



CERAMIC TILE INSTITUTE OF AMERICA, INC.  
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## CTIOA FIELD REPORT 69-5 (R-98)

### SUBJECT: SUGGESTED STANDARD TEST METHOD FOR GLAZED AND UNGLAZED, SPECIAL PURPOSE, CUSTOM AND DECORATIVE CERAMIC TILE

#### I. SCOPE AND DEFINITIONS

1.1 This test procedure sets minimum requirements for glazed and unglazed special purpose, faience, ceramic tile for use on floors in pedestrian traffic areas. Tile that pass these test requirements, which are basically for floors, are also suitable for wall surfaces.

1.2 This procedure is designed to provide information to be used when a tile will not qualify under the *ANSI A137.1* specifications.

1.3 Special Purpose - Faience. Unglazed porcelain or natural clay tile formed by the dust pressed method and similar to ceramic mosaics in composition and physical properties but relatively thicker and with 6 or more square inches of facial area.

1.4 Glazed or unglazed tile. Generally made by the dust pressed or plastic process, showing characteristic variations in the face, edges and glaze that give a hand crafted, nonmechanical, decorative effect.

1.5 Impervious. Tile with water absorption of 0.5 percent or less.

1.6 Vitreous. Tile with water absorption of 0.5 percent to 3 percent shall be classified vitreous.

1.7 Semivitreous. Tile with water absorption of 3 percent to 7 percent shall be classified semivitreous.

1.8 Nonvitreous. Tile with a water absorption in excess of 7 percent. Tile with water absorption over 7 percent do not qualify under this Standard for floor use.

1.9 *Shivering (Peeling)*. The splintering which occurs in firing glazes or other ceramic coatings due to critical compressive stresses.

*Dunting*. The cracking that occurs in firing ceramic bodies due to thermally induced stresses.

*Crazing*. The cracking which occurs in fired glazes or other ceramic coatings due to critical tensile stresses.

*Thermal Shock*. The cracking or splintering of the glazed surface or tile body due to thermally induced stresses

#### II. SELECTION OF TILE FOR TESTING

2.2 Each separate lot or shipment of tile shall have the proper number of tile taken and separate tests and reports shall be made on each. A minimum of 80 tile are requested for this testing procedure.

### III. **UNGLAZED TILE**

3.1 Faces. Tile shall meet the same requirements as ANSI A137.1 for quarry tile unless otherwise specified.

3.2 Shapes and dimensions. Tile shall meet the same requirements as ANSI A137.1 for quarry tile unless otherwise specified.

3.3 When tested in accordance with ASTM C373 for water absorption, these tile shall be vitreous or semivitreous.

3.4 When tested in accordance with ASTM C482 for bond strength, the tile shall develop a bond strength of not less than 50 psi on average of the tile tested.

3.5 When tested in accordance with ASTM C648 for breaking strength, the tile shall attain an average of not less than 250 lbs.

3.6 When tested in accordance with ASTM C501 for abrasive wear, the average value shall be not less than 35 for natural clay type bodies and not less than 100 for porcelain body tile.

3.7 The abrasive for abrasive surface tile shall be an abrasive aggregate of silicone carbide, aluminum oxide or other rust proof abrasive of comparable hardness embedded in the wearing surface.

### IV. **GLAZED TILE**

4.1 Facial dimension and thickness. Tile shall meet the same requirements as ANSI A137.1 for quarry tile unless otherwise specified. ASTM C499.

4.2 Warpage and wedging. Tile shall meet the same requirements as ANSI A137.1 for quarry tile unless otherwise specified. ASTM C485 and C502 respectively.

4.3 When tested in accordance with ASTM C373 for water absorption, these tile shall be vitreous or semivitreous.

4.4 When tested in accordance with ASTM C482 for bond strength, tile shall develop a bond strength of not less than 50 psi on an average of the tile tested.

4.5 When tested in accordance with ASTM C648 for breaking strength, the tile shall achieve an average breaking strength of not less than 250 lbs.

4.6 When tested in accordance with ASTM C484 for thermal shock, the glaze shall show no evidence of failure or shivering, and the body shall show no evidence of dunting or other disintegration.

4.7 When tested in accordance with ASTM C501 for abrasive wear, the average value shall be not less than 35 for natural clay type bodies and not less than 100 for porcelain body tile and the abrasive wear index of the glaze or finish surface of the tile as manufactured shall not be less than 35.

## **STANDARD TEST METHOD FOR TESTING THE RESISTANCE TO PENETRATION OF WATER OR LIQUIDS ON GLAZED TILE WHEN USED ON COUNTER TOPS**

### I. **SCOPE**

1.1 To determine if the glaze is resistant to the penetration of water and liquids.

### II. **APPARATUS AND PROCEDURE**

2.2 The water is colored with a dye.

2.3 A section of plastic pipe is placed in the center of the tile and silicone caulking is used to seal the pipe to the tile.

2.4 A sheet of white bond paper is placed underneath the tiles to be tested.

2.5 The water is allowed to be in contact with the tile surface for 16 hours. At the end of the time period the paper is checked for any sign of water penetration.

### II. **REPORT**

3.1 Sign of water penetration would indicate failure of that glaze for use on counter top or wet area installation.

### III. **PROCEDURE**

4.1 All testing procedures shall be in accordance with the appropriate ASTM or other methods described within.

### IV. **EVALUATION OF RESULTS AND REPORT**

5.1 Following the listing of individual specimen results and the numerical average, if applicable, the minimum criteria will be listed and a determination made as to its compliance with the criteria.