

 **ITALGRANITI GROUP**

 **EPD**[®]
THE INTERNATIONAL EPD[®] SYSTEM



Environmental Product Declaration

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

PORCELAIN STONEWARE

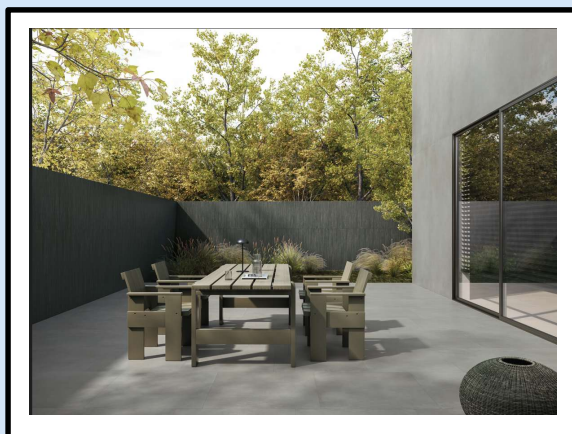
Thickness 20 mm

(Bla classification according to EN 14411:2016)

from

Italgraniti Group S.p.A.

VIA RADICI IN PIANO 355, FRAZ. CASINALBO - FORMIGINE (MO) - ITALY
PRODUCTION SITE: VIA PER CARPI 54 - SAN MARTINO IN RIO (RE) - ITALY



The EPD covers multiple products (listed at pag.4), based on the average results of the product group.

Programme:	The International EPD [®] System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0013297 (S-P-13297)
Publication date:	2024-07-11
Version	1
Valid until:	2029-07-10

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>Construction product, PCR 1019:14, version 1.3.3</i>
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Life Cycle Assessment (LCA)
LCA accountability: <i>Italgraniti Group S.p.A.</i>
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier Third-party verifier: Marcel Gomez Ferrer Marcel Gómez Consultoria Ambiental, info@marcelgomez.com Phone: +34 630 64 35 93 - Email: info@marcelgomez.com Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" 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.

Name and contact information of LCA practitioners:

Esalex srl, www.esalex.eu, info@esalex.eu

Company information

Owner of the EPD: Italgraniti Group S.p.A.

Contact: Armando Bergamini, email: A.Bergamini@italgranitigroup.com

Description of the organisation: Italgraniti Group has been on the market since 1975 (Impronta before and Italgraniti since 1994). The company is an Italian excellence in the production and commercialization of ceramic products. The porcelain stoneware of Italgraniti has highest technical and aesthetic performance and the company has attention to product quality and service.

The company is located in Formigine (MO) with a productive site in San Martino in Rio (RE), a historical district for the ceramic production. The plant of Formigine has function of warehouse with administrative offices. The plant in San Martino in Rio is the production site, with 3 independent production lines. This plant, highly technological, covers an area of 145.084 m², of which 35.201 m² covered.

Italgraniti group sells his products all over the world, to 1000 client located in 110 countries in 5 continents.

Italgraniti Group S.p.A. is certified ISO 9001:2015 (certificate n. IT316439), ISO 14001:2015 (certificate n. IT310442), ISO 45001:2018 (certificate n. IT326943), ISO 14064-1:2018, B-corp, UNI/PDR 125:2022 and registered EMAS (registration n. IT-000058).

More information: www.italgranitigroup.com

Name and location of production site:

Italgraniti Group S.p.A.

Via per Carpi 54,

San Martino in Rio (RE) - Italy

T. +39 059 888411

info@italgranitigroup.com

Product information

Product name: Porcelain stoneware

Product description and identification: The products offered by Italgraniti group to the market are the excellence of Italian-made products, in their design, assortment of colours and decoration, the use of state-of-art technologies and raw materials. The slabs are resistant and durable, with different superficial effects, that give to the product adapt for all type of internal and external applications.

In this EPD, the porcelain stoneware tiles with thickness 20 mm produced by Italgraniti group are studied and 28 collections are included. This EPD covers multiple products based on the average results of the product group.

The collections for product with 20 mm thickness included in LCA study are:

- Outdoorfloor20
- Charm experience
- Terre
- Nuances
- Silver grain + ceppo di Grè
- Allure
- Icon blue
- Loft
- Shale
- Metaline
- Up_stone
- Nordic stone
- My plank
- Stone plan
- Square
- Mineral D
- I Cementi
- I Travertini
- Dorset
- Origins
- Essence
- Ardesia
- Decora
- Linfa
- Limestone
- Magnetica
- Fjord
- Marmi di Impronta.

In the LCA study, all raw materials used for the production of 9 mm slabs have been considered, with the relative transportation. In A3 module the consumptions are allocated for the whole production and reported to the weight of slab under study. The composition of all products included in the EPDs is the same. The variability of the products is determined by the different colours. In the study, the use of different oxides coloured was analysed and the variability of results between the worst scenario and the average scenario is compared. The variability of results in terms of GHG-GWP is declared.

UN CPC code: **3732** Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous earths

Geographical scope: Global

The pretended communication of the EPD is B2B.

Technical specification:

The products has technical specification conforming to the standard EN14411 and ISO 13006 annex G Group Bla UGL with $E_v \leq 0,5\%$ and to the standard EN14411 and ISO 13006 annex G Group Bla GL with $E_v \leq 0,5\%$.

Conforming to standard EN14411 and ISO 13006 annex G Group Bla UGL with $E_v \leq 0,5\%$:

PHYSICAL PROPERTIES	TESTING METHOD	REFERENCE STANDARD	PRODUCT VALUES	
Sizes	EN ISO 10545-2	7cm ≤ N < 15cm	Conforming	
		(mm) (%) (mm)		
		Length and width		±0.9 ±0.6 ±2.0
		Thickness		±0.5 ±5.0 ±5.0
		Linearity		±0.75 ±0.5 ±1.5
		Wedging		±0.75 ±0.5 ±2.0
		Warpage		±0.75 ±0.5 ±2.0
appearance: percentage of acceptable tiles	95 % min. 95 % min.			
Water absorption %	EN ISO 10545-3	$E_v \leq 0,5\%$	Conforming	
Modulus of rupture		Average value 35 N/mm ² min.	Conforming	
Breakage resistance	EN ISO 10545-4	sp. > = 7,5 mm: min 1300 N sp. < 7,5 mm: min 700 N	Conforming	
Deep abrasion resistance	EN ISO 10545-6	175 mm ³ max	Average < 150 mm ³	
Thermal expansion coefficient	EN ISO 10545-8	Declared value	6,8 MK ⁻¹	
Thermal shock resistance	EN ISO 10545-9	Pass according to ISO 10545-1	Resistant	
Frost resistance	EN ISO 10545-12	Pass according to ISO 10545-1	Resistant	
Resistance to low concentrations of acids and alkali -	EN ISO 10545-13	Declared value	Resistant	
Resistance to high concentrations of acids and alkali		Declared value	Resistant	
Resistance to domestic chemicals and additives for swimming pools		UB min	UA	
Stain resistance of unglazed matte porcelain	EN ISO 10545-14	Declared value	Resistant	
Slip resistance	DIN 51130	If needed	Value available upon request	
	DIN 51097		Value available upon request	
	B.C.R.A. - D.M.236/ 89		> 0,40 Dry / > 0,40 Wet	
	ANSI A326.3 D COF		≥ 0,42 Wet	

Conforming to the standard EN14411 ISO 13006 annex G Group Bla GL with Ev ≤0,5%

PHYSICAL PROPERTIES	TESTING METHOD	REFERENCE STANDARD	PRODUCT VALUES
Sizes	EN ISO 10545-2	7cm ≤ N < 15cm	Conforming
Water absorption %	EN ISO 10545-3	Ev ≤ 0,5%	Conforming
Modulus of rupture		Min 35 N/mm ²	Conforming
Breakage resistance	EN ISO 10545-4	sp. > = 7,5 mm: min 1300 N sp. < 7,5 mm: min 700 N	Conforming
Abrasion resistance	EN ISO 10545-7	Required	See single tile picture
Thermal expansion coefficient	EN ISO 10545-8	Testing method available	6,8 MK ⁻¹
Thermal shock resistance	EN ISO 10545-9	Testing method available	Resistant
Glaze crazing resistance	EN ISO 10545-11	Required	Resistant
Frost resistance	EN ISO 10545-12	Required	Resistant
Resistance to low concentrations of acids and alkali -	EN ISO 10545-13	See manufacturer's declaration	Resistant
Resistance to high concentrations of acids and alkali		Testing method available	Resistant
Resistance to domestic chemicals and additives for swimming pools		GB min.	Conforming
Stain resistance of unglazed matte porcelain	EN ISO 10545-14	Declared value	Resistant
Slip resistance	B.C.R.A. - D.M.236/ 89	If needed	Value available upon request

LCA information

Declared unit: 1 m² of porcelain stoneware with thickness of 20 mm installed and with a useful life of 50 years. The mass conversion factor for 1 m² is 40 kg.

The product is used as floors and walls recovering and decoration for interiors and exteriors.

The study comprises the raw material extraction, raw material transportation, manufacturing, transportation to customer, installation, end-of-life of product.

Reference service life: 50 years

Time representativeness: primary data refer to 2023 year. The generic data has been updated in 2023 (Ecoinvent 3.9.1).

Geographical representativeness: primary data are derived from Italgraniti group in San Martino in Rio production site. The secondary data are derived by database Ecoinvent 3.9.1 (RER or GLO records).

Technological representativeness: primary data are derived from processes and products of Italgraniti group under study. The secondary data are derived from databases of Italgraniti similar technology.

Database and LCA software used: for the elaboration of data SimaPro v. 9.5.0.2; the database used is Ecoinvent 3.9.1.

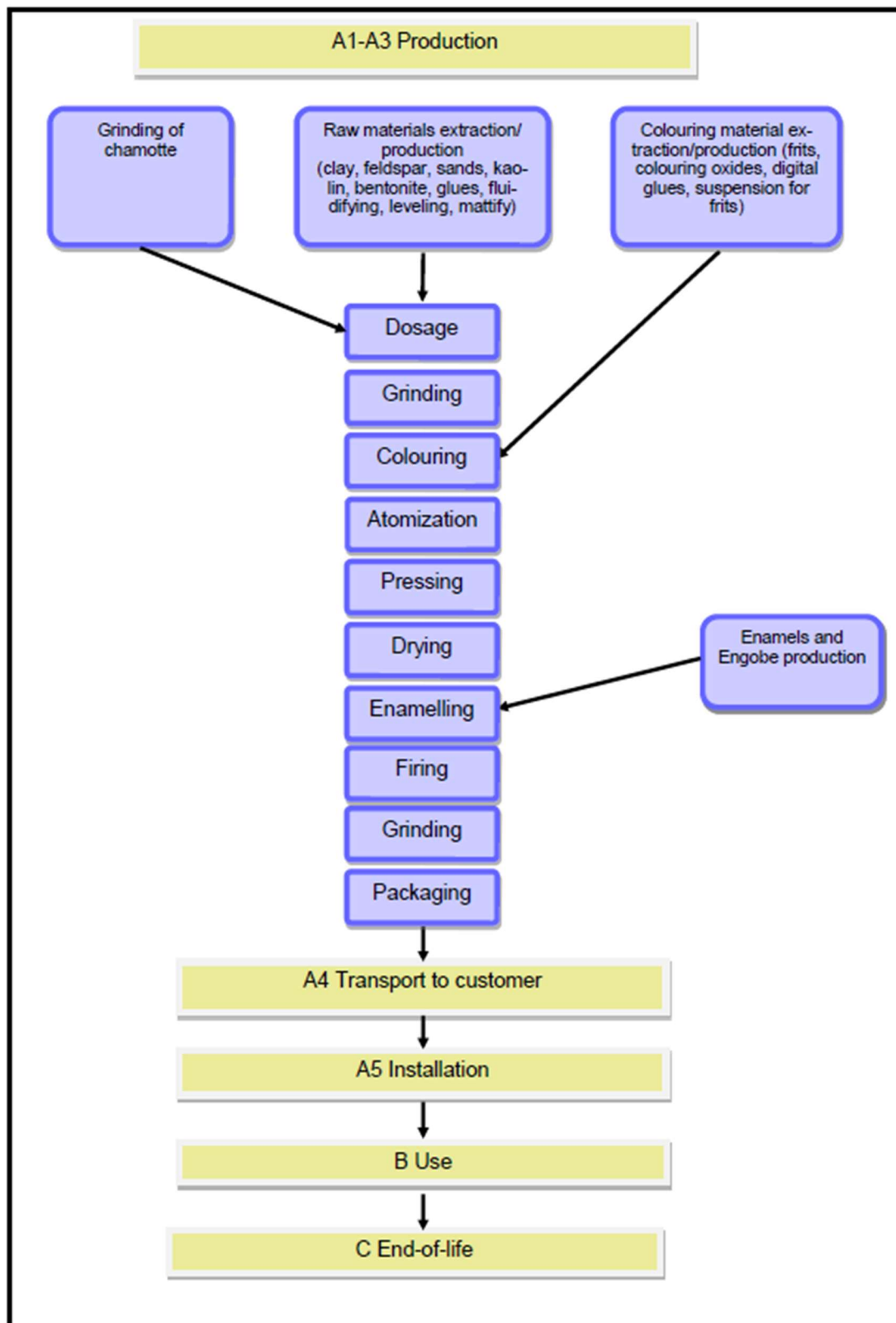
Description of system boundaries: cradle-to-grave (A-B-C) + module D

Excluded lifecycle stages: all life stages are included in the LCA study

More information: www.italgranitigroup.com

Production process

The system boundary is presented in the flow chart below:



The production process analysed in the LCA study, object of this EPD is characterized by a series of steps from the raw materials supply to the production of finished slab.

- Dosage: The raw materials are stocked in silos and in warehouse boxes. The dosage takes place through weighting belts that determine the specific quantities of raw materials according to the recipe elaborated by internal laboratory.
- Grinding: the raw materials (clay, feldspar, sands, bentonite and other materials) are shredded in mill with fluidifying and water to generate a mixture called "slip".
- Colouring: colouring materials are added to slip (frits, colouring oxides).
- Atomization: the slip is subsequently dried by the spray drying technique, which takes place in the atomizers. Atomization is a continuous and controlled process that allows to obtain a semi-finished product whose residual moisture content, the shape and size of the granules are suitable for the next phase.
- Pressing: the atomized powders are compacted by a hydraulic press and uploaded in molds for forming the tiles.
- Drying: this phase aims to reduce the level of moisture in the tiles and takes place by transferring heat from the air to the raw tile with consequent transformation of water into water vapor.
- Enamelling: the raw tile is covered with a uniform veil of a glass composition called engobe, whose function is to protect the tile. After the engobe, the tile is digital printed and decorated. Finally, the enamel is applied, a substance that acts as a protection from oxidizing agents, water and acids.
- Firing: this process consists in heating the materials by transferring energy at a certain temperature and for a specific time. In first time the a pre-heating with temperature between 500°C and 700°C happens, then the temperature can reach 1200°C.
- Lapping: the tile can be subject to a mechanical treatment, which makes the surface smooth and shiny.
- Grinding: this is a mechanical process for reducing the inhomogeneity of the finished products in terms of dimensions and edges.
- Packaging: Italgraniti packs its products with wood packaging, plastic, cardboard.

Additional information:

- The allocation is applied in the LCA study: when necessary, mass allocation is used.
- Cut-off: at least 95% of the energy and materials used by module has been introduced, as well as 99% of the total use of energy and materials
- The modularity principle, as well as the polluter payer principle have been followed
- The long-term emissions have not been included.
- The next processes have not been included since its impact is not significant:
 - Environmental impact from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process.
 - Personnel-related impacts, such as transportation to and from work.
- The impact method used are:
 - Environmental footprint 3.1
 - Cumulative energy demand (LHV) v. 1.00 for resource use
 - EDIP 2003 v. 1.07 for waste production.

The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	Europe	Europe	Italy	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	

- Module A1 – Raw material supply: this module includes the extraction and production of raw material. The processing of recycled materials (chamotte) is also accounted in this module.
- Module A2 – Transport: this module includes the transportation of raw materials from the production site to the Italgraniti group gate.
- Module A3 – Manufacturing: this module considers Italgraniti group S.p.A. internal processes, including consumption of energy, resources, packaging and generation of waste and emissions in air. The natural gas production used in productive process is included (0,054 kg CO₂eq/MJ). The electricity used in the productive process is modelled from the Italian residual mix and the Ecoinvent record is used (1 kWh – medium voltage - Italy = 0,601 kg CO₂eq).
- Module A4 – Transport: this module considers the transport of product to construction site. The distances are calculated as average weighted (in Italy and abroad) of all transports of 2023; for the model the distances from Italgraniti Group site to centre of state (for abroad distribution) or to the centre of province (for Italian distribution) are considered. The distribution modelled is: 17% in Italy and 83% abroad.

PARAMETER	DESCRIPTION / VALUE
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc	From Ecoinvent <u>Truck</u> (16-32 metric ton): 0,0374 kg of diesel low sulfur for ton*km transported <u>Ferry</u> : 0,030 kg of heavy fuel oil for ton*km transported <u>Ship</u> : 0,0025 kg of heavy fuel oil for ton*km transported <u>Train</u> : 0,0007 kg of diesel for ton*km transported

Distance	The distances are calculated as weighted average of all transportation in Italy and abroad in 2023: <ul style="list-style-type: none"> - Truck: 636,81 km - Ferry: 0,079 km - Ship: 2541,69 km - Train: 154,49 km
Capacity utilisation (including empty returns)	From Ecoinvent database: <ul style="list-style-type: none"> Truck: 36,67% Ferry: 50% Ship: 70% Train: unspecified
Bulk density of transported products (kg/m ³)	For tile 20 mm: 2188,00
Volume capacity utilisation factor	1

- Module A5 – Construction installation: this module considers the installation of product in the building with use of auxiliary materials.

PARAMETER	DESCRIPTION	VALUE
Auxiliary materials for installation	Kg	0
Use of water	m ³	2,4E-04
Use of other resources	Adhesive mortar (kg)	5
Quantitative description of energy type and consumption during the preparation and installation process	Electric energy (kWh)	0 (manual installation)
Direct emissions to ambient air, soil and water	kg	0
Waste materials on the building site, before waste processing, generated by the product's installation; specified by type	Product loss	5%
	Wood packaging (kg)	0,66
	Cardboard (kg)	0,29
	Plastic packaging (kg)	0,09
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal; specified by route	Landfill	100% of product packaging (0,66 kg of wood, 0,29 kg of cardboard, 0,09 kg of plastic) and 100% of product loss (2 kg)

- Module B – Use stage: The product is maintained with a periodic cleaning with water (every week) and detergent (every 2 weeks) for 50 years.

SCENARIO INFORMATION	DESCRIPTION / VALUE
Maintenance process	Periodic cleaning with water and detergent
Maintenance cycle	For 50 years
Ancillary materials for maintenance	Detergent: 0,134 ml/two weeks
Waste material resulting from maintenance	Not relevant
Net fresh water consumption during maintenance	Tap water: 0,1 l/week
Energy input during maintenance	No energy use during maintenance

- Module C1 – Deconstruction/demolition: The product is uninstalled with the use of jackhammer and the consume of 0,03 kWh of electricity.
- Module C2 – Transport to waste processing: the product is then transported to disposal; the scenario provides the transport for 50 km.

- Module C3 - Waste processing for reuse, recovery and/or recycling: the product is sent to landfill; any process of reuse, recovery and/or recycling isn't considered in the study.
- Module C4 - Disposal: the product is totally disposed in landfill.

PARAMETER	DESCRIPTION / VALUE
Collection process specified by type	Product waste are collected with 16-32 metric ton truck
Recovery system specified by type	There is no recovery, recycling or reuse
Disposal specified by type	100 % Landfill (40 kg)
Assumptions for scenario development (e.g. transportation)	16-32 metric ton truck. Distance: 50 km

Module D - Reuse-Recovery-Recycling potential: Module D calculates the potential environmental benefits of the recycling or reuse of materials. The product has not considerable benefits due to recycling or/and reuse.

Content information for 20 mm thickness tile (40 kg)

Product components	Weight, %	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Clay	<30	0	0
Feldspar	>60%	0	0
Chamotte	<1%	100	0
Sands	>5%	0	0
Bentonite/Engobe	<2%	0	0
Frits/colouring oxides/suspension for frit	<1%	0	0
digital inks	<1%	0	0
Other additives	<1%	0	0
TOTAL Kg	40	<1%	0
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Wood pallet	0,44	1,09	0,47
Wood panel	0,23	0,57	0,49
Cardboard	0,29	0,73	0,45
Plastic	0,095	0,24	0
TOTAL	1,055	2,62	/

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.

Results of the environmental performance indicators

The following results refers to 1 m² of 20 mm thickness tile of Italgraniti group porcelain stoneware, weighting 40 kg/m².

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

This EPD contains the module C; we strongly discourage the use of the results of modules A1 - A3 without considering the results of module C.

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit															
Indicator	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil (kg CO ₂ eq.)	2,48E+01	5,10E+00	7,95E+00	0,00E+00	6,82E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,29E-02	3,05E-01	0,00E+00	2,43E-01	0,00E+00
GWP-biogenic (kg CO ₂ eq.)	- 1,61E+00	8,20E-04	2,15E+00	0,00E+00	2,00E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,43E-05	1,74E-05	0,00E+00	9,62E-05	0,00E+00
GWP-luluc (kg CO ₂ eq.)	9,65E-03	4,46E-04	6,69E-03	0,00E+00	1,96E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,86E-05	1,17E-05	0,00E+00	1,47E-04	0,00E+00
GWP-total (kg CO ₂ eq.)	2,49E+01	5,10E+00	8,46E+00	0,00E+00	8,80E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,30E-02	3,05E-01	0,00E+00	2,43E-01	0,00E+00
ODP (kg CFC 11 eq.)	1,01E-06	7,57E-08	3,14E-07	0,00E+00	6,98E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,31E-10	4,50E-09	0,00E+00	7,03E-09	0,00E+00
AP (mol H ⁺ eq.)	7,61E-02	4,78E-02	4,65E-02	0,00E+00	4,04E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,10E-04	1,22E-03	0,00E+00	1,83E-03	0,00E+00
EP-freshwater (kg P eq.)	1,72E-04	2,03E-05	2,58E-04	0,00E+00	4,12E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,15E-06	7,12E-07	0,00E+00	2,37E-06	0,00E+00
EP-marine (kg N eq.)	2,72E-02	1,45E-02	8,96E-03	0,00E+00	2,60E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,96E-05	4,98E-04	0,00E+00	6,99E-04	0,00E+00
EP-terrestrial (mol N eq.)	2,67E-01	1,58E-01	9,07E-02	0,00E+00	1,15E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,16E-04	5,35E-03	0,00E+00	7,54E-03	0,00E+00
POCP (kg NMVOC eq.)	1,00E-01	4,56E-02	3,34E-02	0,00E+00	3,69E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,42E-05	1,69E-03	0,00E+00	2,62E-03	0,00E+00
ADP-minerals&metals (kg Sb eq.) [1]	5,13E-05	2,55E-07	3,97E-05	0,00E+00	8,56E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,19E-10	1,81E-08	0,00E+00	3,38E-07	0,00E+00
ADP-fossil (MJ) [1]	3,55E+02	6,84E+01	1,18E+02	0,00E+00	1,27E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,98E-01	4,10E+00	0,00E+00	6,06E+00	0,00E+00
WDP (m ³) [1]	7,56E+00	1,09E-01	3,70E+00	0,00E+00	1,12E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,76E-03	5,69E-03	0,00E+00	2,68E-01	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption														

[1] 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.

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[2] (kg CO ₂ eq.)	2,48E+01	5,10E+00	7,96E+00	0,00E+00	8,78E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,30E-02	3,05E-01	0,00E+00	2,43E-01	0,00E+00

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

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	1,64E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Use of resources

Results per declared unit															
Indicator	Tot.A1-A3	A4	A5	B1	B2	B2	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE (MJ)	1,90E+01	5,51E-01	6,47E+00	0,00E+00	7,16E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,03E-02	6,04E-03	0,00E+00	5,13E-02	0,00E+00
PERM (MJ)	8,11E+00	0,00E+00	-8,11E+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
PERT (MJ)	2,71E+01	5,51E-01	-1,64E+00	0,00E+00	7,16E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,03E-02	6,04E-03	0,00E+00	5,13E-02	0,00E+00
PENRE (MJ)	3,55E+02	6,84E+01	1,18E+02	0,00E+00	1,30E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,98E-01	4,10E+00	0,00E+00	6,06E+00	0,00E+00
PENRM (MJ)	4,26E+00	0,00E+00	-3,69E+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	-5,70E-01	0,00E+00
PENRT (MJ)	3,60E+02	6,84E+01	1,14E+02	0,00E+00	1,30E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,98E-01	4,10E+00	0,00E+00	5,49E+00	0,00E+00
SM (kg)	5,46E-01	0,00E+00	2,73E-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
RSF (MJ)	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
NRSF (MJ)	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
FW (m ³)	7,36E+00	2,60E-02	6,29E-01	0,00E+00	5,54E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,61E-04	5,49E-04	0,00E+00	7,80E-03	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water														

Waste production and output flows

Waste production

Results per declared unit															
Indicator	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed (kg)	1,69E-03	4,23E-04	3,21E-04	0,00E+00	1,49E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,22E-07	2,76E-05	0,00E+00	3,21E-05	0,00E+00
Non-hazardous waste disposed (kg)	7,23E+00	1,72E-02	4,76E+00	0,00E+00	4,28E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,58E-04	1,04E-03	0,00E+00	4,00E+01	0,00E+00
Radioactive waste disposed (kg)	9,38E-05	2,01E-05	8,02E-05	0,00E+00	1,33E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,17E-07	1,44E-07	0,00E+00	8,95E-07	0,00E+00

Output flows

Results per declared unit															
Indicator	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use (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	0,00E+00	0,00E+00	0,00E+00
Material for recycling (kg)	1,25E+08	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
Materials for energy recovery (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	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity (MJ)	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
Exported energy, thermal (MJ)	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

Additional information

1. Recycled content

The content of recycled or recovered material or by-products is modelled, as required by the Italian law DM 23/06/2022 n.256, using purchased post-consumer material and material coming from internal recycling as described in the recipe.

Recycled and recovered material content	2,45%
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2. Indoor pollution

As regards ceramic tiles manufactured by ITALGRANITI GROUP S.p.A. (Brands: ITALGRANITI, IMPRONTA CERAMICHE), in compliance with **EN 14411:2012** standard and according to the **IEQ Credit 4.3**: “Low-Emitting Materials – Flooring Systems” of LEED Buildings Certification (Leadership in Energy and Environmental

Design; LEED 2009 NC Rating System - USGBC),

It is stated that

a) Ceramic tiles manufactured by ITALGRANITI GROUP S.p.A. (Brands: ITALGRANITI, IMPRONTA CERAMICHE), are obtained by an industrial process in which the firing phase is oxidant and it is performed at high temperature (ranging from 950 °C to 1200 °C), depending on the type of product.

b) During firing, in the presence of oxygen, any organic compounds in the ceramic product become oxidised (combustion), with consequent emission of combustion gases. This process can be considered completed in a temperature range of 450°C, 500°C. Above these temperatures, no organic compounds can be present in the fired material.

c) It can be concluded that, after firing at these temperatures, ceramic tiles manufactured by ITALGRANITI GROUP S.p.A. (Brands: ITALGRANITI, IMPRONTA CERAMICHE):

- **are completely without VOC;**
- **won't give off VOC during their use, in any operating conditions.**

Some of the 9 mm products at the end of the productive process can be polished to give brightness with water-based substances that don't contain VOCs.

All other processes are before firing phase.

No surface treatments used contain formaldehyde-based resins.

3. Industrial and construction mineral extraction

At least 90% mineral material suppliers provided the following documentation required by Italgraniti if their product are virgin material:

- quarry location and authorization provided to competent body;
- copy of EIA screening and EIA report;
- copy of rehabilitation management plan provided;
- declaration on invasive species;
- declaration on the habitats and birds Directive.

4. Restricted substances

Italgraniti declares under their sole responsibility that the product listed in this document do not contain any “Substance of very high concern” (SVHC) included in the “REACH Authorisation, Restriction and candidate list”, at the date of this document, in concentration above 0,1% weight and neither do their packaging.

Italgraniti declares that products don't contain substances or mixtures in concentration above 0,1% weight with those hazardous classes, hazard categories and related hazard statement codes in accordance with Regulation (EC) No. 1272/2008:

- Group 1 hazards: Category 1A or 1B carcinogenic, mutagenic and/or toxic for reproduction (CMR): H340, H350, H350i, H360, H360F, H360D, H360FD, H360Fd, H360Df.

- Group 2 hazards: Category 2 CMR: H341, H351, H361, H361f, H361d, H361fd, H362; Category 1 aquatic toxicity: H400, H410; Category 1 and 2 acute toxicity: H300, H310, H330; Category 1 aspiration toxicity: H304; Category 1 specific target organ toxicity (STOT): H370, H372.
 - Group 3 hazards: Category 2, 3 and 4 aquatic toxicity: H411, H412, H413; Category 3 acute toxicity: H301, H311, H331; Category 2 STOT: H371, H373.

5. Fitness for use

Italgraniti declares to have an ISO 9001 quality management system (certificazion n. IT316439) in place for the production site(s) and a procedure for dealing with customer complaints.
 Italgraniti products comply with EN14411 standard.

6. User information

User can find details about relevant technical performance, correct preparation and installation, instructions on proper cleaning and maintenance and information about correct disposal (of both product and packaging materials) at the end of technical manual, on the packaging and at the following links:

<https://www.italgranitigroup.com/it/porcelain-stoneware/laying>

<https://www.italgranitigroup.com/it/porcelain-stoneware/cleaning-and-maintenance>

<https://www.italgranitigroup.com/it/download/cataloghi-general>

The packaging is made by cardboard and strapping PET: on the packaging there are information about the correct disposal.

7. Fuel consumption for drying and firing

Specific spray-dried powder energy consumption (MJ/kg)	0,13
Specific kiln & ware dryer fuel consumption (MJ/kg)	3,08
Specific fuel consumption (MJ/kg)	6,49

8. CO₂ emissions

Specific emissions	Spray drying powder phase	Kiln & ware dryer fuel
Combustion emission	8,54 kg CO ₂ /t	212,52 kg CO ₂ /t
Process emission	0 kg CO ₂ /t	3,48 kg CO ₂ /t
Totale	8,54 kg CO ₂ /t	216 kg CO ₂ /t

Specific emissions	From ETS annual communication
Combustion emission	358,22 kg CO ₂ /t
Process emission	3,48 kg CO ₂ /t
Totale	361,70 kg CO ₂ /t

9. Process water consumption and wastewater management

Italgraniti production facility has a zero liquid discharge system.

Specific process water consumption	0,56 l/kg
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10. Emission of dust, HF, NO_x and SO_x to air

	Total emission (kg)	Spry dryer emission (mg/kg)	Kiln emission (mg/kg)
Dust	3817,85	0	33
HF	1.000,43	-	9
NO _x	28675,01	-	248
SO _x	0	-	0

11. Reuse of process waste

Fraction of process waste reused	98,3%
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12. Glazes and inks

The Lead (Pb) and Cadmium content in glazes and inks are <0,10% wt.

Differences versus previous versions

The primary data are updated to 2023, the secondary data are updated to the database Ecoinvent 3.9.1.

References

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14. CONSTRUCTION PRODUCTS. 1.3.3
- EN 17160:2019 Product category rules for ceramic tiles
- ISO 14040:2006 Environmental management-Life Cycle Assessment - Principles and framework
- ISO 14044:2006 Environmental management - Life Cycle Assessment-Requirements and guidelines
- ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations - Principles and procedures
- EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works — Environmental product declarations
- Project report rev.4 of 17/06/2024 – Life cycle assessment: Porcelain stoneware

