

ENVIRONMENTAL PRODUCT DECLARATION

As per ISO 14025, EN 15804, and ISO 21930.

Valid Through: 03/31/2024



ENVIRONMENTAL PRODUCT DECLARATION

ESTABLISHED IN 1968, Emser Tile, headquartered in Los Angeles, offers unparalleled service and a dynamic selection of products. Emser is one of the most comprehensive sources for interior and exterior products that include porcelain, ceramic, metal, glass, quarry, decorative accents and mosaics, cut-to-size stone, setting materials, and custom manufactured products made to your specifications.

Our dedication and commitment to customer service remains as strong as ever and the core of our business and our culture.

Emser Tile embraces our responsibility to protect the planet and its precious resources. We hold the same standards for our suppliers and trade partners, and work alongside to ensure that they adhere to these standards. That is why we are helping to lead the Declare Red List Free, HPDC, and EPD initiatives in the tile industry. Our goal is to provide cutting-edge solutions that not only meet your design standards but also keep our planet healthy for generations to come.

Emser Tile® conforms to
ANSI A137.1

Technical Standards	
Property	Method
Breaking Strength	ASTM C648
Chemical Resistance	ASTM C650
Crazing Resistance	ASTM C424
Deep Abrasion	ASTMC1243
Stain Resistance	ASTM C1378
Visual Abrasion Resistance	ASTM C1027
Water Absorption	ASTM C373
Coefficient of Friction	ANSI 326.3
Facial Dimensions	ASTM C499
Thickness	ASTM C499
Warpage	ASTM C485
Wedging	ASTM C502



PRODUCT INFORMATION

PRODUCT DESCRIPTION

Ceramic tiles, produced by/for Emser Tile® are shaped mainly by pressing (but also by extrusion), starting from natural raw materials such as clay, feldspar, sand and kaolin. The main type of ceramic tiles is porcelain stoneware, characterized by a very compact structure and high performances. Other types include single fired tiles, like monoporosa, double fired tiles, etc.

APPLICATION

The ceramic tiles under study are intended and applied for both floor and wall coverings, installed both in internal and external environments, for residential, commercial and institutional use.

TECHNICAL DATA

Ceramic tiles produced by/for Emser Tile® conform to the following standards and specifications. ASTM/ANSI

BASE MATERIALS/ANCILLARY MATERIALS

Main raw materials for ceramic tile:

Clay 42%
Sand 13%
Feldspar 35%
Rhyolite 4%

Main glaze components:

Clay powder
Quartz
Alumina
Natural pigments
Frits

Main Auxiliary Additives:

Dispersant
Binder
Fluidifying agents
Pigments

ENVIRONMENT AND HEALTH DURING MANUFACTURING

Workers are informed about physical and chemical risks associated to their job and workplace. They receive an appropriate training and personal protective equipment. Emser Tile® promoted the adoption of health and safety practices agreed with local authorities.

PRODUCT PROCESSING/INSTALLATION

Tiles are fixed to the walls and floors surfaces using different materials and amounts, for example, dispersion and cementitious adhesives and mortars, sealants or liquid applied membranes. During the installation, no emissions occur and no health or environmental risks derive from ceramic tile installations.

PACKAGING

The tiles are packed in cardboard boxes, wrapped with polyethylene film and plastic straps and stacked on wooden pallets. The amount of packaging material can vary according to the tile size.

- Paper: recycling, energy recovery, disposal;
- Plastic: recycling, energy recovery, disposal;
- Wood: reuse, energy recovery, landfill.

CONDITION OF USE

Ceramic tiles are solid and inert due to being burnt at high temperatures. The environmental impacts generated during the B1 phase are very low and therefore can be neglected.



PRODUCT INFORMATION

ENVIRONMENT AND HEALTH DURING USE

Ceramic is intrinsically inert, chemically stable and therefore, during the use stage, does not emit any pollutants or substances which are harmful to environment and health such as: VOCs and Radon

REFERENCE SERVICE LIFE

The service life of tiles is generally higher than 50 years. According also to /US Green Building Council/ the service life of tiles could be as long as the life of the building itself. Therefore 60 years can be an alternative tile's life for /U.S. GBC/.

The results reported consider the tile's use of 1 year, therefore multiplying B2 values for 50 or 60, it's possible to obtain B2 values referred to 50 or 60 years. Influences on ageing when applied in accordance with the rules of technology

EXTRAORDINARY EFFECTS

Fire

According to ASTM E84, ceramic tiles can be classified as A1 class of fire resistance rating, because they do not contribute to fire.

Water

Ceramic tiles cannot react with water because they are an insoluble material.

Mechanical Destruction

Ceramic tiles can be smashed mechanically, but no harmful damage on the environment is expected.

RE-USE PHASE

After the demolition and deconstruction stage, ceramic tiles can be crushed and then used in a range of different applications, like concrete aggregates or road construction.



MANUFACTURING PROCESS



MANUFACTURING PROCESS

MANUFACTURING (A3)

Raw materials are mixed and can be milled through a wet or dry process, being the most popular the wet milling one. The mixture of water and raw materials obtained from the wet process is then spray-dried to obtain the granule.

Most of the spray-driers have cogeneration systems for combined heat and power. All the heated gases generated are used in the spray drying process; part of the electric energy generated is used in the manufacturing process itself, thus reducing the energy demand from the grid and other part is sold to the grid, considering therefore, a coproduct.

The granules are transported to the ceramic tiles factory. The ceramic pieces are formed by dry uniaxial pressing mainly and/or by extrusion. Currently, continuous presses are being installed to obtain tiles pieces of large sizes and reduced thicknesses.

The formed pieces are introduced into a continuous drier to reduce tile moisture content, thus doubling or tripling tile

mechanical strength for subsequent processing, thus allowing next processing.

Most of the pieces are decorated with one or more thin layers of ceramic glaze. The body is also decorated with applying different techniques, being the majority, the injection of inks.

Subsequently, the ceramic tiles go on the firing stage that uses natural gas as fuel. The firing is the most important stage in the production process, as the materials have a fundamental change in the properties, obtaining a hard material, resistant to water and to chemical products. The products are subjected to firing cycles with temperatures between 1000-1300°C.

The search for new effects in ceramic tiles has led to a series of additional treatments to the fired pieces: pre-cutting, cutting, surface polishing, grinding, beveling, etc.

After the quality control processes, also known as sorting, the pieces are packaged using cardboard, pallets and polyethylene.



MANUFACTURING PROCESS

PRODUCT STAGE

A1: Raw Material Supply includes raw material extraction and pre-treatment processes before the production. Production starts with the raw materials.

A2: Upstream Transport is relevant for delivery of raw materials to the plant and forklift usage within the factory.

A3: Manufacturing stages include production of tiles and detailed production scheme is given in Manufacturing Scheme. Transport is only relevant for delivery of raw materials to the plant and forklift usage within the factory.

CONSTRUCTION STAGE

A4: Downstream Transport is relevant for delivery of porcelain tiles to the construction site.

A5: Installation Stage includes the adhesive mortar and water usage in the construction site. Yurbay advises 5 kg mortar and 1.2 L water usage for 1 m² porcelain tile installation.

USE STAGE

B1: Use Stage concerns emissions into environment. Tiles do not cause any emissions in the use stage because of their inert feature.

B2: Maintenance includes cleaning of tiles. [See Emser Tile's Cleaning and Maintenance guidelines.](#)

B3: Repair is not required during the use phase and therefore no impacts should be declared.

B4: Replacement is not required during the use phase and therefore no impacts occurred in this module.

B5: Refurbishment is not required during the use phase and therefore no impacts has occurred in this module.

B6: Operational Energy Use is not required in the use stage therefore no impacts has occurred in this module.

B7: Operational Water Use is not required in the use stage therefore no impacts has occurred in this module.

END OF LIFE STAGE

C1: Deconstruction and Demolition at the end of RSL is usually conducted with a selective deconstruction/ demolition. The environmental impacts generated during this phase are very low and therefore can be neglected.

C2: Transport includes the transportation of the discarded tiles and adhesive mortar to final disposal. Average distance from demolition site to inert landfill site for final disposal is assumed to be 50 km.

C3: Waste Processing concerns crushing of discarded porcelain tiles before recycle or reuse. The environmental impacts generated during the C3 phase are very low and therefore can be neglected.

C4: Disposal is the final stage of product life. Porcelain tiles end up at construction and demolition waste landfills as their final fate and modelled as such in this LCA.

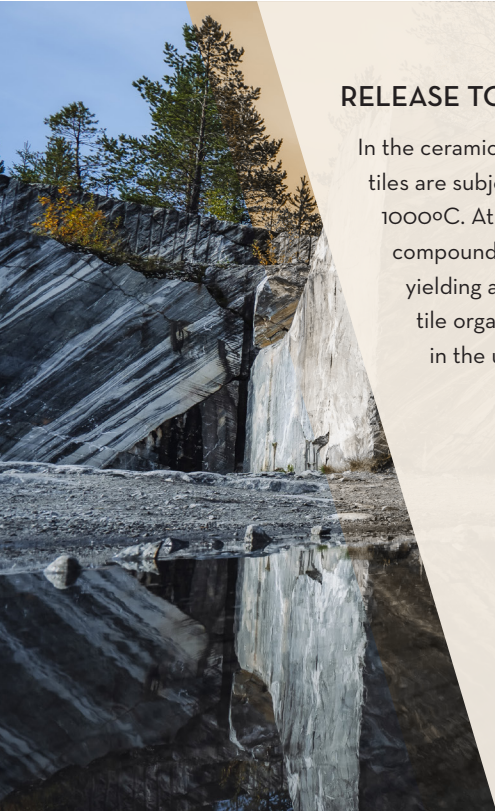
B&L STAGE

D : Benefits and Loads stage includes calculation of inert filler benefits and recycling of packaging materials specified in the disposal stage.



MANUFACTURING PROCESS

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Benefits and loads beyond the 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 from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste Processing	Disposal	Reuse, Recovery, Recycling Potential	
Cradle to Grave		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND



RELEASE TO INDOOR AIR

In the ceramic tiles manufacturing process, tiles are subjected to a thermal process above 1000°C. At these temperatures, any organic compound in the composition decomposes, yielding an inert end-product free of any volatile organic compounds that might be released in the use stage.

RELEASE TO SOIL AND WATER

Ceramic coverings release no compounds into the soil or water during their use stage because a completely inert product is involved that undergoes no physical, chemical, or biological transformations, is neither soluble nor combustible, and does not react physically or chemically or in any other way, is not biodegradable, and does not adversely affect other materials with which it enters into contact such that it might produce environmental pollution or harm human health. It is a non-leaching product, so that it does not endanger the quality of surface water or groundwater.

