QUA GRANITE

EPD® THE INTERNATIONAL EPD® SYSTEM

TÜRKİYE EPD® THE INTERNATIONAL EPD® SYSTEM

ECO PLATFORM EPD VERIFIED

ENVIRONMENTAL PRODUCT DECLARATION

7 mm

Porcelain Tiles

IN ACCORDANCE WITH ISO 14025:2006 and EN 15804:2012 - A2:2021 and ISO 21930

Programme:	The International EPD® System
Programme Operator:	EPD Turkey / EPD International AB
S-P Code:	S-P-08767
Publication Date:	2023-09-18
Revision Date and Version:	2023-10-13, V1.01
Validity Date:	2028-09-17
Geographical Scope:	Türkiye

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.

EPD Content

Programme Information

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)

Product Category Rules (PCR):
2019:14 Version 1.2.5, 2024-12-20, Construction Products and CPC 54 Construction Services, EN 15804:2012 + A2:2019 Sustainability of Construction Works

PCR review was conducted by:
The Technical Committee of the International EPD® System.

Review chair: Claudia A. Peña, University of Concepción, Chile

EPDs within the same product category but registered in different EPD programmes 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.

LCA Accountability:
Metsims Sustainability Consulting

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., MBA, LCA Studio Šárecká 5,16000 Prague 6 - Czech Republic

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No X

QUA GRANITE HAYAL YAPI VE ÜRÜN. SAN.TİC. A.Ş. has the sole ownership, liability, and responsibility for this EPD.

The International EPD® System

EPD International AB
Box 210 60 SE-100 31
Stockholm, Sweden
www.environdec.com

EPD Turkey

www.epdturkey.org
info@epdturkey.org

managed and run by
SÜRATAM
www.suratam.org
Nef 09 B Blok No:7/15 34415
Kagıthane/Istanbul, Turkey

About the Company

In July 2016, Qua Granite started its operations in Söke Organized Industrial Zone, Aydın, and has been growing steadily and rapidly since its establishment. Having started with a production capacity of 5,5 million m²/year, today the company produces technical granite and glazed granite (granite tile), the product group with the highest added value in the floor covering sector, in a closed area of 70 000 m² on 232 965 m2 of land.

Qua Granite completed the second production line in a short period of 6 months and put it into operation in June 2017 with a capacity of 5,5 million m² with the objectives of reaching optimum capacity utilization of the first line, benefiting from economies of scale and focusing on exports. With this investment, the company's total production capacity has reached 11 million m², making Qua Granite Türkiye's largest facility exclusively producing technical granite.

As of 2021, Qua Granite started its investments for capacity increase, and with the commissioning of 4 new lines in 2022, the company expanded its production capacity to 41.0 million m² in its facilities built on an open area of 304 068,58 m² and indoor area of 170 493 m², becoming one of the world's largest technical granite facilities producing under a single roof.

Qua Granite, which has attached importance to exports since the day it was founded, obtains more than half of its sales revenues from foreign markets. The company exports to approximately 100 countries and over 400 customers in 5 continents, mainly EU countries and the USA. Qua Granite, which develops strategies with the aim of pioneering sustainable development in every region where it operates and carries out its activities accordingly, considers environmental, social and economic sustainability as its main priority.

About the Product

7 mm

Porcelain Tiles

PORCELAIN CERAMIC TILE; It is called fully glazed (vitrified) ceramic tile with a water absorption capacity of 0.5% or less.

As QUA GRANIT, our company;
We produce porcelain tiles in 6.5 mm, 7 mm, 9 mm, 20 mm and 30 mm thicknesses and different sizes.

All of these products;

- It is in Group BIa Eb ⩽ 0.5% product group with low water absorption.
- It is produced as glazed (GL – Glazed).
- After it is produced, the box is rectified in a single dimension specified on them and in the technical reports and micro chamfer is applied and there is no different caliber class.

MASS (BODY)
The mixtures obtained from clay and/or other inorganic raw materials are formed into moist granules in a spray dryer after different mixing and grinding processes, and are shaped and dried by dry pressing in the form of falt plates (Method B). We use the term ceramic tile body for the dried raw ceramic plate formed here.

As Qua Granit, we have body productions in product-specific mixtures and colors.

- T1 colorless body
- G1 low amount black body mixed
- G2 high amount black body mixed
- B1 low amount Brown body mixed
- B2 high amount Brown body mixed

We make our productions by using the appropriate bodies for the product top image by coding in the form.

ENGOBE
It is a coating material that gives the clay-based, permeable or impermeable, matte-looking product the technical properties it needs, and is an intermediate layer that provides bonding by being applied between the glaze and the body. Different mixtures and application methods are used for our products.

GLAZE
It is the impermeable coating on the ceramic tile. Matte, glossy, and varieties that offer different visual, physical and features are developed specifically for the products.

In addition to satisfying all the porcelain tile features, by beeing lighter in weight, they are preferred in interior and exterior wall coverings, floor coverings, pool interiors. With very smooth sub-base applications leveled in accordance with the conditions of the usage area they can also be used easily on indoor and outdoor floors.

Technical Specifications

Characteristics	Test Results	EN 14411 ANNEX G Requirements	Test Method
A.1 b) Length & Width for rectified tiles	1195 ± 0,4 mm	1195 mm. ± 1,0 mm	EN ISO 10545-2
	600 ± 0,4 mm	600 mm. ± 1,0 mm	
	297 ± 0,4 mm	297 mm ± 1,0 mm	
A.2 Thickness	max. ±0,4 mm	max. ± 0,5 mm	EN ISO 10545-2
A.3 Straightness of Sides	max. ± 0,8 mm	max. ± 0,8 mm	EN ISO 10545-2
A.4 Rectangularity	max ± 0,5 mm	max. ± 1,5 mm	EN ISO 10545-2
A.5 b) Center Curvature	max ± 0,5 mm	max. ± 1,8 mm	EN ISO 10545-2
A.5 d) Edge Curvature	max ± 0,5 mm	max. ± 1,8 mm	EN ISO 10545-2
A.5 f) Warpage-corner curvature	max ± 0,5 mm	max. ± 1,8 mm	EN ISO 10545-2
A.6 Surface Quality	> 95 % First Quality	> 95 % First Quality	EN ISO 10545-2
B.1 Water Absorption (by mass)	< 0,1 %	≤ 0,5 %	EN ISO 10545-3
B.2 Breaking Strength	> 1300N	> 700 N	EN ISO 10545-4
B.3 Flextural-Bending Strength	min 40 N/mm²	min 35 N/mm²	EN ISO 10545-4
B.4 b) Resistance to surface abrasion	not applicable for full polish glossy surface for matte sure faces informed by special tecnical cards		EN ISO 10545-7
Scratch Resistance	for full lappato >=5 Mohs for matte and lappato >=7 Mohs	As declared	EN 101
Glossiness (at 60° angle)	for full lappato min. 90 gloss(60 degree) for others special to products	As declared	DIN EN ISO 2813
B.5 Coeff. Of Thermal Expansion	< 9,0 x 10-6	As declared	EN ISO 10545-8
B.6 Thermal Shock Resistance	Resistant	Required	EN ISO 10545-9
B.7 Crazing Resistance	Resistant	Required	EN ISO 10545-11
B.8 Frost Resistance	Resistant	Required	EN ISO 10545-12
B.9 Slipperiness	not applicable for full polish glossy surface		
B.10 Bond Strength	declared due to customer needs	As declared	EN 12004-1,4.1- 4.2- 4.3
B.11 Moisture Expansion	< 0,3 mm/m	As declared	EN ISO 10545-10
B.12 Small Colour Differences	ΔE cmc < 0,50 for base colors	ΔE cmc < 0,75	EN ISO 10545-16
B.13 Impact Resistance	applied due to customer needs	As declared	EN ISO 10545-5
B.14 Reaction to fire	Class A1 and A1FL	Class A1 and A1FL	-
C.1 a) Resistance to staining	Class 5	Min. Class 3	EN ISO 10545-14
C.2 a)Resistance to low conc. of Acid & Alkalis	min. LB	As declared	EN ISO 10545-13
C.2 b)Resistance to high conc. of Acid & Alkalis	min. HB	As declared	EN ISO 10545-13
C.2 b)Resistance to household Chemicals and swimming pool salts	min B class	Min. B class	EN ISO 10545-13
C.3 c)Release of dangerous substance : Cadmium	< 0,005 mg/dm2	As declared	EN ISO 10545-15

System Boundary

PRODUCT STAGE

A1. Raw Material Supply includes raw material extraction and pre-treatment processes before production. In this report, production for each product starts with raw material acquisition.

A2. Transport is relevant for delivery of raw materials to the plant and involves forklift usage within the factory.

A3. Manufacturing stages include production of granules by spray drying, forming, drying, glazing, firing and packaging. Transport is only relevant for delivery of raw materials to the plant and forklift usage within the factory. Packaging waste scenario is created separately depending on the geographic location of the installation process.

CONSTRUCTION PROCESS STAGE

A4. Transport includes transportation of wall tiles to the construction site. QUA transport tiles by seaway, and road haulage to the distribution centres for export.

A5. Installation of the product stage includes the adhesive mortar and water usage in the construction site. For 1 m^2 porcelain tile installation; 4.2 kg mortar and 1.5 L water usage was assumed.

USE STAGE

B1. Use stage concerns emissions into environment. Porcelain tiles are inert materials, so during the use stage, they do not cause any emissions. Hence, use phase is not relevant for the assessment.

B2. Maintenance includes cleaning of tiles. QUA advices to use 0.2 mL detergent which contains stain remover or neutral low-sulphate and rinse with 0.1 L tap water after cleaning. The results are given for a one-time cleaning activity, as the activity will vary by user.

B3. Repair: QUA porcelain tiles require no repairing during the use phase and therefore no impacts has ocurred in this module.

B4. Replacement: QUA porcelain tiles require no replacement during the use phase and therefore no impacts has ocurred in this module.

B5. Refurbishment: QUA porcelain tiles require no refurbishment during the use phase and therefore no impacts has ocurred in this module.

B6. Operational Energy Use: Operational energy use is not relevant for this product.

B7. Operational Water Use: Operational water use is not relevant for this product.

END OF LIFE STAGE

C1. De-construction/demolition at the end of RSL is usually conducted with a selective deconstruction/demolition. The environmental impacts generated during this phase are very low and therefore can be neglected.

C2. Transport (Waste) includes the transportation of the discarded tiles. packaging material and adhesive mortar to final disposal. Average distance from demolition site to inert landfil site for final disposal is assumed to be 50 km.

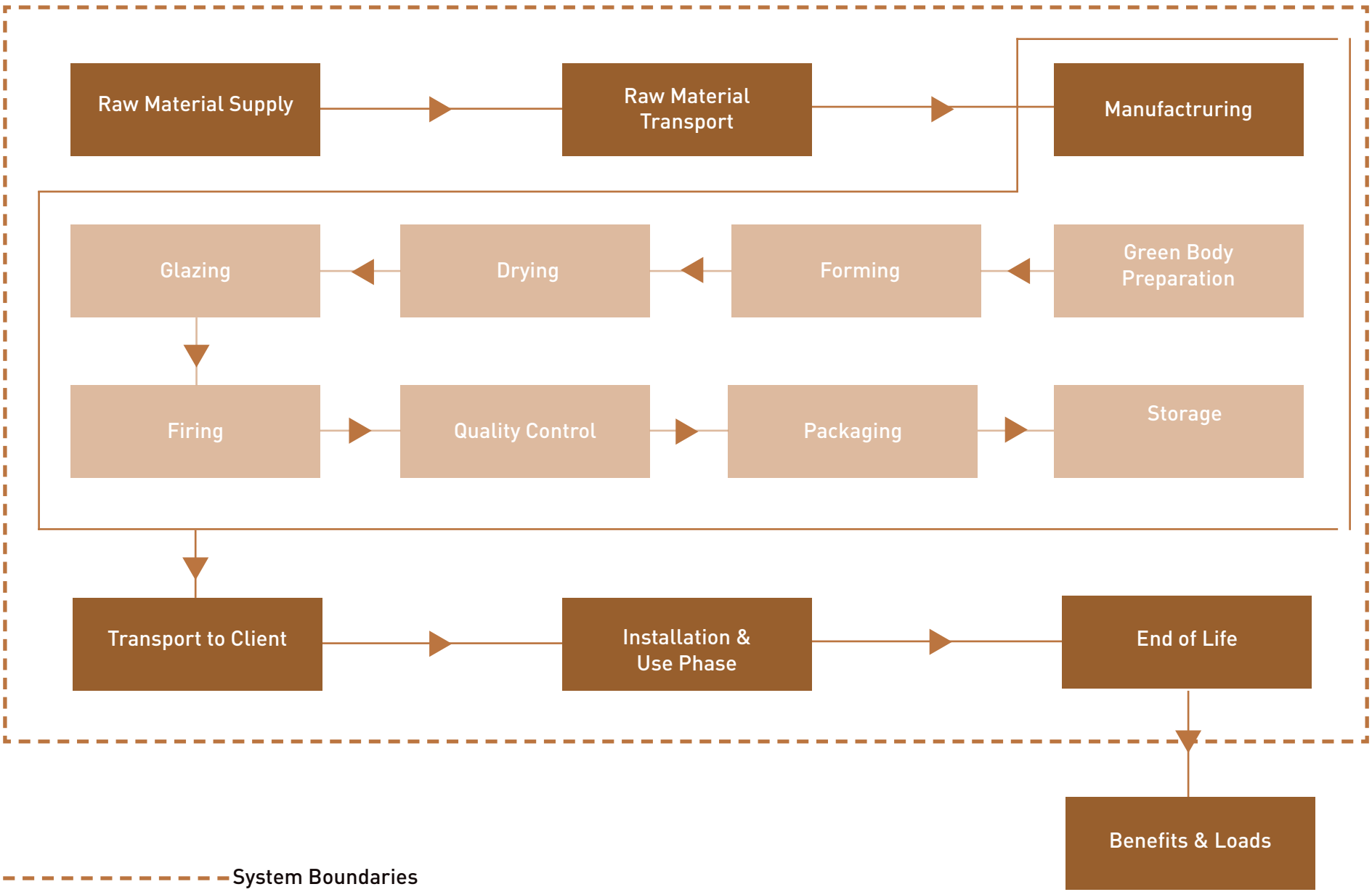
C3. Waste processing concerns processing of discarded porselain tiles for recycle or reuse. The environmental impacts generated during this phase are very low and therefore can be neglected.

C4. Disposal is the final stage of product life. Porcelain tiles end up at construction and demolition waste landfills as their final fate and modelled as such in this LCA.

BENEFITS AND LOADS

D. Benefits & Loads from the tiles are calculated in this stage.

System Boundary



LCA Information

Functional Unit	The functional unit is the production of 1 m^2 porcelain tile in 7 mm thickness with a mass of 19 kg
Goal and Scope	This EPD evaluates environmental impacts of 1 m^2 the porcelain tile
System Boundary	The system boundary covers A1 - A3 product stages referred as 'Raw material supply', 'Transport' and ' Manufacturing', A4 - A5 'Construction', B1 - B7 'Use' and C1 – C4 'End of life' stages and D 'Benefits and Loads' Stage.
Estimates and Assumptions	There are no additional product scenarios developed for this EPD.
Cut-Off Rules	No cut-off is applied. All raw materials and energy inputs are included. Any inventory for which no data available is amount to less than 1% by weight.
Background Data	This LCA modeling was done SimaPro 9.3 LCA software using the Ecoinvent 3.9.1
Geographical Scope	The geographical scope of this EPD is Türkiye.
Data Quality	Raw materials, energy and water consumption, waste, upstream and downstream transport data is collected from production site.
Period Under Review	All primary data collected from QUA Aydın Plant/Türkiye is for the period year of 2022.
Allocations	There are no co-products in the production of paint products. Hence, there is no need for co-product allocation.
Reach Regulation	The product does not contain any substance of very high concern (SVHC).
Comparability	A comparison or an evaluation of EPD data is only possible where EN 15804+A2 has been followed, and the same building context and product-specific characteristics of performance are taken into account and the same stages have been included in the system boundary. According to EN 15804+A2, EPD of construction products may not be comparable if they do not comply with this standard.
Packaging	Tile products produced by QUA is delivered to end users in carton, plastic and paper packagings.

Composition of Product

Product Composition	Weight, %	Post Consumer Material Weight, %	Renewable Material Weight, %
Feldspat	30-50	0	0
Clay	20-50	0	0
Others	0-15	0	0

Packaging Contents

Product Composition	Weight, kg	Post Consumer Material Weight, %	Renewable Material Weight, %
Carton	0,1	0	0
Plastic	0,065	0	0
Paper	0,1	100	0

Information on Biogenic Carbon Content According to EN15804+A2

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon content in product	kg C	0,0004
Biogenic carbon content in packaging	kg C	0,0004

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Benefits and Loads
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction / Demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	TR	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Specific Data Used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	NR					-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	NR					-	-	-	-	-	-	-	-	-	-	-	-

Description of the system boundary (X = Included in LCA, NR=Not Relevant)

The system boundaries in tabular form for all modules are shown in the table above. The results of the LCA with the indicators as per EPD requirement are given in the following tables for product stage (A1 - A3), construction process (A4. A5), use stage (B1 - B7). and end of life (C1 - C4). Life Cycle Inventory Analysis indicators describing the use of resources are determined respectively to the following impact categories. calculated using CML-IA Baseline (Ver. 3.5) method: Global Warming Potential (GWP) for time span of 100 years, Ozone Layer Depletion Potential (ODP) with time span of infinity, Formation Potential of Tropospheric Ozone Photochemical Oxidants (POCP) with time span of 5 days, Acidification Potential (AP) with time span of eternity. Eutrophication Potential (EP) with time span of eternity, Photochemical Oxidation (POCP) and Abiotic Depletion Potential for Fossil (ADPF) and Non-fossil (ADPE) resources. All energy calculations were done using Cumulative Energy Demand (LHV) methodology. The freshwater use value for manufacturing life cycle was taken from the manufacturer as the net freshwater consumption occurs during the manufacturing stage only.

LCA Results

Environmental Impacts for 1 m^2 porcelain tile in 7 mm thickness												
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP - Fossil	kg CO_2 eq	9,00	1,83	8,32	0	0,379	0	0	0,246	0	0,311	-0,78
GWP - Biogenic	kg CO_2 eq	-0,29	0,001	0,071	0	-0,536	0	0	225E-6	0	0,002	-0,001
GWP - Luluc	kg CO_2 eq	0,031	0,001	0,009	0	0,651	0	0	121E-6	0	227E-6	-0,002
GWP - Total	kg CO_2 eq	8,74	1,83	8,40	0	0,494	0	0	0,246	0	0,314	-0,78
ODP	kg CFC-11 eq	194E-9	27,3E-9	328E-9	0	20,5E-9	0	0	5,35E-9	0	7,36E-9	-12,5E-9
AP	mol H+ eq	0,030	0,006	0,054	0	0,004	0	0	0,001	0	0,002	-0,007
EP - Freshwater (P)	kg P eq	0,003	148E-6	0,003	0	0,007	0	0	17,5E-6	0	81,6E-6	-85,1E-6
EP - Marine	kg N eq	0,007	0,002	0,009	0	0,005	0	0	136E-6	0	0,001	-0,002
EP - Terrestrial	mol N eq	0,069	0,023	0,093	0	0,016	0	0	0,001	0	0,009	-0,022
POCP	kg NMVOC	0,028	0,009	0,035	0	0,003	0	0	0,001	0	0,003	-0,007
ADPE	kg Sb eq	13,9E-6	5,83E-6	95,7E-6	0	3,78E-6	0	0	803E-9	0	632E-9	-3,02E-6
ADPF	MJ	127	25,7	123	0	3,960	0	0	3,49	0	6,740	-10,6
WDP	m^3 depriv.	3,31	0,114	4,20	0	0,719	0	0	0,014	0	0,286	-0,89
PM	disease inc.	263E-9	145E-9	542E-9	0	71,7E-9	0	0	18,3E-9	0	47,8E-9	-77,9E-9
IR	kBq U-235 eq	0,194	0,022	0,418	0	0,021	0	0	0,005	0	0,009	-0,016
ETP - FW	CTUe	24,2	14,3	114	0	46,9	0	0	1,73	0	2,96	-6,47
HTTP - C	CTUh	5,27E-9	1,65E-9	10,3E-9	0	1,68E-9	0	0	224E-12	0	348E-12	-1,16E-9
HTTP - NC	CTUh	100E-9	36,9E-9	248E-9	0	38,2E-9	0	0	4,95E-9	0	3,90E-9	-15,3E-9
SQP	Pt	49,7	15,3	43,7	0	37,9	0	0	2,10	0	15,4	-20,6
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.											
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site, A5: Installation, B1: Use, B2: Maintenance, B3: Repair, B4: Replacement, B5: Refurbishment, B6:Operational Energy Use, B7: Operational Water Use C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary											
Disclaimer 1	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.											
Disclaimer 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 for 1 m^2 porcelain tile in 7 mm thicknes												
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	MJ	15,4	0,327	8,07	0	18,6	0	0	0,055	0	0,116	-0,221
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	15,4	0,327	8,07	0	18,6	0	0	0,055	0	0,116	-0,221
PENRE	MJ	127	25,7	123	0	4,66	0	0	3,49	0	6,74	-10,7
PENRM	MJ	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	127	25,7	123	0	4,66	0	0	3,49	0	6,74	-10,7
SM	kg	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	0,070	0,004	0,108	0	0,125	0	0	0,001	0	0,007	-0,067
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water.											

Waste Ouput Flows for 1 m^2 porcelain tile in 7 mm thickness												
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	kg	0,008	0	0	0	0	0	0	0	0	0	0
NHWD	kg	0,241	0	0	0	0	0	0	0	0	19,0	0
RWD	kg	0	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0	0	0	0	0	0
Acronyms	HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.											

Climate Change Impact for 1 m^2 porcelain tile in 7 mm thickness												
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
***GHG-GWP**	kg CO_2 eq	9,04	1,83	8,37	0	1,07	0	0	0,246	0	0,312	-0,780
Acronyms	GHG-GWP = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology * 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											

Glossary

Global Warming Potential, GWP	Global warming is a concept expressing warming of the atmosphere leading to climate change. One of the human activities which has the greatest effect on global warming is the burning of fossil fuels such as petroleum, coal and natural gas. In LCA, global warming is expressed in terms of the equivalent weight of carbon dioxide (CO_2) emitted.
Ozone Depletion Potential, ODP	Ozone layer depletion is a concept expressing the reduction of ozone in the stratosphere and depletion of the ozone layer (the 'ozone hole') as a consequence of emissions of man-made resources such as CFCs, HCFCs, chlorine, bromine, etc. Damage to the ozone layer reduces its ability to prevent UV light entering the earth's atmosphere, increasing the amount of carcinogenic UVB light hitting the earth's surface. In LCA, ozone layer depletion is expressed in terms of the equivalent weight of CFC-11 emitted.
Acidification Potential, AP	Acidification is an impact category expressing the toxic impact that acidifying substances have on soil, underground water-courses, ground water, organisms, ecosystems and materials. Reaction of acidic gases with water in the atmosphere creates 'acid rain'. The formation of acid rains causes a reduction in biodiversity. In LCA, acidification is expressed in terms of the equivalent weight of sulphur dioxide (SO_2) emitted.
Eutrophication Potential, EP	It is an abnormal proliferation of vegetation in the aquatic ecosystems caused by the addition of nutrients into rivers, lakes or ocean which determinates a lack of oxygen. The eutrophication potential is mainly influenced by emission into water of phosphates and nitrates. Its occurrence can lead to damage to ecosystems, increasing mortality of aquatic fauna and flora and to loss of species that are dependent on low-nutrient environments. In LCA, EP is expressed in mass of PO_4^{3-} eq.
Formation potential of tropospheric ozone photochemical oxidants, POCP	POCP is the formation of reactive substances (mainly ozone) which are injurious to human health and ecosystems and which also may damage crops. This problem is also indicated with "summer smog". In LCA, POCP is expressed in kg C_2H_4 eq.
Abiotic Depletion Potential, ADP	In LCA, resource depletion is one of the impact categories expressing how much of the world's natural resources (petroleum, iron ore, etc.) are used up. It has global, regional and local aspects of impact and expresses the amount of mineral/ fossil fuel used. In LCA, fossil and non-fossil resource depletion are expressed in terms of the MJ and Sb eq. respectively.

References

/ISO 9001:2015/ Quality Management Systems

/ISO 50001:2018/ Energy Management Systems

/GPI/ General Programme Instructions of the International EPD® System. Version 4.0.

/ISO 14020:2000/ Environmental Labels and Declarations — General principles

/EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

/ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

/ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

PCR for Construction Products and Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.2.5

/The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

/Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

/Metsims/ www.metsims.com

Version History

V1.01 - 2023-10-13
Technical specifications table updated.

Contacts

Programme	The International EPD® System www.environdec.com	
Programme operator	EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com	EPD registered through fully aligned regional programme: EPD Turkey www.epdturkey.org info@epdturkey.org SÜRATAM A.S. Nef 09 B Blok No:7/15, 34415 Kagıthane / Istanbul, TÜRKIYE www.suratam.org
Owner of the declaration	QUA GRANITE	QUA GRANITE HAYAL YAPI VE ÜRÜN. SAN. TIC. AS. CUMHURIYET MAH. 1955 SK. 11 / 1 AYDIN / EFELER TÜRKIYE info@qua.com.tr www.qua.com.tr
LCA practitioner and EPD Design	metsims Sustainability Consulting Turkey: Nef 09 B Blok NO:7/46-47 34415 Kagıthane/Istanbul, TÜRKIYE +90 212 281 13 33	The United Kingdom: 4 Clear Water Place Oxford OX2 7NL, UK 0 800 722 0185 www.metsims.com info@metims.com
3rd party verifier	LCA.cz	Prof. Ing. Vladimír Koçí, Ph.D., MBA LCA Studio Šárecká 5,16000 Prague 6 - Czech Republic www.lcastudio.cz

QUA
GRANITE

www.qua.com.tr