

## Materials utilized

- Color layer
  - White Portland cement
  - Marble dust
  - Silica sand
  - Calcium carbonate
  - Mineral pigments (iron, cobalt and chromium oxides)
- Tile body
  - Gray Portland Cement
  - Sand
  - Calcium carbonate

## Manufacturing process

Cement tiles are completely hand made. The color layer is prepared in batches and every component is weighted in order to guarantee color consistency. The color is mixed in a horizontal mixer that guarantees the homogenization of the mixture.

The color is then mixed with water and hand poured into the different molds. The thickness of the color layer will always be between 3 and 5 millimeters. Two layers of cement and sand are poured on top of the color layer and then the tile is pressed using a hydraulic press which applies 1,700 PSI of pressure.

The following day the tiles are soaked in water in order to achieve water saturation of the piece. This guarantees proper cement hydration. The tiles are left to dry for 10 days and then hand inspected. Tiles are ready for shipment 28 days after they've been manufactured. At this stage the cement form the body and the color surface will have obtained 98% of its resistance.

## Dimensions

200x200 mm +/- 1mm, thickness 160 mm +/- 2 mm, weight 3.6 lbs +/- 0.1 lbs

250x250 mm +/- 1mm, thickness 180 mm +/- 2 mm, weight 5.5 lbs +/- 0.1 lbs

## Freeze/Thaw resistance

Cement tiles are not resistant to freeze/thaw cycles and should not be used outdoors were freezing temperatures may exist.

## Acid resistance

Cement tiles are not resistant to acids and should be cleaned with neutral cleaners.

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**TEST REQUESTED BY:** T&C Surfaces

**TEST METHOD:** ANSI A137.1-2017 Section 9.6.1: "Wet Dynamic Coefficient of Friction (DCOF)"

Informal Test Method Description: This test method covers the measurement of dynamic coefficient of friction of ceramic tile or other surfaces under the wet condition using the BOT 3000 device.

This summary is provided for the reader's convenience and is not a complete description of the method. See ANSI A137.1 Section 9.6.1 for all method details and information.

**TEST SUBJECT MATERIAL:** Identified by client as: "CEMENT TILES-POLISHED"  
Approximate Size as Received: 10"x10"  
Product Color: AM125-A/AZ038-C/AZ140-A

**TEST DATE:** 4/17/2019

**TEST PROCEDURE NOTES:**

- Sample Prep: None
- The tiles were cleaned with Bona Stone, Tile and Laminate Floor Cleaner prior to testing.
- Three (3) pieces of tile were tested in all four directions with 8" long measurements.
- The SBR sensor was verified using a standard tile prior to testing. The DCOF measurement on the standard tile was 0.28, within the required range.
- Testing was performed under wet conditions using 0.05% SLS water
- Testing was conducted under laboratory conditions at approximately 70°F and 50% relative humidity using a calibrated BOT 3000E device (calibration due: 8/22/2019).
- After testing the SBR sensor was verified again according to the procedure. The DCOF measurement on the standard tile after testing was 0.29, within the required range.

**TEST RESULTS:**

The individual and average DCOF data for each tile were as follows:

Direction	Tile 1-AM125-A	Tile 2-AZ038-C	Tile 3-AZ140-A
Direction 1	0.52	0.52	0.53
Direction 2	0.52	0.52	0.54
Direction 3	0.56	0.52	0.57
Direction 4	0.55	0.50	0.56
<b>Average</b>	0.54	0.52	0.55

**COMMENTS:** The method states to test at least 3 samples of the same tile (series, color, and finish). The client provided 3 samples of different colors (tiles 1, 2, 3 from left to right in picture below). The samples were tested per the client's request.

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**IMAGE OF PRODUCT TESTED:**



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**ANSI SPECIFICATIONS:**

According to the ANSI A137.1 standard for ceramic tile, "Unless otherwise specified, tiles suitable for level interior spaces expected to be walked upon when wet shall have a wet DCOF of 0.42 or greater when tested using SLS solution as per the procedure in section 9.6.1. However, tiles with a DCOF of 0.42 or greater are not necessarily suitable for all projects. The specifier shall determine tiles appropriate for specific project conditions, considering by way of example, but not in limitation, type of use, traffic, expected contaminants, expected maintenance, expected wear, and manufacturers' guidelines and recommendations.”

This paragraph is excerpted from Section 6.2.2.1.10 of the standard. For the complete section, including necessary information for specifiers, this section can be viewed and downloaded at no cost at [http://www.tcnatile.com/images/pdfs/COF\\_excerpt\\_from\\_ANSI\\_A137.1-2012\\_release\\_date\\_November\\_2012.pdf](http://www.tcnatile.com/images/pdfs/COF_excerpt_from_ANSI_A137.1-2012_release_date_November_2012.pdf)

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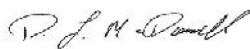
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4/22/2019

