

**SECTION 09 66 16
TERRAZZO FLOOR TILE**

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete between // ----- // if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section includes terrazzo tile for installation over // concrete // floors.

1.2 RELATED WORK

- A. Resilient Base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.
 B. Concrete Floors: Section 03 30 00, CAST-IN-PLACE CONCRETE.
 C. Color and Pattern: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 MANUFACTURER'S QUALIFICATIONS

- A. Approval by Contracting Officer is required of products or service, or proposed manufacturer, suppliers and installers, and will be based upon submission by Contractor of certification that:
1. Manufacturer regularly and presently manufactures terrazzo tile as one of his principal products.
 2. Installer has technical qualifications, experience, trained personnel and facilities to install specified items. Approval will not be given, however, where experience record is one of unsatisfactory performance.
 3. Manufacturer's product submitted has been in satisfactory and efficient operation on three installations similar or equivalent to this project for three years. Submit list of installations including name of project, and owner and location of project.

1.4 SUSTAINABILITY REQUIREMENTS

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // _____// requirements.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:

- B. Flooring Manufacturer's Literature and Data: Printed installation instructions for conditions indicated.
- C. Certificates: Indicate materials conform to specified requirements.
 - 1. Indicate flooring manufacturer's approval of underlayment, adhesive and cleaners.
 - 2. Provide documentation from an independent testing agency, indicating compliance with the FloorScore standard.
- D. Samples: Terrazzo Tile (each color and pattern to be used) adhesive // vinyl // rubber // cove base, each color, 150 mm (6 inch) length

1.6 DELIVERY

- A. Deliver materials to job in manufacturer's original unopened containers, free of damage, with manufacturer's brand name marked thereon.

1.7 STORAGE

- A. Store materials in a protected area.
- B. Keep storage area dry.
- C. Temperature of storage area must not be lower than 10 degrees C (50 degrees F) or higher than 32 degrees C (90 degrees F).

1.8 PROJECT CONDITIONS

- A. Tiles must not be installed until all other work that could cause damage to the finish flooring has been completed.
- B. Maintain a temperature of not less than 21 degrees C (70 degrees F) in spaces where tile is to be installed for at least 48 hours before, during and after the laying of tiles.
- C. Bring tile into such spaces and allow it to condition at not less than 21 degrees C (70 degrees F) at least 48 hours before installing.
- D. Maintain a minimum temperature of 13 degrees C (55 degrees F) thereafter.

1.9 WARRANTY

- A. Terrazzo tile is subject to terms of "Warranty of Construction" FAR clause 52.246-21, except that warranty period is two years instead of one year.

1.10 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Society for Testing and Materials (ASTM):

C97/C97M-09	Absorption and Bulk Specific Gravity of Dimension Stone
C109/C109M-12	Compressive Strength of Hydraulic Cement Mortars
C501-84 (2009)	Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
D2047-11	Static Coefficient of Friction of Polish Coated Floor Surfaces as Measured by the James Machine
E84-13a	Surface Burning Characteristics of Building Materials
E648-10e1	Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
F1869-11	Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
F2170-11	Relative Humidity in Concrete Floor Slabs Using in situ Probes

C. Military Specifications (Mil. Spec.):

MIL-D-3134	Deck Covering Materials
------------	-------------------------

PART 2 - PRODUCTS

2.1 TERRAZZO TILE

SPEC WRITER NOTES:

1. Selection of marble offers greater number of manufacturers.
- A. Terrazzo tile consists of // marble // granite // chips embedded in a resin matrix; mix to include minimum 10 percent post-consumer recycled glass.
 - B. Size and style as indicated.
 - C. Provide tile with the following properties:

Terrazzo Tile Properties		
Property	Test Method	Value
Compressive Strength	ASTM C109/C109M	20 MPa (3000 psi) minimum
Water Absorption	ASTM C97/C97M	0.7 percent maximum
Abrasive Wear	ASTM C501	Index 28
Coefficient of Friction	ASTM D2047	0.5 wet
Flame Spread	ASTM E84	Class A
Critical Radiant Flux	ASTM E648	Class I

D. Comply with requirements of FloorScore standard.

2.2 ADHESIVE

- A. Terrazzo tile manufacturer's product or a product recommended by the terrazzo tile manufacturer.
- B. Provide low VOC products that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 WALL BASE

- A. See Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

2.4 METAL EDGE STRIPS

- A. Extruded aluminum, butt-type, approximately 38 mm (1-1/2 inches) wide with thickness to set top surface flush with top of tile and with bevel at exposed edge.
- B. Provide edge strips with countersunk holes, near each end and spaced at no more than 300 mm (8 inches) on center for securement.

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide flooring and base on floor surfaces and walls where shown on the drawings. Provide resilient base as scheduled for room or space, for freestanding columns, pilasters, furred spaces convectors and where shown. Resilient base required over metal base of casework is specified in other sections. Except as necessary to install new tile, keep all traffic off new tile for at least 24 hours after installation.

3.2 SUBSTRATE PREPARATION

- A. Concrete Floors (New Construction): Fill holes and cracks with approved mortar. Concrete floors must be free of curing compounds, grease, dirt, loose particles and other foreign matter that would prevent adhesion. Remove projecting irregularities by chipping or grinding smooth. Fill

depressions and level uneven surfaces with underlayment. Then rinse subfloors and allow them to dry thoroughly before applying adhesive.

- B. Concrete Floors (Existing Construction): Remove any existing // resilient // _____ // flooring and condition subfloors to provide smooth, clean, continuous surface. Use underlayment where required to provide level surfaces ready to receive tile. Fill holes and cracks in concrete subfloors with mortar. Remove grease, dirt, loose particles, and other foreign matter that would prevent adhesion. Then, rinse subfloors and allow to dry thoroughly before applying adhesive.

3.3 MOISTURE TEST

- A. Moisture Testing: Perform moisture and pH test as recommended by the flooring and adhesive manufacturers. Perform test locations starting on the deepest part of the concrete structure. Proceed with installation only after concrete substrates meet or exceed the manufacturer's requirements. In the absence of specific guidance from the flooring or adhesive manufacturer the following requirements are to be met:
1. Perform moisture vapor emission tests in accordance with ASTM F1869. Proceed with installation only after substrates have a maximum moisture-vapor-emission rate of 1.36 kg of water/92.9 sq. m (31lb of water/1000 sq. ft.) in 24 hours.
 2. Perform concrete internal relative humidity testing using situ probes in accordance with ASTM F2170. Proceed with installation only after concrete reaches maximum 75 percent relative humidity level measurement.

3.4 INSTALLATION

- A. Install tile in accordance with the tile manufacturer's approved installation instructions, except as specified herein. Lay design symmetrical about center lines of rooms. Make joints as tight, and inconspicuous as possible, and in true alignment. Cut tile to fit snugly at pipes and other fixed vertical surfaces. Seal joints at pipes with adhesive. Remove spots or smears of adhesive immediately. Make entire surfaces of finished tile floors smooth, straight, and free from bleeding adhesive, buckles, waves or projecting tile edges upon completion. Remove any surface film on back of base due to mold release agents as recommended by base manufacturer, before applying base adhesive.
1. Where metal edge strip // transition strip // is required, install as detailed.

2. Bleeding of adhesive on finished floors is considered cause for rejection. Replace damaged tiles.

B. Metal Edge Strips: Secure strips with No. 10 aluminum alloy, counter sunk flathead machine screws with expansion sleeves. Provide metal edge strips, in one piece, at any exposed edges of tile.

C. Transition Strips: Apply transition strips with adhesive continuous, between ceramic tile finish floors and resilient tile finish floors as shown.

D. Pre-molded Base: Install as specified in Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

3.5 CLEANING

A. Upon completion of the installation, and after adhesive has cured, clean flooring in accordance with manufacturer's recommendations.

3.6 PROTECTION

A. From the time of laying until acceptance, protect the flooring from damage. Replace damaged, loose, broken, or curled tiles.

- - - E N D - - -