ENVIRONMENTAL PRODUCT DECLARATION

PORCELAIN TILE

WONDER PORCELAIN

Wonder Porcelain is committed to making interiors beautiful as well as protecting the environment. Through comprehensive Life Cycle Assessments, energy efficiency initiatives, responsible raw material sourcing, and robust waste management practices, Wonder Porcelain is working to ensure its ceramic tiles contribute to a more sustainable future. Their dedication extends to innovation in alternative materials, renewable energy, and circular economy practices, while maintaining transparency in reporting and collaborating with industry partners.

The Porcelain Tile's Environmental Product Declaration (EPD) document is just one of many actions that back its responsible stance. It is a standardized, internationally recognized tool containing data to help evaluate the products' impact from a comprehensive level.

For more details, visit https://wonderporcelain.com

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ENVIRONMENTAL PRODUCT DECLARATION
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ENVIRONMENTAL PRODUCT DECLARATION

WONDER PORCELAIN

Porcelain Tile

According to ISO 14025, and ISO 21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Solutions 333 Pfingsten Rd, Northbrook, IL 60062, United States
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	UL Environment Environmental Product Declaration Program, GENERAL PROGRAM INSTRUCTIONS, VERSION 2.7, MARCH 2022
MANUFACTURER NAME AND ADDRESS	Wonder Porcelain 5 Wonder Lane, Lebanon, Tennessee 37090
DECLARATION NUMBER	4791914333.101.1
DECLARED UNIT	1 m^2 of floor covering
REFERENCE PCR AND VERSION NUMBER	Part A: Life Cycle Assessment Calculation Rules and Report Requirements (UL Environment, V4, 2022) Part B: Flooring EPD Requirements (UL Environment V2.0, 2018)
DESCRIPTION OF PRODUCT APPLICATION/USE	Flooring application
PRODUCT RSL DESCRIPTION (IF APPL.)	75 years
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	December 4th , 2025
PERIOD OF VALIDITY	5 Years
EPD TYPE	Product-specific
RANGE OF DATASET VARIABILITY	n/a
EPD SCOPE	Cradle to Grave
YEAR(S) OF REPORTED PRIMARY DATA	2024
LCA SOFTWARE & VERSION NUMBER	Sphera LCA for Experts (fka GaBi) 10.9.1.17
LCI DATABASE(S) & VERSION NUMBER	Sphera Managed LCA Content (fka GaBi) 2025.1
LCIA METHODOLOGY & VERSION NUMBER	IPCC AR5, TRACI 2.1, CML-2016

The PCR review was conducted by:	Jack Geibig, Chair-Ecoform, jgeibig@ecoform.com Thomas Gloria, PhD, Industrial Ecology Consultants t.gloria@industrial-ecology.com Thaddeus Owen, hiper4m@gmail.com
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Cooper McCollum, UL Solutions
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	WAP Sustainability Consulting, LLC
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Omar Mayorga, UL Solutions

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

1. Product Definition and Information

1.1. Description of Company/Organization

Wonder Porcelain is an American company with international roots. With manufacturing based in Lebanon, Tennessee, the U.S. division operates as a wholly owned subsidiary of one of the largest tile companies in the world. Wonder Porcelain, comprised of a team of tile veterans who have come together from leading organizations within the industry, incorporates proven processes and strategy as well as a new vision for manufacturing, marketing, and selling tile in the United States. The U.S. division is committed to the future of the tile industry in America and believes future growth depends upon increasing domestic manufacturing, adopting new, innovative techniques and spearheading ongoing research and development within the industry.

1.2. Product Description

This LCA was conducted for representative products derived from Wonder Porcelain's line of products produced at the facility located in Lebanon, Tennessee. Porcelain tiles are primarily made up of clays, feldspar, and other additives, and then molded into shape, followed by firing in a kiln. Porcelain tiles can be glazed or unglazed. There are several advantages to porcelain tiles. They are fire-resistant, non-combustible, durable (lasts a lifetime), and extremely easy to maintain. The UNSPSC code for this flooring product is 301617, and the CSI code is 09 30 00.

The products declared in this document comply with the following codes or regulations.

- ANSI A137.1: American National Standard Specifications for Ceramic Tile
- Fire Testing: Classification: A, Flame Spread: 0, Smoke Developed: 0

1.3. Application

Porcelain tile products are commonly used in a variety of applications, including commercial, light commercial, institutional, and residential interior and exterior applications.

1.4. Declaration of Methodological Framework

This LCA follows an attributional approach and is a cradle-to-grave study. The third-party verified ISO 14040/44 secondary LCI data sets contribute more than 67% of the total impact (either at the unit process level or in aggregate) to any of the required impact categories identified by the applicable PCR. No known flows are deliberately excluded from this EPD.

1.5. Technical Requirements

Table 1: Technical Data

PARAMETER	WONDER PORCELAIN TILE
Nominal Area (mm^2)	92903, 139355, 185806, 371612, 743224.3
Nominal Value Sizes (in)	6x36, 12x24, 24X24, 24x48, 8x48, 16x32, 32x32
Average Fired Weight (g/m^2)	20.10

Average Fired Weight (lb/ft^2)	4.11
Thickness min value (mm)	8.20
Thickness max value (mm)	9.50
Class	P1
Tile Type	Porcelain
Grade	Includes Standard and Second
Dimensional Categories	Calibrated and Rectified

1.6. Properties of Declared Product as Delivered

All the products are packaged in cardboard and PET films, and then delivered to the customer or job site.

1.7. Material Composition

Table 2: Material composition of the product

COMPONENT	MATERIAL	COMPOSITION %
Body	High Carbon Clay	21.88%
	Low Carbon Clay	8.07%
	Feldspathic Sand	24.99%
	Tailing Feldspar	17.24%
	AG lime	2.91%
	Bentonite	2.19%
	Mason Sand	3.94%
	Recycled Tile	16.80%
Glaze	Nepheline, aluminum silicate, Alumina, Silica, additives	1.98%

1.8. Manufacturing

The manufacturing process begins with the mining of raw materials such as clay, granite, feldspar, and other natural minerals. These raw materials are then mixed with water in a ball mill. The slurry formed in this process is the body slip, which will form the bulk of the porcelain tile. Next, the slip is pumped to the spray dryer. This device uses burners and gravity to form a powder. The resulting powder is then pressed into the form of a pre-fired or “green” tile. The green tiles pass through a drying apparatus to further reduce moisture content. From there, the tiles proceed down the glaze line for base application, ceramic ink jet decoration, and are finished with a protective top glaze. Tiles are then stored in a buffer area for a short time before proceeding to another dryer. After the final dryer, the product is then fed into the kiln. Inside the kiln, thermochemical reactions take place that remove all VOCs and fuse the porcelain tile into the familiar solid and durable product.

The entire process incorporates extensive recycling. All water from municipal sources is reused in the process. Dryer systems utilize hot air from the kiln exhaust. The body formulation recycles wastewater solids, green tile scrap, and materials captured from the dust collection systems. However, to analyze the extent of impacts from tiles with no recycled content, the study includes a scenario with no scrap being recycled back into the

manufacturing process. Once the tiles are manufactured, they are packaged in cardboard and PET films.

1.9. Packaging

All the products are packaged in cardboard and PET films, and then delivered to the customer or job site.

Table 3: Packaging details of the product

PACKAGING	UNIT	QUANTITY
Cardboard	kg/m^2	0.050
PET Film	kg/m^2	0.001

1.10. Transportation

The materials are delivered to the manufacturing facility via truck, train and ship and are accounted for in the model. The distances were modeled by material and were calculated using the supplier location and the location of manufacturing.

1.11. Product Installation

Wonder Porcelain references the Tile Council of North America (TCNA) and the American National Standards Institute (ANSI) installation instructions for guidance and are provided online. Installation scenarios are considered in the study. Installation equipment is required, though not included in the study, as these are multi-use tools and the impacts per functional unit are considered negligible. As per section 3.5 of UL PCR Part B, the installation is manual, and no operational energy is consumed. Packaging and installation waste disposal have been modeled as per guidelines in section 2.8.5 of Part A: Life Cycle Assessment Calculation Rules and Report Requirements.

Table 4: Installation details of the product

MATERIAL	QUANTITY	UNIT
Mortar	4.07	kg/m^2
Grout	0.212	kg/m^2
Water	0.37	kg/m^2
Acrylate	0.043	kg/m^2
Waste for mortar	4.5	%
Waste for grout	4.5	%

1.12. Use Phase

As recommended by the Tile Council of North America (TCNA), porcelain tile floors are cleaned with dust mops daily and with a damp mop 36 times a year for commercial flooring applications. Damp mopping requires the use of tap water for cleaning. The impacts from the mops itself as multi-use tools are considered to be negligible per functional unit. Since the reference service life of porcelain tiles is 75 years, which is as long as the estimated service life of the building, there are no replacements of tiles over the course of the lifetime of the building.

Table 5: Use Phase Parameters (B2)

USE	CLEANING PROCESS	CLEANING FREQUENCY	CONSUMPTION OF ENERGY AND RESOURCES
Commercial	Dust mop	365 times/ year	-
	Damp mop	36 times/ year (Commercial)	Tap water

Table 6: Use Phase Inputs (B2)

	AMOUNT	UNIT
Tap water	0.783	l/m2/yr

1.13. Reference Service Life and Estimated Building Service Life

According to Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL Environment, V3.2, 2018, the Estimated Service Life (ESL) of the building is assumed to be 75 years. Since porcelain tiles are expected to last as long as the building itself, the Reference Service Life (RSL) of porcelain tiles is taken to be 75 years.

Over its service life, porcelain tile's properties are remarkably stable, maintaining high durability, hardness, and resistance to wear, moisture, and stains. While it can last for decades, its performance can be slightly affected by wear and tear from heavy foot traffic, which may lead to micro-fractures or a dulling of the finish. External factors like chemical etching from saltwater, abrasion from sand in dry climates, or dulling from urban pollutants can also degrade the surface over a very long period.

1.14. Disposal

Product waste disposal has been modeled in accordance with the guidelines in Section 2.8.5 of UL PCR Part A, Table 2. The distance from the installation site to the waste processing site is considered as per section 3.5, table 7 of UL PCR Part B-Flooring.

2. Life Cycle Assessment Background Information

2.1. Functional Unit

The functional unit, according to the UL PCR, is 1 m^2 of floor covering. The products under study have a reference service life (RSL) of 75 years. The table shows additional details related to the functional unit.

Table 7: Functional Unit Details

PROPERTY	VALUE
Mass per functional unit [kg/m^2]	21.67

2.2. System Boundary

This LCA is a Cradle-to-Grave study. An overview of the system boundary and a summary of the life cycle stages included in this LCA are presented below.

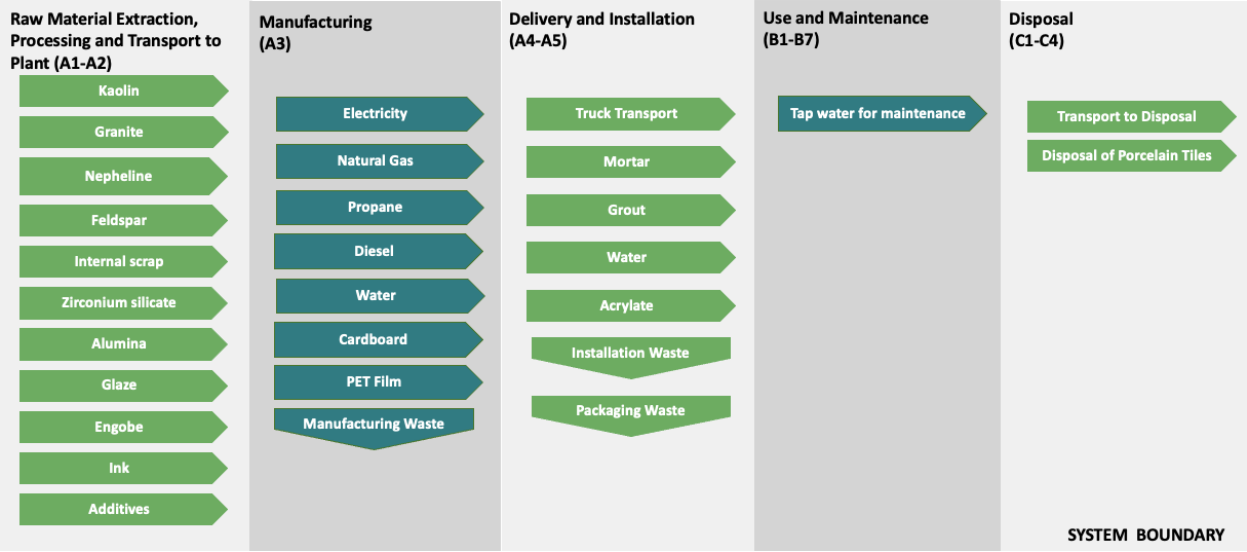


Figure 1: System Boundary Diagram

Table 8: Life Cycle Stages Included in the Study

PRODUCTION			CONSTRUCTION		USE							END OF LIFE				BENEFITS & LOADS BEYOND SYSTEM BOUNDARY
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw Material Supply	Transport	Manufacturing	Transport to Site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction	Transport	Waste Processing	Disposal	Reuse, Recovery, Recycling Potential
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

X = Module Included in LCA Report, MND = Module not Declared

2.3. Estimates and Assumptions

All estimates and assumptions are within the requirements of ISO 14040/44. The majority of the estimations are within the primary data. Some assumptions made in the study that may have affected the results are:

- The primary data was collected as annual totals including all utility usage and production information. For the LCA, the usage information was divided by the production to create an energy and water use per square meter.
- Installation tools are used enough times that the per square meter impacts are negligible.
- Distance of transport to customer is assumed to be 800km as recommended by the PCR (Part B) due to the unavailability of granular sales data.
- Materials required for installation were assumed to be as recommended by Tile Council of North America (TCNA). In reality, these material quantities and application rates may not be used thus changing the overall impact.
- Use phase scenarios are also taken as per TCNA guidelines from the industry wide EPD. However, use phase scenarios have a high degree of variability based on user preferences which might affect overall results.
- The disposal pathways and the corresponding transportation distances of unused product waste, packaging waste, and post-consumer product waste are assumed in accordance with the PCR.
- The selection of which generic dataset to use to represent an aspect of a supply chain is a significant value choice. Collaboration between LCA practitioners, Wonder Porcelain associates and LCA fE data experts was valuable in determining best-case scenarios in the selection of data. However, no generic data can be a perfect fit. Improved supply chain specific data would improve the accuracy of results, however budgetary and time constraints have to be taken into account.

2.4. Cut-off Criteria

Cumulative excluded material inputs, energy inputs, and environmental impacts did not exceed 5% based on total weight, energy use, or environmental impact of the functional unit. In the present study, all the inputs or outputs greater than or less than 1% (based on the total mass of the final product) were included within the scope of analysis.

2.5. Data Sources

Primary data was collected by Wonder Porcelain associates for onsite energy, water and waste during the course of manufacturing. Whenever available, supplier data was used for raw materials used in the production process. When primary data did not exist, secondary data for raw material production was used from LCA fE Database 2025.1. All calculation procedures adhere to ISO14044.

2.6. Data Quality

The assessed data quality for each data point utilized within the study can be viewed in the Data Quality Section of the report, found in Section 3.7. Overall data quality is considered good. Improvements can be made through the modification of datasets to incorporate more regional specificity, both in terms of energy and technology.

However, the data were considered appropriate in relation to the goal, scope, and budget of the project.

Primary data in the form of energy consumption and water consumption were normalized based on the functional unit of the product. The resulting energy and water per unit were used for products manufactured at the facilities under study. Overall, primary energy and water data quality are considered good.

Primary data also includes the bills of materials used to formulate the products that are included in the study. Overall, this data is considered very good.

2.7. Period under Review

The period under review was CY 2024.

2.8. Allocation

General principles of allocation were based on ISO 14040/44. There are no products other than the product under study that are produced as part of the specific manufacturing processes under study. To derive a per-unit value for manufacturing inputs such as electricity, thermal energy, and water, allocation based on total production by mass was adopted. As a default, secondary MLC datasets use a physical basis for allocation.

2.9. Comparability

The user of the EPD should take care when comparing EPDs from different companies. Assumptions, data sources, and assessment tools may all impact the variability of the final results and make comparisons misleading. Without understanding the specific variability, the user is therefore, not encouraged to compare EPDs. Even for similar products, differences in use and end-of-life stage assumptions, and data quality may produce incomparable results. Comparison of the environmental performance of flooring products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR. Full conformance with the PCR for flooring products allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

3. Life Cycle Assessment Scenarios

Table 9. Transport to the building site (A4)

NAME	VALUE	UNIT
Fuel type	Diesel	
Liters of fuel	42	l/100km
Vehicle type	Diesel-powered truck/trailer	
Transport distance	800	km
Capacity utilization (including empty runs, mass based	67%	%

Table 10. Installation into the building (A5)

PARAMETER	UNIT	QUANTITY
Net freshwater	kg/m^2	0.37
Grout	kg/m^2	0.212
Mortar	kg/m^2	4.07
Acrylate	kg/m^2	0.043
Waste materials at the construction site before waste processing, generated by product installation	kg/m^2	1.17
Packaging waste, cardboard	kg/m^2	0.05
Packaging waste, plastic strap	kg/m^2	0.001
Direct emissions to ambient air, soil, and water	kg/m^2	0.00
VOC emissions	$\mu g/m^3$	N/A

Table 11. Reference Service Life

NAME	VALUE	UNIT
RSL	75	years
Declared product properties (at the gate) and finishes, etc.	See Table 1	-
Design application	Installation per recommendation by manufacturer	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	Accepted industry standard	-
Indoor environment (if relevant for indoor applications)	Normal building operating conditions	-
Use conditions, e.g. frequency of use, mechanical exposure	Normal building operating conditions	-

Table 12. Maintenance (B2)

PARAMETER	UNIT	QUANTITY
Maintenance Process	-	Use phase parameters as recommended by TCNA guidelines
Dust mop	Cycles/ RSL and Cycles/ ESL	27,375

Damp mop (Commercial)	Cycles/ RSL and Cycles/ ESL	2,700
Damp mop (Residential)	Cycles/ RSL and Cycles/ ESL	300
Net freshwater consumption specified by water source and fate	m^3	0.05 m^3 tap water, evaporated
Further assumptions for scenario development	Cycles/ RSL and Cycles/ ESL Floor cleaned with dust mop daily and with damp mop 36 times/year for commercial applications and 4 times/year for residential applications	

Table 13. End of life (C1-C4)

PARAMETER	UNIT	QUANTITY
Collected as mixed construction waste	kg	23.7
Waste to Landfill	kg	23.7
Distance to Landfill	km	161

Tile is not routinely recycled or incinerated, and hence, module D is not declared in this study

4. Life Cycle Assessment Results

Environmental impacts were calculated using the LCA fE software platform. As per PCR Part A section 4.7, Life Cycle Impact Assessment results have been calculated as per the methodology rules for the North America region, using characterization factors based on the current version of the U.S. EPA's TRACI v2.1 for all the impact categories except GWP, which is based on IPCC AR5 and ADP-fossil, which is based on CML-baseline, v4.7 August 2016 characterization factors. Results presented in this report are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks.

Table 14: Acronyms

Abbreviation	Parameter	Abbreviation	Parameter
GWP	Global warming potential (excluding biogenic CO_2)	RPR_E	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
AP	Acidification potential of soil and water	RPR_M	Use of renewable primary energy resources used as raw materials
EP	Eutrophication potential	$NRPR_E$	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
ODP	Depletion of stratospheric ozone layer	$NRPR_M$	Use of non-renewable primary energy resources used as raw materials
SFP	Smog formation potential	SM	Use of secondary materials
ADP-fossil	Abiotic resource depletion potential of non-renewable (fossil) energy resources	RSF	Use of renewable secondary fuels
PM	Potential incidence of disease due to PM emissions	NRSF	Use of non-renewable secondary fuels
IRP	Potential human exposure efficiency relative to U235	RE	Recovered energy
ETP-fw	Potential comparative toxic unit for ecosystems	FW	Net use of fresh water
HTP-c	Potential comparative toxic unit for humans	HWD	Disposed-of-hazardous waste
HTP-nc	Potential comparative toxic unit for humans	NHWD	Disposed-of non-hazardous waste
SQP	Potential soil quality index	HLRW	High-level radioactive waste, conditioned, to final repository
BCRP	Biogenic carbon removal from product	EEE	Exported energy
BCEP	Biogenic carbon emission from product	CCE	Calcination carbon emissions
BCRK	Biogenic carbon removal from packaging	CCR	Carbonation carbon removals
BCEW	Biogenic carbon emission from combustion of waste from renewable sources used in production processes	CWNR	Carbon emissions from combustion of waste from non-renewable sources used in production processes

4.1. Life Cycle Impact Assessment Results

The LCIA results are presented below for the functional unit, i.e., 1 m² of floor covering.

Table 15: LCIA results

Impact	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
IPCC AR5																
GWP	kg CO_2 eq	2.24E+01	1.38E+00	6.02E-01	0.00E+00	9.44E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.17E-01	0.00E+00	5.39E-01	MND
TRACI 2.1																
AP	kg SO_2 eq	5.88E-02	6.25E-03	1.81E-03	0.00E+00	2.13E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.90E-04	0.00E+00	2.69E-03	MND
EP	kg N eq	2.16E-03	4.82E-04	1.73E-04	0.00E+00	1.23E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.60E-05	0.00E+00	1.11E-04	MND
ODP	kg CFC 11 eq	2.79E-10	6.08E-14	1.96E-10	0.00E+00	3.57E-15	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-14	0.00E+00	1.11E-13	MND
SFP	kg O_3 eq	5.20E-01	1.43E-01	3.08E-02	0.00E+00	3.28E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.99E-02	0.00E+00	4.81E-02	MND
CML-2016																
ADPF	MJ	2.61E+02	1.72E+01	5.95E+00	0.00E+00	1.37E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.99E+00	0.00E+00	7.69E+00	MND

Table 16: Resource use, waste, and output flow results

Impact	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Resource Use																
RPRE	MJ	1.24E+01	7.24E-01	6.55E-01	0.00E+00	2.29E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E-01	0.00E+00	1.13E+00	MND
RPRM	MJ	8.51E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
NRPRE	MJ	2.89E+02	1.74E+01	6.30E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.03E+00	0.00E+00	7.94E+00	MND
NRPRM	MJ	2.38E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
SM	kg	3.64E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
RSF	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND

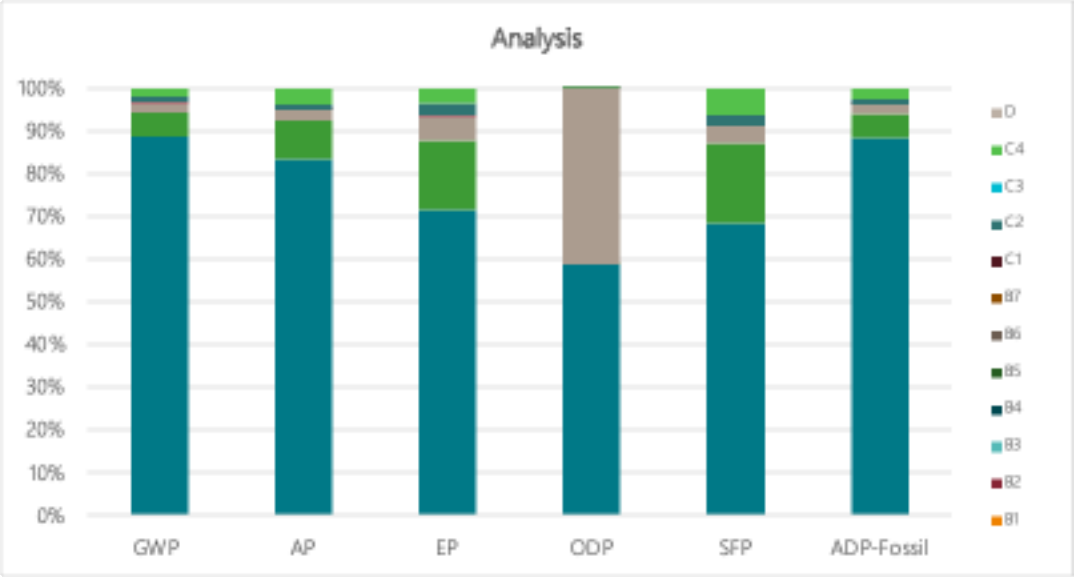
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
RE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
FW	m^3	6.98E-02	7.82E-04	2.08E-03	0.00E+00	5.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-04	0.00E+00	8.65E-04	MND
Output Flows and Waste																
HWD	kg	5.46E-05	2.89E-09	1.31E-09	0.00E+00	4.97E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.69E-10	0.00E+00	1.90E-09	MND
NHWD	kg	4.03E+00	1.78E-03	1.36E+00	0.00E+00	1.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.13E-04	0.00E+00	2.38E+01	MND
HLRW	kg	1.17E-05	7.11E-08	1.01E-07	0.00E+00	4.82E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-08	0.00E+00	9.93E-08	MND
ILLRW	kg	9.91E-03	5.97E-05	1.22E-04	0.00E+00	4.25E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-05	0.00E+00	8.73E-05	MND
CRU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MR	kg	0.00E+00	0.00E+00	3.41E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MER	kg	0.00E+00	0.00E+00	2.67E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
EE	MJ	0.00E+00	0.00E+00	4.88E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND

Table 17: Carbon emissions and removals

Impact	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BCRP	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEP	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCRK	kg CO_2	7.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEK	kg CO_2	0.00E+00	0.00E+00	7.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEW	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
CCE	kg CO_2	0.00E+00	0.00E+00	1.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
CCR	kg CO2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
CWNR	kg CO2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND

5. LCA Interpretation

Analysis was performed for the porcelain tile product to show which of the life cycle modules contributes to the majority of the impacts. Due to the relevance of these impact categories to the product type and the manufacturer's interests, this analysis is provided for GWP, AP, EP, ODP and SFP results, and ADP-fossil results.



For most of the impact categories, the raw material supply to the manufacturing stage contributes the highest, with more than 60% contribution, followed by downstream transportation (from manufacturing to installation site) with around 6% to 15% contribution. For ODP, the installation phase contributes significantly with around 41% contribution.

This LCA project report represents a systematic and comprehensive summary of project documentation and showcases any data and information of importance to the results, as required by the Product Category Rules (PCRs).

Some limitations to the study have been identified as follows:

- Since this LCA uses cut-off approach to recycled material in the product, no credit is given to the product system, but rather is exempted from the burden of extracting virgin material in place of using recycled material.
- Only known and quantifiable environmental impacts are considered.
- Due to the assumptions and value choices listed above, these do not reflect real-life scenarios and hence they cannot assess actual and exact impacts, but only potential environmental impacts.
- Possible credit from Wonder Porcelain's tile take-back program has not been considered in this study. Instead, all tile is considered to be landfilled at the end of its useful life per PCR Part A.

6. Additional Environmental Information

No substances required to be reported as hazardous are associated with the production of this product.

- **Fire**
  Fire testing and performance results are mentioned in Section 3.
- **Water**
  Any excess water from flooding must be removed, and the tile should be dried as soon as possible
- **Mechanical Destruction**
  Any damaged or broken tiles must be removed and replaced only by a qualified contractor.

7. References

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3. ISO 14025:2006 Environmental Labels and Declarations - Type III Environmental Declarations- Principles and Procedures.
4. ISO 14044: 2006 Environmental Management- Life Cycle Assessment - Requirements and Guidelines.
5. ISO 21930:2017 Sustainability in Buildings and Civil Engineering Works - Core Rules for Environmental Product Declarations of Construction Products and Services.
6. Life Cycle Assessment (LCA) Report for Wonder Porcelain. WAP Sustainability Consulting, July 2025.
7. Tile Council of North America. (October 29, 2019). Installing Tile. Retrieved from https://www.tcnatile.com/faqs/47-installing-tile.html#faq39
8. UL Environment (2018): Part B: Flooring EPD Requirements. IBU. Version 2.0, September 2018.
9. UL Environment (2022): Product Category Rule (PCR) for Building-Related Products and Services, Part A: Life Cycle Assessment Calculation Rules and Report Requirements UL 10010. Version 4.0, March 2022.
10. US EPA. (2012). TRACI: The Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts. Version 2.1 - User Guide. Retrieved from https://nepis.epa.gov/Adobe/PDF/P100HN53.pdf

Wonder Porcelain products included in product-specific Type-3 Environmental Product Declarations (EPD)

The table below lists the products that are included in Wonder Porcelain EPD. As product names often change, this list will be updated on a bi-annual basis. If a product is not listed, please check with your sales representative, or please refer to www.wonderporcelain.com for details or contact information.

BRAND	MANUFACTURING LOCATION	EPD CERTIFICATION NUMBER	PRODUCT ID	PRODUCT NAME
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421603	Onx² Style Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421604	Pietra Marme de Milano™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421605	Preeminent II Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421606	Ranch Wood Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421607	Reverence Color Body Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421608	Sandstone Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421609	Sculpture Gold Porcelain™- Connectile Collection
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421610	Sediment Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421611	Sherron Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421613	Terrazzo Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421614	Twilight Elegance Porcelain™- Connectile Collection
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421615	Winter Stone Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421616	4 Points Style Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421617	Adagio Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421618	Arctic Style Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421619	Blanc Stone™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421620	Blue Ridge Style Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421621	Braewood Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421622	Bryce Wood Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421623	Carenza Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421624	Carrara Gold™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421625	Cemento Couture™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421626	Classica Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421627	Destiny Slate Porcelain™

Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421628	Enduring Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421629	Era Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421630	Ethan Stone Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421631	Fossilique Stone Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421632	Gard Stone™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421633	Havana Stone™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421634	Lassen Wood Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421635	Marble Folio Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421636	Marmi de Rosso™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421637	Mars Stone II Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421638	Millennium Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421639	Mod: Slate Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421640	Mystic Marble™ - Connectile Collection
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421641	Tuxedo Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421643	Vayron Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421644	Taj Opus Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421645	Elaraine Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421646	Valora Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421647	Ivorynn Stone Porcelain™
Wonder Porcelain	Lebanon, TN- Floor Tile	4791914333.101.1	421648	Silvanus Porcelain™