ENVIRONMENTAL PRODUCT DECLARATION

In accordance with:
ISO 14025
EN 15804:2012+A2:2019
ISO 21930:2017

PORCELAIN STONEWARE SLABS FOR INTERIOR AND EXTERIOR WALLS AND FLOORS - TOP - FURNITURE

URBATEK
PORCELANOSA Grupo

EPD Programme	The International EPD® System, www.environdec.com
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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."

1. PROGRAMME INFORMATION

PROGRAMME	The International EPD® System
PROGRAMME OPERATOR ADDRESS	EPD International AB Box 210 60 - SE-100 31 Stockholm Sweden
WEBSITE	www.environdec.com
E-mail	info@environdec.com

CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.1
PCR review was conducted by	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A Pena, Univerity of Concepcion, -Chile. The review panel may be contacted via info@environdec.com.
Independent third-party verification of the declaration and data, according to ISO 14025:2006	☐ EPD process certification (Internal) ☑ EPD verification (External)
Third party verifier	Ugo Pretato – Individual Verifier
Approved by	The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:	☑ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.
For further information about comparability, see EN 15804 and ISO 14025

2. COMPANY INFORMATION

OWNER OF THE EPD

Urbatek Ceramics SAU, 12540, Vila-real, Castellón, ESPAÑA

DESCRIPTION OF THE ORGANIZATION

PORCELANOSA Grupo is a leading reference today both in Spain and abroad, with a philosophy based on values like innovation, quality and, above all, a commitment to society and confidence in its extensive team of staff, made up of over 5,000 people.

With almost 40 years' business experience, PORCELANOSA Grupo is present in almost 100 countries throughout the world, thanks to its unique business model and strong corporate strategy. It is currently one of the best-known Spanish companies in the world, with a consumer reputation as a strong, solid company.

Our goal is to excite our clients so that they like our products: this requires keeping up to date with the latest technologies and establishing a continuous improvement work process that easily adapts to the demands of the environment.

PRODUCTION SITES

For the production of the ceramic slabs included in this EPD, the following facilities are considered:

LOCATIONS
IT-1: Italy, Emilia Romagna
IT-2: Italy, Emilia Romagna
IT-3: Italy, Emilia Romagna

CERTIFICATIONS

Urbatek has taken on a global commitment to maintain an environmentally-friendly policy. Proof of the company's efforts to ensure clean and eco-friendly business activities are the implementation of an Environmental Management System in compliance with the ISO 9001:2015 and ISO 14001:2015 standards.

CONTACTS

For more information about this EPD, you can contact:

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e-mail: info@urbatek.com

Alternatively you can write to:
Urbatek Ceramics SAU, 12540, Vila-real, Castellón, ESPAÑA

or visit the websites:
www.urbatek.com

3. PRODUCT INFORMATION

PRODUCT NAME

Porcelain stoneware slabs

PRODUCT IDENTIFICATION

The range of products in this EPD includes Porcelain stoneware slabs under the brand URBATEK having thicknesses of 6-9-12-20 mm.

URBATEK
PORCELANOSA Grupo

THICKNESS 6 mm	AVERAGE WEIGHT 14,1 kg/m^2

FORMATS (cm): 300x150, 250x120, 120x120

COLLECTIONS:

XTONE

THICKNESS 9 mm	AVERAGE WEIGHT 20,5 kg/m^2

FORMATS (cm): 300x150, 150x150

COLLECTIONS:

XTONE

THICKNESS 12 mm	AVERAGE WEIGHT 28,5 kg/m^2

FORMATS (cm): 328x154

COLLECTIONS:

XTONE

THICKNESS 20 mm	AVERAGE WEIGHT 51,6 kg/m^2

FORMATS (cm): 328x154

COLLECTIONS:

XTONE

PRODUCT DESCRIPTION

Porcelain stoneware is a special type of ceramic product, used for floors and walls, combining the highest levels of technical features to a particularly prestigious appearance.
The areas of application in the building industry are multiple, these slabs can be used for internal and external walls and floorings.
The big slabs porcelain stoneware defines the reason of the Company, with development in products of different thicknesses in sheets with formats up to three meters, which facilitate housing reform processes.
The technical porcelain is a product with many characteristics: great durability, resistance, hygiene and beauty; it is available in different finishes.

UN CPC CODE

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

GEOGRAPHICAL SCOPE

Global

PRODUCT TECHNICAL FEATURES

The products meet requirements defined by the European standard EN 14411 and ISO 13006 Annex G, according to criteria established by test method ISO 10545 - "International Organization for Standardization Specifications for Ceramic Tile", reported below.

Porcelain Stoneware Slabs BIa Group according to UNI EN 14411 Annex G/ISO 13006 Annex G

TECHNICAL PROPERTIES	STANDARD OR MEASURING METHOD	VALUE REQUIRED EN 14411 Annex G	AVERAGE PRODUCTION VALUES	
			UGL	
			THICKNESSES 6, 9 mm	THICKNESSES 12, 20 mm
Water absorption	ISO 10545-3	≤ 0,5 %	<0,1 %	<0,1 %
Lenght and width	ISO 10545-2	± 0,6 %	±0,2 %	--
Thickness		± 5 %	± 0,5mm	± 0,5 mm
Streightness of sides		± 0,5 %	<0,15 %	<0,2 %
Rectangularity		± 0,5 %	<0,15 %	<0,2 %
Planarity		± 0,5 %	<0,15 %	<0,2 %
Modulus of rupture (R)	ISO 10545-4	≥ 35 N/mm^2	≥ 40 N/mm^2	> 40 N/mm^2
Resistance to deep abrasion	ISO 10545-6	Max 175 mm^3	<150 mm^3	<140 mm^3
Resistance to thermal shock	ISO 10545-9	Available test method	Compliant	Compliant
Frost resistance	ISO 10545-12	Requested	Compliant	Compliant
Resistance to chemicals*	ISO 10545-13	Min. Class B -Household chemicals -Swimming pool salts	Compliant	Compliant
Resistance to staining	ISO 10545-14	1<X≤5;	Compliant	Compliant
Reaction to fire	Decision 96/603 CE Test absent	--	A1 – $A1_{FL}$	A1 – $A1_{FL}$

(*)With the exception of HYDROFLUORIC acid (HF) or its derivatives and compounds

PRODUCTION PROCESS

The production process of the ceramic slabs covered by this EPD is divided into a series of working phases as described below.

Raw materials acquisition: mineral raw materials (clay, sand, feldspar, kaolin, pigments) arrive at the production facilities and are stored in special warehouses.
The clay fraction performs a plasticizing function; the inert fraction (sand) a slimming and structural function, capable of limiting shrinkage and expansion during the firing of the ceramic piece; the feldspathic fraction has a melting function, which allows the glass formation during the baking of the piece.

Mixture preparation: the mineral raw materials suitably pre-mixed are dosed (in a variable percentage according to the production recipe) inside the milling plants, consisting of continuous mills and turbo dissolvers.
At the same time and in appropriate percentages, water (taken from wells and recirculation), fluidifying agent and grinding bodies (consisting of pebbles and alumina spheres) are added to the raw materials. The dough that is formed with a percentage of water equal to about 30% is called "slip". Downstream of this phase, color concentrates (pigments) are also added, in a variable percentage depending on the product to be made.

Spray-drying: the slip is sprayed inside steel cylinders (atomizers), where it is sprayed to obtain very fine droplets. Subsequently, hot air is introduced for the drying of the drops of slip producing the atomized, mixture of granules with controlled humidity.

Forming: the atomized powders are mixed, sieved and then compacted by pressing between two surfaces in order to obtain a raw compacted product, the so-called "green tile".

Drying: the formed tile undergoes a drying process by means of a recirculation of hot air which considerably reduces its humidity to almost negligible levels, and gives it an even higher mechanical load, which allows it to be subjected to various surface processes to confer appropriate aesthetic properties .

Surface processing For unglazed porcelain stoneware, the desired final aesthetic effect is obtained by using digital printers.

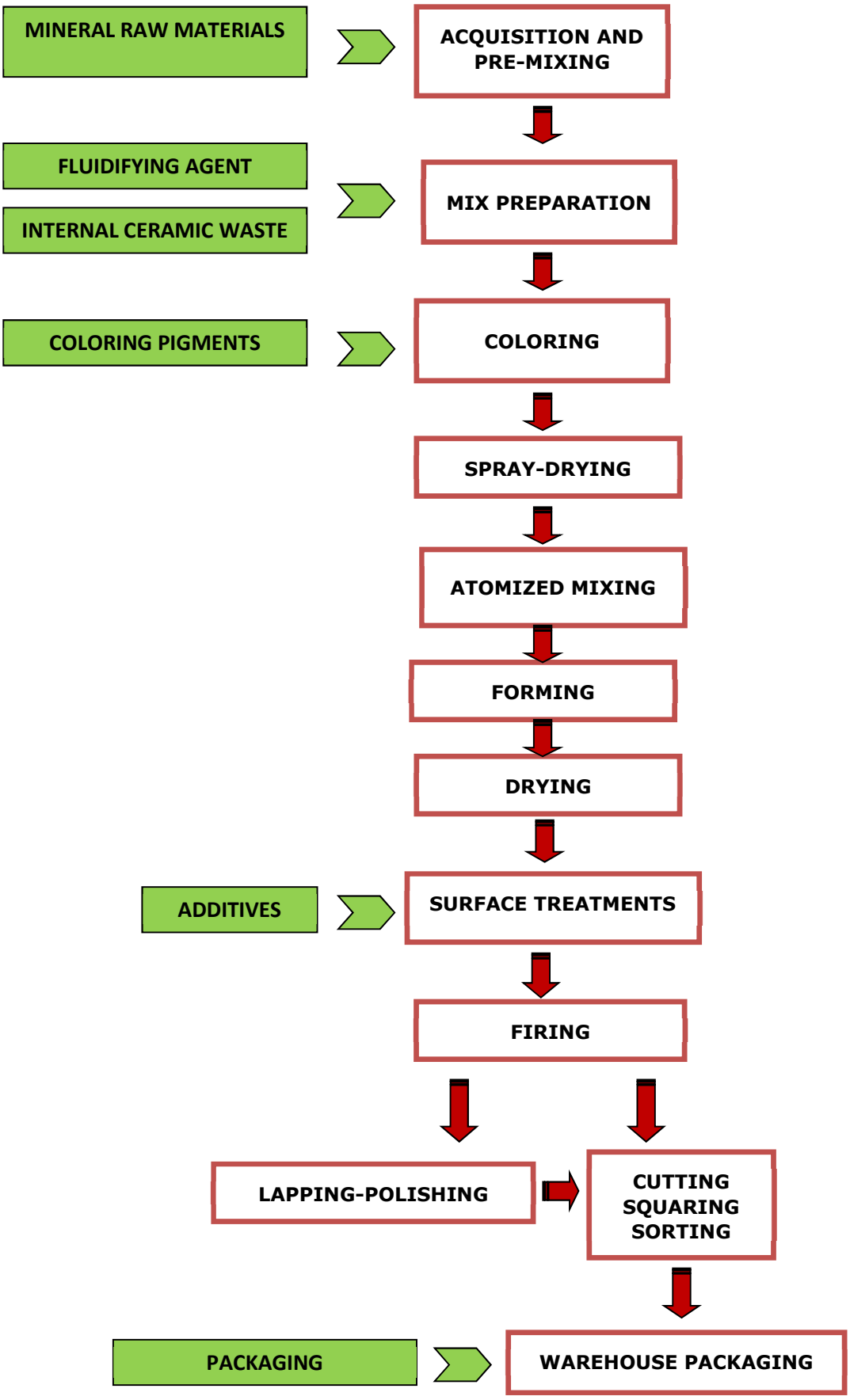
Firing: the firing phase has the aim of reinforcing the slab so as to give mechanical characteristics, inertia and physical-chemical resistance appropriate to the different uses. The dried sheet is placed in ovens and cooked. During the cooking cycle, the plate is preheated, cooked and cooled; the durability of these phases and the temperature reached determine the mechanical and resistance characteristics pursued.

Lapping / Polishing (optional): lapping and polishing are controlled removal operations of the surface layer of ceramic pieces and are carried out to give them a bright surface and a high-quality aesthetic appearance.

Cutting and squaring: the cutting phase is necessary to transform the big slabs into the format requested by customers. The cut is made by water jet. Squaring is an optional process aimed at optimizing the geometric properties and obtaining perfectly orthogonal pieces.

Sorting, packaging and storage: during the sorting phase all the dimensional and qualitative characteristics are checked. This phase is carried out in appropriately equipped automatic lines. The tiles are placed inside punches / trestles appropriately packed with stretch film. The finished packed material is ready to be shipped by lorries or containers to the final user.

FLOW DIAGRAM OF THE PRODUCTION PROCESS



4. LCA INFORMATION

Functional Unit	Coverage of 1 m^2 of flooring in buildings for residential and commercial use for a duration of over 50 years.
Reference Service Life (RSL)	The RLS of the tiles is generally over 50 years (BNB 2011). Furthermore, according to the US Green Building Council, the RLS of the tiles could have the same duration as the building itself; therefore, 60 years represents an alternative RSL value for tiles. The environmental performance results reported in this EPD refer to the product RSL with the exception of the B2-Maintenance module for which they refer to 1 year (multiplying the B2 values by 50 or 60 it is possible to obtain performance values relating to the useful life). An RSL has not been defined in accordance with ISO 15686.
Temporal representativeness	Primary data relating to the production facilities refer to the year 2018.
Database and LCA software	Ecoinvent 3.5 and Simapro 8.5
System boundaries	From cradle to grave + module D (A+B+C+D)
Allocation	Allocations relating to input and output flows were made on a mass basis
Cut-off	In accordance with EN 15084, a minimum of 95% of the total mass and energy flows per module has been included
Electric mix (A3)	Renewables: 8,4%, Fossil: 80,1%; Nuclear: 11,4% Climate impact of electricity production: 561 g CO2 eq./kWh
Exclusions	The analysis does not include administrative activities, workers business travels, cleaning activities, construction of machinery and factories.
Technical support for the LCA	Bureau Veritas Nexta Srl – www.nexta.bureauveritas.it

DECLARED MODULES, GEOGRAPHICAL REPRESENTATION, DATA VARIATION

	Product stage			Construction process stage		Use stage							End of life stage				Resouece Recovery stage
	Raw materials 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**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	IT	GLO													GLO
Specific data	>90%																

X = Module declared; ND = Module not declared

	A1 - A3			
	6 mm	**9 mm**	**12 mm**	**20 mm**
Variation – products %	< 10 %	< 10 %	<10%	<10%
Variation – sites %	Not relevant	Not relevant	Not relevant	Not relevant

A1-A3 PRODUCT STAGE

A1 - Raw materials supply

The slab is mainly composed of mineral raw materials (clay, quartz, kaolin, feldspar) which come partly directly from quarries and partly from pre and post consumer recycled material and / or from ceramic waste resulting from the ceramic and sanitary sectors.

The module includes the processes of extraction of mineral raw materials from European and non-European quarries, selection and grinding of waste from the ceramic and sanitary sector to obtain secondary raw materials, manufacture of the fluidifier and colored pigments, generation of electricity needed for production.

A2 - Transport

The module includes the transport of raw materials by sea, road and rail to the production sites.

A3 - Manufacturing

The module includes the manufacturing activities of the porcelain stoneware slab in the production facilities, the production of packaging materials and auxiliary materials and the transport and treatment processes of the waste produced.

A4-A5 CONSTRUCTION PROCESS STAGE

A4 – Product transport to building site

The module includes the transport of porcelain stoneware slabs from production sites to the customer or to the point of installation. The marketing of the products takes place all over the world.

The transport scenarios used (distances and transport vehicles) are shown in the following table and refer to average data reported in the EN 17160: 2019 standard (Product category rules for ceramic tiles).

Scenario Information	Unit / description
Fuel type and consumption	Diesel – 31,2 l/100 km (National and European destination)
Distance	National destination/Spain (Truck with a capacity of 16-32 tons): 300 km European destination (Truck with a capacity of 16-32 tons): 1390 km International (non-European) destination (Transoceanic freight ship): 6520 km
Capacity utilization	% assumed in Ecoinvent 3.5
Bulk density of transported product	0,08-1,03 kg/m^3 per Functional Unit, depending on product thickness

A5 –Product installation

The module includes the product installation phases, the production of auxiliary materials for installation, the treatment of the waste produced from packaging. The tiles are fixed to the surfaces of walls and floors using specific materials. The installation scenarios used are shown in the following table and refer to average data reported in the EN 17160: 2019 standard (Product category rules for ceramic tiles). The production of ceramic waste in the installation phase is negligible.

Scenario Information	Unit / description
Ancillary materials for installation	6 kg/FU of cementitious adhesive
Use of water	No use of water resulting from product installation
Use of other resources	No use of other resources resulting from product installation
Quantitative description of the type of energy and the consumption during the installation process	No consumption of energy resulting from product installation
Waste materials on the building site generated by the product's installation	Packaging waste: Wood: 1,5-3,3 kg/FU depending on product thickness Cardboard: 0,2-0,5 kg/FU depending on product thickness PE stretch Film: 0,01-0,04 kg/FU depending on product thickness
Output materials as a result of waste processing at the building's site	Wood: 35% recycling, 16% energy recovery, 49% landfill Cardboard:67% recycling, 8% energy recovery, 25% landifll PE Stretch Film: 31% recycling, 27% energy recovery, 42% landifll
Direct emissions to ambient air, soil and water	No emissions to air, soil or water resulting from product installation

B1-B7 "USE STAGE"

B1 - Use

During use, ceramic tiles do not use resources nor generate emissions into the environment. At this stage there are no processes that generate environmental impacts.

B2 - Maintenance

The maintenance of the tile consists of cleaning operations with detergents, which varies according to the type of building (residential, commercial, sanitary). The module therefore includes the water supply and detergent production processes. The maintenance scenarios used are shown in the following table and refer to average data reported in the EN 17160: 2019 standard (Product category rules for ceramic tiles). The values declared in this stage refer to a time period of 1 year

Scenario Information	Unit / description
Maintenance process	Periodic cleaning using floor disinfectants.
Maintenance cycle	52/year
Ancillary materials for maintenance	Liquid detergent: 0,134 ml/two weeks
Waste materials resulting from maintenance	Not relevant
Net fresh water consumption during maintenance	0,1 l/week
Energy input during maintenance	No energy input during maintenance

B3-B4-B5 – Repair, replacement and refurbishment

These types of interventions are not necessary: if correctly installed, the tiles do not require repair, replacement or renovation.

B6 – B7 - Operational energy use and Operational water use

These modules are not relevant for ceramic tiles.

C1-C4 "END OF LIFE STAGE"

C1 – De-construction demolition

This module includes the de-construction and removal of tiles at the end of their life; It is not relevant for ceramic tiles.

C2 – Transport

The module includes the transportation of the demolished tile to a recycling or disposal process.

C3 – Waste processing e C4 - Disposal

The modules include the treatment processes aimed at recycling (C3) and final disposal in landfills (C4) of the tile at the end of life.

Scenario Information	Unit
Collection process	kg/FU collected separaltely: 0%
	Kg/FU collected with mixed construction waste: 100% for all products
Recovery system	kg/FU for re-use: 0
	kg/FU for recycling (depending on product thickness): 8,7 (6mm) - 12,8 (9mm) - 17,7 (12mm) - 20,2 (14mm) - 32,1 (20mm)
	kg/FU for energy recovery: 0
Disposal	kg/FU for final disposal (depending on product thickness): 5,3 (6mm) - 7,7 (9mm) - 10,8 (12mm) - 19,5 (20mm)
Waste transportation (distance)	50 km. The return trip is included in the system.

Module D "REUSE-RECOVERY - RECYCLING-POTENTIAL"

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

For ceramic tiles in this EPD, the net environmental benefits from recycling of tiles and packaging and the net environmental benefits from energy recovery of packaging are calculated.

5. CONTENT DECLARATION

The porcelain stoneware slab is mainly composed of **mineral raw materials** (clay, quartz and feldspathic). The composition of the mineral part can vary from product to product depending on the specific mixture used.
The aesthetic aspect is obtained initially by coloring the mixture with suitable **coloring pigments** (consisting mainly of complex inorganic oxides) and subsequently before firing through surface decorations with **inks** or through **glazing** (the glaze is mainly made up of silicate glass).
Auxiliary additives, such as the fluidifying agents necessary to facilitate the grinding process of mineral raw materials, also form part of the product composition.
The packaging materials are cardboard, polyethylene stretch film and wood. The quantity of packaging materials varies according to the thickness and size of the tiles.
Porcelain stoneware slabs DO NOT contain substances with a high degree of concern SVHC contemplated in the ECHA Candidate List in concentrations greater than 0.1% by mass.
The weight content of the porcelain stoneware slabs included in the EPD is shown in the following tables.

Product components		Weight %		Post-consumer material, weight-%	Pre and post consumer material, weight %
		Average value	Variability		
PARTE MINERALE	CLAY	97 %	3 ÷ 13 %	0 % - 3 %	> 40 % (compliant with BREEAM and LEED criteria)
	FELDSPAR		38 ÷ 39 %		
	KAOLIN		17 ÷ 22 %		
	SAND		26 ÷ 41 %		
COLORING PIGMENTS		1 %	0 ÷ 6 %	0 %	0 %
INKS		1 %	0 ÷ 1 %	0 %	0 %
AUXILIARY ADDITIVES		1 %	1 %	0 %	0 %
TOTAL		**100%**	**-**	**0 % ÷ 3 %**	**> 40 %**

Packaging materials	Weight	
	kg/mq	% versus the product
CARDBOARD	0,2 ÷ 0,5	0,5 ÷ 2,2 %
POLYETHYLENE FILM	0,01 ÷ 0,04	0,06 ÷ 0,13 %
WOOD	1,5 ÷ 3,3	5,9 ÷ 9,5 %

6. ENVIRONMENTAL PERFORMANCE

Potential Environmental Impacts - 6 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	1,62E+01	5,40E+00	1,73E+00	0	4,60E-02	0	0	0	0	0	0	2,84E-01	1,12E-01	4,95E-02	-2,72E-01
GWP-fossil	kg CO2 eq	1,62E+01	5,40E+00	1,65E+00	0	3,56E-02	0	0	0	0	0	0	2,83E-01	1,11E-01	4,94E-02	-2,66E-01
GWP-biogen.	kg CO2 eq	2,23E-02	1,83E-03	8,58E-02	0	1,37E-04	0	0	0	0	0	0	8,82E-05	1,65E-04	3,04E-05	-4,23E-03
GWP-luluc	kg CO2 eq	4,76E-03	1,70E-03	6,75E-04	0	1,03E-02	0	0	0	0	0	0	8,28E-05	8,20E-05	1,34E-05	-1,62E-03
GWP-GHG[1]	kg CO2 eq	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC11eq	2,70E-06	1,22E-06	1,05E-07	0	2,17E-09	0	0	0	0	0	0	6,51E-08	1,85E-08	2,20E-08	-2,98E-08
AP	mol H+ eq	6,05E-02	3,28E-02	6,30E-03	0	2,29E-04	0	0	0	0	0	0	1,16E-03	8,69E-04	4,79E-04	-1,33E-03
EP-freshw.	kg P eq	2,78E-03	4,61E-04	2,60E-04	0	1,30E-05	0	0	0	0	0	0	2,27E-05	2,73E-05	5,53E-06	-9,22E-05
EP-marine	kg N eq	1,15E-02	8,38E-03	1,79E-03	0	1,43E-04	0	0	0	0	0	0	3,39E-04	3,10E-04	1,58E-04	-3,47E-04
EP-terrestrial	mol N eq	1,41E-01	9,29E-02	1,74E-02	0	6,47E-04	0	0	0	0	0	0	3,74E-03	3,38E-03	1,74E-03	-3,23E-03
POCP	kgNMVOCeq	3,73E-02	2,70E-02	4,68E-03	0	1,97E-04	0	0	0	0	0	0	1,13E-03	9,29E-04	5,07E-04	-1,01E-03
ADPmin&met[2]	kg Sb eq	7,83E-05	1,47E-05	1,38E-06	0	1,57E-07	0	0	0	0	0	0	8,42E-07	9,76E-08	5,45E-08	-1,07E-06
ADPfossil[2]	MJ	2,56E+02	8,18E+01	1,15E+01	0	6,78E-01	0	0	0	0	0	0	4,32E+00	1,63E+00	1,49E+00	-4,09E+00
WDP[2]	m3 depriv.	4,73E+00	5,55E-01	4,47E-01	0	2,66E-01	0	0	0	0	0	0	2,94E-02	2,19E-02	6,58E-02	-3,86E-01

GWP-total = Climate change; **GWP-fossil** = Climate change – fossil; **GWP-biogenic** = Climate change – biogenic; **GWP-luluc** = Climate change - land use and land use change; **GWP-GHG** = GWP total excluded biogenic carbon dioxide emissions and biogenic carbon stored in the product; **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 use

1: 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.

2: 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.

Resource Use - 6 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	5,02E+01	9,54E-01	1,31E+00	0	3,43E-01	0	0	0	0	0	0	4,56E-02	5,82E-02	1,22E-02	-1,16E+01
PERM	MJ	3,33E+01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	2,77E+02	8,69E+01	1,22E+01	0	7,27E-01	0	0	0	0	0	0	4,59E+00	1,73E+00	1,58E+00	-4,40E+00
PENRM	MJ	5,52E-01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	Kg	3,95E-01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RM	kg	8,75E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	1,19E-01	1,50E-02	1,18E-02	0	7,06E-03	0	0	0	0	0	0	7,82E-04	6,25E-04	1,55E-03	-9,27E-03

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; **RM**: Use of recycled materials and by-products (according to Green Building Protocols as LEED and BREEAM); **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water;

Waste Production – 6 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HW	Kg	5,75E-04	5,13E-05	2,41E-05	0	5,58E-07	0	0	0	0	0	0	2,73E-06	1,42E-06	9,96E-07	-8,20E-06
NHW	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RW	kg	7,56E-04	5,52E-04	5,23E-05	0	1,05E-06	0	0	0	0	0	0	2,92E-05	8,79E-06	9,85E-06	-1,23E-05

HW = Hazardous waste disposed; **NHW** = Non-hazardous waste disposed; **RW** = Radioactive waste disposed;

Output Flows – 6 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
REUSE	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RECYCLE	Kg	5,15E+00	0,00E+00	8,38E-01	0	0,00E+00	0	0	0	0	0	0	0,00E+00	1,09E+01	0,00E+00	0,00E+00
EN-REC	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-E	MJ	0,00E+00	0,00E+00	3,86E-01	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-T	MJ	0,00E+00	0,00E+00	1,16E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

Potential Environmental Impacts - 9 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	2,32E+01	7,90E+00	1,78E+00	0	4,60E-02	0	0	0	0	0	0	3,74E-01	1,47E-01	6,53E-02	-4,50E-01
GWP-fossil	kg CO2 eq	2,31E+01	7,90E+00	1,68E+00	0	3,56E-02	0	0	0	0	0	0	3,74E-01	1,47E-01	6,52E-02	-4,39E-01
GWP-biogen.	kg CO2 eq	3,39E-02	2,67E-03	1,05E-01	0	1,37E-04	0	0	0	0	0	0	1,16E-04	2,18E-04	4,02E-05	-8,39E-03
GWP-luluc	kg CO2 eq	7,69E-03	2,48E-03	6,82E-04	0	1,03E-02	0	0	0	0	0	0	1,09E-04	1,08E-04	1,76E-05	-2,78E-03
GWP-GHG[1]	kg CO2 eq	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC11eq	3,99E-06	1,79E-06	1,10E-07	0	2,17E-09	0	0	0	0	0	0	8,59E-08	2,44E-08	2,91E-08	-4,79E-08
AP	mol H+ eq	7,84E-02	4,80E-02	6,41E-03	0	2,29E-04	0	0	0	0	0	0	1,53E-03	1,15E-03	6,33E-04	-2,19E-03
EP-freshw.	kg P eq	3,59E-03	6,74E-04	2,63E-04	0	1,30E-05	0	0	0	0	0	0	3,00E-05	3,61E-05	7,30E-06	-1,56E-04
EP-marine	kg N eq	1,59E-02	1,23E-02	1,91E-03	0	1,43E-04	0	0	0	0	0	0	4,48E-04	4,09E-04	2,09E-04	-6,09E-04
EP-terrestrial	mol N eq	1,91E-01	1,36E-01	1,78E-02	0	6,47E-04	0	0	0	0	0	0	4,94E-03	4,46E-03	2,30E-03	-5,42E-03
POCP	kgNMVOCeq	5,20E-02	3,95E-02	4,80E-03	0	1,97E-04	0	0	0	0	0	0	1,50E-03	1,23E-03	6,70E-04	-1,65E-03
ADPmin&met[2]	kg Sb eq	2,18E-05	2,14E-05	1,45E-06	0	1,57E-07	0	0	0	0	0	0	1,11E-06	1,29E-07	7,20E-08	-1,65E-06
ADPfossil[2]	MJ	3,61E+02	1,20E+02	1,19E+01	0	6,78E-01	0	0	0	0	0	0	5,70E+00	2,15E+00	1,97E+00	-6,73E+00
WDP[2]	m3 depriv.	6,00E+00	8,12E-01	4,52E-01	0	2,66E-01	0	0	0	0	0	0	3,88E-02	2,90E-02	8,68E-02	-5,73E-01

GWP-total = Climate change; **GWP-fossil** = Climate change – fossil; **GWP-biogenic** = Climate change – biogenic; **GWP-luluc** = Climate change - land use and land use change; **GWP-GHG** = GWP total excluded biogenic carbon dioxide emissions and biogenic carbon stored in the product; **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 use

1: 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.

2: 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.

Resource Use - 9 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	7,07E+01	1,40E+00	1,32E+00	0	3,43E-01	0	0	0	0	0	0	6,02E-02	7,69E-02	1,61E-02	-1,70E+01
PERM	MJ	1,50E+01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	3,91E+02	1,27E+02	1,26E+01	0	7,27E-01	0	0	0	0	0	0	6,06E+00	2,28E+00	2,09E+00	-7,24E+00
PENRM	MJ	1,38E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RM	kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	1,53E-01	2,19E-02	1,20E-02	0	7,06E-03	0	0	0	0	0	0	1,03E-03	8,26E-04	2,05E-03	-1,39E-02

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; **RM**: Use of recycled materials and by-products (according to Green Building Protocols as LEED and BREEAM); **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water;

Waste Production - 9 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HW	Kg	7,50E-04	7,51E-05	2,44E-05	0	5,58E-07	0	0	0	0	0	0	3,60E-06	1,87E-06	1,31E-06	-1,28E-05
NHW	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RW	kg	1,05E-03	8,07E-04	5,44E-05	0	1,05E-06	0	0	0	0	0	0	3,86E-05	1,16E-05	1,30E-05	-1,92E-05

HW = Hazardous waste disposed; **NHW** = Non-hazardous waste disposed; **RW** = Radioactive waste disposed;

Output Flows - 9 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
REUSE	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RECYCLE	Kg	0,00E+00	0,00E+00	1,29E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	1,44E+01	0,00E+00	0,00E+00
EN-REC	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-E	MJ	0,00E+00	0,00E+00	5,67E-01	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-T	MJ	0,00E+00	0,00E+00	1,70E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

Potential Environmental Impacts – 12 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	2,84E+01	1,04E+01	1,75E+00	0	4,60E-02	0	0	0	0	0	0	4,87E-01	1,92E-01	8,50E-02	-3,42E-01
GWP-fossil	kg CO2 eq	2,83E+01	1,04E+01	1,66E+00	0	3,56E-02	0	0	0	0	0	0	4,87E-01	1,92E-01	8,49E-02	-3,37E-01
GWP-biogen.	kg CO2 eq	2,73E-02	3,52E-03	9,63E-02	0	1,37E-04	0	0	0	0	0	0	1,52E-04	2,84E-04	5,23E-05	-2,87E-03
GWP-luluc	kg CO2 eq	6,23E-03	3,27E-03	6,77E-04	0	1,03E-02	0	0	0	0	0	0	1,42E-04	1,41E-04	2,30E-05	-1,55E-03
GWP-GHG[1]	kg CO2 eq	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC11eq	4,99E-06	2,36E-06	1,07E-07	0	2,17E-09	0	0	0	0	0	0	1,12E-07	3,17E-08	3,78E-08	-3,80E-08
AP	mol H+ eq	9,37E-02	6,33E-02	6,33E-03	0	2,29E-04	0	0	0	0	0	0	2,00E-03	1,49E-03	8,24E-04	-1,71E-03
EP-freshw.	kg P eq	4,06E-03	8,88E-04	2,61E-04	0	1,30E-05	0	0	0	0	0	0	3,91E-05	4,70E-05	9,50E-06	-1,13E-04
EP-marine	kg N eq	1,87E-02	1,62E-02	1,85E-03	0	1,43E-04	0	0	0	0	0	0	5,83E-04	5,33E-04	2,72E-04	-3,73E-04
EP-terrestrial	mol N eq	2,30E-01	1,79E-01	1,75E-02	0	6,47E-04	0	0	0	0	0	0	6,43E-03	5,80E-03	2,99E-03	-3,95E-03
POCP	kgNMVOCeq	6,23E-02	5,21E-02	4,72E-03	0	1,97E-04	0	0	0	0	0	0	1,95E-03	1,60E-03	8,72E-04	-1,27E-03
ADPmin&met[2]	kg Sb eq	2,69E-05	2,83E-05	1,40E-06	0	1,57E-07	0	0	0	0	0	0	1,45E-06	1,68E-07	9,37E-08	-1,84E-06
ADPfossil[2]	MJ	4,41E+02	1,58E+02	1,16E+01	0	6,78E-01	0	0	0	0	0	0	7,43E+00	2,80E+00	2,56E+00	-5,34E+00
WDP[2]	m3 depriv.	7,04E+00	1,07E+00	4,48E-01	0	2,66E-01	0	0	0	0	0	0	5,06E-02	3,77E-02	1,13E-01	-7,35E-01

GWP-total = Climate change; **GWP-fossil** = Climate change – fossil; **GWP-biogenic** = Climate change – biogenic; **GWP-luluc** = Climate change - land use and land use change; **GWP-GHG** = GWP total excluded biogenic carbon dioxide emissions and biogenic carbon stored in the product; **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 use

1: 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.

2: 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.

Resource Use – 12 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	6,22E+01	1,84E+00	1,32E+00	0	3,43E-01	0	0	0	0	0	0	7,84E-02	1,00E-01	2,10E-02	-1,37E+01
PERM	MJ	1,50E+01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	4,78E+02	1,68E+02	1,23E+01	0	7,27E-01	0	0	0	0	0	0	7,88E+00	2,97E+00	2,72E+00	-5,74E+00
PENRM	MJ	1,38E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RM	kg	1,69E+01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	1,79E-01	2,89E-02	1,19E-02	0	7,06E-03	0	0	0	0	0	0	1,34E-03	1,07E-03	2,67E-03	-1,74E-02

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; **RM**: Use of recycled materials and by-products (according to Green Building Protocols as LEED and BREEAM); **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water;

Waste Production – 12 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HW	Kg	9,03E-04	9,90E-05	2,42E-05	0	5,58E-07	0	0	0	0	0	0	4,69E-06	2,44E-06	1,71E-06	-1,17E-05
NHW	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RW	kg	1,28E-03	1,06E-03	5,30E-05	0	1,05E-06	0	0	0	0	0	0	5,02E-05	1,51E-05	1,69E-05	-1,59E-05

HW = Hazardous waste disposed; **NHW** = Non-hazardous waste disposed; **RW** = Radioactive waste disposed;

Output Flows – 12 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
REUSE	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RECYCLE	Kg	1,04E+01	0,00E+00	9,24E-01	0	0,00E+00	0	0	0	0	0	0	0,00E+00	1,87E+01	0,00E+00	0,00E+00
EN-REC	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-E	MJ	0,00E+00	0,00E+00	4,60E-01	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-T	MJ	0,00E+00	0,00E+00	1,38E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

Potential Environmental Impacts – 20 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	4,71E+01	1,89E+01	1,85E+00	0	4,60E-02	0	0	0	0	0	0	8,14E-01	3,21E-01	1,42E-01	-6,23E-01
GWP-fossil	kg CO2 eq	4,70E+01	1,89E+01	1,71E+00	0	3,56E-02	0	0	0	0	0	0	8,13E-01	3,20E-01	1,42E-01	-6,15E-01
GWP-biogen.	kg CO2 eq	4,48E-02	6,39E-03	1,43E-01	0	1,37E-04	0	0	0	0	0	0	2,53E-04	4,75E-04	8,73E-05	-5,24E-03
GWP-luluc	kg CO2 eq	1,10E-02	5,93E-03	6,91E-04	0	1,03E-02	0	0	0	0	0	0	2,38E-04	2,35E-04	3,83E-05	-2,83E-03
GWP-GHG[1]	kg CO2 eq	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC11eq	8,47E-06	4,27E-06	1,16E-07	0	2,17E-09	0	0	0	0	0	0	1,87E-07	5,30E-08	6,32E-08	-6,92E-08
AP	mol H+ eq	1,51E-01	1,15E-01	6,55E-03	0	2,29E-04	0	0	0	0	0	0	3,33E-03	2,49E-03	1,38E-03	-3,10E-03
EP-freshw.	kg P eq	6,27E-03	1,61E-03	2,67E-04	0	1,30E-05	0	0	0	0	0	0	6,52E-05	7,84E-05	1,59E-05	-2,05E-04
EP-marine	kg N eq	3,10E-02	2,93E-02	2,13E-03	0	1,43E-04	0	0	0	0	0	0	9,74E-04	8,89E-04	4,54E-04	-6,80E-04
EP-terrestrial	mol N eq	3,81E-01	3,25E-01	1,83E-02	0	6,47E-04	0	0	0	0	0	0	1,07E-02	9,69E-03	5,00E-03	-7,18E-03
POCP	kgNMVOCeq	1,04E-01	9,45E-02	4,96E-03	0	1,97E-04	0	0	0	0	0	0	3,26E-03	2,67E-03	1,46E-03	-2,32E-03
ADPmin&met[2]	kg Sb eq	4,67E-05	5,12E-05	1,53E-06	0	1,57E-07	0	0	0	0	0	0	2,42E-06	2,80E-07	1,57E-07	-3,33E-06
ADPfossil[2]	MJ	7,31E+02	2,86E+02	1,23E+01	0	6,78E-01	0	0	0	0	0	0	1,24E+01	4,67E+00	4,27E+00	-9,71E+00
WDP[2]	m3 depriv.	1,06E+01	1,94E+00	4,57E-01	0	2,66E-01	0	0	0	0	0	0	8,44E-02	6,29E-02	1,89E-01	-1,33E+00

GWP-total = Climate change; **GWP-fossil** = Climate change – fossil; **GWP-biogenic** = Climate change – biogenic; **GWP-luluc** = Climate change - land use and land use change; **GWP-GHG** = GWP total excluded biogenic carbon dioxide emissions and biogenic carbon stored in the product; **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 use

1: 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.

2: 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.

Resource Use – 20 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,10E+02	3,33E+00	1,32E+00	0	3,43E-01	0	0	0	0	0	0	1,31E-01	1,67E-01	3,50E-02	-2,51E+01
PERM	MJ	1,50E+01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	7,93E+02	3,04E+02	1,30E+01	0	7,27E-01	0	0	0	0	0	0	1,32E+01	4,96E+00	4,54E+00	-1,04E+01
PENRM	MJ	1,38E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RM	kg	3,06E+01	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	2,71E-01	5,24E-02	1,21E-02	0	7,06E-03	0	0	0	0	0	0	2,25E-03	1,79E-03	4,46E-03	-3,15E-02

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; **RM**: Use of recycled materials and by-products (according to Green Building Protocols as LEED and BREEAM); **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water;

Waste Production – 20 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HW	Kg	1,43E-03	1,79E-04	2,48E-05	0	5,58E-07	0	0	0	0	0	0	7,82E-06	4,07E-06	2,86E-06	-2,14E-05
NHW	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RW	kg	2,05E-03	1,93E-03	5,71E-05	0	1,05E-06	0	0	0	0	0	0	8,39E-05	2,52E-05	2,83E-05	-2,89E-05

HW = Hazardous waste disposed; **NHW** = Non-hazardous waste disposed; **RW** = Radioactive waste disposed;

Output Flows – 20 mm

Indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
REUSE	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RECYCLE	Kg	1,89E+01	0,00E+00	1,69E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	3,13E+01	0,00E+00	0,00E+00
EN-REC	Kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-E	MJ	0,00E+00	0,00E+00	8,44E-01	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE-T	MJ	0,00E+00	0,00E+00	2,53E+00	0	0,00E+00	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

Information on biogenic carbon content

Biogenic carbon content	Unit	6mm	8mm	9mm	10mm	12mm	13mm	14mm	20mm
Biogenic carbon content in product	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biogenic carbon content in packaging	kg C	8,58E-01	2,78E-01	2,89E-01	3,50E-01	9,75E-01	5,25E-01	5,25E-01	1,79E+00

Additional environmental impact indicators

The values of the following additional environmental impact indicators have been calculated by LCA analysis and are available on request by writing to: info@urbatek.com

Indicator	Particulate matter emissions	Ionising radiation, human health*	Ecotoxicity (freshwater)**	Human toxicity, cancer effects**	Human toxicity, non- cancer effects**	Land use related impacts / soil quality**
Unit	Disease incidence	kBq U235eq	CTUe	CTUe	CTUe	dimensionless

** This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.*

*** 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 experience with the indicator.*

7. ADDITIONAL ENVIRONMENTAL INFORMATION

Product Circularity

At the end of the reference service life of the product, which can be assessed in at least 50 years, the product could be entirely subjected to a simple mechanical crushing treatment for the recovery of material that can be used in various other sectors (for example concrete production, road construction) instead of primary materials.

In our facilities no wastewater are generated from the manufacturing process, since the water used in the washing of the plant and for the squaring process for the almost totality is internally recycled, in particular in the phase of preparation of the dough, and minimally conferred outside for the recovery to authorized parties, in the form of ceramic sludge and unpurified water.

The internal scrap of raw materials as much as possible is internally reused in the preparation of the dough or delivered to external companies for the recovery of materials.

Air quality (use stage)

Our materials do not contain added VOC (volatile organic compounds). With regard to emissions of VOCs and formaldehyde in indoor environments, emissions of ceramic tiles are classified A +.

No need for sealants or waxes that could contribute to the emission of harmful VOCs in buildings. The stain-resistant surface reduces the need to use strong detergents. For routine cleaning, a pH-neutral detergent is all that is needed.

End of life

Porcelain Stoneware slabs offer an additional guarantee of respect for the environment even in the end of life stage. In fact all the materials at the end of their life cycle do not require treatments since, by virtue of the high chemical inertia, do not release substances into the environment. Precisely for this reason they are considered to all effects inert materials. They can be used as fill material for construction sites and as background material for road beds, thus reducing the need for quarried gravel.

Green Public Procurement (GPP) and Minimum Environmental Criteria (CAM)

The minimum environmental criteria (CAM) are environmental requirements established by the Italian State in the context of its Green Public Procurement (GPP) policies; they are defined for the various stages of the public administrations purchase process and are aimed at identifying the best design solution, product or service from an environmental point of view along the life cycle, taking into account market availability.
For construction products, the criteria adopted by the Decree of the Minister of the Environment for the Protection of the Territory and the Sea of 11 January 2017 ("Entrusting of design and work services for the new construction, renovation and maintenance of public buildings") must be respected.
In particular, for ceramic tiles, the criteria selected by Decision 2009/607 / EC of 9 July 2009, which establishes the ecological criteria for the european ECOLABEL program for "hard coverings", must be respected.

The following minimum environmental criteria are respected on the basis of the test methods provided for by Decision 2009/607/EC of 9 July 2009 (Ecolabel) or other equivalent test methods established by the Competent Authority in the respective environmental permits.

Water consumption

The consumption of water in the production phase, from the preparation of the raw materials to the firing, must not exceed the value of 1 l/kg of product.
The waste water produced by the production processes must have a recycling factor of at least 90%.

Air emissions

Total particle emissions for printing, glazing and spray drying ("cold emissions") do not exceed 5 g/m^2.
Air emissions for the firing stage only must not exceed the following values

PARAMETER	THRESHOLD (mg/m^3)
PARTICULATES	200
FLUORIDES (HF)	200

Water emissions

After waste water treatment, the following values must not be exceeded.

PARAMETER	THRESHOLD (mg/l)
SUSPENDED SOLIDS	40
CADMIUM (Cd)	0,015
CHROME VI (Cr)	0,15
LEAD (Pb)	0,15

Waste recovery

At least 85% (by weight) of the total waste generated by the processes must be recovered, according to the general terms and definitions contained in european Directive 75/442/EEC as amended.

8. DIFFERECES VERSUS PREVIOUS VERSION

First edition of the EPD

9. REFERENCES

- International EPD® System - General Programme Instructions, version 3.01
- International EPD® System - PCR 2019:14 Construction products, version 1.1
- EN 15804:2012+A2:2019 Sustainability of Construction Works
- EN 17160:2019 Product category rules for ceramic tiles
- ISO 14020:2000 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 14044:2018 Environmental management-Life Cycle AssessmentRequirements and guidelines
- LCA Report: Porcelain stoneware slabs for indoor and outdoor floors and walls, Rev1-July 2020 and annex Porcelanosa Grupo/Urbatek, october 2020