

WHAT IS PORCELAIN TILE AND PTCA CERTIFICATION?

WHAT IS PORCELAIN TILE?

Ceramic tile is defined as a ceramic surface component, glazed or unglazed, that is fired at a temperature sufficiently high to produce specific characteristics and properties. This relatively broad definition encompasses different types of ceramic tile, all of which collectively make up what is commonly known as the **"ceramic tile family."**

The ceramic tile family includes:

- Porcelain tile
- Pressed floor tile
- Quarry tile
- Wall tile
- Mosaic tile

While each of these tile subsets is ceramic tile and thus shares ceramic tile's general benefits, they are each produced slightly differently and may consequently have **additional advantages** that lend themselves to specific applications.

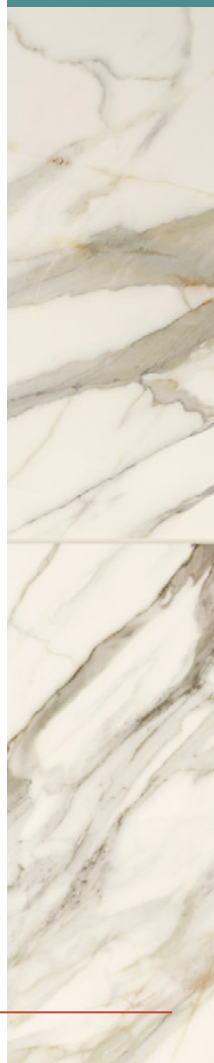


Porcelain tile, which according to census bureau data and estimates from the Tile Council of North America (TCNA), accounts for **more than 50% of U.S. and imported ceramic tile sales**, has emerged as a popular type of ceramic tile. This whitepaper will explore the defined characteristics of true porcelain tile, and the importance of porcelain tile certification.





Like regular ceramic tile, porcelain tile comes in both glazed and unglazed options. Unglazed porcelain tile is often referred to as "**through-body**" according to TCNA when the color on the surface of the tile continues all the way through the tile body. While scratches, chips, and dents are unlikely due to porcelain's high durability, **through-body tile's consistent color makes it difficult to see any wear that does occur.** [1]



PORCELAIN TILE DEFINITION

As TCNA's Director of Standards and Sustainability Initiatives Bill Griese explains, a ceramist or materials scientist would probably describe porcelain as **"a triaxial composition of quartz, clay, and feldspar that, when fired between 1200 and 1400 degrees Celsius, produces a tough white, usually translucent and virtually non-permeable body."** [2]

However, the ceramic tile industry focuses on porcelain meeting an "impervious" rating — meaning that ceramic tile's water absorption must be less than or equal to 0.5% in order to qualify as porcelain tile. Impervious ceramic tile of any composition is considered porcelain.



We see this definition upheld by both the International Standards Organization (ISO) and the American National Standards Institute (ANSI):

- **ISO definition of porcelain (ISO 13006):** Fully vitrified tile with a water absorption coefficient less than or equal to a mass fraction of 0.5%, belonging to groups AI_a and BI_a [3]
- **ANSI definition of porcelain (A137.1):** A ceramic tile that has a water absorption of 0.5% or less that is generally made by the pressed or extruded method; does not include materials with very little or no crystallinity, such as glass tile (Class P1, E1, or O1) [4]

HOW TO DETERMINE IF A CERAMIC TILE IS PORCELAIN

Because porcelain tile is difficult — if not impossible — to identify by sight, **a test for a tile's porosity (water absorption) will determine if a tile can be called "porcelain."**



Despite apparent consensus within the international ceramic tile industry on the definition of porcelain tile, ceramic tile products that do not meet the requirements for porcelain continue to be labeled as porcelain. **This mislabeling results in complicated and costly issues.** In response, TCNA and the Ceramic Tile Distributors Association (CTDA) jointly established the Porcelain Tile Certification Agency (PTCA) to provide a means for manufacturers and distributors to prove that their products comply with the criteria for porcelain tile.[5]





IMPORTANCE OF PORCELAIN TILE CERTIFICATION

Even those who work in the ceramic tile industry struggle to tell if a product is porcelain just by looking at it, so the Porcelain Tile Certification mark provides an easy way for both distributors and consumers to identify porcelain. This ability is crucial for several reasons.



SUITABILITY FOR SPECIFIC APPLICATIONS

Porcelain tile's characteristics make it particularly suited to specific applications.

For example, porcelain's high water resistance can typically mean that it is freeze-thaw resistant and a good choice for use in the outdoors. Porcelain's impervious quality also makes it suitable for moisture-prone areas such as showers, sinks, countertops, backsplashes, pools, and general bathroom, kitchen, and outdoor surfaces.

If a product falsely identified as porcelain is purchased, the consumer, who thought they were purchasing porcelain tile suitable for their intended application, may then be faced with repairs and additional costs.

COST

The porcelain tile manufacturing process may be more **intensive than that of other types of ceramic tile,** and thus porcelain may cost more to produce. Porcelain tile may have a higher price tag as a result.

When lower-cost products are falsely identified and sold at a higher price as porcelain, the consumers who purchase them do not receive what they think they are paying for.



THE CERTIFICATION MARK

The Porcelain Tile Certification Agency permits manufacturers whose products meet porcelain certification requirements to label those products with the **Porcelain Tile Certification Agency certification mark.**

By looking for the Porcelain Tile Certification Agency certification mark, distributors and retailers can have **greater confidence** that the products meet the stringent 0.5% or less water absorption requirement defining porcelain tile.[6]

CERTIFIED PORCELAIN TILE™
0.5% or less water absorption

HOW THE PTCA TESTS PORCELAIN

When tile is tested to determine the rate of water absorption (the test for porcelain), laboratories follow the American Society for Testing and Materials (ASTM) test procedure C373: "Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products."

ASTM C373 involves testing samples by subjecting them to a strong vacuum while water is drawn into the pores of the tile. The water absorption rate is calculated as a percentage of weight gained over the dry weight.





HOW TO CERTIFY PORCELAIN

Manufacturers that want to have their products PTCA porcelain certified must take the following steps:

1. Apply for Porcelain Tile Certification by filling out the Program Participation Agreement and the Order Form on the PTCA website. The application involves submitting samples of each tile series to be tested.

2. Pay the cost of testing the tile samples at an authorized testing lab, as well as the initial and annual licensing fees. **TCNA is the only authorized U.S. lab that performs porcelain certification** for PTCA.

3. Once a participant receives confirmation of their product's compliance, they can use the PTCA certification mark on product packaging, marketing materials, and more to help guide the consumer toward a confident purchase of porcelain tile.

PORCELAIN: CERTIFIED QUALITY AND VALUE

Porcelain's **unique composition and manufacturing process** give it incredible durability and low water absorption rates. These qualities make porcelain, and other types of ceramic tile, **well-suited for water and outdoor applications.**



Porcelain Certification **allows consumers to confidently identify porcelain products.** Purchasing products falsely identified as porcelain may lead to failed applications, the need for repairs, and additional costs.

PTCA certification helps manufacturers and distributors participate in a recognized standard to deliver a consistent product to consumers, **paving the way for successful tile installations.**



SOURCES

1. "Through-Body Color," Tile Council of North America,
2. Bill Griese, "Porcelain in the Ceramic Tile Industry," TileLetter, October 2007
3. "ISO 13006:2018(en): Ceramic tiles — Definitions, classification, characteristics and marking," International Standards Organization, 2018
4. Ansi a137.1 American National Standard Specifications for Ceramic Tile (Tile Council of North America, 2019)
5. "About the Porcelain Tile Certification Agency, Tile Council of North America
6. "About the Porcelain Tile Certification Agency, Tile Council of North America,