



Wangkang



ENVIRONMENTAL FOOTPRINT INSTITUTE

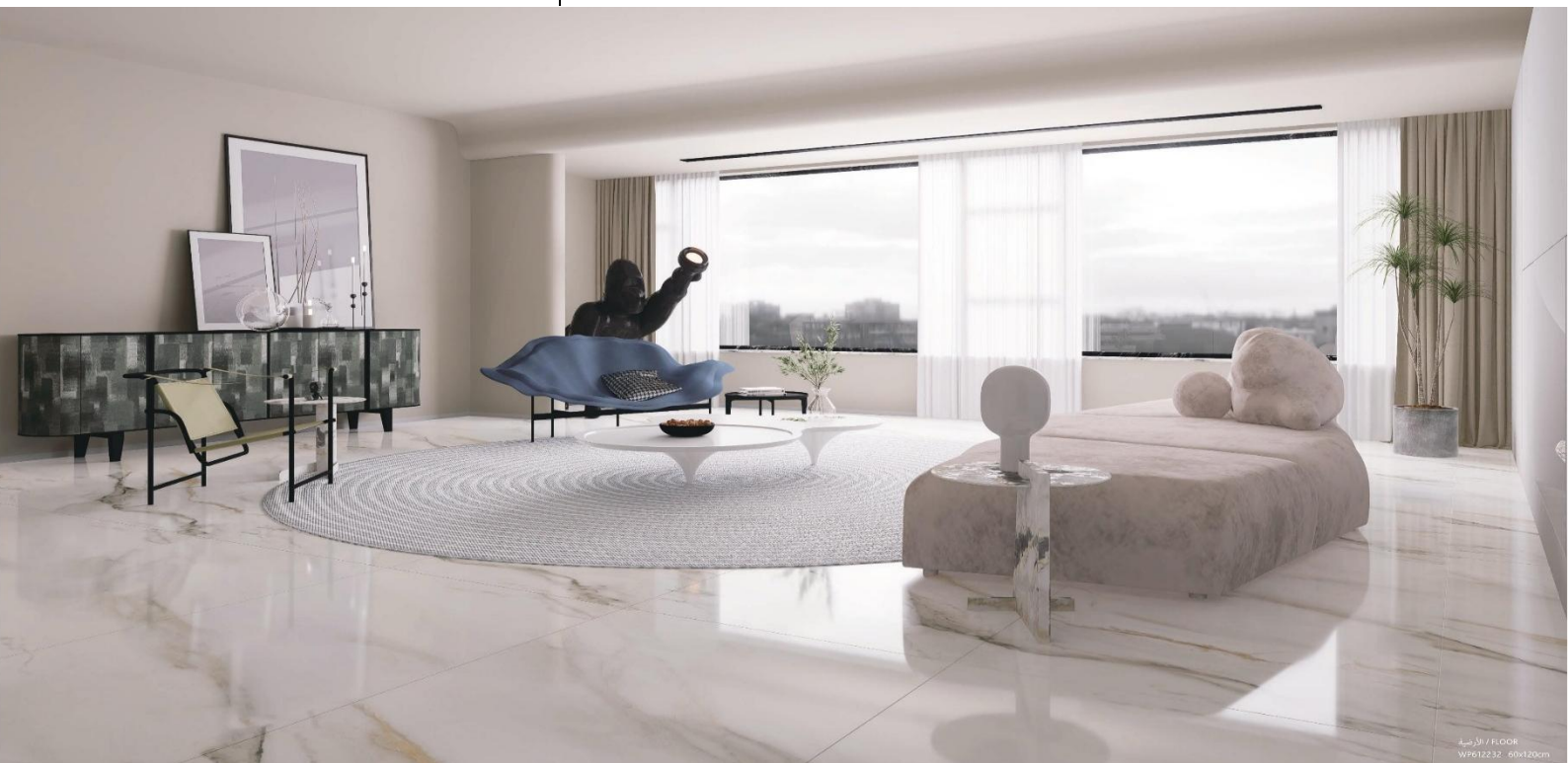
Environmental Product Declaration

Under the general rules of the Environmental Footprint Institute and PCR P-3100: Construction products in general (Accordance with ISO 14040, ISO 14044, ISO 14025 and EN 15804:2012+A2:2019/AC:2021)

for:

PORCELAIN STONEWARE CERAMIC TILES:

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1. INTRODUCTION

This report contains the environmental performance of the manufacturing process of the CERAMIC TILES produced by WANGKANG CERAMIC CO., LTD. This Environmental Product Declaration (EPD) has been developed using the Life Cycle Assessment (LCA) methodology. The environmental impact values calculated are expressed per 1m² of CERAMIC TILES.

The assessed life cycle includes all phases in the manufacturing process of the CERAMIC TILES within a "cradle to gate with options" scope. This LCA covers the transportation of raw materials, production, distribution of the final product to the customer, and end-of-life stages.

This EPD has been conducted according to the Environmental Footprint Institute regulations, and it has been certified and registered with The Environmental Footprint Institute. The EPD regulation is a system for the international use of Type III Environmental Declarations, according to ISO 14025:2006. Both the system and its applications are described in the Programmer's General Indications (PGI). This report has been prepared following the specifications provided in the European standard EN 15804:2012+A2:2019/AC:2021.

2. COMPANY INFORMATION

2.1. About WANGKANG

Saudi Wangkang Ceramics Co., Ltd. was established in July 2018 and is located in the Yanbu Industrial Zone of the Royal Industrial City in Saudi Arabia. It has four modern large-scale ceramic production lines with a total area of 320,000 square meters and a daily production capacity of more than 200,000 square meters.

The project is divided into two phases of construction. In September 2019, the first phase of the construction of two large-scale ceramic production lines with a daily production capacity of 100,000 square meters was completed and put into operation. With the commissioning of the second phase of two ceramic production lines in April 2021, the daily production capacity of the project has reached 200,000 square meters.

The company has more than 100 ceramic experts and about 1,000 technical workers. The total investment is 200 million US dollars. It is one of the largest ceramic manufacturers in Saudi Arabia. The Wangkang Saudi project is a key project of China's National Development and Reform Commission's capacity cooperation with Saudi Arabia. It is one of the few non-oil investment projects in Saudi Arabia by Chinese private enterprises.

The product sales network has fully covered Saudi Arabia and neighboring Gulf countries. After three years of careful operation, Saudi Wangkang Ceramics Co., Ltd. has occupied a certain



position in the ceramic industry in Saudi Arabia. It has a good market reputation and has accumulated many important customer resources.

With the gradual implementation of Saudi Arabia's "Vision 2030" grand plan, Saudi Arabia will be committed to building other sustainable development industries in non-oil industries. In 2021, major projects such as the "Red Sea Project" on the west coast, the NEOM new city project, and new Jeddah will be launched one after another. In the next ten years, Saudi Arabia will enter an unprecedented stage of rapid development and construction. In this golden period of development, Saudi Wangkang Ceramics Co., Ltd. will continue to increase its investment in Saudi Arabia and plans to invest in the construction of supporting industries related to ceramics, such as frit plants, carton packaging, mold factories, and other supporting factories. It will actively strive to build a complete ceramic production industry chain.

"Hundreds of boats compete and borrow the sea to sail forward". We are in an era of great change in Saudi Arabia and the Middle East. As a practitioner of "going out" for industry, Saudi Wangkang Ceramics Co., Ltd. bears ideals, responsibilities, and innovation. We believe that China's construction materials manufacturing industry has the strength to borrow the great decision-making of "the Belt and Road". With the strong support and help from all sectors of society and the hard work of all Wangkang people, we will build a powerful and high-quality Chinese overseas enterprise. We will rapidly develop in the Middle East and African markets centered on Saudi Arabia, creating more business and social value for Saudi Arabia and neighboring countries. We will firmly build a mutually beneficial platform with all partners to achieve our common dream of getting rich and play a successful tune.

The brand GOODWILL under the company is deeply loved by consumers in Saudi Arabia. Wangkang has made China's manufacturing industry known worldwide and is gradually fulfilling its mission - gathering private wisdom to shine China's manufacturing!

2.2. Sustainable practices

WANGKANG CERAMIC CO., LTD. is committed to integrating sustainable practices into its operations and product offerings. The company holds numerous certifications, including ISO9001, ISO14001, ISO45001, ISO50001, SASO, CE certification of EU, UKCA certification of UK, and the GREEN CERTIFICATE, reflecting its adherence to international quality, environmental, and energy management standards. Additionally, it proudly meets the "Made in Saudi Arabia" and "Export Product" certifications by the Saudi government.

In its pursuit of sustainability, WANGKANG CERAMIC CO., LTD. actively adopts eco-friendly materials, reduces resource consumption, and minimizes waste in its production processes. By productizing "art, culture, and concept," the company not only enhances consumers' quality of life but also prioritizes environmental responsibility. It strives to inspire designers, support sustainable innovation, and establish itself as a world-class brand that values both creativity and environmental stewardship.

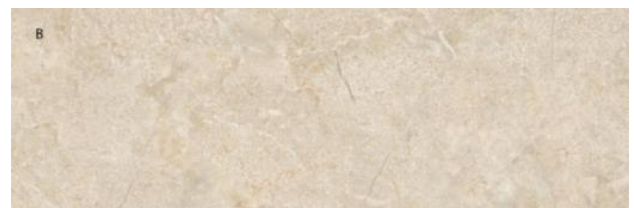
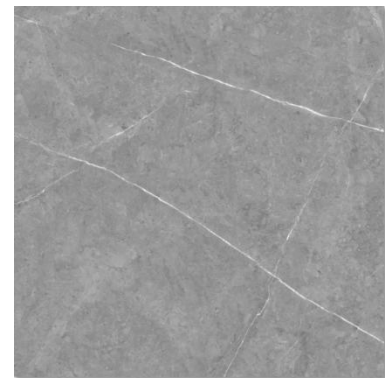
3. PRODUCT INFORMATION

3.1. Analyzed Product

WANGKANG CERAMIC CO., LTD. produces high-quality porcelain and ceramic tiles using primarily inorganic materials such as clay, calcite, and feldspar, along with other selected raw materials. These tiles are designed for versatile applications on both floors and walls.

The tiles are baked at temperatures ranging from 1050°C to 1100°C and are always glazed to enhance durability and aesthetics. The water absorption rate, a key indicator of product durability, is between 0.5% and 3%, making floor tiles more robust and long-lasting compared to wall tiles. With a breaking strength exceeding 1100 N for tiles thicker than 7.5 mm, they offer superior load-bearing capacity.

The surface coating of floor tiles is engineered to be harder than that of wall tiles, ensuring enhanced resistance to wear and prolonged lifespan.





This Environmental Product Declaration (EPD) covers the production of floor tiles at WANGKANG CERAMIC CO., LTD.'s manufacturing facility. The assessment aligns with the United Nations Central Product Classification (UN CPC) code 3731 for floor tiles and is based on the most frequently produced tile type within the product range, calculated per 1 m² of floor tile.

3.2. Product Application

Ceramic porcelain tiles are durable and versatile materials designed for use in a wide range of applications. They are primarily used for flooring and wall coverings in residential, commercial, and industrial spaces. Their excellent resistance to wear, moisture, and stains makes them ideal for high-traffic areas, wet environments such as bathrooms and kitchens, and exterior cladding. Additionally, porcelain tiles are valued for their aesthetic appeal, available in various designs, colors, and finishes to complement diverse architectural and interior design styles.

4. LCA INFORMATION

4.1. Functional Unit

The functional unit used in the study is defined as 1 m² of porcelain tile covering, installed and maintained over a 30-year period. The mass of the considered area is on average 29 kg.

Name	Value	Unit
Functional Unit	1	m ²
Mass	29.2	kg

4.2. System boundaries

This EPD covers all product stages from “cradle to gate with options,” meaning this LCA includes Production stage A1-A3, Transportation A4, Installation A5, End-of-life stages C1-C4, and Resource recovery stage D in accordance with EN 15804 + A2/AC:2021.

The system boundaries of this environmental study encompass not only the processes controlled by WANGKANG CERAMIC but also include upstream and downstream activities, such as fuel extraction, material production, and electricity generation, which are not directly managed by the company.

All related direct and indirect environmental impacts associated with these elements have been calculated and are included in the LCAs within this EPD.



Possible scopes of the LCA defined in the European standard EN 15804:2012+A2:2019 are:

	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	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	KSA	KSA	KSA	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	74%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	N/A			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Included, ND=Module not declared

Modules from B1 to B6 are not declared (X refers to considered stage, ND refers to not declared stage). In the following schemes, the modules are linked to the real phases of the manufacturing and distribution process.

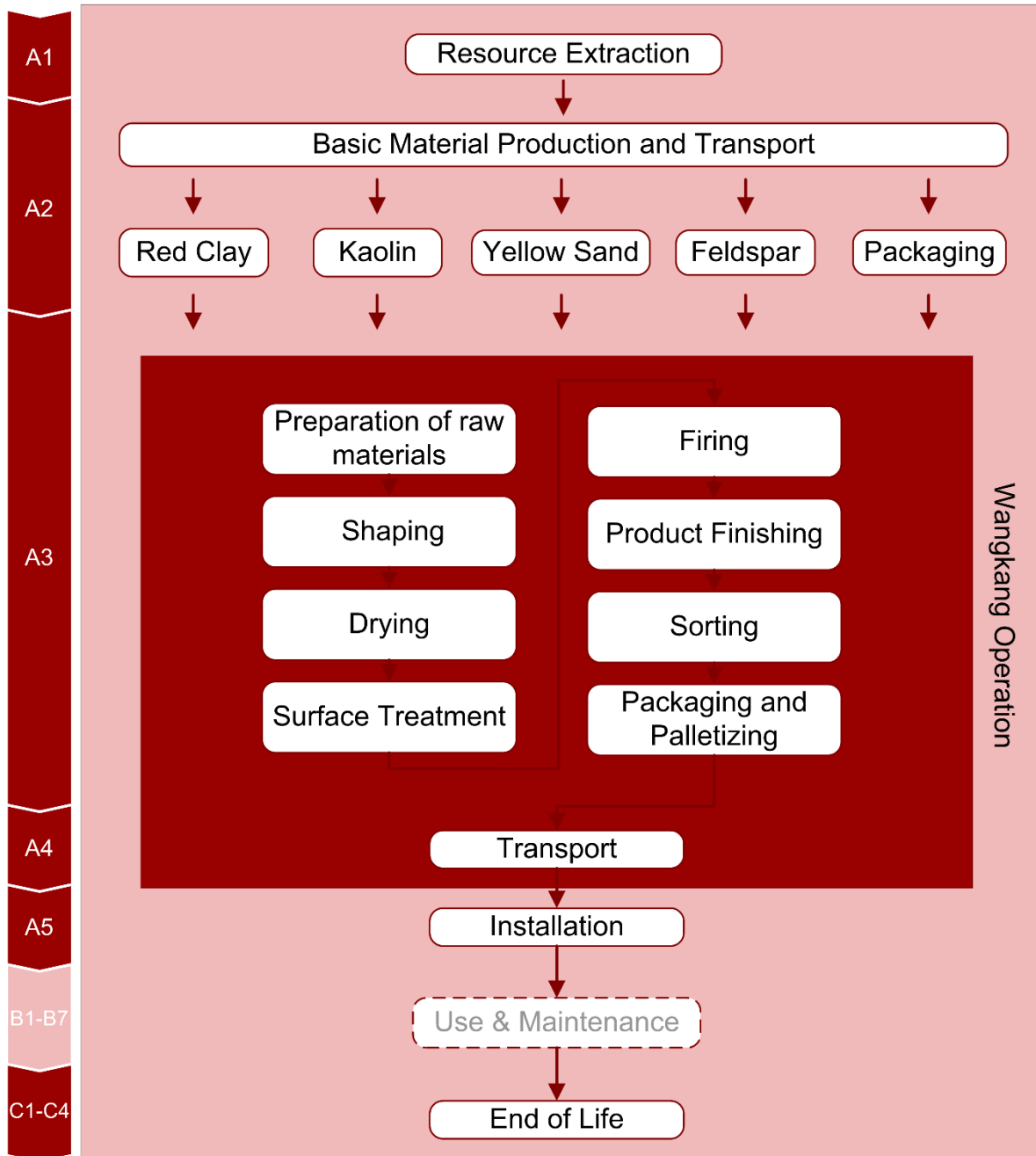
4.3. Time Representativeness

Manufacturing facility-specific data from WANGKANG CERAMIC are based on a 1-year average for process data (Reference time: Nov 2023 to Oct 2024). The following rules for the time scope of data were applied: <10 years for background data and <2 years for manufacturer's data.

4.4. LCA Software and Database

Version 3.17.4.0 of software Air.e LCA™ with Ecoinvent™ 3.10.0 database has been used for LCA modeling and impacts calculations. EN15804 system model is used in this LCA. The scope of this EPD is "cradle to gate with options". Possible scopes of the LCA defined in EN 15804:2012+A1:2014

4.5 Product Stage



A1. Raw Material Extraction

This stage includes the extraction and pre-treatment of raw materials such as clay, feldspar, and other mineral additives, which are essential for the production of ceramic porcelain tiles.

A2. Transport

This stage accounts for the transportation of raw materials to the manufacturing plant, including internal movements using forklifts within the facility.

A3. Manufacturing

The manufacturing process consists of multiple stages:

- **Preparation of Raw Materials**
- **Shaping**
- **Drying**
- **Surface Treatment**
- **Firing**
- **Product Finishing**
- **Sorting, Packing, and Palletizing**

Renewable energy is utilized during the manufacturing process, and a separate scenario for managing packaging waste is modeled based on the geographic location of the installation.

A4. Transport

This stage involves the transportation of tiles to the construction site via road.

A5. Installation of the Product

The installation stage involves the use of adhesive mortar, with 3 kg of mortar required for the installation of 1 m² of tiles. During this stage, 6% of the tiles are assumed to become waste. All packaging materials also become waste at this point. Packaging waste is accounted for in module C3 (waste processing), while tile waste is considered in module C4 (landfilling).

B1 to B7: User Stage – (Not Declared)

The use stage modules (B1 to B7) are not declared in this EPD as they are highly dependent on site-specific factors such as cleaning frequency, cleaning methods, and the intended application of the tiles. While ceramic tiles are durable and typically require minimal maintenance, potential impacts related to cleaning (e.g., use of detergents and water) or repair (in case of damage) are highly variable and outside the scope of this assessment. Further data on these stages can be developed based on specific project requirements.

C1. Deconstruction/Demolition

Demolition at the end of the tiles' life is typically selective, generating negligible environmental impacts.

C2. Transport (Waste)

This stage includes the transport of waste tiles, packaging, and adhesive mortar to disposal sites. An average transport distance of 50 km is assumed.

C3. Waste Processing

The waste processing of discarded tiles for recycling or reuse is excluded due to its minimal impact. However, the recycling of packaging materials, such as cartons or corrugated boxes, is considered. Pallets are reused and therefore do not require any waste processing.

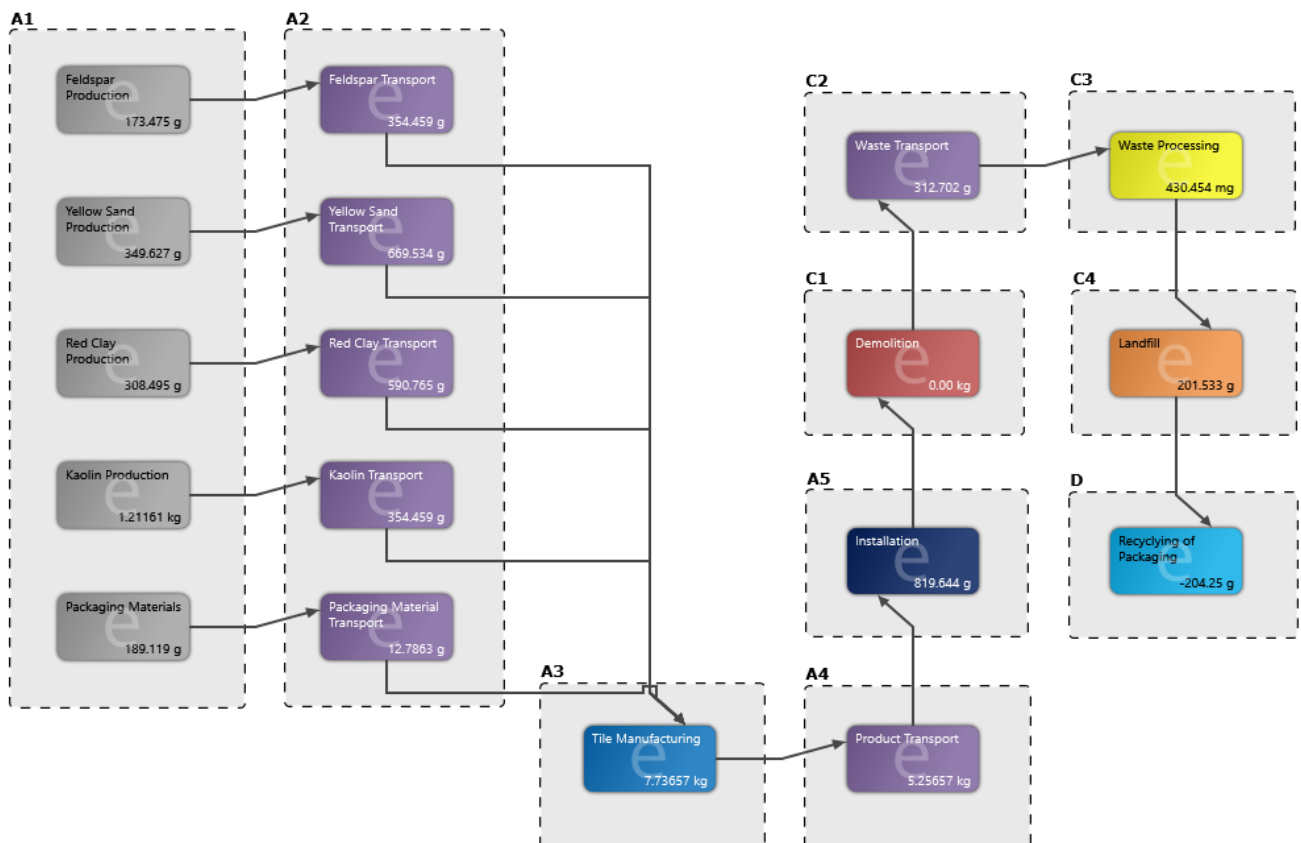
C4. Disposal

At the end of their lifecycle, tiles and adhesive mortar are disposed of in construction and demolition landfills.

D. Benefits and Loads

This stage assesses the potential benefits or burdens associated with the reuse, recycling, or energy recovery of materials at the end of the product's lifecycle. As tiles are neither recycled nor reused, they are not considered here. However, the recycling of corrugated boxes and the reuse of pallets are accounted for, providing benefits through the avoided production of these packaging materials.

The following diagram designed using Air.e LCA software shows an example of the materials, fuels consumption, energy consumption, transports and other elements and procedures included in the assessments.



4.6 Content declaration

The following list includes the main components and materials used in the manufacturing of porcelain ceramic tile.

Material	Quantity per Functional Unit /Kg	Percentage
Red Clay	8.7	29.8%
Kaolin	5.22	17.9%
Yellow Sand	9.86	33.8%
Feldspar	5.22	17.9%
Dispersant	0.2	< 0.5%
Pigment		< 0.5%
Binder		< 0.5%
Rheological additives		< 0.5%
Total	29.2	100%

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Cardboard	0.0097	0.0089%	<0.001
Wooden Pallets	0.367	0.309%	<0.01
TOTAL	0.37	0.31%	<0.01

5. LCA MODELING

5.1 Calculation Methodology

This EPD represents a Type III Environmental Declarations according to ISO 14025:2006. The Life Cycle Assessment (LCA) has been developed following the ISO 14040 International Standard. The environmental impacts calculation method reported in this EPD follows the EF 3.1 (ILCD). The report has been done following the specifications given in the European standard EN 15804:2012+A2:2019/AC:2021, as Product Category Rules.

5.2 Emission Factors

Emission factors and environmental impacts of elements in life cycles that are not directly controlled by WANGKANG CERAMIC CO., LTD. have been analyzed using external studies and external emissions factors databases like Ecoinvent™ due to the lack of direct data. The next paragraphs describe the calculation rules and criteria applied in the calculation of the environmental performance of this type of element in the LCA.

5.3 Raw Materials and Chemicals

Datasets from Ecoinvent™ 3.10 with emission factors for raw materials have been characterized to adjust them to the characteristics of the manufacturing processes of WANGKANG CERAMIC CO., LTD., suppliers, or the countries where the suppliers are located.

Dispersant, pigment, binder, and rheological additives, which collectively represent 0.7% by mass of the total product, have not been included in the model. This exclusion is in line with cut-off rules specified in the methodology. These materials fall below the cut-off threshold and are therefore omitted from the system boundaries.

Datasets from Ecoinvent™ 3.10 with emission factors for generic raw materials have been further adjusted to align with the characteristics of the products manufactured by WANGKANG CERAMIC CO., LTD.

5.4 Electricity

A specific dataset with the Life Cycle Inventory (LCI) corresponding to the 2023 electricity mix in Saudi Arabia has been used for this LCA.

5.5 Fuels Production and Consumption

Specific datasets with emission factors corresponding to fuel combustion in the WANGKANG CERAMIC CO., LTD plant and machinery have been developed for these LCAs. Indirect emissions resulting from the production and transportation of diesel and natural gas are also included in the calculation of environmental impact values, using default values from the Ecoinvent™ database. For the calculations, a lower heating value (LHV) of approximately 42.8 MJ/kg and a density of 0.845 kg/l were assumed for diesel, which is primarily consumed by forklifts. The calorific value for natural gas, provided by the supplier, was considered to be 962.87 BTU/ft³.

5.6 Transport to the use site Stage – A4

The tiles are supplied to customers in Saudi Arabia, and the A4 phase has been modeled in two stages. In the first stage, all products are delivered to warehouses in Riyadh and Jeddah. In the second stage, it is assumed that the distance from the warehouses to the installation site is approximately 200 km. All tiles sold between November 2023 and October 2024 have been analyzed as representative of the transportation scenario. The mode of transport used is freight by lorry (16-32 metric tons, EURO 4).

5.7 LCA Software and Database

Version 3.17.4.0 of software Air.e LCA™ with Ecoinvent™ 3.10 database has been used for LCA modeling and impacts calculations.

Minor components are not directly related to the product, with less than 1% impact, such as office supplies, has been excluded from the assessment. All transports of components have been included in the LCA considering real distances travelled by materials used from November 2023 and October 2024. Transport of raw materials needed to produce tiles is estimated in a global scale according to Ecoinvent™ criteria.

Main means of transport have been included for materials purchases. Road distances calculated using Google Maps.

Cut-off rules: more than 99% of the materials and energy consumption have been included. The Polluter Pays Principle and the Modularity Principle have been followed.

5.8 By Products Assignment

Economic allocation was applied and the allocation was performed according to the PCR -3100. Economic allocation was based on the income of each product. There is no List of by-Products used in this EPD.

6. ENVIRONMENTAL PERFORMANCE

6.1 Potential Environment Impacts

In the following tables, the environmental performance of the declared units “1 m² of porcelain tile covering” is presented for the WANGKANG CERAMIC CO., LTD product, totalized and for each sub-phase of the life cycle.

During the assessment, it was not possible to identify significant differences in the consumption of electricity, water, diesel, raw materials, and chemicals during the manufacturing process of ceramic tiles. Therefore, the calculations are based on total production versus total consumption for the production of the product.

Environmental impacts are calculated using the EF 3.1 (ILCD) methodology in accordance with the EN 15804 standard.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding thresholds values, safety margins or risks.

6.2 Core Environmental Impact Indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1.19E+01	5.25E+00	8.06E-01	0.00E+00	3.13E-01	1.99E-04	2.01E-01	-2.01E-01
GWP-biogenic	kg CO ₂ eq.	4.77E-03	8.19E-04	1.33E-02	0.00E+00	5.06E-05	2.32E-04	4.90E-05	-2.60E-03
GWP-luluc	kg CO ₂ eq.	3.59E-03	2.12E-03	4.56E-04	0.00E+00	1.03E-04	1.25E-07	1.05E-04	-8.06E-04
GWP-total	kg CO ₂ eq.	1.20E+01	5.26E+00	8.20E-01	0.00E+00	3.13E-01	4.30E-04	2.02E-01	-2.04E-01
ODP	kg CFC 11 eq.	4.02E-07	7.82E-08	4.21E-09	0.00E+00	6.25E-09	9.10E-13	5.82E-09	-2.55E-09
AP	mol H ⁺ eq.	4.25E-02	2.19E-02	2.98E-03	0.00E+00	1.24E-03	9.84E-07	1.43E-03	-1.30E-03
EP-freshwater	kg P eq.	9.34E-04	4.13E-04	1.12E-04	0.00E+00	2.10E-05	5.82E-08	1.67E-05	-5.35E-05
EP-marine	kg N eq.	1.00E-02	8.04E-03	8.45E-04	0.00E+00	4.71E-04	4.67E-07	5.46E-04	-3.94E-04
EP-terrestrial	mol N eq.	1.06E-01	8.72E-02	9.15E-03	0.00E+00	5.11E-03	2.59E-06	5.94E-03	-3.97E-03
POCP	kg NMVOC eq.	4.29E-02	3.04E-02	2.71E-03	0.00E+00	1.89E-03	8.32E-07	2.13E-03	-1.38E-03
ADP-minerals&metals*	kg Sb eq.	2.18E-05	1.69E-05	2.17E-06	0.00E+00	1.00E-06	2.01E-09	3.13E-07	-8.44E-07
ADP-fossil*	MJ	1.82E+02	7.82E+01	5.75E+00	0.00E+00	4.66E+00	1.66E-03	5.21E+00	-2.92E+00
WDP*	m ³	2.57E+00	4.14E-01	1.70E-01	0.00E+00	2.46E-02	3.27E-05	2.20E-01	-8.58E-02
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 this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

"Reading example: 1.57E-03 = 1.57*10⁻³ = 0.00157"

6.3 Environmental impacts – GWP-GHG

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	1.19E+01	5.25E+00	8.06E-01	0.00E+00	3.13E-01	1.99E-04	2.01E-01	-2.01E-01

¹This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A2:2019/AC:2021.

6.4 Use of Natural Resources

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	9.50E+00	9.74E-01	6.22E-01	0.00E+00	7.49E-02	-1.41E-01	4.58E-02	-6.82E+00
PERM	MJ	6.94E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-01	0.00E+00	-6.94E+00
PERT	MJ	1.64E+01	9.74E-01	6.22E-01	0.00E+00	7.49E-02	1.63E-04	4.58E-02	-1.38E+01
PENRE	MJ	1.71E+02	7.42E+01	5.48E+00	0.00E+00	4.42E+00	1.59E-03	4.94E+00	-2.33E+00
PENRM	MJ	4.52E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.52E-01
PENRT	MJ	1.17E+02	7.42E+01	5.48E+00	0.00E+00	4.42E+00	1.59E-03	4.94E+00	-2.78E+00
SM	kg	6.00E-02	3.33E-02	1.90E-03	0.00E+00	2.02E-03	4.70E-06	1.24E-03	-2.77E-02
RSF	MJ	1.82E-01	4.24E-04	2.07E-03	0.00E+00	2.55E-05	1.92E-08	2.57E-05	-1.81E-01
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	6.11E-02	1.01E-02	4.10E-03	0.00E+00	6.05E-04	8.46E-07	5.14E-03	-2.07E-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								

6.5 End of Life - Waste

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.76E-01	1.29E-01	2.60E-02	0.00E+00	6.36E-03	2.31E-05	5.49E-03	-1.67E-02
Non-hazardous waste disposed	kg	5.21E+00	2.43E+00	5.56E-01	0.00E+00	1.34E-01	5.10E-04	1.25E-01	-2.89E-01
Radioactive waste disposed	kg	3.68E-05	1.49E-05	3.74E-06	0.00E+00	1.41E-06	2.00E-09	7.67E-07	-1.94E-06

6.6 Output flow indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	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	3.04E-01	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	8.89E-03	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	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	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	0.00E+00

6.7 Biogenic Carbon Content (for all products listed)

Results per declared unit		
Indicator	Unit	A1-A3
Biogenic carbon content in product	kg	0.00E+00
Biogenic carbon content in packaging	kg	5.36E-03

6.8 Interpretation of LCA Study Results

In general terms, as it is shown in the table of core environmental impact indicators, A1-A2 and A3 module has the higher impact, representing above 64% of the whole impact. A4 module has a less impact. C2 and C4 module have little impact too, representing at most 2% and 0.0001% respectively of the whole impact. Finally, Module D represents savings of 1% of the total impact.

7. VERIFICATION

Diffusion Institution	The Environmental Footprint Institute Calle CIRCE 49A Madrid 28022 Spain www.environmentalfootprintinstitute.org
EPD Reference Number	241203EPD CR:P-3100
Published	15-01-2025
Valid until	14-01-2030
Product Category Rules	PCR P-3100: Construction products in general (EN-15804)
Product Group Classification	UN CPC 37370
Reference year for Data	November 2023 – October 2024
Geographical Scope	Global

Product category rules (PCR): Under the general rules of the Environmental Footprint Institute and PCR P-3100: Construction products in general (EN-15804)
PCR review was conducted by: The Environmental Footprint Institute.
Independent verification of the declaration and data, according to ISO 14025:2006 and ISO 14040: <input type="checkbox"/> EPD Process Certification (internal) <input checked="" type="checkbox"/> EPD Verification (external)
Third party verifier: Mr. Manuel Rama
Accredited by: The Environmental Footprint Institute.

8. MANDATORY STATEMENTS

Explanatory material can be obtained from EPD owner and/or LCA author. Contact information can be found below. The owner of the declaration shall be liable for the underlying information and evidence. The LCA Author shall not be liable with respect to manufacturer information, life cycle assessment data and evidences. The verifier and The Environmental Footprint Institute do not make any claim or present any responsibility about the legality of the product. EPDs within the same product category but from different programs may not be comparable.

9. CONTACT INFORMATION

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<p>LCA Author</p>	<p>DANUSHKA PRABHAD KUMARATHUNGA CHILTERN TMC CONSULTANT 15, C-5, Mezzanine Floor, Unique World Business Center, Hamsah - A Building, Al Karama, Dubai, U.A.E T.P. +971 42698356 E mail – info@chilterntmc.com</p>  <p>www.chilterntmc.com</p>
<p>Programme Operator</p>	<p>THE ENVIRONMENTAL FOOTPRINT INSTITUTE Calle Circe 49A Madrid, Spain www.environmentalfootprintinstitute.com info@environmentalfootprintinstitute.com</p>  <p>ENVIRONMENTAL FOOTPRINT INSTITUTE</p>

10. REFERENCES

- ecoinvent database (v3.10) - www.ecoinvent.ch
- EN 15804:2012 + A1:2013 and EN 15804:2012 + A2:2019 - Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products.
- EN ISO 14025: EN ISO 14025:2011-10 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- EN ISO 14040: EN ISO 14040:2009-11 Environmental management - Life cycle assessment - Principles and framework
- EN ISO 14044: EN ISO 14044:2006-10 Environmental management - Life cycle assessment - Requirements and guidelines
- Air.e LCA Tool v3.17



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