Environmental Product Declaration

of multiple products, based on the average results of product group.
A detailed list of products can be found in the product identification section on page 5.
In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Natural Stone Product

from

Xiamen YK Stone Co., Ltd.

YK-STONE

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0024977: 001
Version date:	2026-02-05
Validity date:	2031-02-04

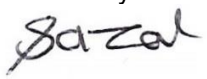
An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

GENERAL INFORMATION

Programme Information		Product Category Rules (PCR)
Programme:	The International EPD® System	**CEN standard EN 15804 serves as the Core Product Category Rules (PCR)**
Address:	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden.	**Product Category Rules (PCR):** *PCR 2019.14 Construction Products, version 2.0.1.*
Website:	www.environdec.com	**PCR review was conducted by:** *The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com.*
E-mail:	support@environdec.com	**Chair of the PCR review:** *Rob Rouwette (chair), Noa Meron (co-chair). 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:
☒ **Individual EPD verification without a pre-verified LCA/EPD tool**
Third-party verifier: *Sazal Kundu, Edge Impact Greenhouse, Level 3, 180 George Street, Sydney NSW 2000, Australia, sazal.kundu@edgeimpact.global.*
Approved by: International EPD System

Signature of verifier: 

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

☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); 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:

Xiamen YK Stone Co., Ltd.

Address:

801-15 Longhushan Road, Siming District, Xiamen City, Fujian Province, P.R. China.

Production address:

Maxiang Town, Xiang'an District, Xiamen City, Fujian Province, P.R. China.

Taocun Town, Qixia City, Yantai City, Shandong Province, P.R. China.

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LCA Practioner: *Qian Guan (qian.guan@tuv.com) and Anna Zhao (*anna.zhao@tuv.com*). TÜV Rheinland (Shanghai) Co., Ltd. Lane 777, West Guangzhong Road, Jingan District, Shanghai, P.R. China.*

Description of the organisation: *Xiamen YK Stone Company is China's stone industry professional manufacturer. The company exports a large number of granites, marble, plate, building stone, tombstone, carving, and other special-shaped processing products around the world. We have a good product range and a professional team. The company has developed rapidly and provides customers with quality products, good technical support, and sound after-sales service. Our products are mainly sold to Europe, Japan, the United States, Australia, Southeast Asian countries, and China. After years of operation, YK has established trade cooperation relations with some international stone dealers. In recent years, the company has undertaken a number of buildings, plaza, and large and medium-sized construction material supply projects.*

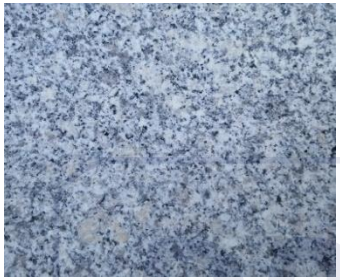
PRODUCT INFORMATION

Product name: *Natural stone product.*

Visual representation of the product:

Figure 1 Pictures of the product.

G654



G623

G375

G363

G352

G302

UN CPC code: *376, Monumental or building stone and articles thereof.*

Product identification: *The types of raw materials and the production process of the included products are almost the same. The only difference is that, due to the different quarry locations of the products, the density of each product varies. The details of the included products in this study are shown below.*

Table 1 The details of the included products in this study.

Group	Product series	Density (tonne/m³)	Dimension	
Xiamen	G654	2.8	60 cm *60 cm *3.0 cm 9.0 cm *9.0 cm *5.0 cm 9.0 cm *9.0 cm *8.0 cm	100 cm *20 cm *7.0 cm 100 cm *28 cm *10 cm 100 cm *35 cm *15 cm
	G623	2.6		
Yantai	G375	2.7	60 cm *60 cm *3.0 cm 100 cm *40 cm *8.0 cm 100 cm *40 cm *12 cm 100 cm *40 cm *15 cm 9.0 cm *9.0 cm *5.0 cm	9.0 cm *9.0 cm *8.0 cm 100 cm *25 cm *12 cm 100 cm *30 cm *15 cm 100 cm *60 cm *20 cm 100 cm *20 cm *8.0 cm
	G363	2.6		
	G352	2.7		
	G302	2.8		

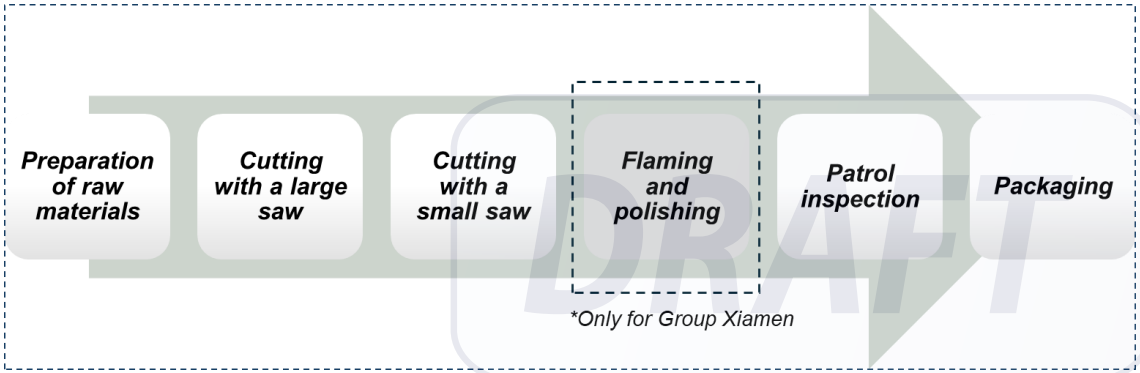
Product description: *Natural stone product is pure granite stone. Granite is an igneous rock composed primarily of minerals such as quartz, feldspar, and mica. These minerals not only give granite its distinctive appearance but also enhance its hardness and durability. The high density of granite contributes to excellent wear resistance, making it durable for high-traffic areas. With a low water absorption rate, granite effectively resists water penetration, offering superior waterproofing capabilities. It is highly resistant to weathering and erosion, maintaining its appearance and structural integrity even when exposed to harsh environmental conditions. Additionally, granite boasts remarkable compressive strength, which means it is very unlikely to crack or deform under pressure. The low maintenance requirements of granite, combined with its long lifespan, make it a cost-effective and practical option for many construction and decorative projects. Overall, granite's combination of natural beauty and exceptional durability has made it a classic and reliable material in the building and design industries.*

Production process:

- *Preparation of raw materials: Blocks of row stone are purchased from a third-party supplier.*
- *Cutting with a large saw: The raw stone blocks are cut into slabs using a large saw.*

- *Cutting with a small saw: The slabs are cut into blocks using a small saw to obtain the finished product.*
- *Flaming and polishing (only for Group Xiamen): A portion of cut slabs requires flaming and polishing. If they fail inspection, they are sent back to the cutting process.*
- *Patrol inspection (appearance and workmanship check): The processed slabs are inspected for appearance and workmanship. Those that fail are either scrapped or reworked.*
- *Packaging: Qualified finished products are packaged.*

Figure 2 Production process.



CONTENT DECLARATION

The declared content corresponds to the average results. The calculation of this average considers the production volumes of the included product groups.

Table 2 Average content declaration of product.

Product components	Weight, kg	Post-consumer material, weight - %	Biogenic material, weight - % of product	Biogenic material, kg C/DU
Quarry stone	1.0E+03	0.0E+00	0.0E+00	0.0E+00
Total	1.0E+03	0.0E+00	0.0E+00	0.0E+00

Table 3 Average content declaration for packaging.

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Wood case	7.1E+00	0.7%	3.2E+00
PET tie	2.0E+00	0.2%	0.0E+00
Iron wire	2.7E+00	0.3%	0.0E+00
LDPE Film	9.9E-02	0.0%	0.0E+00
Total	1.2E+01	1.2%	3.2E+00

Table 4 The range of content declaration of product.

Product components	*Weight, kg*	*Post-consumer material, weight -%*	*Biogenic material, weight -% of product*	*Biogenic material, kg C/DU*
Quarry stone	*1.0E+03*	*0.0E+00*	*0.0E+00*	*0.0E+00*
Total	*1.0E+03*	*0.0E+00*	*0.0E+00*	*0.0E+00*

Table 5 The range of content declaration for packaging.

Packaging materials	*Weight, kg*	*Weight-% (versus the product)*	*Weight biogenic carbon, kg C/DU*
Wood case	*5.3E+00 - 1.4E+01*	*0.50% -1.4%*	*2.4E+00 – 6.5E+00*
PET tie	*2.0E+00*	*0.20%*	*0.0E+00*
Iron wire	*0.0E+00 - 3.3E+00*	*0.0% - 0.30%*	*0.0E+00*
LDPE Film	*0.0E+00 - 5.0E-01*	*0.0% - 0.10%*	*0.0E+00*
Total	*1.1E+01 - 1.7E+01*	*1.1% -1.7%*	*2.4E+00 – 6.5E+00*

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

The product does not exceed 0.10% of the weight of the product for any dangerous substances from the candidate list of SVHC for Authorization.

LCA INFORMATION

Declared unit: *1 000 kg of the natural stone product.*

Product lifespan: *According to the Natural Stone Institute, choosing and installing granite countertops, flooring, or cladding generally results in a product that can last at least 100 years in many cases, and in most cases, endure for the entire lifetime of the building. Thus, in this study, taking into account both the information from the Natural Stone Institute and the specific advice of YK, the product lifespan of the natural stone product is set at 100 years.*

Declared results of multiple products: *In this study, products are grouped by production site. Within each production site, the manufacturing processes are essentially identical. Differences between products from the same site arise only from the raw materials, which are sourced from different quarries and lead to variations in product density. The transport distance of quarry stone from warehouse to plant is therefore calculated as a weighted average based on the actual procurement mix from each warehouse, providing a more accurate representation of logistics.*

In this LCA EPD report, the average results for each indicator of two groups included are presented. The calculation of this average considers the production volumes of each group.

Table 6 The proportion of production volume of each product group.

Group	Products series	Proportion
Xiamen	G623 / G654	20%
Yantai	G375 / G363 / G352/ G302	80%

Time representativeness: *The time reference is 2024 (01 January 2024 to 31 December 2024).*

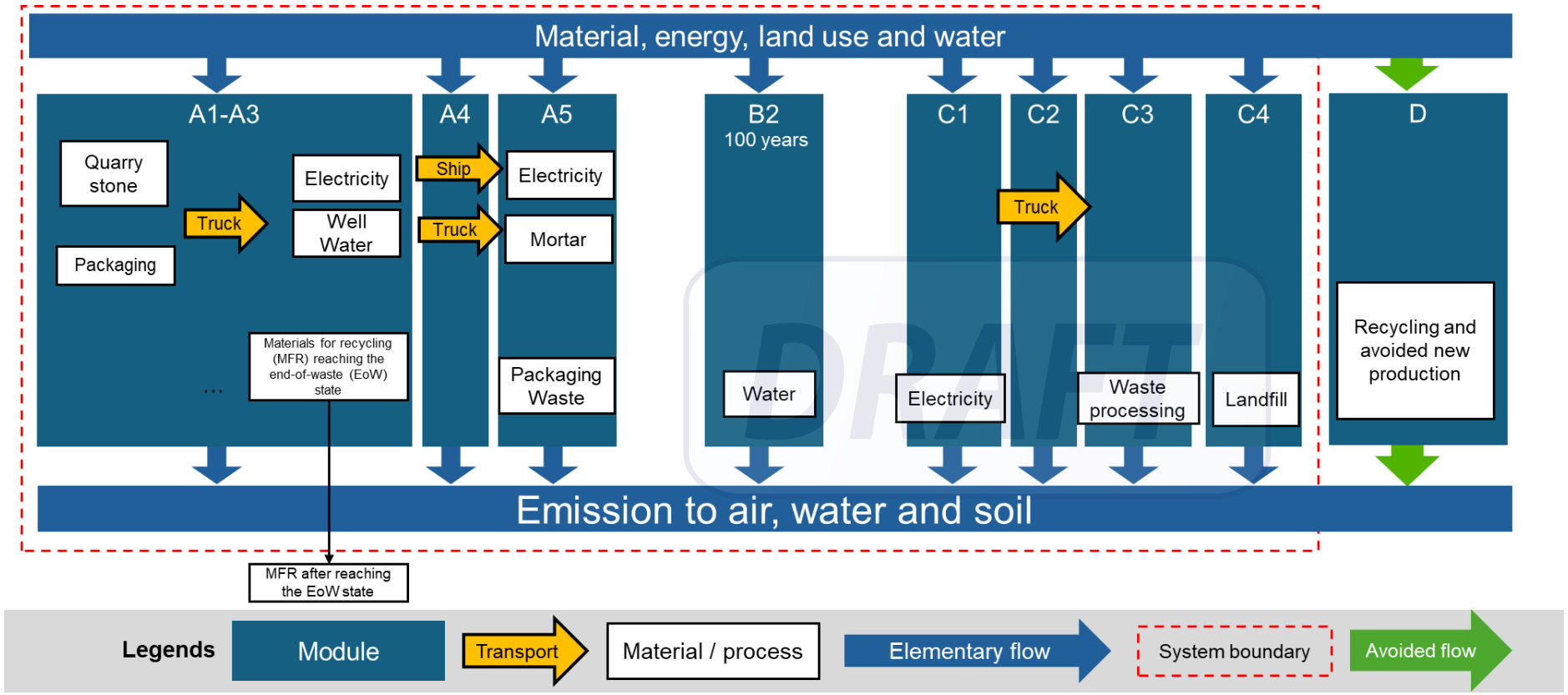
Geographical scope: *China (A1-A3) + Europe (A4-A5, B2, C, D).*

Database(s) and LCA software used: *ecoinvent 3.11 EN15804 database and Simapro 10.2.*

Description of system boundaries: *The system boundary applied in this report is cradle-to-gate with optional modules, covering modules A1-A3, modules A4-A5, module B2, module C and module D. Other modules from stage (B) were not assessed because there are no significant energy or resource used and so they were excluded from the system boundaries.*

Process flow diagram:

Figure 3 System boundary.



More information:

Allocation: *In a process step where more than one type of product is generated, it is necessary to allocate the environmental stressors (inputs and outputs) from the process to the different products (declared outputs) in order to get product-based inventory data instead of process-based data. An allocation problem also occurs for multi-input processes. In an allocation procedure, the sum of the allocated inputs and outputs to the products shall be equal to the unallocated inputs and outputs of the unit process.*

The following stepwise allocation principles shall be applied for multi-input/output allocations:

- *The initial allocation step includes dividing up the system sub-processes and collecting the input and output data related to these sub-processes.*
- *The first (preferably) allocation procedure step for each sub-process is to partition the inputs and outputs of the system into their different products in a way that reflects the underlying physical relationships between them.*
- *The second (worst case) allocation procedure step is needed when physical relationship alone cannot be established or used as the basis for allocation. In this case, the remaining environmental inputs and outputs from a sub-process must be allocated between the products in a way that reflects other relationships between them, such as the economic value of the products.*

The factory manufactures a range of granite products with differing economic values. Although economic allocation is applied, a conservative approach is taken whereby 100% of the environmental impacts are assigned to the high-value products covered by the EPD, and no environmental burden is allocated to the low-value products.

In the manufacturing process, there are some solid wastes recycled after waste processing within the system boundary. The waste processing of these wastes is assigned to Module A1-A3 within the studied product system boundary. The credits for recycling of solid waste have been assigned to Module D.

Cut-off: *In accordance with EN 15084 and PCR 2019:14, the cut-off criteria of 1.0% of renewable and non-renewable primary energy usage and 1.0% of the total mass input of the unit process in case of insufficient input data or data gaps for a unit process are met. And a minimum of 95% of the total mass and energy flows per module has been included. This study strictly follows the cut-off rules in the PCR. All inputs and outputs to a (unit) process have been included in the calculation for which data are available. In addition, certain differences between inputs and outputs were identified as unquantifiable due to limitations in data availability and measurement techniques. These unquantifiable differences were subject to cut-off, and the total of neglected input flows per module is less than 0.01% of mass.*

Residual electric mix (Module A3):

To be noted, in China, all kinds of electricity are collected into the grid and then sent to the user side, thus, residual mix of electricity is not appliable in China. In this study, the residual grid mix conservatively be assumed to be the consumption mix of the market minus the renewables of that mix.

Since China is relatively large, and the electricity generation structure varies from province to province, so the electricity data of China requires the use of the Fujian or Shandong province's electricity structure according to the PCR requirements. The Fujian and Shandong province electricity structure from the China Electric Power Yearbook 2023 and the electricity dataset based on the ecoinvent 3.11 EN15804 database were used for electricity modeling.

In the 2023 China Electricity Yearbook, the percentage of electricity from fossil fuel for each province is not specified. A brief description of electricity from fossil fuel for the whole country is given in the yearbook, i.e. it covers coal, gas, oil, biomass, and a smaller source of unidentified sources for generating electricity. Based on the information in the yearbook, i.e., electricity from hard coal accounts for more than 80% of the thermal power generation types, and considering that China is a country where coal-fired power generation is the main source of thermal power generation, in this study, the hard coal generation dataset has been used for fossil fuel power generation modeling.

The transmission of electricity in all cases is taken from power station via a high voltage electricity grid to low voltage electricity suitable for industrial use, with a loss factor of 4.7% of the electricity loss from transmission line.

The GWP-GHG of the residual electricity mix used for the A3 stage for Group Xiamen is 0.8 kg CO_2 eq./kWh.

The GWP-GHG of the residual electricity mix used for the A3 stage for Group Yantai is 1.1 kg CO_2 eq./kWh.[1]

The combined GWP-GHG indicator across all production sites is 1.1 kg CO_2 eq./kWh.[2]

Exclusions: *Based on the goal and scope of the study, some inputs and outputs were excluded from the system boundary such as production of capital equipment and infrastructure, human activities and transport of workers and capital expenditure. But for the model of electricity used for the A3 stage, the infrastruction associated with electricity production has been included.*

[1] The GWP-GHG value for Yantai is 1.13 kg CO_2 eq./kWh, which is reported as 1.1 kg CO_2 eq./kWh in accordance with the PCR requirement to use two significant figures.
[2] The combined GWP-GHG value is 1.06 kg CO_2 eq./kWh, which is reported as 1.1 kg CO_2 eq./kWh in accordance with the PCR requirement to use two significant figures.

Declaration of data:

Table 7 Data sources declaration of average results.

A1-A3 Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Production process	Collected data	EPD owner	2024	Primary data	1.2%
Production of quarry stone	Database	ecoinvent 3.11 EN 15804 database	2024	Representative secondary data	0.0%
Generation of electricity used in manufacturing of product	Database		2024	Primary data	28%
Transportation of raw materials	Database		2024	Representative secondary data	8.0%
Other processes	Database		2025	Representative secondary data and proxy data	0.0%
		Total share of primary data, of GWP-GHG results for A1-A3			37%

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.

Data quality assessment:

The EPD covers natural stone product from two factory in China, which provided data for the period January - December 2024. The EPD covers transport to, use and end-of-life in Europe. Background data was sourced from the ecoinvent 3.11 EN15804 database. The quality of the relevant data used for the EPD, in terms of time, geography, and technology representativeness using EN 15804:2012+A2:2019, Annex E, was assessed only against E.1. The data quality is mostly good, except for the diamond blade segment input, for which only fair data in terms of technology and geography was available. This data was manually modeled based on public papers and contributes 4.2% to the average GWP-GHG result for the A1–A3 stage.

Scenario information：

- ***A1-A3 "PRODUCTION STAGE"***

  A1 - Raw materials supply
  The upstream of the granite industry chain is the exploration of mineral resources and the mining of raw stones.

  A2 - Raw Materials Transport
  The module includes the transport of raw materials, packaging and other auxiliaries by truck to the production site. The distance of quarry stone from the warehouse to the plant is now a weighted average reflecting the actual procurement mix from each warehouse.

  A3 - Manufacturing
  In the manufacturing process, all the factory is doing is cutting stones down to size and creating a finish on the surface.

- ***A4-A5 "CONSTRUCTION PROCESS STAGE"***

  A4 - Product transport to building site
  The finished products are first transported by truck to the port of China from factory, then by container ship to the Hamburg port of Germany. Some of them are transported to other regions of Europe by barges and then to the installation site by truck. Others are directly transported to the installation site by truck.

The transport scenarios used (distances and transport vehicles) are shown in the following table.

Table 8 The scenarios information of module A4.

	Vehicle	Fuel type	Fuel use, kg/tkm	Distance, km	Carrying capacity, tonne	Capacity utilisation	Bulk density of transported products, kg/m^3	Volume capacity utilisation factor
Factory to the port of China	Truck, lorry 27 metric ton, EURO4	Diesel	2.8E-02	1.8E+02	1.6E+01	80%	2.7E+03	<1.0
The port of China to the World	Container ship, deep sea	Heavy fuel oil	2.5E-03	1.9E+04	4.3E+04	70%	2.7E+03	<1.0
Barges between different ports	Inland waterways, barge	Heavy fuel oil	5.0E-03	2.4E+02	8.5E+02	85%	2.7E+03	<1.0
The ports to the installation site	Truck, lorry 27 metric ton, EURO5	Diesel	2.2E-02	3.0E+02	1.6E+01	80%	2.7E+03	<1.0

A5 - Product Installation

During the installation process of natural stone product, cement mortar needs to be used for fixation. The usage of cement mortar is 40 kg/DU. On-site installation generally does not consume electricity and will not produce scraps. The packaging waste of the products will be treated in landfills.

The installation scenarios used are shown in the following table.

Table 9 The scenarios information of module A5.

Scenario information	Unit (expressed per DU)
Ancillary materials for installation (specified by material)	Cement Mortar: 4.0E+01 kg Truck, lorry 10.0 metric ton, EURO5: 5.0E+01km
Output materials (specified by type) as result of waste processing at the building site	Landfill: 1.2E+01 kg Waste collection by 21 metric ton lorry: 5.0E+01 km

- ***B2 - Maintenance***

  Based on the principle of conservative estimation, all products are assumed to require water cleaning. Natural stone products need to be cleaned with water once a year, 0.50 L per cleaning. Over a 100-year product lifespan, this amounts to a total water requirement of 50 L.

- ***C1-C4 "END OF LIFE STAGE"***

  C1 - De-construction demolition

  The energy consumption of Module C1 is calculated based on the default data of PCR. The mortar will be removed at the C1 stage and disposed of by landfill at the C4 stage.

  C2 - Transport

  The transportation type and distance of Module C2 are calculated based on the PCR.

  C3 - Waste processing and C4 - Disposal

  According to the statistical data for year 2023 of Eurostat, the recycling rate of municipal waste in EU27 is 49.1%. The scenarios of Module C3 and C4 are based on the data of Eurostat. Some waste natural stone products will be sorted in Module C3 and then recycled. Other waste natural stone products and waste mortar removed from the natural stone as stated in C1 will be treated in landfills. The energy consumption of Module C3 and C4 are calculated based on the default data of PCR (as detailed in Table 4 of Section 4.8.4 of the PCR).

Table 10 The scenarios of the End-of-life stage.

Processes in C1	***Energy carrier***	***Quantity [kWh/tonne]***
Demolition/deconstruction of natural stone product	*Diesel*	*5.0E+00*
Processes in C2	***Distance***	***Means of transport***
Transport (for products/materials not to be incinerated)	*80 km*	*16-32 tonne lorry (EURO 5), 50% load factor*
Processes in C3	***Energy carrier***	***Quantity [kWh/tonne]***
Loading and unloading at sorting facility *Mechanical sorting*	*Diesel* *Electricity*	*1.8E+00* *2.2E+00*
Processes in C4	***Energy carrier***	***Quantity [kWh/tonne]***
Compacting of inert construction waste for landfills (including backfilling)	*Diesel*	*1.6E+00*

- ***MODULE D "REUSE-RECOVERY-RECYCLING POTENTIAL"***

  In Module C3, some waste natural stone products will be sorted and then recycled. Module D contains credits from the recycling of the fraction of the product in module C3, the product can be collected and recycled for use in substitution of virgin raw stone because of the large durability of the rock.

  In Module A1-A3, the solid waste, including crushed stones and stone powder, generated in the cutting process will be recycled. Module D also contains the credit from the recycling of a fraction of solid waste generated by Module A1-A3 for making bricks for the next system.

  Besides, in Module A1-A3, the used diamond blade segments will be recycled by the supplier for remanufacturing. However, due to the very low mass of the diamond blade segments, the credit from recycling of these segments has been neglected.

Table 11 The scenario information of module D.

Scenario information	***Parameter unit expressed per DU***
Material for recycling	*A1-A3: 3.5E+01 kg* *C3: 4.9E+02 kg*

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	X	ND	X	ND	ND	ND	ND	ND	X	X	X	X		X
Geography	CN			EU		-	EU	-	-	-	-	-	EU					EU
Primary data used	37%			-		-	-	-	-	-	-	-	-	-	-	-		-
Variation – products	- 7.2% / + 35 %			-	-	-	-	-	-	-	-	-	-	-	-	-		-
Variation – sites	- 6.0% / + 24 %			-	-	-	-	-	-	-	-	-	-	-	-	-		-

ND - Not Declared

ENVIRONMENTAL PERFORMANCE

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).

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3.4E+01	3.0E+02	3.1E+01	1.5E-02	1.7E+00	1.7E+01	6.8E-01	3.2E-01	-1.0E+01
GWP-fossil	kg CO_2 eq.	4.6E+01	3.0E+02	1.3E+01	1.5E-02	1.6E+00	1.7E+01	6.8E-01	3.2E-01	-1.0E+01
GWP-biogenic	kg CO_2 eq.	-1.2E+01	6.1E-02	1.9E+01	3.1E-05	3.8E-03	4.2E-03	8.5E-04	3.5E-05	-9.8E-02
GWP-luluc	kg CO_2 eq.	7.2E-02	1.6E-01	7.2E-03	3.0E-05	4.9E-03	7.5E-03	1.1E-03	3.3E-05	-9.6E-03
ODP	kg CFC 11 eq.	4.4E-07	4.2E-06	7.8E-08	2.2E-10	3.1E-08	2.1E-07	1.1E-08	4.7E-09	-8.0E-08
AP	mol H^+ eq.	3.1E-01	6.2E+00	4.9E-02	8.0E-05	9.5E-03	5.7E-02	4.9E-03	2.8E-03	-6.5E-02
EP-freshwater	kg P eq.	1.1E-02	1.9E-02	2.4E-03	9.6E-06	1.6E-03	1.8E-03	3.5E-04	1.0E-05	-1.9E-03
EP-marine	kg N eq.	9.0E-02	1.6E+00	2.5E-02	1.5E-05	1.5E-03	1.8E-02	1.7E-03	1.3E-03	-1.9E-02
EP-terrestrial	mol N eq.	1.0E+00	1.8E+01	1.6E-01	1.5E-04	1.3E-02	2.0E-01	1.7E-02	1.4E-02	-2.4E-01
POCP	kg NMVOC eq.	3.0E-01	4.9E+00	5.2E-02	4.8E-05	4.3E-03	7.8E-02	5.3E-03	4.3E-03	-6.4E-02
ADP-minerals&metals *	kg Sb eq.	1.3E-03	5.3E-04	3.3E-05	8.0E-08	2.2E-05	5.5E-05	4.9E-06	1.1E-07	-2.9E-05
ADP-fossil*	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	1.2E+01	4.1E+00	-9.8E+01
WDP*	m^3	3.0E+01	1.6E+01	8.9E-01	2.2E+00	9.2E-01	1.3E+00	2.1E-01	1.2E-02	-2.5E+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									

** Disclaimer:*

The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[3]	kg CO_2 eq.	4.6E+01	3.0E+02	2.0E+01	1.5E-02	1.7E+00	1.7E+01	6.8E-01	3.2E-01	-1.0E+01

Resource use indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.4E+02	4.1E+01	8.1E+00	4.6E-02	1.0E+01	3.2E+00	2.2E+00	2.6E-02	-9.2E+00
PERM	MJ	1.2E+02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ	3.5E+02	4.1E+01	8.1E+00	4.6E-02	1.0E+01	3.2E+00	2.2E+00	2.6E-02	-9.2E+00
PENRE	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	1.2E+01	4.1E+00	-9.8E+01
PENRM	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	1.2E+01	4.1E+00	-9.8E+01
SM	kg	2.8E+00	1.8E+00	3.1E-02	1.0E-03	6.1E-03	1.0E-01	3.0E-03	1.7E-03	-5.6E-02
RSF	MJ	7.4E-03	1.0E-02	3.0E-02	5.9E-07	5.3E-05	1.3E-03	1.6E-05	4.5E-06	-2.4E-02
NRSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m^3	7.1E-01	3.9E-01	2.3E-02	5.0E-02	2.5E-02	3.2E-02	5.7E-03	2.9E-04	-6.2E-02
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									

[3] 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.

Waste indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	5.3E+00	6.6E+00	4.0E-01	1.6E-03	9.2E-02	5.3E-01	2.5E-02	4.6E-03	-4.9E-01
Non-hazardous waste disposed	kg	7.4E+01	1.1E+02	4.0E+01	5.0E-01	7.7E+00	1.0E+01	1.7E+00	6.8E-02	-1.1E+01
Radioactive waste disposed	kg	7.6E-04	5.9E-04	5.1E-05	1.4E-06	2.7E-04	4.6E-05	5.9E-05	4.3E-07	-8.0E-05

Output flow indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Material for recycling	kg	3.5E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E+02	0.0E+00	0.0E+00
Materials for energy recovery	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, electricity	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, thermal	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Additional LCA results of the products - Additional scenario - EOL 100% recycling

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).

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3.4E+01	3.0E+02	3.1E+01	1.5E-02	1.7E+00	1.7E+01	1.4E+00	0.0E+00	-2.3E+01
GWP-fossil	kg CO_2 eq.	4.6E+01	3.0E+02	1.3E+01	1.5E-02	1.6E+00	1.7E+01	1.4E+00	0.0E+00	-2.3E+01
GWP-biogenic	kg CO_2 eq.	-1.2E+01	6.1E-02	1.9E+01	3.1E-05	3.8E-03	4.2E-03	1.7E-03	0.0E+00	-1.2E-01
GWP-luluc	kg CO_2 eq.	7.2E-02	1.6E-01	7.2E-03	3.0E-05	4.9E-03	7.5E-03	2.2E-03	0.0E+00	-3.5E-02
ODP	kg CFC 11 eq.	4.4E-07	4.2E-06	7.8E-08	2.2E-10	3.1E-08	2.1E-07	2.3E-08	0.0E+00	-2.7E-07
AP	mol H^+ eq.	3.1E-01	6.2E+00	4.9E-02	8.0E-05	9.5E-03	5.7E-02	1.0E-02	0.0E+00	-1.7E-01
EP-freshwater	kg P eq.	1.1E-02	1.9E-02	2.4E-03	9.6E-06	1.6E-03	1.8E-03	7.2E-04	0.0E+00	-4.1E-03
EP-marine	kg N eq.	9.0E-02	1.6E+00	2.5E-02	1.5E-05	1.5E-03	1.8E-02	3.4E-03	0.0E+00	-5.5E-02
EP-terrestrial	mol N eq.	1.0E+00	1.8E+01	1.6E-01	1.5E-04	1.3E-02	2.0E-01	3.6E-02	0.0E+00	-6.5E-01
POCP	kg NMVOC eq.	3.0E-01	4.9E+00	5.2E-02	4.8E-05	4.3E-03	7.8E-02	1.1E-02	0.0E+00	-1.8E-01
ADP-minerals&metals *	kg Sb eq.	1.3E-03	5.3E-04	3.3E-05	8.0E-08	2.2E-05	5.5E-05	1.0E-05	0.0E+00	-7.2E-05
ADP-fossil*	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	2.5E+01	0.0E+00	-2.3E+02
WDP*	m^3	3.0E+01	1.6E+01	8.9E-01	2.2E+00	9.2E-01	1.3E+00	4.3E-01	0.0E+00	-2.3E+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									

** Disclaimer:*

The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[4]	kg CO_2 eq.	4.6E+01	3.0E+02	2.0E+01	1.5E-02	1.7E+00	1.7E+01	1.4E+00	0.0E+00	-2.3E+01

Resource use indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.4E+02	4.1E+01	8.1E+00	4.6E-02	1.0E+01	3.2E+00	4.6E+00	0.0E+00	-1.7E+01
PERM	MJ	1.2E+02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ	3.5E+02	4.1E+01	8.1E+00	4.6E-02	1.0E+01	3.2E+00	4.6E+00	0.0E+00	-1.7E+01
PENRE	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	2.5E+01	0.0E+00	-2.3E+02
PENRM	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	2.5E+01	0.0E+00	-2.3E+02
SM	kg	2.8E+00	1.8E+00	3.1E-02	1.0E-03	6.1E-03	1.0E-01	6.2E-03	0.0E+00	-9.2E-02
RSF	MJ	7.4E-03	1.0E-02	3.0E-02	5.9E-07	5.3E-05	1.3E-03	3.2E-05	0.0E+00	-1.3E-03
NRSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m^3	7.1E-01	3.9E-01	2.3E-02	5.0E-02	2.5E-02	3.2E-02	1.2E-02	0.0E+00	-6.1E-02
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									

[4] 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.

Waste indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	5.3E+00	6.6E+00	4.0E-01	1.6E-03	9.2E-02	5.3E-01	5.0E-02	0.0E+00	-8.9E-01
Non-hazardous waste disposed	kg	7.4E+01	1.1E+02	4.0E+01	5.0E-01	7.7E+00	1.0E+01	3.5E+00	0.0E+00	-2.0E+01
Radioactive waste disposed	kg	7.6E-04	5.9E-04	5.1E-05	1.4E-06	2.7E-04	4.6E-05	1.2E-04	0.0E+00	-2.3E-04

Output flow indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Material for recycling	kg	3.5E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E+03	0.0E+00	0.0E+00
Materials for energy recovery	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, electricity	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, thermal	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Additional LCA results of the products - Additional scenario - EOL 100% landfill

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).

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3.4E+01	3.0E+02	3.1E+01	1.5E-02	1.7E+00	1.7E+01	0.0E+00	5.8E-01	-6.4E+00
GWP-fossil	kg CO_2 eq.	4.6E+01	3.0E+02	1.3E+01	1.5E-02	1.6E+00	1.7E+01	0.0E+00	5.8E-01	-6.3E+00
GWP-biogenic	kg CO_2 eq.	-1.2E+01	6.1E-02	1.9E+01	3.1E-05	3.8E-03	4.2E-03	0.0E+00	6.4E-05	-6.6E-02
GWP-luluc	kg CO_2 eq.	7.2E-02	1.6E-01	7.2E-03	3.0E-05	4.9E-03	7.5E-03	0.0E+00	5.9E-05	-3.8E-03
ODP	kg CFC 11 eq.	4.4E-07	4.2E-06	7.8E-08	2.2E-10	3.1E-08	2.1E-07	0.0E+00	8.6E-09	-4.4E-08
AP	mol H^+ eq.	3.1E-01	6.2E+00	4.9E-02	8.0E-05	9.5E-03	5.7E-02	0.0E+00	5.2E-03	-2.5E-02
EP-freshwater	kg P eq.	1.1E-02	1.9E-02	2.4E-03	9.6E-06	1.6E-03	1.8E-03	0.0E+00	1.9E-05	-8.0E-04
EP-marine	kg N eq.	9.0E-02	1.6E+00	2.5E-02	1.5E-05	1.5E-03	1.8E-02	0.0E+00	2.4E-03	-5.2E-03
EP-terrestrial	mol N eq.	1.0E+00	1.8E+01	1.6E-01	1.5E-04	1.3E-02	2.0E-01	0.0E+00	2.6E-02	-5.6E-02
POCP	kg NMVOC eq.	3.0E-01	4.9E+00	5.2E-02	4.8E-05	4.3E-03	7.8E-02	0.0E+00	7.9E-03	-1.9E-02
ADP-minerals&metals *	kg Sb eq.	1.3E-03	5.3E-04	3.3E-05	8.0E-08	2.2E-05	5.5E-05	0.0E+00	2.0E-07	-2.5E-05
ADP-fossil*	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	0.0E+00	7.5E+00	2.0E+00
WDP*	m^3	3.0E+01	1.6E+01	8.9E-01	2.2E+00	9.2E-01	1.3E+00	0.0E+00	2.2E-02	-1.8E-01
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									

** Disclaimer:*

The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[5]	kg CO_2 eq.	4.6E+01	3.0E+02	2.0E+01	1.5E-02	1.7E+00	1.7E+01	0.0E+00	5.8E-01	-6.4E+00

Resource use indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.4E+02	4.1E+01	8.1E+00	4.6E-02	1.0E+01	3.2E+00	0.0E+00	4.7E-02	-5.5E+00
PERM	MJ	1.2E+02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ	3.5E+02	4.1E+01	8.1E+00	4.6E-02	1.0E+01	3.2E+00	0.0E+00	4.7E-02	-5.5E+00
PENRE	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	0.0E+00	7.5E+00	2.0E+00
PENRM	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ	5.8E+02	3.9E+03	9.5E+01	2.7E-01	3.8E+01	2.3E+02	0.0E+00	7.5E+00	2.0E+00
SM	kg	2.8E+00	1.8E+00	3.1E-02	1.0E-03	6.1E-03	1.0E-01	0.0E+00	3.1E-03	8.2E-04
RSF	MJ	7.4E-03	1.0E-02	3.0E-02	5.9E-07	5.3E-05	1.3E-03	0.0E+00	8.2E-06	2.1E-06
NRSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m^3	7.1E-01	3.9E-01	2.3E-02	5.0E-02	2.5E-02	3.2E-02	0.0E+00	5.3E-04	-6.3E-03
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									

[5] 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.

Waste indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	5.3E+00	6.6E+00	4.0E-01	1.6E-03	9.2E-02	5.3E-01	0.0E+00	8.5E-03	-1.5E-01
Non-hazardous waste disposed	kg	7.4E+01	1.1E+02	4.0E+01	5.0E-01	7.7E+00	1.0E+01	0.0E+00	1.2E-01	-2.3E+00
Radioactive waste disposed	kg	7.6E-04	5.9E-04	5.1E-05	1.4E-06	2.7E-04	4.6E-05	0.0E+00	7.9E-07	2.1E-07

Output flow indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Material for recycling	kg	3.5E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Materials for energy recovery	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, electricity	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, thermal	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Variation of GWP-GHG between Average and Specific Results

Since this EPD covers two sites of natural stone products, the variation table below compares the A–C stage results between the averaged values of both sites and the site-specific values.

Indicator name and abbreviation (EN)	Unit (EN)	Difference between Average Results and Xiamen Site	Xiamen site	Average results	Yantai site	Difference between Average Results and Yantai Site
Core environmental impact indicators (MANDATORY)						
Global warming potential - total (GWP-total)	kg CO_2 eq.	-2.7%	3.8E+02	3.9E+02	3.9E+02	0.7%
Global warming potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	-3.4%	3.7E+02	3.8E+02	3.9E+02	0.8%
Global warming potential - biogenic (GWP-biogenic)	kg CO_2 eq.	39%	9.5E+00	6.8E+00	6.2E+00	-9.7%
Global warming potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	-13.1%	2.2E-01	2.6E-01	2.6E-01	3.2%
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	-7.2%	4.6E-06	5.0E-06	5.0E-06	1.8%
Acidification potential, accumulated exceedance (AP)	mol H+ eq.	-0.3%	6.6E+00	6.6E+00	6.6E+00	0.1%
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	-0.9%	3.6E-02	3.6E-02	3.6E-02	0.2%
Eutrophication potential - marine (EP-marine)	kg N eq.	-1.1%	1.7E+00	1.7E+00	1.7E+00	0.3%
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	-1.4%	1.9E+01	1.9E+01	1.9E+01	0.3%
Photochemical ozone creation potential (POCP)	kg NMVOC eq.	-2.0%	5.3E+00	5.4E+00	5.4E+00	0.5%
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	12%	2.1E-03	1.9E-03	1.9E-03	-2.8%
Abiotic depletion potential - fossil resources (ADPF)	MJ, net calorific value	-2.5%	4.7E+03	4.8E+03	4.9E+03	0.6%
Water (user) deprivation potential (WDP)	m^3 world eq. deprived	13%	5.8E+01	5.1E+01	4.9E+01	-3.2%
Additional mandatory environmental impact indicators (MANDATORY)						
Global warming potential (GWP-GHG)	kg CO_2 eq.	-2.7%	3.8E+02	3.9E+02	3.9E+02	0.7%
Indicators describing resource use (MANDATORY)						
Use of renewable primary energy as energy carrier (PERE)	MJ, net calorific value	71%	5.2E+02	3.0E+02	2.5E+02	-17%
Use of renewable primary energy resources used as raw materials (PERM)	MJ, net calorific value	102%	2.3E+02	1.2E+02	8.7E+01	-25%
Total use of renewable primary energy (PERT)	MJ, net calorific value	79%	7.5E+02	4.2E+02	3.4E+02	-20%
Use of non renewable primary energy as energy carrier (PENRE)	MJ, net calorific value	-2.5%	4.7E+03	4.8E+03	4.9E+03	0.6%
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ, net calorific value	/	0.0E+00	0.0E+00	0.0E+00	/
Total use of non renewable primary energy resource (PENRT)	MJ, net calorific value	-2.5%	4.7E+03	4.8E+03	4.9E+03	0.6%
Use of secondary material (SM)	kg	-17%	4.0E+00	4.8E+00	5.0E+00	4.2%
Use of renewable secondary fuels (RSF)	MJ, net calorific value	22%	6.0E-02	4.9E-02	4.6E-02	-5.5%
Use of non-renewable secondary fuels (NRSF)	MJ, net calorific value	/	0.0E+00	0.0E+00	0.0E+00	/
Net use of fresh water (FW)	m^3	12.7%	1.4E+00	1.2E+00	1.2E+00	-3.1%
Environmental information describing waste categories (MANDATORY)						
Hazardous waste disposed (HWD)	kg	9.6%	1.4E+01	1.3E+01	1.3E+01	-2.4%
Non-hazardous waste disposed (NHWD)	kg	6.7%	2.6E+02	2.5E+02	2.4E+02	-1.7%
Radioactive waste disposed (RWD)	kg	76%	3.1E-03	1.8E-03	1.4E-03	-19%
Environmental information describing output flows (MANDATORY)						
Components for re-use (CRU)	kg	/	0.0E+00	0.0E+00	0.0E+00	/
Materials for recycling (MFR)	kg	3.5%	5.4E+02	5.3E+02	5.2E+02	-0.9%
Materials for energy recovery (MER)	kg	/	0.0E+00	0.0E+00	0.0E+00	/
Exported electrical energy (EEE)	MJ, net calorific value	/	0.0E+00	0.0E+00	0.0E+00	/
Exported thermal energy (EET)	MJ, net calorific value	/	0.0E+00	0.0E+00	0.0E+00	/

The variation table below compares the GWP-GHG of A1-A3 satge between average results and specific results.

Group	A1-A3 GWP-GHG, kg CO_2 eq.	The difference compared with the average result
Xiamen	5.7E+01	24%
Yantai	4.3E+01	-6.0%
Average result	4.6E+01	/

The GWP-GHG of A1-A3 stage for Group Xiamen is about 24% higher than the average result. The deviation is driven mainly by the above-average electricity consumption during processing at that site. Owing to the fact that the Xiamen factory engages in precision processing of quarries, whereas the Yantai factory is involved in coarse processing, the former consumes approximately eightfold the quantity of electricity per DU of raw stone relative to the latter throughout the entire production process. Consequently, this leads to a significantly higher GWP-GHG emissions for Group Xiamen in the A1-A3 stages. Specifically, with regard to the electricity consumption of the two groups, Group Xiamen produces six times the GWP-GHG emissions per functional unit compared to Group Yantai.

VERSION HISTORY

Version 1.0, 2026-02-05.
Original version of the EPD.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
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 (m^3)
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)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m^3)
Waste Indicators	
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
Output Flow Indicators	
CFR	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)
Lifecycle Stages / Modules	
A1	Raw material supply
A2	Transport
A3	Manufacturing

A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
EOL	End-of-life stage
Other Relevant Terms	
SVHC	Substances of Very High Concern
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared
CN	China
GLO	Global
EU	Europe
Eurostat	The statistical office of the European Union

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