

# EPD

## Environmental Product Declaration



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

PORCELAIN STONEWARE SURFACES FOR FLOORS AND WALLS

Produced by:

# FONDOVALLE



EPD of PORCELAIN STONEWARE SURFACEES with thickness 6.5 mm produced by CERAMICA FONDOVALLE S.P.A.



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## 1 - About the program

<b>Program:</b>	THE INTERNATIONAL EPD® SYSTEM
<b>Address:</b>	EPD International AB Box 210 60 - SE-100 31 Stockholm - Sweden
<b>Web site:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:info@environdec.com">info@environdec.com</a>

<b>PCR:</b>	The UNI EN 15804:2021 standard is the reference for the following Core Product Category Rules (PCRs). - PCR 2019:14 Construction products, version 1.3.4 - C-PCR-002 Ceramic tiles (EN 17160:2019), version 2024-04-30
<b>PCR review conducted by:</b>	Technical Committee of the International EPD® System. See <a href="http://www.environdec.com/TC">www.environdec.com/TC</a> for a list of members Reviewer: Claudia A. Peña, University of Concepción, Chile. The review team can be contacted through the secretariat <a href="http://www.environdec.com/contact">www.environdec.com/contact</a>
<b>Independent verification of the statement and data in accordance with ISO 14025:2006</b>	<input type="checkbox"/> EPD process certification (Internal) <input checked="" type="checkbox"/> EPD verification (External)
<b>Third-party verifier:</b>	Bureau Veritas Italy S.p.A. Approved by the Technical Committee of the International EPD System, supported by the Secretariat
<b>Data review procedures during the EPD validity period include a third-party verification</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## 2 - Information about the company

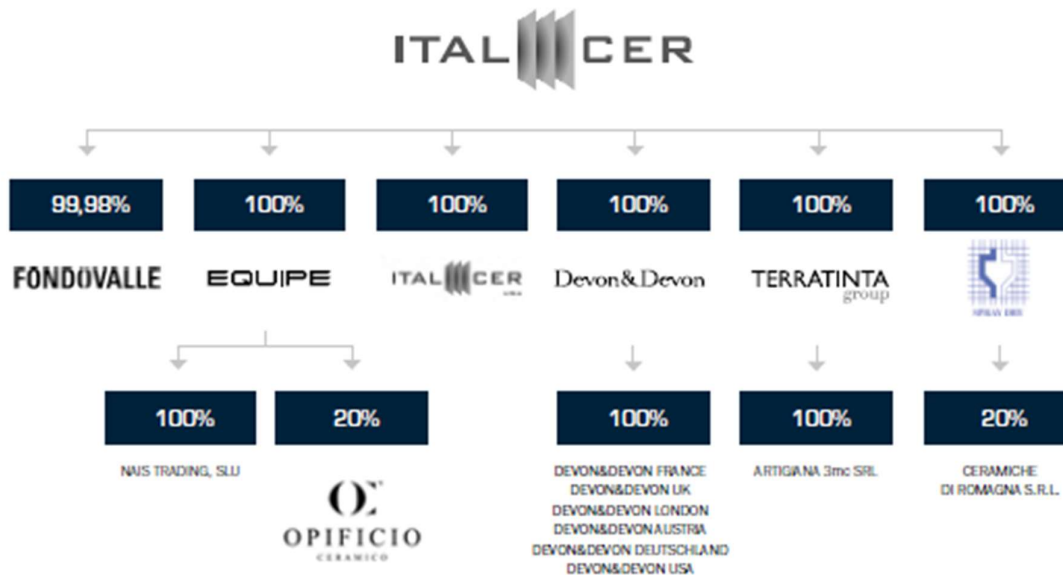
### DECLARATION HOLDER

CERAMICA FONDOVALLE S.P.A. (ITALCER Group)  
Via Emilia Ovest, 53/A - 42048 Rubiera (RE) - Italy

### THE ITALCER GROUP

Italcer Group - whose parent company is Italcer S.p.A., a joint stock company under Italian law, was founded in spring 2017. The Group operates in the design surfaces market as a multi-specialist, developing high-quality ceramic surfaces for interior and exterior use, as well as luxury bathroom furniture for commercial and residential use, with a focus on innovation, design and environmental sustainability.

The Italcer Group boasts 11 production plants, including 7 in Italy and 4 in Spain (3 in Figueroles and 1 in Onda). The plants cover a total area of more than 540,000 m<sup>2</sup>, with a production capacity of about 25 million m<sup>2</sup>.



### MANUFACTURING PLANTS

This statement, and the related LCA study, considers the Ceramica Fondovalle production plants listed in the following table.

Establishment		Address	Province
01	Marano s/P Plant	Via Ceramica Fondovalle, 5049	Modena
02	Ubersetto Plant	Via V maggio, 1	Modena

## CERTIFICATIONS

Ceramica Fondovalle has adopted an Environmental Management System, to create operational tools to monitor the impacts on the environment created by the company's activities, through the definition of an Environmental Policy, the identification of performance improvement objectives and the monitoring of their achievement.

Production processes are subject to strict control and monitoring, and factories hold the following certificates of conformity:

- ISO 9001: Quality Management System
- ISO 14001 and EMAS registration: Environmental Management System

Details of system and/or product certifications are given in the table below.

CERTIFICATE	DESCRIPTION	ITALCER S.P.A.
CE MARKING	Compliance with P.o.D. and all requirements set forth in the harmonized industry standard (UNI EN 14411)	Declarations of Performance (DoP) available upon request
UNI EN ISO 9001:2015	Quality Management System	Certificate No. 58165
UNI EN ISO 14001:2015	Environmental Management System	Certificate No. 59410
EMAS REGISTRATION	European Eco-Management and Audit Scheme	Certificate No. 002308
EPD	Sectoral environmental product declaration (Confindustria Ceramics)	EPD-COI-20220297-ICG1-EN MR-EPDITALY0064
VOC EMISSION	Compliance with mandatory French certification	Level A+
QB UPEC	Compliance with technical quality requirements according to CSTB specifications	Certificates available on the web page
CCC	Compliance with mandatory Chinese certification	Certificate No. 2009052102000749
SASO Quality Mark	Product quality certification for export to Saudi Arabia	Certificate No. 20200129061
MOCA	Certification of suitability for food contact	Certificate No. ICIM-MOC-010800-01

## CONTACTS

<b>For information on this statement and/or HSE certifications:</b>	<p>Davide Giuranna HSE Manager</p> <p>davide.giuranna@gruppoitalcer.it</p>
<b>For more information on the group's activities:</b>	<p>ITALCER S.p.A. SB Via Emilia Ovest 53/A - 42048 Rubiera (RE)</p> <p><a href="https://fondovalle.it/">https://fondovalle.it/</a> <a href="https://www.gruppoitalcer.it/">https://www.gruppoitalcer.it/</a></p>

## 3 - Product information

### PRODUCT NAME

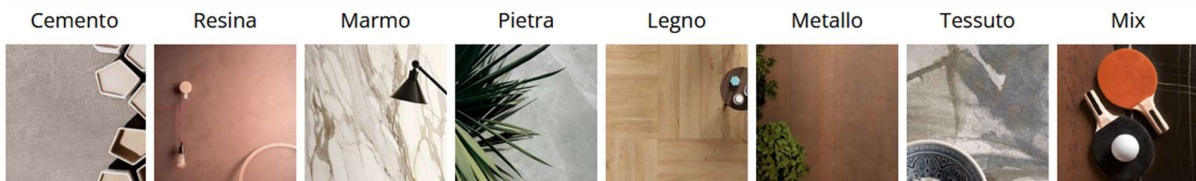
Porcelain Stoneware Surfaces for flooring and wall coverings.

### PRODUCT IDENTIFICATION

The range of products included in this declaration includes PORCELAIN STONEWARE SURFACES FOR FLOORS AND WALLS in various sizes and finishes with a thickness of 6.5 mm. The production of ceramic floor and wall tiles is spread across two sites with complementary processes: the Marano s/P site (with the production plant) and the Ubersetto site (including the production plant, for finishing and other processes, and the warehouse and logistics site), in the province of Modena.

For this declaration, an average product representative of the different formats of thickness 6.5 mm was therefore identified.

Brand	Collections	Format	Thicknesses
Ceramica Fondovalle	Concrete effect Resin effect Marble effect Stone effect Wood effect Metal effect Monochrome effect Textile effect Mix effect	from 24120 cm to 160x320 cm	6.5 mm



### PRODUCT DESCRIPTION

Porcelain stoneware surfaces are compact, hard, nonporous ceramic materials that are produced by a process of firing and sintering mineral raw materials that are first ground and then finely atomized to a powder suitable for pressing.

Ceramica Fondovalle porcelain stoneware surfaces are formed by dry pressing of a mixture made of natural raw materials such as clay, feldspar, sand and kaolin.

Porcelain stoneware is a material characterized by a very compact structure and high performance and can be used for floors and walls, both indoor and outdoor.

Over the past few years, Ceramica Fondovalle has focused on high quality products, both from the point of view of technical performance and the aesthetic quality of surface processing, with an extremely wide production range and offering design products, such as those oriented toward the faithful reproduction of natural elements such as woods, stones and marbles.

## CPC CODE

3732 Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous earths.

## GEOGRAPHICAL SCOPE

Global.

## TECHNICAL CHARACTERISTICS OF THE PRODUCT

Under the standards EN 14411, in Europe, and ISO 13006, in the rest of the world, ceramic tiles are classified into different types according to their forming methods (A = Extrusion, B: Dry pressing) and level of water absorption.

Ceramic tiles with the lowest water absorption level ( $\leq 0.5\%$ ) can be called porcelain tiles (full-body waterproof tiles), including mosaic tiles and special pieces.

Ceramic tiles produced by Italcera comply with the following standards and specifications.

Requirement	Value	Unit of measurement
Water absorption according to ISO 10545-3	< 0,5	%
Breaking load according to ISO 10545-4	$\geq 35$	N/mm <sup>2</sup>
Flexural strength according to ISO 10545-4	> 1300	N/mm <sup>2</sup>
Resistance to surface wear - Glazed tiles according to ISO 10545-7	> 3	Abrasion class
Coefficient of linear thermal expansion according to ISO 10545-8	9 E10-6 (max)	1/K
Resistance to thermal shock according to ISO 10545-9	Resistant	
Resistance to cracking according to ISO 10545-11	Resistant	
Frost resistance according to ISO 10545-12	Resistant	
Anti-slip properties (class A, B or C) according to CEN/TS 16165	A-B-C: Depending on the surface type	
Cohesive strength/adhesion according to EN 12004	Resistant	
Impact resistance according to ISO 10545-5	Resistant	
Fire resistance without testing (CWT)	A1-FL	
Resistance to household chemicals and pool additives according to ISO 10545-13	A-B: depending on the type of surface	
Resistance to low and high concentrations of acids and alkalis according to ISO 10545-13	LA-LB-HA-HB: depending on the type of surface	
Stain resistance according to ISO 10545-14	4-5: depending on the type of surface	
Expansion in steam according to ISO 10545-10	0,1	mm/m
Deep abrasion resistance (unglazed tiles) according to ISO 10545-6	< 175	mm <sup>3</sup>

## THE PRODUCTION PROCESS

The production process of the ceramic surfaces covered by this EPD consists of a series of work steps as described below.

**Raw material acquisition:** mineral raw materials (clay, sand, feldspar, kaolin, pigments) arrive at the plant and are stored in special warehouses.

The clay fraction performs a plasticizing function, the inert fraction (sand) a smoothing and structural function, which can limit shrinkage and expansion during firing of the ceramic piece, and the feldspathic fraction a melting function, which allows glass formation during firing of the piece.

**Preparation of the atomized mixture:** Clay and other raw materials used in the production of ceramics are first processed through the process of grinding, reducing them into small particles of atomized powder.

Processing carried out in the Marano sul Panaro plant:

**Forming and drying:** atomized powders are processed in a process known as pressing, during which the powder is compacted under high pressure (more than 350 kg/cm<sup>2</sup>) using hydraulic presses (small- and medium-size ceramics) or continuous pressing equipment (XL-size ceramics) in order to achieve the desired shape and size.

After pressing, the ceramic slabs undergo a drying phase. During this process, the slabs are exposed to controlled temperature and humidity conditions to ensure uniform and gradual drying.

**Glazing and digital decoration:** after drying, the slabs undergo a decoration process in which a layer of glaze is applied to the surface to improve the texture and strength of the slabs.

The finishing and customization phase begins with the digital decoration of the plates through printing techniques. This is a crucial stage of the production process, as it allows a wide range of designs and patterns to be created, offering endless possibilities for customization. The digital printing process involves the use of advanced printers and special inks capable of reproducing detailed, high-quality images on the surface of the plates.

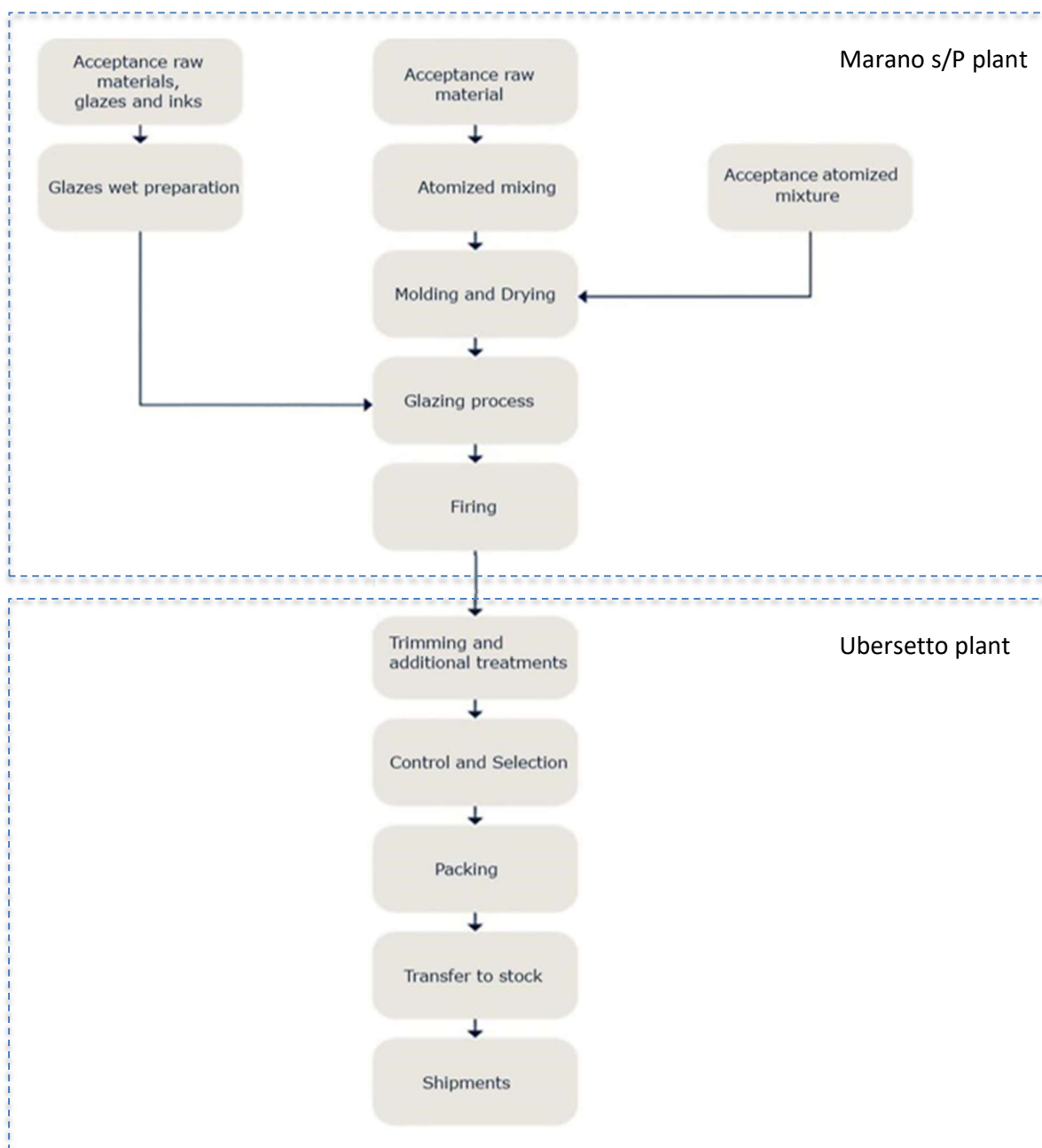
**Firing:** In this stage, the slabs are fired at high temperatures to strengthen them and achieve the desired porosity. The firing process takes place in carefully controlled kilns to ensure that the slabs are heated evenly and to the right temperature. Once the firing is complete, to avoid cracks, the slabs are allowed to cool gradually.

Processing carried out in the Ubersetto plant:

**Cutting and finishing:** after the firing process, ceramic slabs can be cut and finished. Cutting is done with high-precision machinery that ensures smooth edges and uniform dimensions. Finishing, on the other hand, involves different processes such as polishing, honing or brushing, depending on the desired surface finish. These processes improve the texture, color and overall appearance of the sheets, giving them a unique and refined look.

**Inspection, selection and packaging:** slabs undergo meticulous quality control to ensure that they meet the Group's high standards. Once the slabs pass quality control, they are carefully packed and prepared for shipment to customers.

## PRODUCTION PROCESS FLOW CHART



## 4 - LCA information

<b>Functional unit</b>	Covering 1 m <sup>2</sup> of floor or wall coverings for a lifetime of more than 50 years. Average product weight 15,5 kg/m <sup>2</sup>
<b>Reference Service Life (RSL)</b>	50 years. The useful life of tiles is generally more than 50 years (BNB 2011). Moreover, according to US Green Building Council, the service life of tiles could be as long as the useful life of the building itself.
<b>Temporal Reference</b>	Specific primary data for manufacturing plants refer to the year 2023
<b>LCA database and software</b>	International database: Ecoinvent 3.9.1 SimaPro Analyst ver. 9.5
<b>System boundaries</b>	Cradle to the grave and module D (A+B+C+D)
<b>Allocations</b>	Allocations related to input and output streams were made on the basis of the mass
<b>Cut-off</b>	In accordance with EN 15084, a minimum of 95 percent of total mass and energy flows per module was included.
<b>Electric Mix</b>	Calculated based on statistics compiled by AIB (Association of Issuing Bodies) using the Issuance Based Method (IB). Sources: <ul style="list-style-type: none"> <li>- Electricity, medium voltage (IT), residual mix GWP-GHG = 0,618 kgCO<sub>2</sub>/KWh</li> <li>- Source: Database Ecoinvent version 3.9.1</li> </ul>
<b>Exclusions</b>	Processes found to be insignificant to overall environmental performance were excluded. Environmental impacts of administrative activities, travel of workers to and from the workplace, cleaning activities, and construction of machinery and plants were excluded because they were not directly related to the product.
<b>LCA technical support</b>	Be-Circular S.r.l.s.

## REPORTED MODULES, GEOGRAPHIC REPRESENTATIVENESS, SPECIFIC DATA, AND DATA VARIABILITY

	PRODUCTION			INSTALLATION		USE							END OF LIFE.				BENEFITS
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
MODULES	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	6	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	GLO	GLO	IT	GLO													GLO
SPECIFIC DATA	>90%																
PRODUCT VARIATION (*)	Not relevant																
CHANGE SITES (*)	Not relevant																

Notes:

X= Module included in the LCA study

(\*) GWP-GHG Indicator

## A1-A3 PRODUCTION STAGE

### A1 Raw materials

The raw materials required for the production of porcelain stoneware are as follows:

- **minerals:** primary, resulting from quarrying: clay, kaolin, feldspar, sand
- **frits, glazes and dyes**
- **other additives**

The module covers the processes of extracting the mineral raw materials from European and non-European quarries, processing for atomized production, and manufacturing secondary components and additives.

### A2 Transportation of raw materials

The mineral raw materials used (clay, sand, feldspar) come directly from their places of origin (quarries or production sites) and arrive via ship and road transport.

### A3 Manufacture

The module covers the manufacturing activities of porcelain stoneware surfaces in Ceramica Fondovalle plants, the production of packaging and auxiliary materials, and the processes of transporting and treating the waste produced.

## A4-A5 CONSTRUCTION PHASE

### A4 - Transportation of the final product to the installation site.

The module includes the transportation of porcelain slabs from production sites to the customer or to the point of installation. Marketing takes place worldwide.

Not having sufficiently detailed primary data and considering the considerable variability over time, it was considered more correct to use the reference scenario established by UNI EN 17160 integrated with the data on sales volumes of the Italcra Group (year 2023) divided into three types of destination.

Destination	Type of transport	Average distance (km)	% of sales
Italy	Truck (capacity of 16-32 tons)	300	51 %
Europe	Truck (capacity of 16-32 tons)	1390	34 %
World (outside Europe)	Transoceanic cargo ship	6520	15 %
	Truck (capacity of 16-32 tons)	300	

The load characteristics are as follows:

- Apparent density of transported products (ton/m<sup>3</sup>) > 1,5
- Volume capacity utilization factor 1

The additional data of the adopted transport scenario are given in the following table (source: Ecoinvent).

Reference data	Truck	Cargo ship
Fuel type and consumption of vehicle.	0,0374 kg of diesel low sulfur for ton*km transported	0,0025 kg of heavy fuel oil for ton*km transported
Utilization capacity (including empty returns)	36-49%	70%

## A5 - Product installation

The installation of the product corresponds to the laying of the tile, during which the materials necessary for this operation are used.

Since no specific data were available for tile installation, reference scenarios defined by UNI EN 17160 were used, which are derived from average data provided by several European ceramic tile manufacturers.

Based on industry appropriateness considerations, the third option was considered among the reference scenarios proposed by the standard.

About the Scenario	unit/description
Cementitious adhesive	5.25 kg/UF
Water use	The installation process does not require the use of water
Use of other resources	The installation process does not require the use of other resources
Quantitative description of the type of energy and consumption in the installation process	The installation process requires no energy use
Waste resulting from the installation of the product	Packaging waste: Wood: 1,47 kg/UF Cardboard: 0.04 kg/UF PE film: 0.05 kg/UF
Output materials from waste treatment at the construction site	Wood: 63% recycling, 28% energy recovery, 9% landfill Cardboard: 95% recycling, 1% energy recovery, 3% landfill PE film: 55% recycling, 30% energy recovery, 15% landfill
Direct emissions to air, water, soil	The installation process does not generate emissions to air, water, soil

## B1-B7 USE PHASE

### B1 - Use

During use, ceramic tiles do not require the use of resources or generate emissions into the environment. No processes that generate environmental impacts take place at this stage.

## B2 - Maintenance

Tile maintenance includes cleaning done by the user periodically.

In the absence of specific data, the data reported in EN 17160:2019 were used

- Scenario for maintenance of ceramic floor tiles: 0.134 ml of detergent and 0.1 l of water are used to wash 1 m<sup>2</sup> of ceramic floor tiles once a week for the entire stated service life.

About the Scenario	unit/description
Maintenance process	Periodic cleaning with detergents
Cleaning cycle	1 time per week
Resource utilization	Detergent 0.134 ml detergent with 5% active ingredient
Water consumption	0.1 l/UF
Waste	Not relevant
Energy	No energy consumption

## B3-B4-B5 - Repair, replacement and renovation.

When properly installed, tiles do not require repair, replacement, or renovation.

## B6 - B7 - Operational use of energy and operational use of water.

These forms are not relevant for ceramic tiles.

## C1-C4 END-OF-LIFE PHASE

### C1 De-construction/demolition

As specified in EN 17160:2019, "the environmental impacts generated during C1 phase are very low and therefore can be ignored."

### C2 Transportation

The module includes the transportation of waste after demolition regardless of the subsequent management mode (disposal or recovery).

The distances covered are about 30 km as given in EN 17160.

### C3 and C4 Recovery/Recycling

Based on the 2023 sales data of Italcera Group in the 3 identified geographical areas (Italy, Europe and North America), the global weighted averages of construction and demolition waste destined for recycling and landfill disposal were calculated.

Construction and demolition waste	Italy <sup>1</sup>	Europe <sup>2</sup>	North America <sup>3</sup>
% to recovery/recycling	97,9	88,0	76,0
% to landfill	2,1	12,0	24,0
% sale of products Ceramica Fondovalle	51	34	15
Weighted average % to recovery/recycling	91%		
Weighted average % to landfill	9%		

Notes:

1 and 2: Eurostat, Waste generation and treatment - Treatment of waste by waste category.  
(data coverage: 2020)

3: EPA, Waste and Recycling (data coverage: 2021)

Therefore, the end-of-life scenario developed in this study predicts that on average about 91 percent of a tile is sent to recovery/recycling (C3), while 9 percent is sent to landfill (C4).

## **D BENEFITS THAT GO BEYOND THE BOUNDARIES OF THE SYSTEM**

Module D accounts for the potential net environmental benefits produced beyond the boundaries of the system studied from the reuse, recovery and recycling processes of materials.

Net environmental credits from recycling are calculated for this EPD.

This is a process outside the system.

In the hypothesis considered, tiles are recycled for the production of construction aggregates; the product replaced is natural aggregate (gravel).

## 5 - Product composition

Porcelain stoneware is produced from predominantly mineral raw materials used in both the preparation of the body (from atomized) and the surface finish.

The main components of the product are:

- Atomized: clay, feldspar, sands and additives
- Glaze: clay, feldspar, kaolin, nepheline, frit, zirconium compounds, alumina
- Additives and auxiliaries: dispersing agents, bonding agents, fluidizing agents, grits

Porcelain stoneware surfaces manufactured by Ceramica Fondovalle DO NOT contain the substances of very high concern (SVHC) included in ECHA's Candidate List (<https://echa.europa.eu/candidate-list-table>) in concentrations greater than 0.1 percent by mass.

Taking into account that almost all the raw materials used are of mineral origin and that the firing process is carried out at high temperatures, the biogenic carbon content in porcelain stoneware is zero.

The average product weight content of this EPD is given in the table below.

Product Components		Composition (%)
ATOMIZED	CLAY	35,9
	FELDSPAR	49,3
	SANDS	4,5
	ADDITIVES (SODIUM SILICATE)	0,9
DYE PIGMENTS AND INKS		0,9
GLAZES AND SIMILAR MATERIALS		5,6
AUXILIARY ADDITIVES		0,4
OTHER COMPONENTS		2,5
TOTAL		100 %
AVERAGE WEIGHT OF THE FUNCTIONAL UNIT		15,5 kg/m <sup>2</sup>
BIOGENIC CARBON		0.00 kgC/m <sup>2</sup>

Packaging consisting of cardboard, polyethylene stretch film and wood are also included in the functional unit of EPD. The weight content in the average product and the average biogenic carbon content is given in the table below.

Packaging	Average weight (kg/m ) <sup>2</sup>	Material recycled (%)
POLYETHYLENE FILM	0,049	0
WOOD	1,47	0
CARDBOARD	0,043	0
BIOGENIC CARBON	0.677 kgC/m <sup>2</sup>	

## 6 - Environmental Information

### DESCRIPTIVE PARAMETERS OF ENVIRONMENTAL IMPACT (EN 15804)

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3, B4, B5	B6, B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq	1,11E+01	1,04E+00	3,32E+00	0,00E+00	1,26E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,46E-01	5,04E-02	-2,47E-01
GWP-fossil	kg CO <sub>2</sub> eq	-1,82E+00	7,13E-04	2,01E+00	0,00E+00	-2,49E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,32E-04	1,16E-05	-4,39E-04
GWP-biogenic	kg CO <sub>2</sub> eq	1,29E+01	1,04E+00	1,31E+00	0,00E+00	1,32E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,46E-01	5,04E-02	-2,46E-01
GWP-luluc	kg CO <sub>2</sub> eq	5,52E-03	5,62E-04	6,42E-04	0,00E+00	1,86E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,08E-05	5,67E-06	-2,08E-04
ODP	kg CFC-11 eq	3,70E-02	8,76E-03	4,94E-03	0,00E+00	7,75E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,76E-04	4,67E-04	-1,57E-03
AP	mol H <sup>+</sup> eq	2,88E-02	2,44E-03	1,34E-03	0,00E+00	3,24E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,64E-04	2,16E-04	-4,41E-04
EP-freshwater	kg P eq	1,27E-03	6,52E-05	2,04E-04	0,00E+00	6,84E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,02E-05	1,55E-06	-5,77E-05
EP-marine	kg N eq	1,66E-01	2,66E-02	1,44E-02	0,00E+00	1,81E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,73E-03	2,35E-03	-5,00E-03
EP-terrestrial	mol N eq	3,58E-07	2,12E-08	6,26E-09	0,00E+00	2,76E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,18E-09	8,01E-10	-2,97E-09
POCP	kg NMVOC eq	1,03E-01	8,57E-03	4,14E-03	0,00E+00	6,23E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,11E-04	6,97E-04	-1,53E-03
ADPE (*)	kg Sb eq	2,00E+02	1,43E+01	8,39E+00	0,00E+00	2,47E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,07E+00	6,60E-01	-3,21E+00

ADPF (*)	MJ	3,69E-05	2,88E-06	3,14E-06	0,00E+00	8,65E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,68E-07	1,76E-08	-1,16E-06
WDP	m <sup>3</sup> eq	3,18E+00	5,38E-02	2,77E-01	0,00E+00	1,10E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,43E-03	1,42E-03	-2,04E-01
GWP-GHG (**)	kg CO <sub>2</sub> eq	1,29E+01	1,04E+00	1,31E+00	0,00E+00	1,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,46E-01	5,04E-02	-2,47E-01

### Notes

(\*) The results of these environmental impact indicators should be used with caution because uncertainties about these results are high or because experience with the indicator is limited.

(\*\*) This Indicator includes all GHGs included in GWPTotal but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. The indicator is therefore the same as the GWP indicator originally defined in the previous version of the standard (EN 15804:2012 + A1: 2013).

### Indicator legend

GWP-total = climate change

GWP-fossil = climate change-fossil

GWP-biogenic = Climate change-biogenic

GWP-luluc = climate change-land use

ODP = Ozone depletion potential

AP = Acidification potential

EP-freshwater = Eutrophication potential, fraction of nutrients reaching the freshwater terminal compartment

EP-marine = Eutrophication potential, fraction of nutrients reaching the terminal compartment of seawater

EP-terrestrial = Eutrophication potential, accumulated exceedance

POCP = tropospheric ozone formation potential

ADP-fossil = Abiotic depletion potential of fossil resources

ADP-minerals & metals = Abiotic depletion potential of non-fossil resources; abiotic of non-fossil resources

WDP = Water deprivation potential

GWP-GHG = Climate Change

## DESCRIPTIVE PARAMETERS OF RESOURCE CONSUMPTION (EN 15804)

Category impactful	Unit	A1-A3	A4	A5	B1	B2	B3, B4, B5	B6, B7	C1	C2	C3	C4	D
PERE	MJ	1,60E+01	2,02E-01	1,21E+00	0,00E+00	9,00E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,22E-02	3,76E-03	-1,78E-01
PERM	MJ	2,12E+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
PERT	MJ	3,72E+01	2,02E-01	1,21E+00	0,00E+00	9,00E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,22E-02	3,76E-03	-1,78E-01
PENRE	MJ	2,15E+02	1,52E+01	8,91E+00	0,00E+00	2,62E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,20E+00	7,02E-01	-3,41E+00
PENRM	MJ	3,04E+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
PENRT	MJ	2,18E+02	1,52E+01	8,91E+00	0,00E+00	2,62E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,20E+00	7,02E-01	-3,41E+00

### Indicator legend

PERE = Renewable primary energy use excluding renewable primary energy resources used as feedstock;

PERM = Utilization of renewable primary energy resources used as raw materials;

PERT = Total use of renewable primary energy resources;

PENRE = Primary non-renewable energy use excluding non-renewable primary energy resources used as raw materials;

PENRM = Use of non-renewable primary energy resources used as raw materials;

PENRT = Total use of non-renewable primary energy resources;

## DESCRIPTIVE PARAMETERS OF SECONDARY MATERIAL USE

Category impactful	Unit	A1-A3	A4	A5	B1	B2	B3, B4, B5	B6, B7	C1	C2	C3	C4	D
SM	Kg	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
RM	Kg	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
RSF	MJ	1,26E-01	0,00E+00	3,36E+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
NRSF	MJ	5,65E-02	0,00E+00	1,26E-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

### Indicator legend

SM = Use of secondary material

RM: Use of recycled materials and by-products (in accordance with LEED and BREEAM protocols);

RSF = Use of renewable secondary fuels;

NRSF = Use of non-renewable secondary fuels.

## DESCRIPTIVE PARAMETERS OF WASTE GENERATION AND FRESHWATER CONSUMPTION

Category impactful	Unit	A1-A3	A4	A5	B1	B2	B3, B4, B5	B6, B7	C1	C2	C3	C4	D
FW	m <sup>3</sup>	8,46E-02	1,89E-03	7,20E-03	0,00E+00	2,59E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,95E-04	5,18E-05	-5,08E-03
HWD	Kg	8,25E-04	8,77E-05	3,24E-05	0,00E+00	5,69E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,32E-05	4,44E-06	-2,16E-05
NHWD	Kg	2,72E+00	5,85E-01	1,24E-01	0,00E+00	2,44E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,01E-01	9,44E-04	-1,02E-01
RWD	Kg	1,27E-04	4,12E-06	6,72E-06	0,00E+00	8,53E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,72E-07	7,23E-08	-3,89E-06

### Indicator legend

FW = Net freshwater use  
HW = Disposed hazardous waste;  
NHWD = Disposed non-hazardous waste;  
RW = Radioactive waste disposed.

## DESCRIPTIVE PARAMETERS OF COMPONENTS RELATED TO REUSE

The following indicators were obtained using data entered into Simapro and following the UNI EN 15804 SEPTEMBER 2021.

Category impactful	Unit	A1-A3	A4	A5	B1-B7	B2	B3, B4, B5	B5, B6, B7	C1	C2	C3	C4	D
CRU	Kg	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
MFR	Kg	7,26E-02	0,00E+00	1,31E+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
MER	Kg	1,07E-02	0,00E+00	2,53E-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
EEE (electrical)	MJ	6,01E-02	0,00E+00	1,15E+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
EET (thermal)	MJ	1,20E-01	0,00E+00	2,30E+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

### Indicator legend

REUSE = Components for Reuse

RECYCLE = Materials for recycling ;

EN-REC = Materials for energy recovery;

EE-E = Exported energy-electricity;

EE-T = exported energy-thermal energy

## 7 - Additional environmental information

### PRODUCT CIRCULARITY

At the Ceramica Fondovalle plants, there are no water discharges resulting from the manufacturing process of the products covered by the EPD, since the water used in plant washing and squaring processes is totally recycled internally in the process, both in the preparation phase of the mixture and for the production of atomized, and only to a small extent delivered externally for recovery to authorized parties, in the form of ceramic sludge and unpurified water.

Internal raw material scraps are as far as possible reused internally in the dough preparation stage, while cooked scraps are almost totally recycled in atomized production.

Thus, Ceramica Fondovalle production is a closed-loop process that puts all raw material and water waste back into the production cycle.

Furthermore, at the end of their useful life, estimated at least 50 years, porcelain stoneware surfaces can be entirely subjected to a simple mechanical crushing treatment to recover material that can be used in various other sectors (for example concrete production, road construction) instead of primary materials.

### END OF LIFE

Porcelain stoneware offers an additional guarantee of environmental friendliness even at the end-of-life stage.

In fact, these materials do not require treatment because, by virtue of their high chemical inertness, they do not release substances into the environment. This is precisely why they are considered to all intents and purposes inert materials. They can be used as backfill material for construction sites and as bedding material for roadways, thus reducing the need for quarry gravel.

### COMPLIANCE WITH ITALIAN BUILDING "CAM" REQUIREMENTS

Ceramica Fondovalle products meet the environmental quality characteristics and requirements outlined in the Minimum Environmental Criteria (CAM) established in Italy by D.M. No. 256/2022, as part of the national Green Public Procurement (GPP) programs.

The environmental quality requirements adopted by the Italian CAM program for ceramic floor and wall tiles are given below and are taken from the European environmental quality requirements used for awarding the Ecolabel to hard coverings in buildings (EU Commission Decision No. 2021/476), effective January 1, 2024.

- § 1.1 Extraction of industrial and construction minerals. Ceramica Fondovalle uses suppliers who meet the qualification criteria stated in the criterion.
- § 1.2. Restricted substances, § 1.3. VOC emissions. Tiles meet EU criteria regarding the presence of SVHC substances in raw materials, the presence of certain hazardous substances in products, and emissions. of VOCs in products.
- § 1.4. Suitability for use. Italcra S.p.A., in application of the management requirements of CE marking, has adopted procedures to control and assess the quality of its products and to ensure their suitability for use,
- § 1.5. Information for users. Porcelain tile surfaces are sold with the information the user needs for proper installation and maintenance as well as disposal.
- § 1.7. Environmental Management System. Ceramica Fondovalle has a Management System complying with UNI EN ISO 14001:2015 and is certified by a third party, the main plant in Rubiera (RE) is also EMAS registered.

- § 4.1. Fuel consumption for drying and combustion processes, § 4.2. CO<sub>2</sub> emissions, § 4.4. Emissions of dust, HF, NO<sub>x</sub>, and SO<sub>x</sub> to air. These environmental indicators are measured or calculated directly at the level of each individual plant and stated in the Italian IPPC document called "AIA Report".
- § 4.3. Process water consumption. In the Ceramica Fondovalle plants, almost all of it is fed back into the grinding process of atomized production, in addition to internal reuse.
- § 4.5. Wastewater management. In the Ceramica Fondovalle plants, no industrial effluent is produced, wastewater is removed as waste and re-introduced almost entirely into the grinding process of atomized production, in addition to internal reuse.
- § 4.6. Reuse of process waste. Ceramica Fondovalle initiates more than 98% of the waste produced for recovery.
- § 4.7. Glazes and inks. Glazes and inks used in the surface finishes of products comply with EU criteria for Lead and Cadmium content.

## 8 - Bibliographical references

- ISO 14020:2002. Environmental labels and declarations - General principles
- ISO 14025:2010. Environmental labels and declarations - Type III environmental declarations, Principles and procedures.
- ISO 14040:2006. Environmental management - Life cycle assessment, Principles and framework.
- ISO 14044:2006. Environmental management - Life cycle assessment, Requirements and guidelines.
- EN 15804:2021. Sustainability of construction work - Environmental product declaration, Rules for the production of construction products.
- EN 17160:2019. Rules by product category for ceramic tiles.
- ISO 13006:2018. Ceramic tiles - Definitions, classification, characteristics and marking.
- EN 14411:2016. Ceramic tiles - Definitions, classification, characteristics, evaluation and verification of constancy of performance and marking
- ISO 9001:2015. Quality management systems - Requirements
- ISO 14001:2015. Environmental management systems - Requirements and guidance for use.
- EC Regulation 1221/2009 on the voluntary participation of organizations in a Community eco-management and audit scheme (EMAS)
- Association of Issuing Bodies, 2024, European Residual Mixes: Results of the calculation of Residual Mixes for the calendar year 2023.
- BNSR, 2011. BNB useful lives tables
- Decision 2014/955/EU amending Decision 2000/532/EC on the list of waste under Directive 2008/98/EC of the European Parliament and of the Council.
- ISPRA, 2024. Rapporto rifiuti urbani - Edizione 2023.
- GSE, 2019. Guida Operativa Certificati Bianchi - Allegato 2.1 Guide Settoriali: il settore industriale della produzione di piastrelle ceramiche
- Confindustria Ceramica, 2024. Industrie produttrici di piastrelle di ceramica - Fattori di impatto e prestazioni: Aggiornamento dati 2022
- ENEA, 2021. Caratterizzazione energetica e strategie d'intervento per il settore delle piastrelle di ceramica.
- Pré Sustainability, SimaPro Analyst ver. 9.5.
- Swiss Centre for Life Cycle Inventories, 2023. Database Ecoinvent version 3.9.1.
- ILCD Handbook - General guide for Life Cycle Assessment - Detailed guidance - First Edition (2010)