GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION

AENOR Confía

ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EN ISO 14025:2010

UNE-EN 15804:2012+A2:2020

NATURPIEDRA PIZARRAS JBERNARDOS

Natural stone products

Date of first issue: 2022-10-07
Expiration date: 2027-10-06

Declared validity is subject to registration and publication on www.aenor.com

Registration code: GlobalEPD EN15804-020

naturpiedra JBERNARDOS

NATURPIEDRA PIZARRAS JBERNARDOS

The holder of this Declaration is responsible for its contents and for keeping the records and the documentation that supports data and statements included during the validity period.

Holder of the Declaration

NATURPIEDRA PIZARRAS JBERNARDOS
C/ Saturno, 1. Aulencia Business Park
28229 (Villanueva del Pardillo) MADRID

Tel.+34 91 8135172
Mail naturpiedra@naturpiedra.com
Web www.naturpiedra.com

LCA Study

NOTIO – Technology Center
C/ Río Cabriel s/n
45007 Toledo

Tel.(+34) 925 24 11 62
Mail info@notio.es
Web www.notio.es

GlobalEPD Programme Operator

AENOR Internacional S.A.U. C/
Génova 6
28009 – Madrid
Spain

Phone(+34) 902 102 201
Mail aenordap@aenor.com
Web http://www.aenor.com

AENOR is a founding member of ECO Platform, the European Association of Environmental Product Declaration Verification Programmes.

European Standard UNE-EN 15804:2012+A2:2020 serves as the basis for PCRs.
Independent verification of the declaration and data in accordance with EN ISO 14025:2010 ☐ Internal ☒ External
Verification body AENOR Confía

1. General Information

1.1. The organisation

The holder of this statement is Naturpiedra Pizarras Jbernardos.

This DAP is for the exclusive use of the holder and is representative of the production process of the company since it has been obtained using real data from the company's manufacturing process.

NATURPIEDRA JBERNARDOS is a company specialized in the integral service around natural stone: extraction, transformation and marketing. It has extensive experience in natural stone, whose strength lies in our slate, phyllite and quartzite quarries, factory, stocks and highly qualified own personnel, offering a service and a final product of high quality.

The combination of an exceptional natural product with the experience and professionalism of the Naturpiedra JBernardos team drives that more than 80% of the production is for export, being present in more than 25 countries on 5 continents.

1.2. Scope of the Declaration

The data provided in this DAP are calculated for one ton of natural stone product, prepared by the holder of the declaration, in a geographical and technological environment in Spain in the year 2020, for the following commercial families:

- Slate natural texture.
- Disc cutting slate / elaborate textures.
- Quarry products (masonry, flagstones and slabs).

It is made as an average of the products that are part of each of the families, processed in the processing plant at Bernardos (Segovia).

The data used for Life Cycle Assessment is based on real data obtained from the manufacturing process of the Company of the Year 2020.

The main function of slate products will be for ornamental use, to cover indoor and outdoor surfaces, such as floors, walls, facades, roofs, stairs, etc.
It is considered the scope from cradle to grave.

1.3. Life Cycle and Compliance.

This EPD has been developed and verified in accordance with the UNE-EN ISO 14025:2010 and UNE-EN 15804:2012+A2:2020 Standards.

This Environmental Statement includes the following stages of the life cycle

System limits. Modules

Information considered

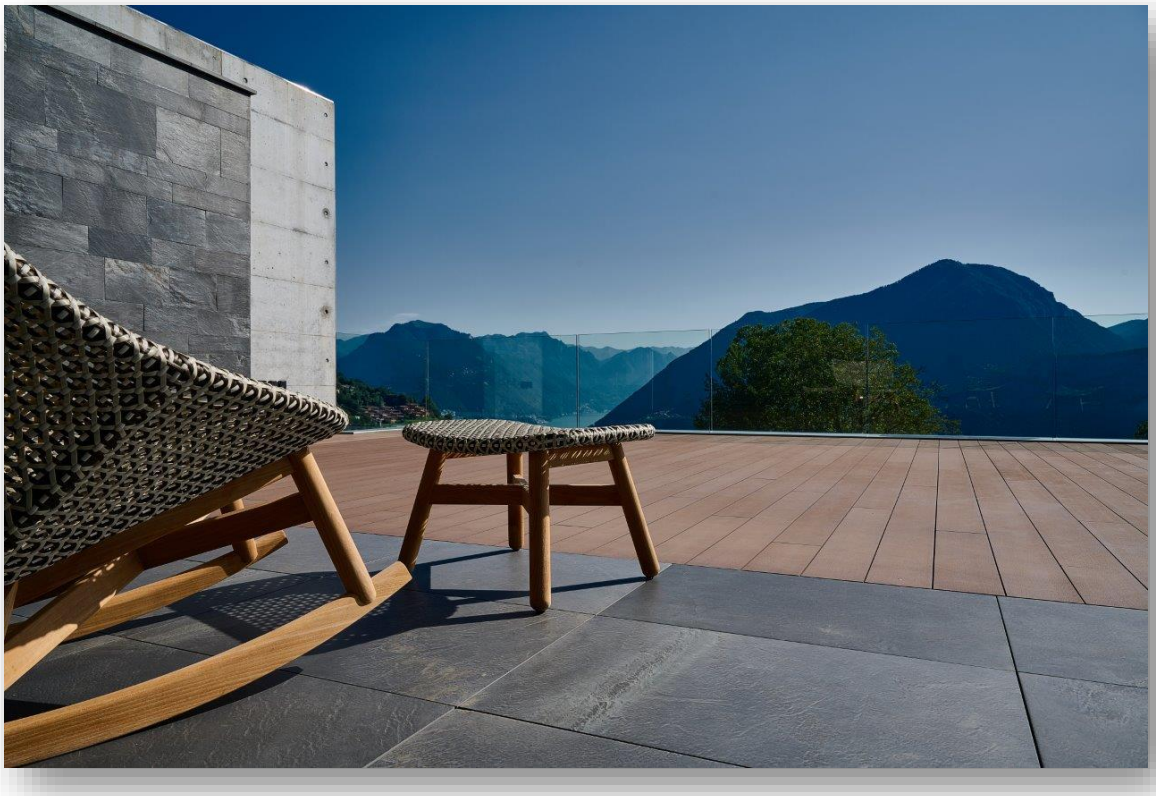
Product stage	A1	Raw materials supply	X
	A2	Factory transport	X
	A3	Manufacturing	X
Construction	A4	Transport to construction site	X
	A5	Installation/construction	X
Stage d use	B1	Use	NR
	B2	Maintenance	X
	B3	Repair	NR
	B4	Replacement	NR
	B5	Refurbishment	NR
	B6	Operational energy use	NR
	B7	Operational water use	NR
End of life	C1	Deconstruction/demolition	X
	C2	Transport	X
	C3	Waste processing	X
	C4	DIsposal	X
	D	Potential for reuse, recovery and/or recycling	X

X = Module included in the LCA; NR = Module no relevant; MNE = Module not evaluated

This DAP may not be comparable with those developed in other Programs or according to different reference documents, in particular it may not be comparable with DAP not prepared in accordance with Standard UNE-EN 15804 + 2012: A2.

Similarly, DAPs may not be comparable if the data source is different (e.g. databases), not all relevant information modules are included, or are not based on the same scenarios.

The comparison of construction products must be made on the same function, applying the same functional unit and at the level of the building (or architectural or engineering work) that is, including the behavior of the product throughout its life cycle, as well as the specifications of section 6.7.2 of the UNE-EN ISO 14025 Standard.



2. The product.

2.1. Product identification

The products included in this DAP are natural stone products (slate), made by NATURPIEDRA JBernardos, under the following commercial families:

- Slate natural texture.
- Disc cutting slate / elaborate textures
- Quarry products (masonry, slabs and slabs).

The main function of natural stone products will be ornamental use to cover indoor and outdoor surfaces, such as floors, walls, facades, stairs, etc. The versatility of these pieces allows them to be installed in any type of building or civil works, in indoor and outdoor environments, being an extremely firm, consistent material with great resistance to loads and wear, both mechanical and atmospheric.

The properties and technical characteristics of the products of NATURPIEDRA JBernardos, are declared in accordance with the use that will be given to them as a construction material, in accordance with the regulatory structure developed by the European standardization committees.

The "harmonised standards" developed by the European Standardization Committees (CEN), which are applicable, for the different constructive uses for which they are marketed are the following:

- UNE-EN 12326-1 and 2. Slate and stone for discontinuous roofing and external cladding.
- UNE-EN 1469. Slabs for cladding.
- UNE-EN 12057. Modular tiles.
- UNE-EN 12058. Slabs for floors and stairs.
- UNE-EN 1341. Slabs of natural stone for external paving.
- UNE-EN 1342. N Setts of natural stone for external paving.
- UNE-EN 1343. Kerbs of natural stone for external paving.
- UNE-EN 771-6. masonry units.

The CPC code for the product is 15110 (Slate).

2.2. Product Composition

The manufacturer declares the following information on the technical specifications of the product:

Product performance (roofing boards)

Benefit	Calculation or test method	Value	Units
Medium modulus of rupture	UNE EN 12326-2	55 27	N/mm2 (Longitudinal direction) N/mm2 (Longitudinal direction)
Characteristic modulus of rupture	UNE EN 12326-2	41 21	N/mm2 (Longitudinal direction) N/mm2 (Longitudinal direction)
Water absorption	UNE EN 12326-2	0,2	% Class A1
Calcium carbonate content	UNE EN 12326-2	0,2	%
Non-carbonated carbon content	UNE EN 12326-2	0,08	%
Exposure to sulfur dioxide	UNE EN 12326-2	S1	Atmospheric SO_2 resistant
Thermal cycling	UNE EN 12326-2	T1	No significant oxidation or appearance changes

Product performance (Other uses)

Benefit	Calculation or test method	Value	Units
Petrographic classification	UNE-EN 12670:2003	FILITA	---
Water absorption	UNE EN 13755	0,1	%
Bending strength	UNE EN 12372	65	N/mm2 Average value
Frost	UNE EN 12371	65	N/mm2. Bending strength after 144 ice/thaw cycles
Bulk density	UNE EN 1936	2700	kg/m3
Open porosity	UNE EN 1936	0,3	%
Breaking load for dowel hole	UNE EN 13364	3550 ±600	N Average value of breaking load
Resistance to thermal shock ageing	UNE EN 14066	0,03	% Not relevant
Dowel hole resistance	UNE EN 13364	3550	N

Slip resistance (UNE EN 12633)

Surface Finishes	Natural Surface		Sawn	
Test Type	Dry	Wet	Dry	Wet
Results SRV	69	54	90	76

Surface Finishes	Honed		Flamed	
Test Type	Dry	Wet	Dry	Wet
Results SRV	76	40	74	68

Surface Finishes	Brushed	
Test Type	Dry	Wet
Results SRV	75	44

2.3. Product composition

The Jbernardos Philita is a natural stone used in construction for five centuries. Geologically, phyllite is a metamorphic rock that is representative of regional metamorphism of low to medium grade (facies of green schists), which is formed by the metamorphism of pelitic sediments (rich in clay and organic matter) and is recognized for having a grain size greater than that of the slate.

It is a rock that represents a gradation in the degree of metamorphism between slate and shale. Its planar minerals are larger than those of shale, but not enough to be easily identifiable with the naked eye. Although phyllite appears similar to slate, it can be easily distinguished by its satin sheen and wavy surface.

According to the petrographic analyses carried out, the main components of Naturpiedra JBernardos' products are: quartz, sericitico-clay minerals (sericite-phengite), muscovite, opaque; being accessory components: biotite, tourmaline. Texture: Metalymolytic with sporadic metasamitic bands, very fine sand size.

The composition declared by the manufacturer is as follows:

Product composition

Substance/ Component	Content	Units
Quartz	37 0,015 – 0,12	% Particle diameter (mm)
Clay minerals	58 0,01	% Particle diameter (mm)
Opaque	5 0,03-0,08	% Particle diameter (mm)

For more information on the types of product you can consult the website of the company (www.naturpiedra.com) in the section "products".

The product does not contain substances included in the Candidate List of Substances of Very High Concern for Authorisation, of the European Chemicals Agency.

3. LCA Information

3.1. Life Cycle Analysis.

The LCA carried out by NOTIO-Technology Center (July 2022. V04) has been made with the support of GaBi software, with database version 2021.1 (SpheraSolutions). The characterization factors used are those included in the UNE EN 15804:2012+A2:2020 standard.

3.2. Declared unit.

The functional unit is defined as "*mass of product made natural stone of 1 ton for use in building, with a useful life of 75 years*".
The density of the product is 2,700 kg/m^3.

3.3. Reference service life (RSL).

The reference service life of the product is the same as the building where it is installed, provided that it is installed correctly, since it is a long-lasting product that does not require replacement. It has been considered a lifespan of 75 years.

3.4. Allocation Criteria.

The criteria followed for the allocation of inputs and outputs to the functional unit have been the following:

- Electrical energy: Of the total electrical energy, 50% is consumed in processes related to the elaboration of products of the natural texture family, and 50% is consumed in processes related to the elaboration of products of the family cutting discs / finished textures. The products of the quarry products family do not consume electrical energy in the process of making them.
- Propane gas: Of the total propane consumption, 100% is destined to processes for the elaboration of the products of the family cutting discs / finished textures.
- The total oxygen consumption is used for the family cutting discs / finished textures.
- The water is taken directly from an old quarry hole used as a tank. From the calculation of the water contained in the sludge generated, the total water consumption is obtained, of which 90% is recirculating water. No water consumption is allocated to quarry products.
- 90% of the sludge is deposited in a dump at the foot of the processing plant and the remaining 10% is transported for treatment for agricultural use and soil stabilization. An average sludge water content of 60% is considered.

3.5. Cut-Off Criteria.

In the LCA, a cut-off criterion of 1% has been applied for the use of energy (renewable and non-renewable) and 1% of the total mass in those unit processes whose data are insufficient. In total, more than 95% of all inputs and outputs of matter and energy from the system have been included, excluding those data not available.

Infrastructure construction processes, machinery manufacturing and vehicle manufacturing processes have been excluded, since the impact of these processes, referring to the functional unit, is very low.

3.6. Representativeness, quality and selection of data

The data for the performance of the LCA have been provided by the manufacturer of the product. These are data from the 2020 financial year, corresponding to all the production lines available to NATURPIEDRA PIZARRAS JBERNARDOS at its plant in Bernardos, Segovia. The 2020 data is representative of production. Traceability has been verified.

For generic data and data not available by the manufacturer, the GABI/Sphera professional database (SP37) has been used. The software used in the realization of the stroke has been GABI.

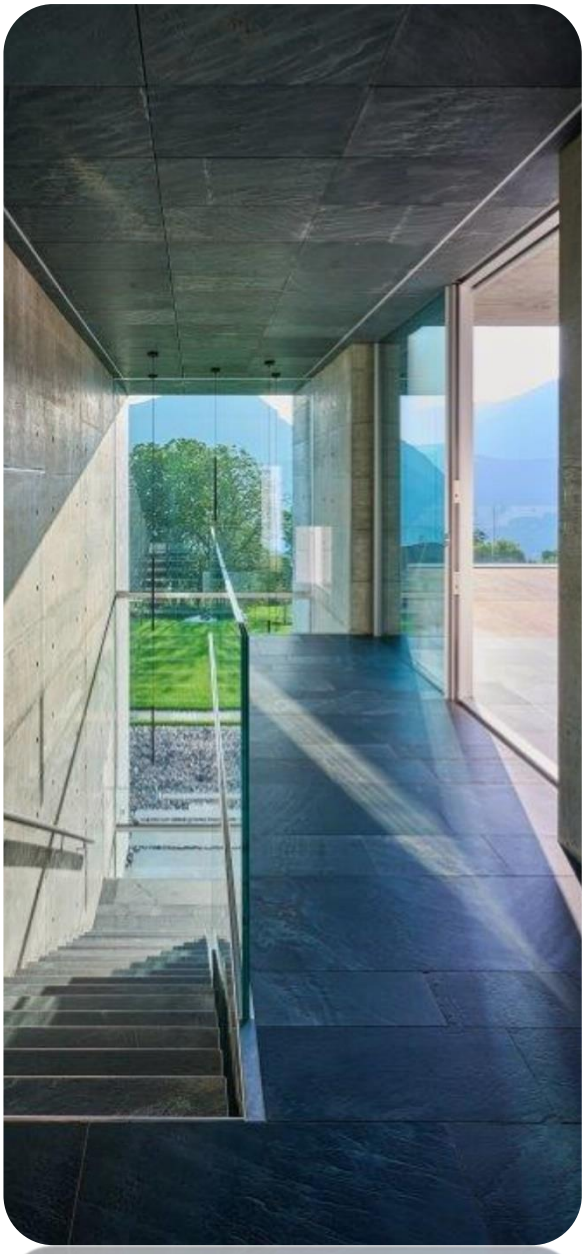
For the development of this study, the data quality requirements established in Annex E present in the UNE EN 15804: 2012 + A2 (2020) standard have been taken into account:

- Integrity: All the relevant processes of the products have been used and represent the specific situation of each of them.
- Coherence: Data with the same level of detail and developed under the same methodological conditions have been used.
- Reproducibility: The methods and data used have been described in such a way that they can be reproduced by an independent professional.
- Temporal representativeness: The inventory data has been compiled through a questionnaire completed by technical staff of NATURPIEDRA JBernardos. These data cover all the processes of product elaboration and transport to construction site, and correspond to the production data of the year 2020, so they are 1 year old. For secondary and generic data, they have been taken from Sphera's professional database, from GABI software (update February 2021).
- Geographical representativeness: The specific data used for modules A1, A2, A3, A4, A5 have been provided by the manufacturer itself, being representative of the products of NATURPIEDRA JBernardos, reflecting the physical reality of the declared products. All the products covered by this DAP have been produced in Spain and distributed internationally, and are representative of the production of NATURPIEDRA JBernardos. For generic data, representative data for the country (Spain) have been used as far as possible.
- Technical representativeness: The specific data reflect the physical reality of the declared product, since they have been provided by the manufacturer himself. The primary data have been provided directly by the company, corresponding to the production center of Bernardos (Segovia). For secondary data, Sphera databases have been used and modelled with Gabi's 2021 version. The results presented are representative of the production of NATURPIEDRA JBernardos, expressed as a weighted average by the production of the different families of products.

According to the data quality assignment methodology present in Annex E of the UNE EN 15804: 2012+A2 (2020) standard, the data quality obtained is good.
The variation between the different references of product families is greater than 10%, so the average values of each of the families are declared separately.

3.7. Other calculation Criteria and hypotheses

The loads allocation applied have been those necessary to quantify the specific data for each product family and obtain a weighted average.



4. System boundaries, scenarios and additional technical information.

All relevant lifecycle modules have been included:

The process of making NATURPIEDRA's natural stone products included in this EPD is composed of the following stages:

4.1. Pre-manufacturing processes (upstream)

The cycle begins with the extraction of large blocks in the quarry next to the processing plant, which is subdivided into a set of successive stages, with diamond wire and cutting disc and heavy machinery. In this way they are transformed into elements ready to be transported. Subsequently, the blocks are transported to the processing plant with trucks with a load capacity of 50 tons.

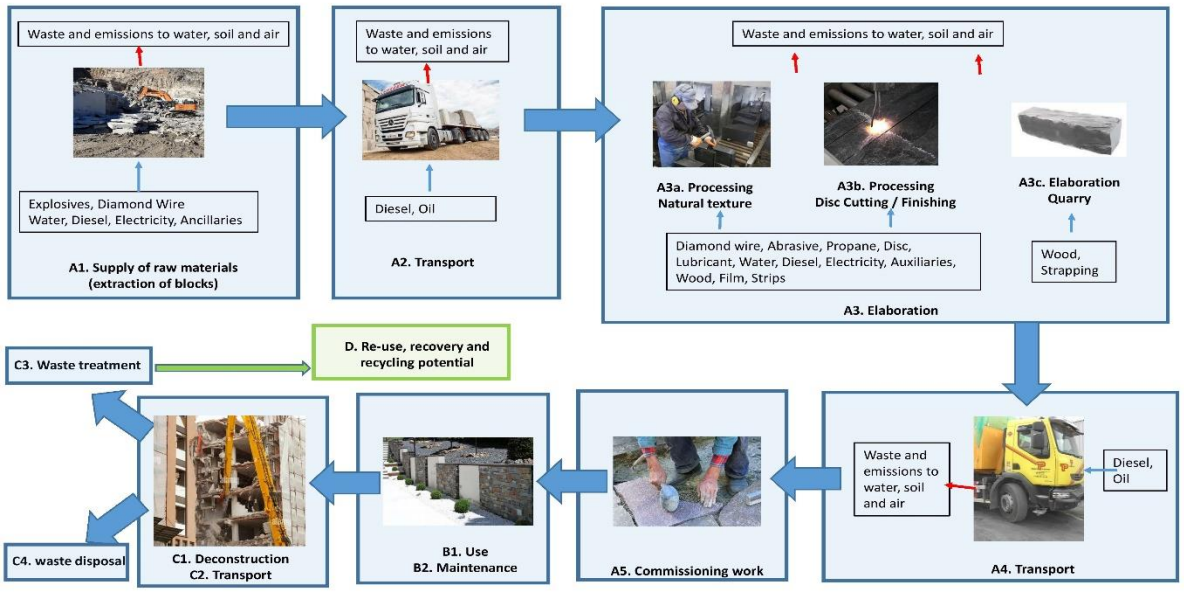
4.2.

Product manufacturing

The blocks from the quarry are subjected to various stages before obtaining the final product.

The products of the quarry products family (slab, monoliths, slabs, masonry and bolus) are obtained directly, by simple mechanical means, without machinery.
The products of the natural texture family (roof, slabs for cladding, kerbs, iron, slabs, pickets, tiles) are obtained by mechanical exfoliation methods.

For the elaboration of the products of the slate family disc cutting / elaborate textures (tiles, plates, pickets, margelles), the blocks are cut with diamond wire equipment and cutting disc, until the desired dimensions are obtained. Finally, they are subjected to treatments to obtain the desired texture/finish (disc cutting, aging, drumming, flamed, honing, sandblasting).
Once the final products have been obtained, they are packaged. The products are packed on pallets with an average weight of 1,000 kg of finished product, plasticized with film and strapping, being ready for transport to work.



4.3. Construction process

Transport to construction site (A4)

The calculation of transport distances to construction site is based on orders served in the reference year. The average distance is based on the weighted average data of the products manufactured by NATURPIEDRA for each product family considered.

Module A4 Transport to the construction site

Scenario information	Unit (expressed per functional unit)
Type and fuel consumption of the vehicle, type of vehicles used for transport; for example long-distance trucks, boats, etc.	- Road transport: 28-34 ton truck. Reference is taken from trailer truck of 28-34 tons (already considers diesel fuel), from the professional database of TS, (GLO: Truck-trailer, Euro 6, 28 - 34t gross weight / 22t payload) - Transport by ship: Freighter of 200,000 tons. A 200,000-ton freighter (already considers diesel fuel) is taken as a reference, from Sphera's professional database, (GLO: Transoceanic Ship, 200,000t payload)
Distance	- Natural texture: 1,043.00 km by road (92.67%) and 9,000.00 km by boat (7.33%). - Disc cutting and finishes: 764.36 km by road (99.28%) and 9,000.00 km boat (0.72%) - Quarry products: 440 km by road (100%)
Capacity utilization (including idle return)	85% in trucks 100% freighter
Bulk density of transported products	2,700 kg/m^3
Useful capacity factor (factor: = 1 or < 1 or ≥ 1 for products that are packaged compressed or nested)	Not applicable

Installation and construction (A5)

Once the product is unpacked, it is installed. In general terms, the installation of the products on the construction site is mainly manual and the use of energy or water required is very small or negligible. The on-site storage of the products does not require any special care, apart from the usual good health and safety practices.

However, and in order to present a real scenario of installation on site of the most representative product, the installation of interior pavement of slate tiles of 60 x 60 x 2 cm has been considered. According to the data obtained and in order to apply a real scenario, it has been established that for the installation the application of glue mortar (8 kg / m2) and mortar for joints (0.15 kg / m2) is required. For the preparation of the mortar requires 0.24 l of water / kg of mortar.

It has been considered a 2% loss of product (losses) in the installation, a factor that is considered in the manufacture of products. It is considered the landfill (construction waste) of 100% of the losses. In the case of wooden pallets, 100% is considered to be reusable with the same use.

The data in the following table refer to the functional unit (ton of product). Each ton of product is equivalent to 17.4 m2 of pavement.

Module A5 - Installation

Scenario information	Unit (expressed per functional unit)
Mortar for gluing and grouting	143 kg
Use of water (for mortar production)	34 l
Use of other resources	Not applicable
Quantitative description of the type of energy (regional mix) and consumption during the installation process	Not applicable
Waste of materials on site before waste treatment, generated by the installation of the product (specifying by type)	Material waste due to loss of commissioning: 20 kg Packaging waste: 1,028 kg plastic containers
Output of materials (specified by type) as a result of waste treatment on the building plot, e.g. collection for recycling, energy recovery, disposal (specified by route)	Stone waste: 100% to landfill Plastic packaging waste: 40% recycled; 60% landfill
Direct emissions into ambient air, to soil and water	Not applicable

4.4. Use linked to the structure of the building

Since the natural stone products produced by NATURPIEDRA do not require any energy input for their use nor do they need maintenance after their commissioning, only the environmental burdens attributable to the maintenance of the product used as indoor flooring (B2) are considered.

It is taken, as the most representative product of the indoor flooring made by NATURPIEDRA, the tile of 60 x 60 x 2cm. Since the density considered for the products under study is 2,700 kg / m^3, a pavement surface of 17.4 m 2 is obtained for the unit considered under study of 1 ton of product put on site.

The frequency of general cleaning of slate floors should not be high, considering once a week with water, and every 2 weeks with neutral soap, during the 75 years of useful life, thus avoiding unnecessary contributions of moisture.

Use linked to the structure of the building

Scenario information	Unit (expressed per functional unit)
B2 Maintenance	
Maintenance process	Water cleaning, indoor pavement use scenario (disc cutting family)
Maintenance cycle	Wash 1 time a week with water and every two weeks with neutral soap.
Auxiliary materials for maintenance (e.g. cleaning products) (specifying each material)	Neutral soap 1,34E-04 kg /m^2 and cycle (0,046 m^3 functional unit service life)
Material waste during maintenance (specifying type)	Not applicable.
Net tap water consumption	0.1 l/m^2 (6,825 m^3 service life)
Power input during maintenance.	Not applicable.

4.5. End of life stage

For the deconstruction and demolition stage (C1), it has been considered that, once its useful life has ended, the product will be removed, either as part of a rehabilitation of the building or during its demolition. The impacts associated with the use of energy necessary for the demolition of a type building with mechanical means, in which stone products (such as masonry, roof, flooring or façade) are installed, have been considered.

End of life

Parameter	Unit (expressed per functional unit
Collection process, specified by type	1,000 kg collected with construction waste mixture
Recovery system, specified by type	700 kg for recycling as gravel for road surfaces or concrete elements
Delete, specified by type	kg product or material for final disposal
Scenarios for scenario development (e.g. transport)	The product waste is transported by a large tonnage truck (27 t) that complies with Euro 6 regulations. An average distance of 40.5 km to the recycling plant and 62.0 km to the landfill is considered.

4.6. Benefits and loads beyond the system

Waste that is sent to recovery in stage C3 (700 kg), at the end of the building's useful life, has been considered. The benefits derived from the use of the resulting recycled material as crushed gravel, replacing primary or virgin gravel in roads or concrete products, are considered.

5. LCA and LCI Environmental Parameter Declaration.

The following tables include LCA and LCA parameter data.

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins or risks.

5.1. Natural texture family

Environmental impacts.

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	**kg CO2 eq**	9,48E+01	8,38E+01	4,33E-01	NR	NR	NR	NR	NR	NR	NR	6,17E-01	4,06E+00	1,82E+00	4,35E+00	-5,47E+00
GWP-fossil	**kg CO2 eq**	9,73E+01	8,35E+01	4,41E-01	NR	NR	NR	NR	NR	NR	NR	6,42E-01	4,05E+00	1,81E+00	4,48E+00	-5,40E+00
GWP-biogenic	**kg CO2 eq**	-2,80E+00	-1.01E-01	-9.45E-03	NR	NR	NR	NR	NR	NR	NR	-2.81E-02	-5.63E-03	3,10E-04	-1,33E-01	-7.61E-02
GWP-luluc	**kg CO2 eq**	3.59E-01	4,36E-01	1,12E-03	NR	NR	NR	NR	NR	NR	NR	3,43E-03	2,27E-02	8.38E-03	8.26E-03	5.73E-03
ODP	**kg CFC11 eq**	1.74E-09	5.01E-12	7.67E-13	NR	NR	NR	NR	NR	NR	NR	3.68E-14	2.44E-13	2.69E-12	1,05E-11	-1.72E-11
AP	**mole H+ eq**	3,34E-01	6,51E-01	2,80E-03	NR	NR	NR	NR	NR	NR	NR	3.05E-03	3,37E-02	9.35E-03	3,17E-02	-1.58E-02
EP-freshwater	**kg P eq**	3,43E-04	2,34E-04	8.28E-06	NR	NR	NR	NR	NR	NR	NR	1.83E-06	1,22E-05	5,20E-06	7.59E-06	2.95E-06
EP-marine	**kg N eq**	1,22E-01	2,71E-01	8.43E-04	NR	NR	NR	NR	NR	NR	NR	1,43E-03	1.69E-02	4,27E-03	8,12E-03	-2.42E-03
EP-terrestrial	**mol N eq**	1,35E+00	2,99E+00	9.28E-03	NR	NR	NR	NR	NR	NR	NR	1.59E-02	1.86E-01	4.72E-02	8.92E-02	-2.83E-02
POCP	**Kg NMVOC eq**	3.55E-01	5.72E-01	2,26E-03	NR	NR	NR	NR	NR	NR	NR	4.03E-03	3,16E-02	1,16E-02	2,47E-02	-6.95E-03
ADP-minerals& metals [2]	**kg Sb eq**	4.05E-05	6.74E-06	4,19E-08	NR	NR	NR	NR	NR	NR	NR	5.14E-08	3.41E-07	2.01E-06	4.59E-07	1.68E-06
ADP-fossil [2]	**MJ**	1,49E+03	1,11E+03	5,86E+00	NR	NR	NR	NR	NR	NR	NR	8,21E+00	5,45E+01	3,54E+01	5,86E+01	-4.59E+01
WDP [2]	**m³ depriv.**	8,39E+01	7,11E-01	3,32E-02	NR	NR	NR	NR	NR	NR	NR	5.51E-03	3.66E-02	3,50E-01	4,91E-01	-2,80E+00

GWP - total: Global warming potential; **GWP -** fossil: Global warming potential of fossil fuels; **GWP - biogenic**: Biogenic global warming potential; **GWP - luluc** : Global warming potential of land use and land use change; **ODP**: Stratospheric ozone depletion potential; **AP:** Acidification potential, accumulated surplus; **EP-freshwater**: Eutrophication potential, fraction of nutrients reaching the final freshwater compartment; **EP-marine**: Eutrophication potential, fraction of nutrients reaching the final seawater compartment; **EP-terrestrial**: Eutrophication potential, accumulated surplus; **POCP:** Tropospheric ozone formation potential; **ADP-minerals&metals**Abiotic resource depletion potential for non-fossil resources; **APD-fossil**: Abiotic resource depletion potential for fossil resources; **WDP**: Water deprivation potential (user), weighted water deprivation consumption. **NR:** Not relevant

Environmental impact parameters

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	**Incidence of diseases**	3,33E-06	5,20E-06	2.93E-08	NR	NR	NR	NR	NR	NR	NR	3.44E-08	2,17E-07	1.77E-07	3.91E-07	-4.53E-07
IRP [1]	**kBq U235 eq**	3,58E+00	2.00E-01	6,21E-03	NR	NR	NR	NR	NR	NR	NR	1,49E-03	9.86E-03	7.64E-02	7,26E-02	-1.94E-03
ETP-fw [2]	**CTUe**	7,55E+02	7,72E+02	3,68E+00	NR	NR	NR	NR	NR	NR	NR	5,70E+00	3,78E+01	2,37E+01	3,29E+01	-1.74E+01
HTP-c [2]	**CTUh**	6,22E-08	1.55E-08	3.80E-10	NR	NR	NR	NR	NR	NR	NR	1,15E-10	7.68E-10	5.08E-10	5.01E-09	-1,12E-09
HTP-nc [2]	**CTUh**	1,41E-06	8,49E-07	4.03E-08	NR	NR	NR	NR	NR	NR	NR	6.96E-09	4.51E-08	2.72E-08	5.55E-07	-3.90E-08
SQP [2]	**-**	3,02E+02	3,59E+02	1,31E+00	NR	NR	NR	NR	NR	NR	NR	2,83E+00	1,88E+01	8,00E+00	1,22E+01	2,02E+00

PM: Potential incidence of diseases due to emissions of particulate matter (PM); **IRP** : Human potential exposure efficiency relative to U235; **ETP-fw** : Comparative potential of toxic unit for ecosystems - freshwater; **HTP-c** : Comparative potential of toxic unit for ecosystems - carcinogenic effects; **HTP-nc** : Comparative potential of toxic unit for ecosystems - non-carcinogenic effects; **SQP** : Soil quality potential index; **NR:** Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

Notice 2: The results of this environmental impact indicator should be used with caution, as the uncertainties of the results are high and experience with this parameter is limited.

Resource usage

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	**MJ**	1,04E+03	5,96+01	7,13E-01	NR	NR	NR	NR	NR	NR	NR	4,67E-01	3,10E+00	2,84E+00	8,80E+00	-1,12E+01
PERM	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	**MJ**	1,04E+03	5,96E+01	7,13E-01	NR	NR	NR	NR	NR	NR	NR	4,67E-01	3,10E+00	2,84E+00	8,80E+00	-1,12E+01
PENRE	**MJ**	1,49E+03	1,12E+03	5,87E+00	NR	NR	NR	NR	NR	NR	NR	8,23E+00	5,46E+01	3,55E+01	5,87E+01	-4.59E+01
PENRM	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	**MJ**	1,49E+03	1,12E+03	5,87E+00	NR	NR	NR	NR	NR	NR	NR	8,23E+00	5,46E+01	3,55E+01	5,87E+01	-4.59E+01
SM	**kg**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	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	NR	NR	NR	NR	NR	NR	NR	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	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	**m^3**	1,55E+00	6.75E-02	1.09E-03	NR	NR	NR	NR	NR	NR	NR	5.28E-04	3,50E-03	9.91E-03	1,49E-02	-6.42E-02

PERE : Use of renewable primary energy excluding renewable primary energy resources used as feedstock; **PERM:** Use of renewable primary energy used as raw material; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstock; **PENRM:** Use of non-renewable primary energy used as feedstock; **PENRT:** Total use of non-renewable primary energy; **SM:** Use of secondary materials; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of tap water resources; **NR:** Not relevant

Waste categories

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	**kg**	2.02E-07	5,30E-09	3.04E-10	NR	NR	NR	NR	NR	NR	NR	3.94E-11	2.62E-10	4.44E-10	3.02E-09	-5.06E-09
NHWD	**kg**	7,26E+02	1.56E-01	2,07E+01	NR	NR	NR	NR	NR	NR	NR	1,18E-03	7.83E-03	9.41E-03	3,00E+02	-1.78E-02
RWD	**kg**	5.39E-02	1,37E-03	5,29E-05	NR	NR	NR	NR	NR	NR	NR	1,01E-05	6,73E-05	4.67E-04	6.53E-04	-7.36E-04

HWD: Hazardous waste disposed of; **NHWD**: Non-hazardous waste disposed of; **RWD**: Radioactive waste disposed of; **NR:** Not relevant

Outflows

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	**kg**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	**kg**	3,39E-01	0,00E+00	5.79E-01	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	6,79E+02	0,00E+00	0,00E+00
MER	**kg**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
USA	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU: Components for reuse; **MFR**: Materials for recycling; **MER**: Materials for energy recovery; **EE:** Energy exported; **NR:** Not relevant

Information on biogenic carbon content

Biogenic carbon content	Units	Result per functional unit
Biogenic carbon content product - KgC	Kg C	0
Biogenic carbon content packaging - KgC	Kg C	6,40E-02

5.2. Family disc cutting / elaborate textures.

Environmental impacts.

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	**kg CO2 eq**	1,27E+02	6,14E+01	5,89E+01	NR	1,03E+01	NR	NR	NR	NR	NR	6,17E-01	4,06E+00	1,82E+00	4,35E+00	-5,47E+00
GWP-fossil	**kg CO2 eq**	1,30E+02	6,11E+01	5,92E+01	NR	6,65E+00	NR	NR	NR	NR	NR	6,42E-01	4,05E+00	1,81E+00	4,48E+00	-5,40E+00
GWP-biogenic	**kg CO2 eq**	-2,80E+00	-8.34E-02	-3.68E-01	NR	3,65E+00	NR	NR	NR	NR	NR	-2.81E-02	-5.63E-03	3,10E-04	-1,33E-01	-7.61E-02
GWP-luluc	**kg CO2 eq**	3.64E-01	3,39E-01	1,60E-02	NR	1.36E-03	NR	NR	NR	NR	NR	3,43E-03	2,27E-02	8.38E-03	8.26E-03	5.73E-03
ODP	**kg CFC11 eq**	3.42E-09	3.68E-12	8.00E-11	NR	3.00E-11	NR	NR	NR	NR	NR	3.68E-14	2.44E-13	2.69E-12	1,05E-11	-1.72E-11
AP	**mole H+ eq**	4,27E-01	3,63E-01	1,17E-01	NR	1.74E-02	NR	NR	NR	NR	NR	3.05E-03	3,37E-02	9.35E-03	3,17E-02	-1.58E-02
EP-freshwater	**kg P eq**	3.51E-04	1.82E-04	6.52E-05	NR	4,32E-03	NR	NR	NR	NR	NR	1.83E-06	1,22E-05	5,20E-06	7.59E-06	2.95E-06
EP-marine	**kg N eq**	1,42E-01	1.73E-01	3.91E-02	NR	2.01E-02	NR	NR	NR	NR	NR	1,43E-03	1.69E-02	4,27E-03	8,12E-03	-2.42E-03
EP-terrestrial	**mol N eq**	1,57E+00	1,91E+00	4,27E-01	NR	4,37E-02	NR	NR	NR	NR	NR	1.59E-02	1.86E-01	4.72E-02	8.92E-02	-2.83E-02
POCP	**Kg NMVOC eq**	4,16E-01	3,39E-01	1,11E-01	NR	1,31E-02	NR	NR	NR	NR	NR	4.03E-03	3,16E-02	1,16E-02	2,47E-02	-6.95E-03
ADP-minerals& metals [2]	**kg Sb eq**	7.77E-05	5,11E-06	2,35E-06	NR	9.17E-07	NR	NR	NR	NR	NR	5.14E-08	3.41E-07	2.01E-06	4.59E-07	1.68E-06
ADP-fossil [2]	**MJ**	2,00E+03	8,20E+02	3,42E+02	NR	1,48E+02	NR	NR	NR	NR	NR	8,21E+00	5,45E+01	3,54E+01	5,86E+01	-4.59E+01
WDP [2]	**m³ depriv.**	1,41E+02	5.47E-01	4,41E+00	NR	2,39E+02	NR	NR	NR	NR	NR	5.51E-03	3.66E-02	3,50E-01	4,91E-01	-2,80E+00

GWP - total: Global warming potential; **GWP - fossil**: Global warming potential of fossil fuels; **GWP - biogenic**: Biogenic global warming potential; **GWP - luluc** : Global warming potential of land use and land use change; **ODP**: Stratospheric ozone depletion potential; **AP:** Acidification potential, accumulated surplus; **EP-freshwater**: Eutrophication potential, fraction of nutrients reaching the final freshwater compartment; **EP-marine**: Eutrophication potential, fraction of nutrients reaching the final seawater compartment; **EP-terrestrial**: Eutrophication potential, accumulated surplus; **POCP:** Tropospheric ozone formation potential; **ADP-minerals&metals**Abiotic resource depletion potential for non-fossil resources; **APD-fossil**: Abiotic resource depletion potential for fossil resources; **WDP**: Water deprivation potential (user), weighted water deprivation consumption. **NR:** Not relevant

Environmental impact parameters

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	**Incidence of diseases**	4,19E-06	1.58E-06	1.67E-06	NR	1.53E-07	NR	NR	NR	NR	NR	3.44E-08	2,17E-07	1.77E-07	3.91E-07	-4.53E-07
IRP [1]	**kBq U235 eq**	6,88E+00	1,48E-01	1,94E+00	NR	8.49E-01	NR	NR	NR	NR	NR	1,49E-03	9.86E-03	7.64E-02	7,26E-02	-1.94E-03
ETP-fw [2]	**CTUe**	8,90E+02	5,69E+02	1,46E+02	NR	6,63E+02	NR	NR	NR	NR	NR	5,70E+00	3,78E+01	2,37E+01	3,29E+01	-1.74E+01
HTP-c [2]	**CTUh**	8.52E-08	1,15E-08	7.55E-09	NR	2,15E-08	NR	NR	NR	NR	NR	1,15E-10	7.68E-10	5.08E-10	5.01E-09	-1,12E-09
HTP-nc [2]	**CTUh**	1.73E-06	6.34E-07	7.92E-07	NR	2,13E-06	NR	NR	NR	NR	NR	6.96E-09	4.51E-08	2.72E-08	5.55E-07	-3.90E-08
SQP [2]	**-**	3,12E+02	2,80E+02	3,51E+02	NR	1,43E+01	NR	NR	NR	NR	NR	2,83E+00	1,88E+01	8,00E+00	1,22E+01	2,02E+00

PM: Potential incidence of diseases due to emissions of particulate matter (PM); **IRP** : Human potential exposure efficiency relative to U235; **ETP-fw** : Comparative potential of toxic unit for ecosystems - freshwater; **HTP-c** : Comparative potential of toxic unit for ecosystems - carcinogenic effects; **HTP-nc** : Comparative potential of toxic unit for ecosystems - non-carcinogenic effects; **SQP** : Soil quality potential index; **NR:** Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

Notice 2: The results of this environmental impact indicator should be used with caution, as the uncertainties of the results are high and experience with this parameter is limited.

Resource usage

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	**MJ**	2,00E+03	4,63E+01	7,52E+01	NR	2,00E+00	NR	NR	NR	NR	NR	4,67E-01	3,10E+00	2,84E+00	8,80E+00	-1,12E+01
PERM	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	0,00E+00	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	**MJ**	2,00E+03	4,63E+01	7,52E+01	NR	2,00E+00	NR	NR	NR	NR	NR	4,67E-01	3,10E+00	2,84E+00	8,80E+00	-1,12E+01
PENRE	**MJ**	2,02E+03	8,22E+02	3,42+02	NR	1,48E+02	NR	NR	NR	NR	NR	8,23E+00	5,46E+01	3,55E+01	5,87E+01	-4.59E+01
PENRM	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	0,00E+00	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	**MJ**	2,02E+03	8,22E+02	3,42E+02	NR	1,48E+02	NR	NR	NR	NR	NR	8,23E+00	5,46E+01	3,55E+01	5,87E+01	-4.59E+01
SM	**kg**	0,00E+00	0,00E+00	0,00E+00	NR	0,00E+00	NR	NR	NR	NR	NR	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	NR	0,00E+00	NR	NR	NR	NR	NR	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	NR	0,00E+00	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	**m^3**	2,893E+00	5,23E-02	1,36E-01	NR	3.74E-02	NR	NR	NR	NR	NR	5.28E-04	3,50E-03	9.91E-03	1,49E-02	-6.42E-02

PERE : Use of renewable primary energy excluding renewable primary energy resources used as feedstock; **PERM:** Use of renewable primary energy used as raw material; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstock; **PENRM:** Use of non-renewable primary energy used as feedstock; **PENRT:** Total use of non-renewable primary energy; **SM:** Use of secondary materials; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of tap water resources; **NR:** Not relevant

Waste categories

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	4.05E-07	3.93E-09	3,45E-08	NR	5.73E-09	NR	NR	NR	NR	NR	3.94E-11	2.62E-10	4.44E-10	3.02E-09	-5.06E-09
NHWD	kg	7,27E+02	1,17E-01	2,15E+01	NR	6,62E+00	NR	NR	NR	NR	NR	1,18E-03	7.83E-03	9.41E-03	3,00E+02	-1.78E-02
RWD	kg	1.05E-01	1.01E-03	1,21E-02	NR	5,20E-03	NR	NR	NR	NR	NR	1,01E-05	6,73E-05	4.67E-04	6.53E-04	-7.36E-04

HWD: Hazardous waste disposed of; **NHWD**: Non-hazardous waste disposed of; **RWD**: Radioactive waste disposed of; **NR:** Not relevant

Outflows

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	NR	0,00E+00	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	3,39E-01	0,00E+00	5.79E-01	NR	0,00E+00	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	6,79E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	NR	0,00E+00	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
USA	MJ	0,00E+00	0,00E+00	0,00E+00	NR	0,00E+00	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU: Components for reuse; **MFR**: Materials for recycling; **MER**: Materials for energy recovery; **EE:** Energy exported; **NR:** Not relevant

Information on biogenic carbon content

Biogenic carbon content	Units	Result per functional unit
Biogenic carbon content product - KgC	Kg C	0
Biogenic carbon content packaging - KgC	Kg C	6,40E-02

5.3. Family quarry products

Environmental impacts.

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	**kg CO2 eq**	6,45E+01	6,12E+01	4,33E-01	NR	NR	NR	NR	NR	NR	NR	6,17E-01	4,06E+00	1,82E+00	4,35E+00	-5,47E+00
GWP-fossil	**kg CO2 eq**	6,70E+01	6,09E+01	4,41E-01	NR	NR	NR	NR	NR	NR	NR	6,42E-01	4,05E+00	1,81E+00	4,48E+00	-5,40E+00
GWP-biogenic	**kg CO2 eq**	-2,84E+00	-8.46E-02	-9.45E-03	NR	NR	NR	NR	NR	NR	NR	-2.81E-02	-5.63E-03	3,10E-04	-1,33E-01	-7.61E-02
GWP-luluc	**kg CO2 eq**	3,52E-01	3,41E-01	1,12E-03	NR	NR	NR	NR	NR	NR	NR	3,43E-03	2,27E-02	8.38E-03	8.26E-03	5.73E-03
ODP	**kg CFC11 eq**	5.00E-12	3.67E-12	7.67E-13	NR	NR	NR	NR	NR	NR	NR	3.68E-14	2.44E-13	2.69E-12	1,05E-11	-1.72E-11
AP	**mole H+ eq**	2.44E-01	3,44E-01	2,80E-03	NR	NR	NR	NR	NR	NR	NR	3.05E-03	3,37E-02	9.35E-03	3,17E-02	-1.58E-02
EP-freshwater	**kg P eq**	2,29E-04	1.83E-04	8.28E-06	NR	NR	NR	NR	NR	NR	NR	1.83E-06	1,22E-05	5,20E-06	7.59E-06	2.95E-06
EP-marine	**kg N eq**	1.01E-01	1.68E-01	8.43E-04	NR	NR	NR	NR	NR	NR	NR	1,43E-03	1.69E-02	4,27E-03	8,12E-03	-2.42E-03
EP-terrestrial	**mol N eq**	1,13E+00	1,86E+00	9.28E-03	NR	NR	NR	NR	NR	NR	NR	1.59E-02	1.86E-01	4.72E-02	8.92E-02	-2.83E-02
POCP	**Kg NMVOC eq**	2.97E-01	3.25E-01	2,26E-03	NR	NR	NR	NR	NR	NR	NR	4.03E-03	3,16E-02	1,16E-02	2,47E-02	-6.95E-03
ADP-minerals& metals [2]	**kg Sb eq**	5.82E-06	5,12E-06	4,19E-08	NR	NR	NR	NR	NR	NR	NR	5.14E-08	3.41E-07	2.01E-06	4.59E-07	1.68E-06
ADP-fossil [2]	**MJ**	9,90E+02	8,18E+02	5,86E+00	NR	NR	NR	NR	NR	NR	NR	8,21E+00	5,45E+01	3,54E+01	5,86E+01	-4.59E+01
WDP [2]	**m³ depriv.**	5,11E+00	5.49E-01	3,32E-02	NR	NR	NR	NR	NR	NR	NR	5.51E-03	3.66E-02	3,50E-01	4,91E-01	-2,80E+00

GWP - total: Global warming potential; **GWP - fossil**: Global warming potential of fossil fuels; **GWP - biogenic**: Biogenic global warming potential; **GWP - luluc** : Global warming potential of land use and land use change; **ODP**: Stratospheric ozone depletion potential; **AP:** Acidification potential, accumulated surplus; **EP-freshwater**: Eutrophication potential, fraction of nutrients reaching the final freshwater compartment; **EP-marine**: Eutrophication potential, fraction of nutrients reaching the final seawater compartment; **EP-terrestrial**: Eutrophication potential, accumulated surplus; **POCP:** Tropospheric ozone formation potential; **ADP-minerals&metals**Abiotic resource depletion potential for non-fossil resources; **APD-fossil**: Abiotic resource depletion potential for fossil resources; **WDP**: Water deprivation potential (user), weighted water deprivation consumption. **NR:** Not relevant

Environmental impact parameters

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	**Incidence of disease**	2.55E-06	1,23E-06	2.93E-08	NR	NR	NR	NR	NR	NR	NR	3.44E-08	2,17E-07	1.77E-07	3.91E-07	-4.53E-07
IRP [1]	**kBq U235 eq**	1.87E-01	1,48E-01	6,21E-03	NR	NR	NR	NR	NR	NR	NR	1,49E-03	9.86E-03	7.64E-02	7,26E-02	-1.94E-03
ETP-fw [2]	**CTUe**	6,38E+02	5,68E+02	3,68E+00	NR	NR	NR	NR	NR	NR	NR	5,70E+00	3,78E+01	2,37E+01	3,29E+01	-1.74E+01
HTP-c [2]	**CTUh**	9.34E-07	1,15E-08	3.80E-10	NR	NR	NR	NR	NR	NR	NR	1,15E-10	7.68E-10	5.08E-10	5.01E-09	-1,12E-09
HTP-nc [2]	**CTUh**	1,15E-06	6.34E-07	4.03E-08	NR	NR	NR	NR	NR	NR	NR	6.96E-09	4.51E-08	2.72E-08	5.55E-07	-3.90E-08
SQP [2]	**-**	2,91E+02	2,82E+02	1,31E+00	NR	NR	NR	NR	NR	NR	NR	2,83E+00	1,88E+01	8,00E+00	1,22E+01	2,02E+00

PM: Potential incidence of diseases due to emissions of particulate matter (PM); **IRP** : Human potential exposure efficiency relative to U235; **ETP-fw** : Comparative potential of toxic unit for ecosystems - freshwater; **HTP-c** : Comparative potential of toxic unit for ecosystems - carcinogenic effects; **HTP-nc** : Comparative potential of toxic unit for ecosystems - non-carcinogenic effects; **SQP** : Soil quality potential index; **NR:** Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

Notice 2: The results of this environmental impact indicator should be used with caution, as the uncertainties of the results are high and experience with this parameter is limited.

Resource usage

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	**MJ**	5,08E+01	4,65E+01	7,13E-01	NR	NR	NR	NR	NR	NR	NR	4,67E-01	3,10E+00	2,84E+00	8,80E+00	-1,12E+01
PERM	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	**MJ**	5,08E+01	4,65E+01	7,13E-01	NR	NR	NR	NR	NR	NR	NR	4,67E-01	3,10E+00	2,84E+00	8,80E+00	-1,12E+01
PENRE	**MJ**	9,92E+02	8,20E+02	5,87E+00	NR	NR	NR	NR	NR	NR	NR	8,23E+00	5,46E+01	3,55E+01	5,87E+01	-4.59E+01
PENRM	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	**MJ**	9,92E+02	8,20E+02	5,87E+00	NR	NR	NR	NR	NR	NR	NR	8,23E+00	5,46E+01	3,55E+01	5,87E+01	-4.59E+01
SM	**kg**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	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	NR	NR	NR	NR	NR	NR	NR	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	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	**m^3**	1,61E-01	5,26E-02	1.09E-03	NR	NR	NR	NR	NR	NR	NR	5.28E-04	3,50E-03	9.91E-03	1,49E-02	-6.42E-02

PERE : Use of renewable primary energy excluding renewable primary energy resources used as feedstock; **PERM:** Use of renewable primary energy used as raw material; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstock; **PENRM:** Use of non-renewable primary energy used as feedstock; **PENRT:** Total use of non-renewable primary energy; **SM:** Use of secondary materials; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of tap water resources; **NR:** Not relevant

Waste categories

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	**kg**	1,25E-08	3.93E-09	3.04E-10	NR	NR	NR	NR	NR	NR	NR	3.94E-11	2.62E-10	4.44E-10	3.02E-09	-5.06E-09
NHWD	**kg**	6.54E-01	1,18E-01	2,07E+01	NR	NR	NR	NR	NR	NR	NR	1,18E-03	7.83E-03	9.41E-03	3,00E+02	-1.78E-02
RWD	**kg**	1,24E-03	1.01E-03	5,29E-05	NR	NR	NR	NR	NR	NR	NR	1,01E-05	6,73E-05	4.67E-04	6.53E-04	-7.36E-04

HWD: Hazardous waste disposed of; **NHWD**: Non-hazardous waste disposed of **RWD**: Radioactive waste disposed of **NR:** Not relevant

Outflows

Parameter	Units	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	**kg**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	**kg**	3,39E-01	0,00E+00	5.79E-01	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	6,79E+02	0,00E+00	0,00E+00
MER	**kg**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
USA	**MJ**	0,00E+00	0,00E+00	0,00E+00	NR	NR	NR	NR	NR	NR	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU: Components for reuse; **MFR**: Materials for recycling **MER**: Materials for energy recovery **EE:** Energy exported;**NR:** Not relevant

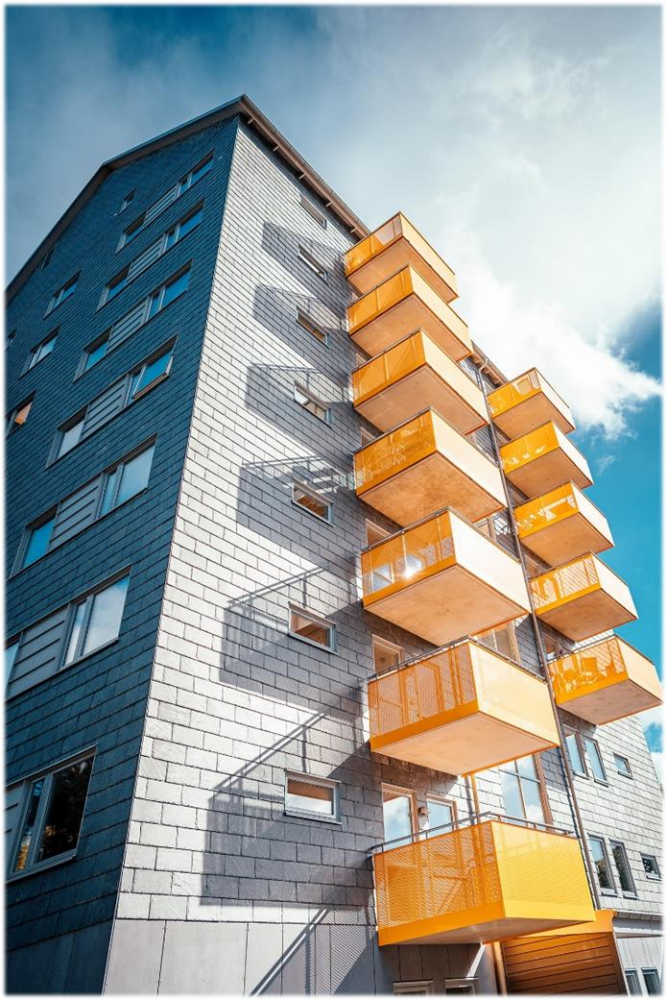
Information on biogenic carbon content

Biogenic carbon content	Units	Result per functional unit
Biogenic carbon content product - KgC	Kg C	0
Biogenic carbon content packaging - KgC	Kg C	6,40E-02

6. Additional Environmental Information.

Natural stone products are totally inert, do not undergo physical, chemical or biological transformations, are not soluble or combustible, do not react physically, chemically or otherwise, are not biodegradable, do not adversely affect other materials with which they come into contact, so that they may lead to pollution of the environment or harm human health. Therefore, they do not emit any compounds into soil or water during their useful life.
Natural stone products are free of volatile organic compounds that may be emitted in their use phase.

They are products that do not produce leaching so they do not pose a risk to the quality of surface or groundwater during its useful life.



References

[1] General Rules of the GlobalEPD Program, 2nd revision. AENOR. February 2016

[2] UNE-EN ISO 14025:2010 Environmental labels. Type III environmental declarations. Principles and procedures (ISO 14025:2006).

[3] Standard UNE-EN 15804:2012+A2:2020 Sustainability in construction. Environmental product declarations. Basic Product Category Rules for Construction Products

[4] Standard UNE-EN ISO 14040. Environmental Management. Life Cycle Assessment. Principles and frame of reference. 2006.

[5] Standard UNE-EN ISO 14044. Environmental Management. Life Cycle Assessment. Requirements and guidelines. 2006

[6] LCA report prepared by NOTIO-Technology Center, issued in July 2022.
.

Index

AENOR
Confía

GlobalEPD

A VERIFIED **ENVIRONMENTAL** DECLARATION