands: 3–13%
Reintroduced external clay-based materials: 0–8%
Reintroduced internal clay-based materials: 0–8%
Others: 1–5%
Glaze: 1–7%

The composition of the glazes is frit:water in a 1:1 ratio. The frit consists of: 24% quartz, 24% feldspar, 14% zirconium, 10% carbonates, and the remainder comprises various clay-based materials and other components.

Packaging materials

The packaging materials are:

Cardboard: 2.12E-01 kg/m^2
Plastic: 5.78E-02 kg/m^2
Wood: 1.71E-01 kg/m^2
Others: 9.11E-04 kg/m^2

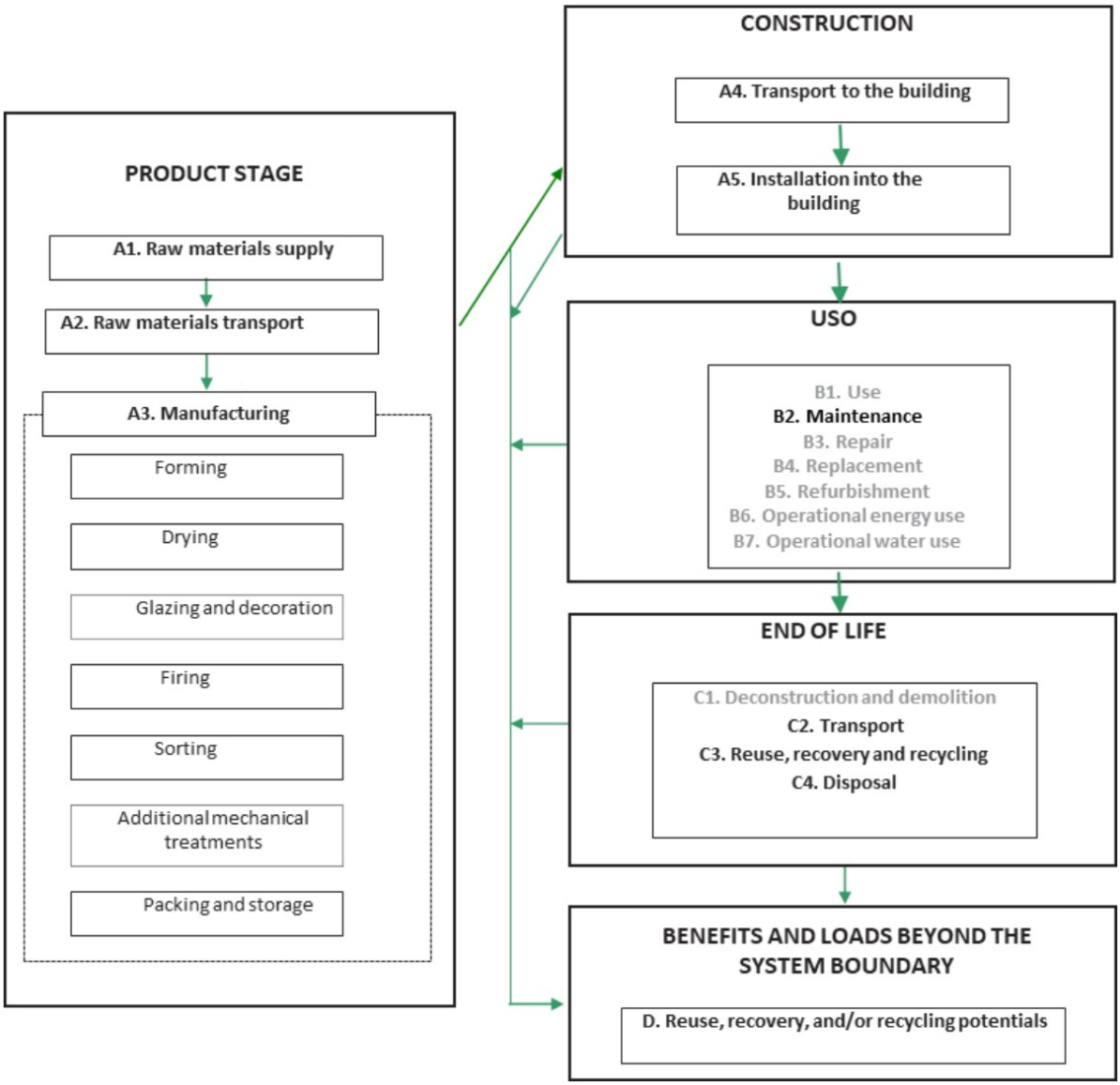
Image – BIa Product

PORCELANOSA

Table of Technical Characteristics

STANDARD	TEST	UNE EN 14411 : 2016 ISO 13006 : 2018	VALUES
UNE-EN ISO 10545-2	Length and width*	No rectified: ± 0.6 % Max 2 mm Rectified: ± 0.3 % Max 1 mm	Complies with the standards
	Thickness*	±5 %, Máx 0,5 mm	Complies with the standards
	Straightness of sides*	No rectified: ± 0.5 % Max 1.5 mm Rectified: ± 0.3 % Max 0.8 mm	Complies with the standards
	Squareness*	No rectified: ± 0.5 % Max 2 mm Rectified: ± 0.3 % Max 1.5 mm	Complies with the standards
	Surface flatness side curvature/central curvature/warpage*	No rectified: ± 0.5 % Max 2 mm Rectified: ± 0.4 % Max 1.8 mm	Complies with the standards
UNE-EN ISO 10545-3	Water absorption	Average value ≤ 0.5 %	E ≤ 0,1 %
UNE-EN ISO 10545-4	Modulus of rupture	≥ 35 N/mm^2	Complies with the standards
	Breaking strength	> 1300 N	Complies with the standards
UNE-EN ISO 10545-6	Resistance to abrasion	As per manufacturer	According to models
UNE-EN ISO 10545-8	Thermal expansion coefficient	Test method available	< 7 x 10^{-6} K^{-1}
UNE-EN ISO 10545-9	Thermal shock resistance	Test method available	Resists
UNE-EN ISO 10545-11	Crazing resistance	Required	Complies with the standards
UNE-EN ISO 10545-12	Frost resistance	Required	
UNE-EN ISO 10545-13	Resistance against acids and bases	As per manufacturer	Class B Min.
	Household detergents and additives	Class B Min.	Complies with the standards
UNE-EN ISO 10545-14	Resistance to staining	Class 3 minimum	Complies with the standards

* Deviation from manufacturing measure



2. DESCRIPTION OF THE STAGES OF THE LIFE CYCLE

2.1. Manufacturing (A1, A2 y A3)

Raw Materials and transport (A1 y A2)

The average Porcelain product is primarily composed of clay, sand, and feldspar, with a glaze layer mainly made of feldspar, carbonate, silicates, kaolin, and other materials.
The raw materials used come from various origins (regional, national, Turkey, Ukraine, or the United Kingdom). This variation is due to the impossibility of sourcing all raw materials from a single origin. Raw materials imported from outside Spain are transported by cargo ship to the Port of Castellón and then by 24-ton EURO VI trucks to the production plants.

For maritime transport, an average transoceanic cargo vessel has been considered. Transport distances vary depending on the country of origin. All raw materials are transported in bulk.

Manufacturing (A3)

Once the raw materials arrive at the factory, they are stored separately in hoppers that will dose the required amount of each material to begin the process. After mixing, the blend undergoes wet milling in a continuous-operation ball mill made of silex and alumina.
Subsequently, the slurry is subjected to a spray drying process to remove excess moisture, resulting in a homogeneous mixture of the various components with a defined particle size, properly conditioned for the molding of the tile.
Next, the tile is shaped. The molding of flat tiles is carried out by unidirectional dry pressing using single-action presses, where the pressure is applied only on one surface of the piece. After pressing, the tile is dried, leaving residual moisture that increases its green strength, allowing it to undergo subsequent processing.
The freshly dried tiles are then coated with one or several layers of glaze. This treatment is applied to give the fired product's surface a range of technical and aesthetic properties such as: impermeability, gloss and color, surface texture, mechanical resistance, and chemical resistance.
The glazes are manufactured in an external plant and formulated by selecting appropriate raw materials based on a specific oxide composition. The chemical composition and mineralogical structure of these materials have a significant impact on the final properties of the product.
The tiles are then fed into the kiln for firing. Firing is the most critical stage in the ceramic tile production process, as it is when the tiles undergo a fundamental transformation in their properties.
Once fired, the tiles are conveyed to the classification station, where aesthetic (visual) and dimensional inspections are performed. Some product series are rectified prior to classification, using grinding wheels to achieve perfectly straight edges.
Finally, the finished product is packaged using cardboard, polyethylene, wood, and other materials. Once the pallet is assembled, it is stored in the plant's logistics area, ready for shipment to the customer.
Throughout the production process, clay material waste (both raw and fired) and industrial wastewater are generated. These are reintroduced into the tile manufacturing process, either internally or through external processors (atomizers).
To reduce atmospheric emissions, bag filters are used. These consist of a textile membrane that is permeable to gases but retains dust particles.
The electricity mix from the supplier IBERDROLA for the year 2022 has been used (0.276 $kgCO_2/kWh$).

2.2. Construction process stage (A4 y A5)

Transport to the building site (A4)

PORCELANOSA produces tiles that are marketed both nationally and across Europe, as well as in the rest of the world.

For transcontinental transport, an average transoceanic cargo ship has been considered. For road transport, a 27-ton EURO VI truck has been assumed.

Table 1. Basic of a scenario with the parameters described in the following table

Destinations	Type of transport	Percentage	Average km
Spain	27t truck	25	600
Europe	27t truck	23	1190
	Barge	21	1086
Rest of the world	27t truck	3	723
	Barge	28	7702

Product installation process and construction (A5)

To characterize the product installation scenario, the guidelines from standard UNE-EN 17160 have been used:

Auxiliary materials: Table 11, Option 1 — Mortar: 3.3 kg/m² and water: 0.8 L/m².

Packaging waste management: Table 12 — Packaging waste scenarios:
Material Recycling (%) / Recovery (%) / Landfill (%)
Plastic 37.2 / 31.5 / 31.3
Paper & cardboard 84.6 / 8.3 / 7.1
Wood 36.1 / 30.0 / 33.9

A 3% installation waste rate has been accounted for, and the same waste management scenario described in the end-of-life stages has been applied.

2.3. Product use (B1-B7)

Use (B1)

The impact of the product at this stage is null, as no materials are consumed and there are no emissions to the environment during its useful life.

Maintenance (B2)

To characterize the cleaning scenario, the guidelines from UNE-EN 17160 have been followed:

Maintenance scenario for ceramic floor tiles (residential use):
– 0.134 ml of detergent is used once every two weeks, and
– 0.1 L of water is used to clean 1 m² of ceramic floor tiles once per week.

Repair (B3)

According to PORCELANOSA, the reference service life of the product will be the same as that of the building in which it is installed, since—when properly installed—it is a durable product. Therefore, it does not require any repair.

Replacement (B4)

The product does not require any replacement.

Refurbishment (B5)

The product does not require any refurbishment.

Operational energy use (B6)

Ceramic products do not consume energy during the use phase of the building. By default, the associated environmental impacts are zero.

Operational water use (B7)

Ceramic products do not consume water during the use phase of the building. By default, the associated environmental impacts are zero.

2.4. End of life (C1-C4)

Deconstruction and demolition (C1)

Once its service life has ended, the product will be removed, either as part of a building refurbishment or during demolition. In the context of building demolition, the impacts attributable to the product's deconstruction are negligible. Therefore, the impact of stage C1 – Deconstruction, demolition – has been considered negligible.

Transport to waste processing (C2)

The transport of residual materials is carried out using a 27-ton EURO VI truck. An average distance of 50 km has been estimated from the demolition site to the landfill and to the recycling plant, in accordance with the guidelines provided in the PCRs.

Waste processing for reuse, recovery and/or recycling (C3)

It has been estimated that 70% of the residual ceramic material is sent for recycling, following the guidelines provided in the PCRs. Collection burdens have been assumed to be negligible.

Disposal (C4)

It has been estimated that 30% of the residual ceramic material is sent to landfill, following the guidelines provided in the PCRs.
100% of the residual mortar is assumed to be landfilled.

2.5. Reuse/recovery/recycling potential (D)

In this Module D, the existence of environmental loads and credits (i.e., avoided environmental impacts) outside the system boundaries is declared, due to the reuse, recovery, or recycling of certain output flows from the system. The declared impacts are net values resulting from the accounting of the impacts from the recycling and energy recovery processes, subtracting the impacts of producing the primary materials or fuels that are displaced

or substituted by the recycled ones, while considering the quality differences between primary and secondary materials.

As indicated in the PCR and in UNE-EN 15804, the loads and benefits of residual materials destined for recycling that are generated in stages A1–A3 are not included in this module. Therefore, only the environmental loads and benefits generated by the recycling of waste from the installation stage (packaging materials) and end-of-life stage have been considered.

3. LIFE CYCLE ASSESSMENT

This study was carried out using the LCA tool SimaPro 9.6.0.1 by PRé Sustainability, which has been developed based on the UNE-EN ISO 14040–14044 standards, and using the Ecoinvent v3.10 (2023) database.
This LCA follows a "cradle-to-grave" approach, encompassing the product manufacturing, construction, use, and end-of-life stages.
Specific data from PORCELANOSA's production plants in Villarreal (Castellón, Spain) for the year 2022 were used to inventory the manufacturing stage.

The study is based on:

- UNE-EN 15804:2012+A2:2020/AC:2021 (and its corrigendum),
- UNE-EN 17160:2019, Product Category Rules (PCRs) for ceramic tiles, and follows the principles of modularity and the "polluter pays" approach.

Allocation procedures:

- Internal recycled materials (such as chamotte and unfired scraps) enter the process with no environmental burden; they are considered to have reached "end-of-waste" status upon entering the atomization plant. The recycling process is accounted for as if they were conventional raw materials.

- Recyclable waste is considered to reach the end-of-waste status at the gate of the waste management facility → only transportation impacts are included.

- Co-products from stages A1–A3 are not included in Module D.

- For external recycled materials (e.g., chamotte), as it is a waste material derived from fired ceramic tiles, an economic allocation is applied. A value is assigned to the chamotte based on the average market price of ceramic tiles and the price of chamotte itself. Based on this price ratio, a proportional share of the environmental burden of ceramic tile production is attributed to the chamotte.

Production at plants: Allocation methods

- Clay-based materials: Allocated by plant according to atomizer production and destination. Allocated by product family based on kilograms produced.

Energy:

- Natural gas: Allocated by mass, except for atomizers (allocation based on the destination of the atomized

material).
- Electricity: Allocated proportionally to the square meters produced.
- Diesel, alumina balls, packaging: Allocated proportionally to the kilograms of production.
- Water: Allocated proportionally to the square meters produced.

Emissions:
- CO_2 from combustion and other parameters: Allocated according to natural gas consumption per product.
- CO_2 from the process (decarbonation): Allocated proportionally to the kilograms produced of the corresponding ceramic body.

- Effluents and waste: Allocated proportionally to the kilograms produced.

- Cogeneration: Part of the electricity generated is consumed internally; the surplus sold is considered an avoided burden (accounted for only in Module A3, not in Module D).

3.1. Functional Unit

"covering 1 m^2 of a surface (flooring) in a residential building for 50 years with BIa Porcelain Stoneware ceramic tiles"

Additional comments

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3.2. Scope and modules that are declared

Table 2. Declared modules

Product stage			Construction Process Stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw materials supply	Transport	Manufacturing	Transport	Construction - Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X = Declared module **MND** = Undeclared module

3.3. LCA results of potential environmental impact referred to the declared unit (ACV)

Table 3. Parameters of environmental impact

Parameter	Unit	Life cycle stage														Module D
		Product stage	Construction Process Stage		Use stage							End of life stage				
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Climate change - total (GWP-total)	kg CO2 eq	9,62E+00	2,49E+00	3,24E+00	0,00E+00	6,87E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,02E-01	0,00E+00	2,77E-02	-2,96E-01
Climate change - fossil (GWP-fossil)	kg CO2 eq	1,16E+01	2,49E+00	1,28E+00	0,00E+00	4,32E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,02E-01	0,00E+00	2,77E-02	-2,93E-01
Climate change - biogenic (GWP-biogenic)	kg CO2 eq	-1,96E+00	0,00E+00	1,96E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Climate change - land use and changes in land use (GWP-luluc)	kg CO2 eq	4,50E-03	4,62E-04	4,08E-04	0,00E+00	2,55E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-05	0,00E+00	1,13E-06	-3,08E-03
Ozone layer depletion (ODP)	kg CFC 11 eq	4,60E-07	4,87E-08	1,86E-08	0,00E+00	5,89E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,35E-09	0,00E+00	4,11E-10	-5,20E-09
Acidification (AP)	mol H+ eq	4,79E-02	2,34E-02	4,99E-03	0,00E+00	3,70E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,18E-04	0,00E+00	2,52E-04	-1,77E-03
Eutrophication of fresh water (EP-freshwater)	kg P eq	9,77E-05	5,50E-06	1,58E-05	0,00E+00	3,23E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,15E-07	0,00E+00	9,97E-08	-4,64E-05
Eutrophication of sea water (EP-marine)	kg N eq.	1,42E-02	5,93E-03	1,36E-03	0,00E+00	2,67E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,29E-05	0,00E+00	1,15E-04	-6,01E-04
Terrestrial eutrophication (EP-terrestrial)	mol N eq.	1,55E-01	6,60E-02	1,50E-02	0,00E+00	1,14E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E-03	0,00E+00	1,25E-03	-5,83E-03
Photochemical ozone formation (POCP)	kg NMVOC eq	5,47E-02	2,10E-02	4,68E-03	0,00E+00	1,97E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,29E-04	0,00E+00	3,80E-04	-1,57E-03
Depletion of abiotic resources - minerals and metals (ADP-minerals&metals)	kg Sb eq	1,98E-05	9,26E-07	1,76E-06	0,00E+00	1,42E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,75E-08	0,00E+00	1,10E-09	-1,22E-06
Depletion of abiotic resources - fossil fuels (ADP-fossil)	MJ, net calorific value	2,04E+02	3,39E+01	1,21E+01	0,00E+00	4,83E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,85E+00	0,00E+00	3,56E-01	-4,74E+00
Water consumption (WDP)	m3 worldwide eq. private	3,32E+00	4,27E-02	2,91E-01	0,00E+00	1,16E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,58E-03	0,00E+00	3,23E-04	-1,14E+00
Eco-toxicity - freshwater (ETP-fw)	CTUe	2,19E+01	2,69E+00	2,02E+00	0,00E+00	1,07E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,37E-01	0,00E+00	1,67E-02	-2,42E+00
Human toxicity, cancer effect (HTP-c)	CTUh	2,89E-08	4,63E-09	1,36E-09	0,00E+00	1,80E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,88E-10	0,00E+00	6,05E-12	-1,69E-09
Human toxicity, non-cancer effects (HTP-nc)	CTUh	2,79E-08	4,13E-09	5,59E-09	0,00E+00	1,29E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,30E-10	0,00E+00	3,72E-11	-3,48E-09
The Indicador includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This Indicador is thus equal to the GWP Indicador originally defined in EN 15804:2012+A1:2013. Can be obtained from IPCC characterization factors.																
Global Warming Potential (GHG)	kg CO2 eq	1,16E+01	2,49E+00	1,28E+00	0,00E+00	4,32E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,02E-01	0,00E+00	2,83E-02	-2,97E-01

A1 Supply of raw materials. **A2** Transport to waste processing. **A3** Manufacturing. **A4** Transport to waste processing. **A5** Installation and construction processes. **B1** Use. **B2** Maintenance. **B3** Repair. **B4** Replacement. **B5** Refurbishment. **B6** Operational energy use. **B7** Operational water use. **C1** Deconstruction and demolition. **C2** Transport to waste processing. **C3** Waste management for reuse, recovery and recycling. **C4** Fine removal. **D** Environmental benefits and burdens beyond the system boundary. **MND** Undeclared module.

Table 4. Parameters for the use of resources, waste and output material flows

Parameter	Unit	Life cycle stage														Module D
		Product stage	Construction Process Stage		Use stage							End of life stage				
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Use of renewable primary energy excluding renewable primary energy resources used as feedstock	MJ, net calorific value	2,89E+00	1,59E-01	8,14E-01	0,00E+00	1,07E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-02	0,00E+00	1,69E-03	-1,90E+00
Use of renewable primary energy used as raw material	MJ, net calorific value	1,54E+01	0,00E+00	-1,09E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	1,82E+01	1,59E-01	-1,01E+01	0,00E+00	1,07E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-02	0,00E+00	1,69E-03	-1,90E+00
Non-renewable primary energy use, excluding non-renewable primary energy resources used as feedstock	MJ, net calorific value	2,21E+02	3,60E+01	1,30E+01	0,00E+00	5,53E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,03E+00	0,00E+00	3,79E-01	-5,07E+00
Use of non-renewable primary energy used as raw material	MJ, net calorific value	2,17E+00	0,00E+00	-1,47E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	2,23E+02	3,60E+01	1,15E+01	0,00E+00	5,53E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,03E+00	0,00E+00	3,79E-01	-5,07E+00
Use of secondary materials	kg	7,31E-01	0,00E+00	2,19E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of freshwater resources	m3	7,28E-02	1,47E-03	7,03E-03	0,00E+00	2,81E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,40E-05	0,00E+00	1,23E-05	-2,90E-02
Hazardous waste removed	kg	1,58E-02	2,15E-04	4,97E-04	0,00E+00	3,97E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,92E-05	0,00E+00	2,36E-06	-3,81E-05
Non-hazardous waste eliminated	kg	1,82E+00	1,70E-02	3,59E-01	0,00E+00	4,51E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,31E-04	0,00E+00	1,02E+01	-2,39E-02
Radioactive waste disposed of	kg	3,59E-04	3,22E-06	1,47E-05	0,00E+00	7,49E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,55E-07	0,00E+00	2,18E-08	-8,41E-06
Components for reuse	kg	0,00E+00	0,00E+00	1,71E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	6,94E+00	0,00E+00	7,55E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,61E+01	0,00E+00	0,00E+00
Materials for energy recovery (energy recovery)	kg	0,00E+00	0,00E+00	8,98E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ by energy vector	1,95E-01	0,00E+00	6,62E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,62E-01
Exported electrical energy (AEE)	MJ	1,95E-01	0,00E+00	2,24E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,24E-01
Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	4,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,38E-01

A1 Supply of raw materials. **A2** Transport to waste processing. **A3** Manufacturing. **A4** Transport to waste processing. **A5** Installation and construction processes. **B1** Use. **B2** Maintenance. **B3** Repair. **B4** Replacement. **B5** Refurbishment. **B6** Operational energy use. **B7** Operational water use. **C1** Deconstruction and demolition. **C2** Transport to waste processing. **C3** Waste management for reuse, recovery and recycling. **C4** Fine removal. **D** Environmental benefits and burdens beyond the system boundary. **MND** Undeclared module.

Table 5. Kg of biogenic carbon

Carbon content (biogenic) - packaging	5,34E-01
Carbon content (biogenic) - product	0,00E+00

3.4. Recommendations of this EPD

The comparison of construction products must be made using the same functional unit and at the building level, meaning that the product's performance over its entire life cycle must be considered. Environmental Product Declarations (EPDs) from different type III ecolabeling systems are not directly comparable, as the calculation rules may differ.
Construction product EPDs (DAPcons®) may not be comparable with other EPDs unless they are based on the standard EN 15804+A2:2020/AC:2021.
This declaration represents the performance of the BIa Porcelain Stoneware product manufactured by PORCELANOSA.

3.5. Cut-off rules

More than 99% of all mass and energy inputs and outputs of the system have been included. The following exclusions apply:

Diffuse particle emissions to the atmosphere generated during the transport and storage of powdery raw materials.

Channeled atmospheric pollutants generated during combustion stages (spray drying, tile drying, and firing) that were not measured, as they are not covered by applicable legislation.

Auxiliary materials used in ceramic production (e.g., kiln rollers, conveyor belts, lubricating oil, etc.) have been excluded due to their negligible quantities relative to the functional unit. These materials represent less than 1% of the total input mass in the unit process and, as such, are considered "complementary materials" in accordance with UNE-EN 17160:2019, which allows for their exclusion (section 6.3.5).

Auxiliary materials used in the production of atomized powders and glazes have also not been considered, as these are upstream processes over which the manufacturer has no direct control. UNE-EN 17160:2019 allows the use of generic data or conservative estimates in such cases (section 6.3.6), and their exclusion is justified if they are marginal in terms of mass and energy or if no supplier-specific data is available.

The production of machinery and industrial equipment has also been excluded, as stated in section 6.3.5 of UNE-EN 17160:2019.

3.6. Additional environmental information

The included product does not release hazardous substances into indoor air, soil, or water during the use phase. The product does not contain any substances listed in the Candidate List of Substances of Very High Concern (SVHC) for authorisation by the European Chemicals Agency (ECHA).

3.7. Other data

Waste from the ceramic industry is classified as non-hazardous in the European List of Waste under the following codes:

LER 10 12 08: Waste ceramics, bricks, tiles and construction materials (after firing process)
LER 17 01 07: Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in code 17 01 06

4. ADDITIONAL TECHNICAL INFORMATION AND SCENARIOS

4.1. Transport to the building site (A4)

Parameter	Parameter expressed per functional unit
Type and fuel consumption, type of vehicle used for transportation	EURO VI 27-ton truck: Diesel consumption = 2.23E-05 kg diesel per kg·km Cargo ship transport: Transport, freight, sea, container ship {GLO} | market for transport, freight, sea, container ship
Distance	Average based on distances considered for Spain, Europe, and the rest of the world: 894 km by road 2850 km by sea
Capacity utilization (including empty return)	85% of the road transport distance is considered applicable. 100% of the sea transport distance is considered applicable for the cargo hip.
Apparent density of transported product	2311 kg/m3
Useful capacity factor (1, <1 or >1 for products that are packed compressed or nested)	1

4.2. Installation processes (A5)

Parameter	Parameter expressed per functional unit
Auxiliary materials for construction (specifying each material)	Mortar: 3.3 kg/m^2
Water use	0.8 kg of water / m2

Parameter	Parameter expressed per functional unit
Use of other resources	Not detected
Quantitative description of the type of energy (regional mix) and consumption during the installation process	Not detected
Waste of materials in the work before the treatment of waste, generated by the installation of the product (specify by type)	Packaging waste: 4.55E-01 kg Installation losses : 0.691 kg
Material outputs (specified by type) as a result of waste treatment on the building site. For example: collection for recycling, energy recovery, disposal (specified by route)	Cardboard – Energy recovery: 1.81E-02 kg Cardboard – Recycling: 1.85E-01 kg Cardboard – Landfill: 1.55E-02 kg Plastic – Energy recovery: 1.88E-02 kg Plastic – Recycling: 2.22E-02 kg Plastic – Landfill: 1.86E-02 kg Pallet – Energy recovery: 5.29E-02 kg Pallet – Recycling: 6.36E-02 kg Pallet – Landfill: 5.98E-02 kg Metal – Recycling: 6.98E-04 kg Metal – Landfill: 2.40E-04 kg Installation losses – Recycling: 0.484 kg Installation losses – Landfill: 0.207 kg
Direct emissions to air, soil and water	Not detected

4.3. Reference life (B1)

Parameter	Parameter expressed per functional unit
Reference Lifetime (RSL)	50 years
Characteristics and properties of the product	Water absorption ≤0.5%
Requirements (conditions of use, frequency of maintenance, repair, etc.)	Cleaning cycle: weekly cleaning with detergent every two weeks.

4.4. Maintenance (B2), Repair (B3), Replacement (B4), or Refurbishment (B5)

Maintenance (B2)

Parameter	Parameter expressed per functional unit
Maintenance process, for example; cleaning agent, surfactant type	Cleaning with detergent every two weeks
Maintenance cycle	Residential use: weekly cleaning

Parameter	Parameter expressed per functional unit
Auxiliary materials for the maintenance process (specifying each material)	0.134 ml of detergent every two weeks and 0.1 L of water to clean 1 m^2 of ceramic floor tiles once per week.
Energy inputs for the maintenance process (quantity and type of energy vector)	Not detected
Net consumption of fresh water during maintenance or repair	260 kg
Material waste during maintenance (specifying the type)	Not detected

Repair (B3)

Parameter	Parameter expressed per functional unit
Repair process	Not applicable
Proceso de inspección	Not applicable
Repair cycle	Not applicable
Auxiliary materials (specifying each material], for example lubricant	Not applicable
Interchange of parts during the product life cycle	Not applicable
Energy inputs during maintenance, type of energy, example: electricity, and quantity	Not applicable
Energy input during the repair, renovation, replacement process if applicable and relevant (quantity and type of energy vector)	Not applicable
Material waste during repair (specifying each material)	Not applicable
Consumo neto de agua dulce	Not applicable

Replacement (B4)

Parameter	Parameter expressed per functional unit
Energy input during substitution, for example for the use of cranes (quantity and energy vector)	Not applicable

Parameter	Parameter expressed per functional unit
Change of worn parts in the product life cycle (specifying each material)	Not applicable
Net freshwater consumption	Not applicable

Refurbishment (B5)

Parameter	Parameter expressed per functional unit
Rehabilitation process	Not applicable
Rehabilitation cycle	Not applicable
Energy input during rehabilitation, for example for the use of cranes (quantity and energy vector)	Not applicable
Input material for rehabilitation, including auxiliary materials (specifying by material)	Not applicable
Waste of material during rehabilitation (specifying each material)	Not applicable
Other scenario development assumptions	Not applicable

4.5. Reference life

Parameter	Parameter expressed per functional unit
Reference life	50 years
Declared properties of the product, finishes, etc.	Water absorption: Group BIa AA ≤0.5% Reaction to fire Euroclass: A1 / A1fl All tiles are glazed, with glossy/matte finishes, Rectified / non-rectified.
Application design parameters (manufacturer's instructions)	The installation of ceramic tiles requires qualified personnel with proven experience, as well as appropriate tools and equipment.
Estimation of the quality of execution, when installed according to the manufacturer's instructions	50 years. Always check the information provided on the packaging beforehand and strictly follow the manufacturer’s recommendations.
Outdoor environment for outdoor applications. For example, weather, pollutants, UV radiation, temperature, etc.	The product is suitable for outdoor installation. UNE-EN-ISO 10545-12:1997 – Frost resistance.

Parameter	Parameter expressed per functional unit
Indoor environment for indoor applications. For example, temperature, humidity, chemical exposure	The product complies with the limits established by Indoor Air Comfort GOLD®.
Terms of use. For example, frequency of use, mechanical exposure, etc.	Not applicable
Maintenance. For example, the required frequency, etc.	Cleaning – Residential use: 0.134 ml of detergent is used every two weeks, and 0.1 L of water is used to clean 1 m^2 of ceramic floor tiles once per week.

4.6. Operational energy use (B6) and operational water use (B7)

Parameter	Parameter expressed per functional unit
Auxiliary materials (specified by material)	Not applicable
Type of energy vector. For example, electricity, natural gas, district heating	Not applicable
Equipment output power	Not applicable
Net freshwater consumption	Not applicable
Characteristic features (energy efficiency, emissions, etc.)	Not applicable
Other scenario development assumptions. For example, transportation	Not applicable

4.7. End of life (C1-C4)

	Process				
	Collection processes (specified by types)	Recovery systems (specified by type)			Elimination
	kg collected with mixed construction waste	kg for reuse	kg for recycling	kg for energy recovery	kg for final disposal
	26.34	0	16.13	0	10.21
Assumptions for scenario development	The transport of residual materials is carried out using a EURO VI 20t–28t truck. The distance to both the recycling facility and the landfill is 50 km. .				

5. ADDITIONAL INFORMATION

This DAPcons® has been developed following the mutual recognition process between the INIES program and the DAPconstrucción program.

- CE marking 001-DRP-20130701

The company holds the following certifications:

- UNE-EN-ISO 9001:2015 (Certificate No. ES05/1884)
- UNE-EN-ISO 14001:2015 (Certificate No. ES06/2640)
- UNE-EN-ISO 14064-1:2019 – CO_2 verified – Carbon footprint (Certificate No. 940-356062-02)
- Zero Waste Verification Declaration 2022 (Ref. 02/940-343288-02)
- Zero Waste Verification Declaration 2023 (Ref. 02/940-363187)
- UNE-EN-ISO 14021:2016 (Certificate No. ES13/13672)
- UNE-EN-ISO 50001:2018 (Certificate No. ES22/211029)

6. PCR AND VERIFICATION

This statement is based on Document

UNE-EN 17160:2019 Product category rules for ceramic tiles. Ceramic tile

Independent verification of the declaration and data, in accordance with ISO 14025 and IN UNE-EN 17160:2019

☑ External

Third party Verifier

DAVID PORRAS MELENDEZ
Accredited by the administrator of the DAPcons® Programme

Verification date:

21/07/2025

References

- Life Cycle Analysis of the following products: AVERAGE PORCELAIN STONEWARE (BIa), AVERAGE PORCELAIN XLIGHT-XTONE 6mm (BIa), AVERAGE PORCELAIN XTONE 12mm (BIa), AVERAGE PORCELAIN XTONE 20mm (BIa), STONEWARE (BIIa), and AVERAGE WALL TILE (BIII) by PORCELANOSA. ReMa-INGENIERÍA, S.L., version 5, July 2025 (Unpublished)
- Documentation for Duty Vehicle Processes in GaBi, February 2022
- Annex C to the PEF-OEF Methods V2.1, May 2020
- Handbook of Emission Factors for Road Transport (HBEFA 4.2), 2022
- Spain – Greenhouse Gas Inventory Report 1990–2020 (2022 Edition), Annex 7: CO_2 Emission Factors and Calorific Values of Fuels
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- GDO/DE/001/22 Electricity Labelling 2023 – CNMC. Annex II. Labelling of Remaining Electricity from Retailers

Who Have Redeemed Guarantees of Origin for Their Clients, Related to Energy Produced in 2022
- GDO/DE/001/24 Electricity Labelling 2023 – CNMC. Annex II. Labelling of Remaining Electricity from Retailers Who Have Redeemed Guarantees of Origin for Their Clients, Related to Energy Produced in 2023
- Sectorial Life Cycle Assessment of Ceramic Coatings – ASCER, 2018
- GENERAL INSTRUCTIONS OF THE DAPconstrucción® PROGRAM OPERATOR for Environmental Product Declarations in the Construction Sector. 5th revision: December 21, 2023
- Biogenic Carbon Content – Bibliographic source: Comparative Carbon Footprint of Packaging Options, developed by thinkstep-anz

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