



3-Part Specification

SECTION 09656

RESILIENT TERRAZZO TILE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Marble terrazzo tile and accessories.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-in-Place Concrete.
- B. Section 06100 - Rough Carpentry: Wood subfloor.
- C. Section 07900 - Joint Sealers.
- D. Section 09650 - Resilient Flooring.

1.3 REFERENCES

- A. ASTM C 109/C 109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).
- B. ASTM D 695 - Standard Test Method for Compressive Properties of Rigid Plastics.
- C. ASTM D 2047 - Standard Test Method for Static Coefficient of Polish-Coated Floor Surfaces as Measured by the James Machine.
- D. ASTM D 2240 - Standard Test Method for Rubber Property--Durometer Hardness.
- E. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- G. ASTM E 662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- H. ASTM F 510 - Standard Test Method for Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method.
- I. ASTM F 540 - Standard Test Method for Squareness of Resilient Floor Tile by Dial Gage Method.
- J. ASTM F 925 - Standard Test Method for Resistance to Chemicals of Resilient Sheet Flooring.
- K. ASTM F 970 - Standard Test Method for Static Load Limit.
- L. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- M. MIL D-3134 - Deck Covering Materials; Revision J, Addendum 1.
- N. ASTM E492-09 – Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine
- O. ASTM E989-06 – Standard Classification for determination of Impact Insulation Class

- P. ASTM E90-09 – Standard Test Method for Laboratory Measurements of Airborne Sound Transmission Loss of Building Partitions and Elements
- Q. ASTM E413-10 – Classification for Rating Sound Insulation

1.4 SYSTEM DESCRIPTION

- A. Performance Requirements of Terrazzo Tiles:
 - 1. Abrasion Resistance: Maximum 0.0196 cubic centimeters volume loss, when tested in accordance with ASTM F 510, Taber abrader, S-39 wheels, at 500 cycles with 1000 gram load.
 - 2. Compressive Strength: Between 2900 and 5000 psi (20 and 34.5 MPa), when tested in accordance with ASTM C 109/C 109M or ASTM D 695.
 - 3. Static Load Limit: 0.0007 inch (0.012 mm) maximum indentation, when tested in accordance with ASTM F 970 at 125 pounds (57 kg).
 - 4. Hardness: When tested in accordance with ASTM D 2240:
 - a. Matrix: Shore D 78, minimum.
 - b. Aggregate: Between Barcol 55 and 100.
 - 5. Coefficient of Friction: Greater than 0.7, average 0.74, when tested in accordance with ASTM D 2047.
 - 6. Flame Spread Index: 15, maximum, when tested in accordance with ASTM E 84.
 - 7. Smoke Density: Specific optical density, when tested in accordance with ASTM E 662, of 231.76 (smoldering) and 292.05 (flaming).
 - 8. Critical Radiant Flux: Minimum of 0.93 watt/cubic centimeter (Class 1) when tested in accordance with ASTM E 648.
 - 9. Chemical Resistance: No change or surface attack, color change, or swelling, when tested in accordance with ASTM F 925.
 - 10. Oil Resistance: Complying with MIL D-3134.
 - 11. Corrosion Resistance: Complying with MIL D-3134.
 - 12. Electrical Conductance: Nonconductive.
 - 13. Squareness: 0.003 inch (0.076 mm) out of square, maximum, when measured in accordance with ASTM F 540.
 - 14. Acoustical Testing:
 - ASTM E492-09/ASTM E989-06 (IIC) = 43dB
 - ASTM E90-09/ASTM E413-10 (STC) = 54 dB

1.5 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit manufacturer's specifications and technical data for precast terrazzo tile and accessories; including manufacturer's printed installation instructions and maintenance manuals for each material specified.
- C. Samples for Selection: Submit manufacturer's samples of actual sections of tile and accessories; include manufacturer's full range of color and patterns available.
- D. Samples for Verification Prior to Installation: Submit full size samples of all types, colors, and patterns selected, indicating full range of patterning and color variations.
- E. Test Reports: Submit test reports for bond and moisture tests of substrates.
- F. Certificates: Submit certificates from manufacturer stating compliance with applicable requirements for materials specified.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has at least three years of experience with the installation of precast terrazzo tile and has successfully completed installations of a similar size and scope.
- B. Regulatory Requirements: Comply with requirements of local building codes and applicable regulations of other government authorities.
- C. Pre-Installation Meeting: Meet with tile manufacturer's representative prior to preparation of substrate and installation of tile, to review manufacturer's instructions and requirements to ensure the tile is installed properly.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened packages, containers or bundles bearing brand name and identification of manufacturer.
- B. Store materials inside, under cover in a manner to keep them dry, protected from the weather, direct sunlight, surface contamination, corrosion, and damage from construction traffic and other causes.

1.8 PROJECT CONDITIONS

- A. Maintain minimum temperature of 70 degrees F (21 degrees C) in spaces to receive terrazzo tile, for at least 48 hours before, during and after installation. Store materials in space where they will be installed for at least 48 hours or as required ensuring that the materials have reached 70 degrees F (21 degrees C) before starting installation.
- B. Install terrazzo tile and accessories after other finishing operations, including painting, have been completed.
- C. Do not install terrazzo tile on concrete slabs until they have been cured and are sufficiently dry to achieve bond with adhesives, as determined by the tile manufacturer's recommended bond and moisture test. Allow sufficient time for the slab to dry out before installation is started.
- D. Provide adequate lighting to allow for proper installation.
- E. Do not use portable or temporary heat.

1.9 WARRANTY

- A. Submit 20 year wear warranty written material warranty from tile manufacturer warranting that tile is free from defects in workmanship and material.
 - 1. Products must be installed so as not to void the manufacturer's warranty for wear.
 - 2. Warranty shall be in form acceptable to Owner.

1.10 MAINTENANCE

- A. Extra Materials: Furnish one box of tile for each fifty boxes or fraction thereof, for each type, color, pattern and size of the tile installed, from same manufactured lot as materials installed.
 - 1. Deliver extra tile to Owner after completion of work.
 - 2. Furnish tiles in protective packaging with identifying labels.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Fritz Tile by Expanko Inc., which is located at: 180 Gordon Dr. Suite 113 ; Exton, PA 19341; Toll Free Tel: 800-345-6202; Email: rgillespie@expanko.com; Web: www.fritztile.com
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- D. Obtain all materials including terrazzo tile and recommended adhesives from a single manufacturer.

2.2 MATERIALS

- A. Terrazzo Tile: Marble or granite chips embedded in flexible thermoset polyester resin matrix, with random distribution of chips and smooth factory applied urethane coating cured by ultra violet exposure process.
 - 1. Color/Pattern/Thickness: As indicated on drawings.
 - 2. Color/Pattern/Thickness: As selected by Architect from manufacturer's full range.
 - 3. Size: 12 by 12 inches (305 by 305 mm), nominal.
 - 4. Color Match: Obtain all tile materials from same production run.
- B. Wall Base: Fritztile straight bullnosed wall base.
- C. Leveling Compound: Fritztile recommends only Ardex leveling compound products. Refer to Ardex for recommendations and installation methods. www.Ardex.com
- D. Patching Compound: Fritztile recommends only Ardex patching compound products. Refer to Ardex for recommendations and installation methods. www.Ardex.com
- E. Floor Adhesive:
 - 1. Fritz FA88 Powdered Multipurpose Adhesive
 - 2. Fritz FA1100 Pre-Mixed Wet Set Adhesive
- F. Sealer and Finish: Two coats of Fritz FCP102 protective sealer and two coats of Fritz Duro-Gloss Finish FCP300, applied as recommended by manufacturer.
- G. Sealant: Silicone, as specified in Section 07900, and of type approved by tile manufacturer.

Part 3 EXECUTION

2.3 EXAMINATION

- A. Concrete Subfloor:
 - 1. Inspect subfloor to verify that it is clean, flat, smooth, level and free from cracks, holes, ridges, coatings preventing adhesion, and other defects impairing performance or appearance.
 - 2. Notify Architect of conditions that would adversely affect flooring installation; do not proceed until defective conditions have been corrected.
 - 3. Perform bond and moisture tests on concrete subfloors to determine if surfaces

are sufficiently cured and dry as well as to ascertain presence of curing, sealing, hardening or any other compounds.

- a. Perform bond test in accordance with tile manufacturer's warranty requirements.
 - b. ASTM F 1869-11. Moisture Vapor Emission test using Anhydrous Calcium Chloride. Maximum Allowable Readings: FA88= 10 pounds per 1000 square feet in 24 hours, FA1100=7 pounds per 1000 square feet in 24 hours
 - c. ASTM F2170-11, Relative Humidity (RH) test using situ probes. Maximum Allowable Readings: FA88=90%RH, FA1100=87%RH
 - d. Submit test results and obtain Architect's acceptance prior to beginning installation.
4. Do not proceed until substrate preparation is complete and satisfactory, bond and moisture tests are completed and test reports submitted which indicate that bond and moisture values meet specified requirements.
- B. Wood Subfloor:
1. Verify that wood subflooring complies with requirements specified in Section 06100.
 2. Verify that underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface or stain flooring.
- C. Coordinate work with that of other installers prior to installation so that tile work fits properly with doors, frames, saddles, floor drains, and other adjacent work.
- D. Start of work constitutes acceptance that conditions are satisfactory.
- E. Close the space and areas where flooring is being installed to traffic and other installers until flooring has set and sealing and finish of tiles are complete.

2.4 PREPARATION

- A. Fill small cracks, holes and depressions in subfloors using leveling and patching compounds recommended by tile manufacturer.
- B. Remove deleterious coatings from subfloor surfaces that would prevent a positive adhesive bond; such as curing compounds incompatible with adhesives, paints, oils, adhesives, waxes and sealers.
- C. Completely remove existing solvent-based adhesives to prevent bleed through and staining.
- D. Remove existing floor covering and condition subfloor to provide smooth, clean continuous surface; level subfloor with self-leveling compound in compliance with tile manufacturer's specifications and installation instructions.

2.5 INSTALLATION

- A. Comply with manufacturer's instructions for terrazzo tile installation.
- B. Scribe, cut and fit tile to permanent fixtures, built-in furniture, cabinets, pipes, outlets and permanent columns, wall, and partitions using tile cutting procedures recommended by tile manufacturer.
- C. Maintain reference markers indicated on subfloor for future cutting, by repeating on finished terrazzo tile floor.
- D. Lay tile from center marks established with principal walls discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid use of cut widths less than one half tile at perimeters. Lay tile square to room axis, unless otherwise indicated.

- E. Adhere tile flooring to substrate using full spread of adhesive.
- F. Lay tile using conventional procedures for laying resilient tile, placing tile carefully and firmly in position and as level as possible. Butt tile cleanly, evenly and snugly against adjacent tile.
- G. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged, if cartons are so numbered. Do not install broken, cracked or chipped tiles.
- H. Roll and cross roll floor with 150 pound sectional roller continuously while tile is being laid. Use hand roller in areas that cannot be reached with large roller. Cease rolling when rolling has no more effect.
- I. Do not subject floors to traffic until adhesive is dry and hard and sealers and finishes are applied.
- J. Remove and replace tiles that are not flat, including lipped, cupped, curved, or poorly adhered tile. Remove rejected tile from site.

2.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Provide on-site services of tile manufacturer or authorized distributor for technical assistance during preparation and installation.

2.7 CLEANING AND PROTECTION

- A. Upon completion of installation and curing of adhesive, apply sealant to entire perimeter and around columns, door frames, and other joints and penetrations to prevent water penetration into the adhesive layer due to accidental or maintenance (mopping) water accumulation.
- B. Remove excess adhesives, dirt, stain and other foreign material. Clean floors in accordance with tile manufacturer's instructions.
- C. Protect finished installation at all times. Repair or replace flooring damaged prior to final acceptance of installation by Owner.