A NEW MILESTONE IN OUR SUSTAINABILITY JOURNEY

EPD for our entire natural stone slab production

We are proud to be among the first companies in our sector in Italy to obtain an **Environmental Product Declaration (EPD) covering our entire natural stone slab production.**

This is an important achievement for us, but above all, a **tangible tool for those who choose our materials.**

For years, we have **placed sustainability at the heart of our strategic growth**, turning commitments into measurable goals and results into transparent, verifiable data.

Achieving the EPD is another step in this direction.

We have adopted an approach that encompasses our entire production line because we believe that **sustainability should generate value across the whole the entire supply chain.**

For **designers, contractors, and partners**, this means being able to count on reliable environmental information that assists in material selection and provides concrete support for projects that must comply with **CAM and international protocols such as LEED and BREEAM.**

For us, this milestone is not a final destination, but another step on the journey that defines our commitment as a sustainable company that respects people, the environment, and communities.

Francesco Corradini e **Cristina Corradini**
President and CEO



> *"This is an important achievement for us, but above all, a tangible tool for those who choose our materials."*

Environmental Product Declaration

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

Natural stone slab

from

Marmi Corradini Group S.p.a.

EPD of multiple products, based on the average results of the product group
The complete list of products can be found in the Product Information section

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0028533:001
Publication date:	2026-03-23
Valid until:	2031-03-22
	An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com.



General information

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

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *Construction products, 2019:14, version 2.0.1*
PCR review was conducted by: Rob Rouwette (chair), Noa Meron (co-chair). The Technical Committee of the International EPD System. The review panel may be contacted via support@environdec.com.

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: x **Individual EPD verification without a pre-verified LCA/EPD tool** *Third party verifier: Bureau Veritas Italia Spa* Accredited by: Accredia with accreditation number, V/V 00031
Procedure for follow-up of data during EPD validity involves third party verifier: • X Yes ☐ No

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

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

factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Marmi Corradini Group S.p.a., Via Enrico Fermi, 2 - Cavaion Veronese (VR) - Italy
Contact: Carlo Zandaval, Ufficio amministrativo - carlo@marmicorradini.it
Francesca Marconi, Ufficio amministrativo - francesca@marmicorradini.it
tel. +39 045/8536421 Tel . +39 045/6269455
Description of the organisation: Marmi Corradini Group S.p.A. is an Italian company with over 50 years of experience in the processing and marketing of natural stone. From the selection of raw materials to production and distribution, the entire process is managed in-house with a focus on quality and innovation. The group is made up of an international team of specialists and offers tailor-made solutions for each national market. Marmi Corradini products are available in several European countries, supported by branches in Germany and Poland. Since 2010, the company has invested in sustainability and advanced technologies, becoming a benchmark in the stone industry for design, functionality, and environmental responsibility.
Product-related or management system-related certifications:
SI Rating
ISO 9001
ISO 14064
ISO 14001
ISO 45001
LCA Practitioner: Up2You Srl https://www.u2y.io/
Up2You is a certified benefit corporation and B Corp that transforms sustainability into a competitive advantage for companies. We do this through customised solutions and ESG strategies to manage sustainability at 360° with proprietary and innovative technologies and the advice of a highly competent team.
Name and location of production site(s):
Marmi Corradini Group S.p.a.
Via Enrico Fermi, 2 - 37010 - Cavaion Veronese (VR) - Italy

Product information

EPD type: This Environmental Product Declaration (EPD) is a single-company, product group EPD that covers a group of natural stone slabs. The product group includes the following: granite, marble/limestone, quartzite, travertine. These products differ in hardness, raw materials, and some processes.

In accordance with the applicable Product Category Rules (PCR), the environmental impacts of this product group are declared using average results of the product group, weighted based on the production volumes of the included models.

Product name: Natural stone slab representative of the following list of submaterials:

- Astoria
- Belvedere
- Bianco Carrara
- Bianco Carrara CD
- Bianco Cristallo
- Bianco Iberico / Bianco Dolomiti
- Bianco Sardo

- Bianco Tarn
- Botticino Classico
- Chambolle / Gascogne / Moleanos
- Colonial Ivory
- Colonial White
- Galaxy Star / Galaxy Black
- Grigio Aveiro / Alma Grey
- Lundhs
- Nero Angola
- Nero Assoluto Extra
- Nero Assoluto Memorial
- Nero Assoluto Zimbawe
- Nero Impala
- Nero Pretoria
- Pietra dei Medici
- Rosa Beta
- Rosa Porrino
- Rosso Multicolor
- San Sebastian / Crema Avorio
- Serizzo
- Steel Grey
- Taj Mahal
- Tan Brown
- Titanium / Cosmic Gold
- Travertino Romano Classico
- Travertino Titanium
- Verde Lapponia
- Via Lattea
- Viscont Whit

Product identification: Natural stone slab (marble/limestone, granite, quartzite, or travertine)
Product description: Natural stone slab made of different types of marble/limestone, granite, quartzite, or travertine, designed for interior and exterior applications such as flooring, cladding, countertops, and facades. It provides high durability, resistance to wear, and aesthetic value. With proper installation and maintenance, the expected service life exceeds 50 years. The slabs are sold to other manufacturing companies for further processing.
The main processes of manufacturing include:

- the quarrying and extraction of raw stone blocks. This stage also includes the sourcing and production of any secondary input materials used in following processes.
- Transport of all raw stone and auxiliary materials from the extraction sites to the main production hub.
- Final transformation at the production site located in Via Enrico Fermi 2, Cavaion Veronese. This stage includes:
    - Slab sawing
    - Surface finishing (polishing, honing).
    - Resining, which consists in the application of resin and the drying of it in an electric oven.
    - Flaming, which is the only process conducted by a supplier.

Natural stone slabs (granite, marble, quartzite, and travertine) provide high durability and resistance, with technical performance aligned with EN 1467 and related construction standards. Among the functional characteristics:

- Versatile finishes; available in polished, honed, satin, and patinated surfaces.
- Durability: high mechanical strength and resistance to UV radiation, thermal cycles, and atmospheric agents.
- Safety and hygiene: adaptable slip-resistance levels and surfaces suitable for food contact (kitchen tops).

The product is designed for both residential and commercial building sectors, specifically for:

- Kitchen and bathroom surfaces: production of high-performance kitchen countertops and vanity tops (polished, honed, or textured).
- Interior and exterior flooring: durable solutions for high-traffic areas, including custom staircases and paving.
- Wall cladding: both interior decorative linings and specialized exterior facade cladding (ventilated or bonded systems).
- Urban design: suitable for outdoor architectural elements requiring resistance to freeze-thaw cycles and chemical pollutants.

UN CPC code: 15120 Marble and other calcareous monumental or building stone
15130 Granite, sandstone and other monumental or building stone
Location of the manufacturing site: Via Enrico Fermi, 2 - 37010 - Cavaion Veronese (VR) - Italy
References to any relevant websites for more information or explanatory materials, if applicable.
https://www.corradinigroup.it/magazzino-online/

Content declaration

The mass (weight) of one unit of a product, as purchased or per declared unit: The net weight of the declared unit is 56.0474 kg.

- Content of the product in the form of a list of materials and substances, and their mass:

Product components	Weight, kg	Post-consumer recycled material, weight-% of product	Biogenic material, weight-% and kg C/kg
Granite	52.5551	0	0
Marble/limestone	0.8551	0	0
Quartzite	2.5122	0	0
Travertine	0.125	0	0

TOTAL	56.0474	0	0

- The mass and the content of distribution and/or consumer packaging:

Packaging materials	Weight, kg	Weight-% (versus the product)	Biogenic material, , kg C/product or declared unit
Nylon	0.07170	0.001%	0
Total	0.07170	0.001%	0

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
This product does not contain substances which exceed the limits for registration at the European Chemicals Agency regarding the Candidate List of Substances of Very High Concern for authorization.			

LCA information

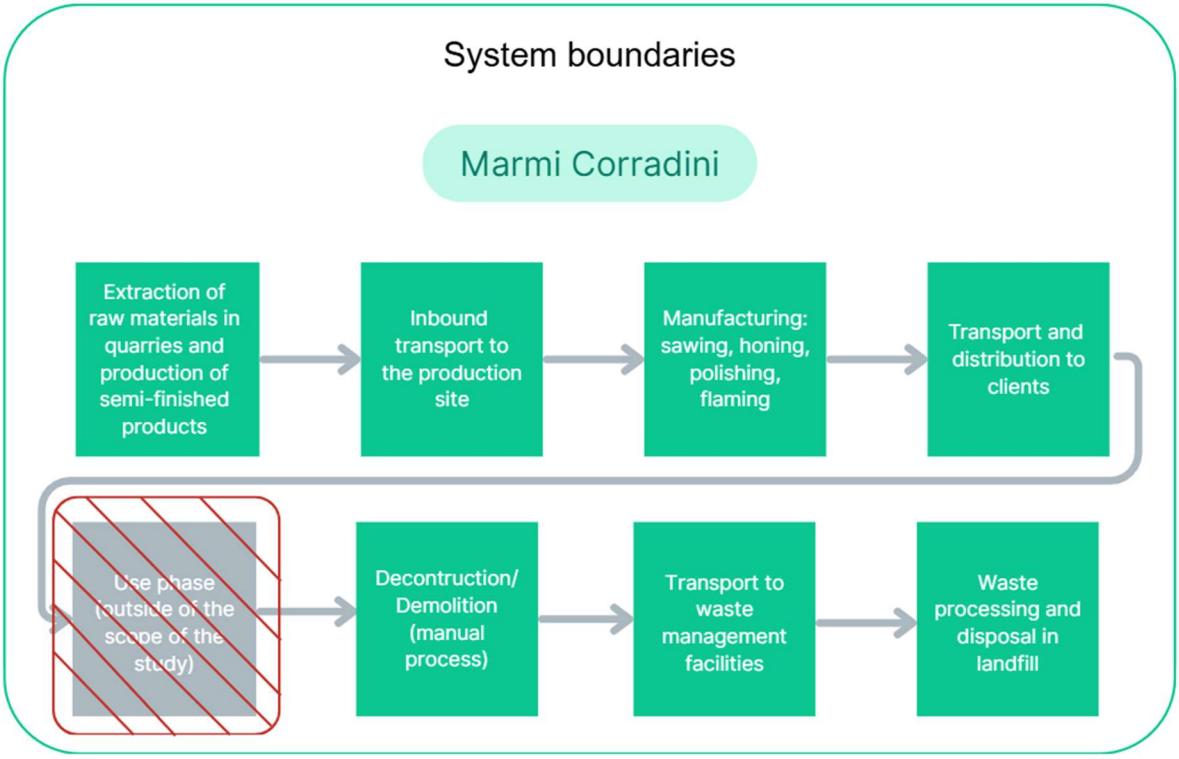
Declared unit: One m² of natural stone slab, 2 cm thick and weighing 56.0474 kg
Reference service life: not relevant
Time representativeness: Technical data sheet of 2024
Geographical scope:
A1-A2 and A4: Global
A3: Italy
C1-C4 and D: Europe
Database(s) and LCA software used: Ecoinvent 3.8 - SimaPro 9.5.0.2
Description of system boundaries:
Cradle to gate with options, modules C1-C4, module D and with optional modules (A4)

The system boundaries include:

- Raw material supply (A1): extraction of raw materials from quarries and processing of secondary materials used as inputs used to produce the slab. This module also includes the production of raw materials for a multitude of purposes: the packaging used inside the perimeter of the company, the wires used for sawing the stone blocks, the abrasive discs used for polishing the slabs, the resin used during the cooking of slabs.
- Transport (A2): transport of blocks and semi-finished products from suppliers to the production site. According to the purchase volume of the respective suppliers, this module includes transportation by ship and truck of raw materials and semi-finished products.
- Manufacturing (A3): the production of the stone slabs is represented by the sawing of blocks and the polishing, sanding and flaming treatments. This phase includes the fuel and electricity consumed in the manufacturing of the product, the transportation of the slabs to flaming of a percentage of them that is done by a supplier and the treatment of waste generated.
- Downstream transport (A4): transport of natural stone slabs from Marmi Corradini to clients. These clients are not the final consumers but other companies that further process the slabs, transforming them into a multitude of products. The slabs are sold worldwide and include transportation by truck and ship.
- Deconstruction/demolition (C1): process done manually. The slab is no longer a single product but underwent further processing. This was done by the purchasers of the slabs.

- Transportation to waste management facilities (C2): transportation of products in which the slab was transformed to facilities for waste processing and disposal.
- Waste processing (C3): the most common scenario for waste disposal of the natural stone slab is landfill. No waste processing is required.
- Waste disposal (C4): the products in which the natural stone slab was transformed into are sent to landfills.
- Benefits and loads beyond the system boundary (D): since the scenario modeled is 100% landfill this phase is not significant.

Process flow diagram: Process flow diagram of the product system, divided into the life-cycle stages and modules (or other division of the product life cycle, if defined in the PCR), showing the main processes included and the system boundary of the LCA.



More information:
All hypothesis and estimates are discussed as follows:

Reference	Assumption/Scenario
Declared unit	The natural stone slab, in its composition, was modeled based on the total production of quartzite, granite, marble/limestone and travertine in a year by the company. Based on that data the percentages of materials are as follows: - 93.77% made of granite; - 1.53% made of marble/limestone; - 4.48% made of quartzite; - 0.22% made of travertine.

	The declared unit of 1 sq. meter of natural stone slab is 2 cm thick (most common slabs produced by Marmi Corradini and same thickness as found in other EPDs)
A1 - Raw materials	- The weight of 1 sq meter of quartzite was estimated using the data available for granite - From the raw materials' technical sheets data about toughness was taken into account in order to carry out the analysis. Materials with a similar toughness level (marble//limestone with travertine and granite with quartzite) were supposed to be equivalent in terms of environmental impacts generated by the extraction activity - Due to the absence of specific characterization factors for marble/travertine in the SimaPro databases, limestone was adopted as a proxy dataset. This choice is justified by the mineralogical analogy (prevalence of calcium carbonate). - For the wires used for cutting down the slabs from blocks the primary material and the primary process of production were included to accurately represent their impact.
A3 - Manufacturing	- Data for flaming was estimated using the technical characteristics of Flamestone FL 2200 by Waterjet Corp (https://www.waterjetcorp.com/prodotto/e-flamestone/) since it's a process done by a supplier and Marmi Corradini couldn't gather the primary data

Allocation procedures: in accordance with EN 15804 standards, allocation has been applied based on the total production volume recorded during the 2024 fiscal year. The allocation of primary input flows, including electricity consumption, water usage, and auxiliary materials, was carried out based on the total square footage (m²) of slabs produced and sold internally. This specifically refers to the output of the primary transformation stage, where raw blocks are processed into slabs using multi-wire and single-wire sawing technology. To ensure the LCA model accurately reflects the environmental profile of the company's diverse portfolio, a weighted average approach was adopted. The calculation model is based on the proportional sales and production data of four macro-material categories: granite, marble, quartzite, and travertine. By calculating the weighted average of the square footage produced in 2024 for these materials (sourced globally from Europe, Africa, Asia, and South America), a single representative square meter of natural stone slab (2 cm thick) was defined. This representative unit serves as the basis for all impact category calculations within this EPD.

Electricity modelling and allocation

The electricity used in the manufacturing process (Module A3) and other processes under the operational control of the EPD owner is a mix of grid-purchased power and on-site renewable generation.

The electricity purchased from the national grid is modelled using the Italian consumption mix as a proxy for the market-based approach, as no specific contractual instruments (e.g., Guarantees of Origin) were applied to this share:

- Data Source: Ecoinvent 3.9.1 database, dataset: *"Electricity, medium voltage {IT}| market for electricity, residual mix | Cut-off, U"*.
- Reference Year: 2022 (matching the latest available representative data).
- Energy Source: Italian national grid mix (fossil, nuclear, and renewable sources).
- Climate impact: the climate impact for this mix is 0.619 kg CO2 eq./kWh, expressed using the GWP-GHG indicator.

A portion of the electricity consumed in A3 is produced by the facility's on-site photovoltaic system.

- Data Source: Ecoinvent 3.9.1, dataset: *"Electricity, low voltage {IT}| electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted | Cut-off, U"*.
- Contractual Instruments: no Guarantees of Origin (GO) or other contractual instruments for this internally generated electricity have been sold to third parties.
- Infrastructure Inclusion: in compliance with PCR Section 4.3.6, the impacts of the powerplant construction (infrastructure) are included in this dataset.
- Climate Impact: the climate impact for the PV production is 0.0722 kg CO2 eq./kWh (GWP-GHG).

For the purpose of allocating the correct amount of electricity for all processes, data was extrapolated from a business management software with information about most machineries:

- for the polishing/honing machine and the electric oven used for resining data shows that the average slab undergoes both processes two times.
- For multiwire sawing machines data for total square meters produced is available in the software.
- For the monowire sawing machine, overhead and normal cranes, and warehouse lighting no data was available in the software. To derive the electricity consumption from these sources a calculation was made of the difference between total electricity consumption of the production site and total electricity consumption of all machineries registered in the business management software (including those used in the section of the production site that produces different products than slabs, which is outside of the scope of the study).
- Finally, for the renewable energy produced by the solar panels present on site the total amount of energy consumed was known and it was allocated to the total 2024 production.

Water allocation

All process water is sourced from a private well extracting from the groundwater table. The total volume withdrawn in 2024 was allocated to the declared unit based on the total internal production. The facility operates a closed-loop recovery system to optimize resource efficiency: water used in multi-wire and single-wire sawing is continuously collected and reused; at the same time, the filter-press unit extracts water from the sawing slurry, which is then filtered and reintegrated into the production cycle.

Waste allocation procedures in A3

In accordance with EN 15804 and the polluter-pays principle, no co-product allocation was applied during the manufacturing stage, as the primary transformation process yields only the declared product and waste streams with no market value. The allocation procedures for waste generated during the sawing phase are managed as follows:

- the primary waste generated in A3 consists of sawing sludge (suspended stone particles). This material is categorized as non-hazardous waste and does not meet the criteria for a co-product.
- The total amount of sludge produced by the facility in 2024 was quantified and allocated to the declared unit based on a physical relationship.
- The environmental impacts associated with the treatment of this waste, comprised of transportation to waste treatment facility and disposal in sanitary landfill for inert waste, are fully accounted for.

Characterization methods:

- For the core environmental impact indicators and for the additional voluntary indicator that is GWP-GHG the characterization method used is EN 15804 - EF 3.1 reference package.
- For resource use indicators, in particular the PERE and PENRE indicators, the characterization method used is Cumulative Energy Demand (LHV) V1.00. For PERM and PENRM calculations were performed using the lower heating values of materials used in all phases.
- For the indicator of use of net fresh water the characterization method used is Selected LCI results, additional V1.05.
- For other environmental indicators regarding waste the characterization method EDIP 2003 V1.07 / Default was used.

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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	GLO	GLO	IT	GLO									EU	EU	EU	EU	EU
Specific data used	58.7% for GWP in A1-A3					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	GWP-GHG in A1-A3 +8.95% / -26.00%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0% all in one site					-	-	-	-	-	-	-	-	-	-	-	-

Variation of core impact indicators:

Impact indicator	Best case variation above 10%	Worst case variation above 10%
GWP-fossil	-25.97%	
GWP-biogenic	-43.02%	
GWP-luluc	-136.21%	
GWP-total	-26.00%	
ODP	61.88%	113.03%
AP	-101.19%	24.37%
EP-freshwater	-54.73%	
EP-marine	-84.65%	32.14%
EP-terrestrial	-83.72%	32.12%
POCP	-83.90%	21.42%
ADP-minerals&metals*	-97.05%	-21.20%
ADP-fossil*	-50.02%	13.50%
WDP*	-16.53%	

Data quality assessment: the data collection phase was carried out between March and June 2025 using an online questionnaire completed by Marmi Corradini project representatives. The data collected referred to 2024 production volumes.

In accordance with EN 15804:2021 and PCR 2019:14, a data quality assessment was performed on the datasets that contribute to the environmental profile of the natural stone slab. The quality was evaluated using the Data Quality Rating (DQR) based on four criteria:

- TiR (Time Representativeness): age of the data; primary data refers to the 2024 fiscal year.
- TeR (Technological Representativeness): degree to which the data reflects the actual technology used in production.
- GeR (Geographical Representativeness): degree to which the data reflects the specific geography (e.g., Italy, Europe, or Global/ROW).
- P (Precision): measure of the variability and completeness of the data used.

Each criteria uses a numerical scale from 1 to 5, based on the quality of the dataset:

- 1: excellent

- 2: very good
- 3: good
- 4: fair
- 5: poor

Process (Dataset Name)	Data Classification	Source & Reference Year	TiR	TeR	GeR	P	DQR
Marble/Travertine Extraction	Proxy / Secondary	Ecoinvent v3.10 (2024)	1	3	2	3	**2.25**
Granite/Quartzite Extraction	Secondary	Ecoinvent v3.10 (2024)	1	2	3	3	**2.25**
Electricity (Italian Grid Mix)	Secondary	Ecoinvent v3.9.1 (2022)	2	1	1	2	**1.50**
Electricity (On-site PV)	Primary	Company Monitoring (2024)	1	1	1	1	**1.00**
Manufacturing Processes (A3)	Primary	Company Monitoring (2024)	1	1	1	2	**1.25**
External Flaming Process	Proxy / Secondary	Technical Specs (2025)	1	3	2	3	**2.25**
Upstream Transport (A2)	Primary	Company Records (2024)	1	1	1	2	**1.25**
Downstream Transport (A4)	Primary	Company Records (2024)	1	1	1	1	**1.00**
End-of-Life (C1-C4)	Proxy / Secondary	NSI Literature (2022)	2	3	3	4	**3.00**

The overall data quality level is very good to excellent, with only the end-of-life dataset which is good.

As required by the regulatory framework, the use of proxy data for the assessment is justified below:

- marble and travertine (extraction): due to the absence of specific characterization factors for marble or travertine in the SimaPro databases, limestone was adopted as a proxy dataset.

This choice is justified by the mineralogical analogy and the prevalence of calcium carbonate in both materials.

- Quartzite (extraction): granite was selected as a proxy for quartzite. The mechanical properties, specifically hardness and toughness, are similar between the two stones, leading to a comparable energy consumption profile during the extraction phase.
- Geographical representativeness (granite/quartzite): for materials extracted outside of Europe (Asia, Africa, South America), the dataset "Granite [ROW]" was used. This is justified by the lack of more specific regional characterization factors in the available databases.
- External surface finishing (flaming): in the absence of primary data from the third-party supplier, energy and fuel consumption (propane/electricity) were estimated based on the technical specifications of the Flamestone FL 2200 machinery, which is a standard equipment used by major market operators.
- End-of-life scenario (C1-C4): since the company does not track the further processing or final disposal of the slabs once they leave the factory, an end-of-life scenario was hypothesized based on literature from the US Natural Stone Institute (NSI).

The share of primary data used in the phases A1-A3 is equal to 58,7%. Below is a table with the processes included in phases A1-A3 and the share of primary data.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Raw material extraction	Collected data	Ecoinvent v3.10	2024	Secondary data	0%
Semi finished products	Collected data	Ecoinvent v3.10	2024	Secondary data	0%
Electricity used in manufacturing	Collected data	Ecoinvent v3.10	2024	Primary data	29.9%
Manufacturing processes conducted externally	Database	Ecoinvent v3.10	2024	Secondary data	0%
Transport of raw materials to manufacturing site	Collected data	Ecoinvent v3.10	2024	Primary data	28.8%
Other processes	Collected data and database	Ecoinvent v3.10	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					58.7%

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	4.75E+01	3.69E+00	0.00E+00	8.44E-01	0.00E+00	6.57E-01	0.00E+00
GWP-biogenic	kg CO_2 eq.	3.81E-02	3.22E-04	0.00E+00	2.68E-04	0.00E+00	1.86E-03	0.00E+00
GWP-luluc	kg CO_2 eq.	1.20E-02	2.29E-04	0.00E+00	4.10E-04	0.00E+00	4.78E-04	0.00E+00
GWP-total	kg CO_2 eq.	4.75E+01	3.69E+00	0.00E+00	8.45E-01	0.00E+00	6.61E-01	0.00E+00
ODP	kg CFC 11 eq.	6.37E-07	8.20E-07	0.00E+00	1.84E-08	0.00E+00	1.54E-08	0.00E+00
AP	mol H^+ eq.	2.10E-01	2.21E-02	0.00E+00	2.75E-03	0.00E+00	4.67E-03	0.00E+00
EP-freshwater	kg P eq.	3.60E-04	4.59E-06	0.00E+00	6.75E-06	0.00E+00	9.44E-06	0.00E+00
EP-marine	kg N eq.	5.05E-02	8.97E-03	0.00E+00	9.36E-04	0.00E+00	1.73E-03	0.00E+00
EP-terrestrial	mol N eq.	5.63E-01	9.84E-02	0.00E+00	1.00E-02	0.00E+00	1.87E-02	0.00E+00
POCP	kg NMVOC eq.	1.89E-01	2.48E-02	0.00E+00	4.11E-03	0.00E+00	6.32E-03	0.00E+00
ADP-minerals&metals[1]	kg Sb eq.	5.78E-05	6.73E-07	0.00E+00	2.71E-06	0.00E+00	1.33E-06	0.00E+00
ADP-fossil[1]	MJ	3.92E+02	5.12E+01	0.00E+00	1.20E+01	0.00E+00	1.42E+01	0.00E+00
WDP[1]	m^3	9.93E+00	2.44E-02	0.00E+00	4.88E-02	0.00E+00	6.02E-01	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption							

1 The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.
The estimated impact results are only relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
PM	diseas inc.	1.27E-06	9.03E-08	0.00E+00	6.69E-08	0.00E+00	1.00E-07	0.00E+00
IRP[2]	kBq U235 eq.	4.76E-01	2.21E-01	0.00E+00	6.00E-03	0.00E+00	7.36E-03	0.00E+00
ETP-fw[1]	CTUe	1.65E+02	1.43E+01	0.00E+00	5.91E+00	0.00E+00	6.23E+00	0.00E+00
HTP-c[1]	CTUh	1.26E-08	3.98E-10	0.00E+00	3.83E-10	0.00E+00	3.67E-10	0.00E+00
HTP-nc[1]	CTUh	9.12E-07	1.06E-08	0.00E+00	8.43E-09	0.00E+00	4.11E-09	0.00E+00
SQP[1]	adimensional	4.24E+02	6.28E+00	0.00E+00	7.13E+00	0.00E+00	3.25E+01	0.00E+00

1 The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.
The estimated impact results are only relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.
2 This impact category is primarily concerned with the possible impact of a low dose/amount of ionizing radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure, or related to disposal of radioactive waste in underground facilities. This indicator also does not consider potential ionizing radiation from soil, radon, or some construction materials.

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	4.75E+01	3.69E+00	0.00E+00	8.45E-01	0.00E+00	6.61E-01	0.00E+00
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017								

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Resource use indicators

Results per functional or declared unit

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	1.11E+01	1.34E-01	0.00E+00	1.85E-01	0.00E+00	2.45E-01	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.11E+01	1.34E-01	0.00E+00	1.85E-01	0.00E+00	2.45E-01	0.00E+00
PENRE	MJ	5.14E+02	5.11E+01	0.00E+00	1.20E+01	0.00E+00	1.42E+01	0.00E+00
PENRM	MJ	3.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.46E+02	5.11E+01	0.00E+00	1.20E+01	0.00E+00	1.42E+01	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.55E-01	1.27E-03	0.00E+00	1.71E-03	0.00E+00	1.47E-02	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water							

Waste indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	6.70E-03	9.63E-04	0.00E+00	2.96E-04	0.00E+00	3.54E-04	0.00E+00
Non-hazardous waste disposed	kg	1.03E+02	2.59E-02	0.00E+00	5.85E-01	0.00E+00	5.62E+01	0.00E+00
Radioactive waste disposed	kg	3.37E-04	3.63E-04	0.00E+00	3.89E-06	0.00E+00	4.52E-06	0.00E+00

Output flow indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

The result tables shall only contain values or the letters “ND” (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.

ABBREVIATIONS

Abbreviation	**Definition**
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
SVHC	Substances of Very High Concern
ND	Not Declared
Environmental Impact Indicators (EN 15804)	
GHG	Greenhouse Gas
GWP	Global Warming Potential (kg CO_2 eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO_2 eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO_2 eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO_2 eq.)
GWP-total	Total Global Warming Potential (kg CO_2 eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO_2 eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H^+ eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)

ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m³)
Resource Use Indicators	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NSRF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m³)
Waste Indicators	
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
Output Flow Indicators	
CR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)

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VERSION HISTORY

Original Version of the EPD, 2026-03-23

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