

SECTION 09 63 46 - MARBLE FLOORING – THIN SET

SECTION 09 75 03 – MARBLE WALL FINISHES – THIN SET

SM Marble® is a marble-based engineered stone which can be used for attractive and functional interior flooring and wall cladding, treads and risers, window sills, vanity tops, shower and tub surrounds and other interior applications. SM Marble® offers many advantages, such as color consistency, ease of maintenance, and availability in a wide range of colors and patterns.

Marble, granite and slate are products of nature which owe their rich color appearance to a vast combination of mineral components, some of which cause some stones to react differently and to varying degrees when exposed to moisture. Having no control over the mineral and chemical composition of natural stones and/or agglomerates or over their respective degree of inherent stability, we have prepared the following suggested specification in good faith for what we believe to be the great majority of marbles, marble agglomerates and stone veneers but waive any claim of its infallibility.

Edit this guide specification according to the Project requirements. Samples, product literature and design assistance are available by contacting Santamargherita USA at 800 3976654 or by visiting www.santamargheritausa.net. Since the fabrication and installation of SM Marble® is similar to that of natural stone, publications such as the Marble Institute of America's Dimension Stone Design Manual can also be consulted. For further information about Mapei setting materials, contact Mapei USA at 800 9926273.

This section includes notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden as follows: Microsoft Word: From the pull-down menus select TOOLS, then OPTIONS. Under the tab labeled VIEW, select or deselect the HIDDEN TEXT option.

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Marble floor finishes.
2. Setting materials and accessories.

B. Related Sections:

1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section [____ _ - _____] – Concrete substrate.
3. Section [____ _ - _____] – Wood substrate.

1.2 REFERENCES

A. American National Standards Institute (ANSI)

1. A-118.4 Fast-setting latex hydraulic thin-set mortar & latex Portland cement mortar.
2. A-118.3 Chemical resistant, water cleanable tile setting and grouting epoxy.
3. A-118.6 Ceramic tile grouts.
4. A-118.10 Thin load bearing waterproofing membrane.
5. A-118.9 Cementitious backer units (C.B.U.)
6. A-108.5 Installation of ceramic tile with latex thin-set mortar
7. A-108.10 Installation of grout in tile work.
8. A-108.11 Interior installation of cementitious backer units.

B. ASTM International (ASTM)

1. C97 – Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
2. C99 – Standard Test Method for Modulus of Rupture of Dimension Stone.
3. C170 - Standard Test Method for Compressive Strength of Dimension Stone.
4. C482 – Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement.
5. C484 – Standard Test Method for Thermal Shock Resistance of Glazed Ceramic Tile.

6. C501 – Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
7. C531 – Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
8. C648 – Standard Test Method for Breaking Strength of Ceramic Tile.
9. C650 – Standard Test Method For Resistance of Ceramic Tile to Chemical Substances.
10. C880 – Standard Test Method for Flexural Strength of Dimension Stone.
11. C1028 – Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
12. E84 – Standard Test Method for Surface Burning Characteristics of Building Material.

C. TILE COUNCIL OF NORTH AMERICA INC.
Handbook for Ceramic Tile Installation.

1.3 SUBMITTALS

A. Product Data

Submit manufacturer's technical information and installation instruction for all specified materials.

B. Samples

1. [3 x 3] [___ x ___] inch quartz samples [in specified color.] [showing available colors.]
 2. [3/8 x 3/8 x 3] [___ x ___ x ___] inch grout samples [in specified color.] [showing available colors.]
 3. [3] [___] inch long joint sealer samples [in specified color.] [showing available colors.]
- As an alternative, samples can be submitted mounted on a 1/2" (12 mm) exterior grade plywood using the specified mortar and grouted with the specified grout.

1.4 QUALITY ASSURANCE

- A. Fabricator and Installer Qualifications: Minimum [2] [___] years [documented] experience in work of this Section.
- B. Additives, installation materials and grouts shall be from the same manufacturer. Recommended manufacturer is Mapei USA (www.mapei.us).
- C. Mockup:
 1. Construct flooring mockup, [6] [___] feet wide x [6] [___] feet long.
 2. Locate [where directed.] [_____].
 3. Approved mockup may remain as part of the Work.

1.5 WARRANTY

- A. Provide manufacturer's 3 year warranty against defects in materials and workmanship.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle tiles in a manner to prevent chipping, breakage, staining or any other damage.
- B. Deliver and store packaged material in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, moisture, freezing, excessive heat, foreign matter or other causes. Do not stir any frozen material until it has completely thawed.
- C. Provide heated or dry storage facilities on site.
- D. Deliver and store all materials on site at least 24 hours before work begins.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Maintain environmental conditions and protect work during and after installation. Comply with the standards and manufacturer's printed recommendations.
- B. Turn off all forced ventilation and radiant heating systems and protect the work against drafts during installation and for at least 72 hours after completion.
- C. Use indirect auxiliary heaters where necessary to maintain an adequate temperature level in the working environment.
- D. Exhaust temporary heaters to exterior to prevent damage to the work from carbon dioxide build-up.
- E. Maintain temperature in work areas not less than 50° F (10°C) or more than 95° F (35°C) during installation and for 7 days after completion, unless higher temperatures are required by ANSI A108 installation standards or manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. SM Marble® tiles are supplied by Santa Margherita S.p.A. Volargne (Verona), Italy or Santamargherita USA (dba Verona Marble Company, Inc.), Dallas, TX.
- B. Setting and grouting materials are supplied by Mapei USA, Deerfield Beach, FL.
- C. Substitutions: [Under provisions of Division 01.] [Not permitted.]

2.2 MATERIALS – MARBLE

A. Marble Sheet:

- 1. Product: SM Marble® by Santa Margherita, S.p.A.
- 2. Composition: agglomerated marble made of 92-96% selected marble chips mixed with polyester resin.
- 3. Color: [_____].] [To be selected from manufacturer's full color range.]
- 4. Physical characteristics:
 - a. Water absorption: maximum 0.50 percent, tested to ASTM C97;
 - b. Compressive strength: minimum 13,000 psi, tested to ASTM C170;
 - c. Relative resistance to wear: 40, tested to ASTM 501;
 - d. Flexural strength: Minimum 1160 psi (dry) and 1250 psi (wet), tested to ASTM C880;
 - e. Breaking strength: Minimum 250 lbs, tested to ASTM C648;
 - f. Thermal expansion: 1.36×10^{-5} inch per °F, tested to ASTM C484;
 - g. Flame spread rating: Class 1, tested to ASTM E84;
 - h. Mohs hardness: 3-4, tested to EN101;
 - i. Static coefficient of friction: polished dry 0.80, polished wet 0.55, honed dry 0.83, honed wet 0.62, tested to ASTM C1028.

B. Setting Materials

- 1. Flexible acrylic latex Portland cement mortar: (See Notes to Specifier 2, 3, 4, 5, 6, 10, 13, 14, 15 and 16) Kerabond/Keralastic [specify color], two component mortar system conforming to ANSI A-118.4 standard as manufactured by Mapei with the polymer having the following characteristics:
 - i. Polymer category: acrylic copolymer;
 - ii. Solids content (%): 28.0-32.0;
 - iii. PH: 4.0-5.0;
 - iv. Specific gravity (water – 1): 1.026;
 - v. Glass transition temperature: -4°F (-20°C);
 - vi. Particle size (um): 0.25-0.35.
- 2. Flexible fast-setting latex hydraulic mortar: (See Notes to Specifier 2, 3, 4, 5, 6, 10, 13, 14, 15 and 16) Granirapid System, two-component, flexible latex hydraulic thin-set mortar conforming to ANSI A-118.4 standard for fast-setting mortars, as manufactured by Mapei.
- 3. Medium bed dry-set mortar: (See notes to specifier 3, 4, 6, 10, 13, 14, 15 and 16) Granirapid RS, medium bed dry-set mortar conforming to ANSI A-118.4 standards, as manufactured by Mapei.
- 4. Epoxy Mortar: (Specify where SM Marble® Rosso Levanto, Verde Alpi, Verde Liguria) 100% solids epoxy mortar, such as Kerapoxy 410, conforming to ANSI A-118.3 standards, as manufactured by Mapei.
- 5. Polyurethane adhesive: (Specify where SM Marble® Rosso Levanto, Verde Alpi and Verde Liguria are specified – see notes to Specifier 1 and 6) Planicrete W, two-component polyurethane adhesive as manufactured by Mapei.
- 6. Water: clean, cold and potable.
- 7. Accessories:
 - a. Drywall latex primer: Planicrete AC as manufactured by Mapei;
 - b. Waterproof membrane: (See Notes to Specifier 10, 13, 14, 15 and 16) Mapelastix 315 thin, load bearing, trowel-applied waterproof membrane conforming to ANSI A-118.10 standard, as manufactured by Mapei.

C. Grouting materials

1. Fast-setting, polymer-modified cementitious grout (See Notes to Specifier 11 and 12) Ultracolor, fast-curing, high early strength, polymer-modified sanded commercial tile grout conforming to ANSI A-118.7 standard, as manufactured by Mapei.
2. Non-sanded tile grout: (See notes to Specifier 11 and 12) Keracolor U, polymer-modified non-sanded Portland cement grout conforming to ANSI A-118.6 standard, as manufactured by Mapei.
3. Sanded tile grout: (See Notes to Specifier 11 and 12) Keracolor S, sanded polymer-modified sanded Portland cement grout conforming to ANSI A-118.6 standard as manufactured by Mapei.
4. Color: [_____]. [To be selected from manufacturer's full color range.]
5. Water: clean, cold and potable.

2.3 MIXES

- A. Mix setting and grouting materials in strict accordance with manufacturer's printed instructions.
- B. Use clean mixing containers.
- C. Use a low speed mixer (approx. 300 RPM).
- D. Special Conditions: (See Notes to Specifier 2, 3, 4, 5, 6, 9, 10, 13, 14, 15 and 16):
 1. In areas which cannot be closed to traffic for any length of time, install tiles with Granirapid System flexible fast setting latex hydraulic thin-set mortar system and grout with Ultracolor fast curing, high early strength polymer-modified sanded tile grout.
 2. When installing large size tiles [16" x 16" (40x40 cm) and larger], use a special medium-bed mortar trowel [3/4" x 9/16" (19 mm x 14 mm) U-shaped and install Granirapid System as a flexible medium-bed mortar.

PART 3 – EXECUTION

3.01 EXAMINATION

Before work commences, examine the area to be covered and report any deficiency or adverse condition in writing to the general contractor and the architect. Do not proceed with the work until surfaces and conditions comply with the requirements indicated in the manufacturer's instructions and in ANSI A-108.5 specification. For more details see "TCNA HANDBOOK FOR CERAMIC TILE INSTALLATION".

3.02 SURFACE PREPARATION

A. GENERAL

1. All supporting surfaces shall be structurally sound, solid, stable level plumb and true to a tolerance in plane of 1/8" in 8'-0" (3mm in 2.4m) for walls and 1/4" in 10'-0" (6mm in 3m) for floors. They shall be dry, clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substance and debris which may prevent or reduce adhesion.
2. Mechanically sand and scarify the substance to completely remove all paint, loosely bonded topping, loose particles and construction debris.
3. Neutralize any trace of strong acid or alkali from the substrate prior to the application of the mortar.
4. All substrates shall be dry. The moisture content shall not exceed 5%.
5. In all cases, the structural design of floors shall not allow a deflection of more than 1/720 of the span under live and dead loads.

B. CONCRETE

1. Concrete surfaces shall be dry, completely cured and free of hydrostatic conditions and/or moisture problem
2. On grade or below grade concrete slabs must be installed over an effective vapor barrier and be exempt of hydrostatic conditions.
3. New concrete surfaces shall be wood floated or broom finished.
4. Over excessively dry porous concrete keep the concrete substrate continuously moist for at least 24 hours before work begins. Remove all excess water or standing water allowing the surface to become almost dry before installing the leveling coat or setting mortar.

C. CEMENTITIOUS BACKER UNITS (C.B.U.)

When installed by others, the C.B.U. shall be from a reputable manufacturer and shall conform to the quality standard requirements of ANSI A-118.9. It must be installed according to the C.B.U. manufacturer's instructions and in strict accordance with ANSI A-108.11 standard for Interior Installation of Cementitious Backer Units.

D. GYPSUM WALL SURFACES (Interior dry areas only)

Prime all drywall and plaster wall surfaces with Planicrete AC multi-purpose latex and let dry completely before applying the mortar.

E. RESURFACING OLD SURFACES (Interior installations only)

Old cement terrazzo, ceramic tile, paver and quarry tile, shall be sound, solid, well bonded, flawless, stripped clean and free of dust, wax, grease, sealer, soap residue and all other deleterious substances which may reduce or prevent adhesion.

F. PLYWOOD (Specify only on interior residential floors and countertops in dry areas) (See Notes to Specifier 2, 10 and 14)

1. Plywood substrate and underlayment shall be Group 1, Exterior Grade plywood – C.C. plugged or better, conforming to A.P.A. classification and U.S. Product Standard PS 1-95 or a "Select" or (SEL TF) COFI classified Exterior Grade plywood conforming to CSA 0121 standard for Douglas fir. Presswood, particleboard, clipboard, masonite, gypsum floor patching compounds, asbestos board, Lauan and similar dimensionally unstable materials are not acceptable substrates.
2. Plywood surfaces shall be installed smooth face-up. Offset joints of sub-floor and underlayment. Use exclusively new plywood.
3. When on joints 16" (40 cm) O.C. plywood sub-floors shall consist of 2 layers each 5/8" (16 mm) thick, and gapped 1/8" (3 mm) between sheets and 1/4" (6 mm) between all materials which they abut such as walls, drains and posts.
4. Plank or board floors shall be covered over with one layer of 3/4" (19 mm) thick exterior grade plywood, each sheet to be fastened with screws 8" (20 cm) O.C. in all directions and around the perimeter. Leave 1/8" (3 mm) spacing between each plywood sheet and 1/4" (6 mm) between all materials which they abut such as walls, drains and posts.
5. The adjacent edges of the plywood sheets shall not be more than 1/32" (0.75 mm) above or below each other.
6. All wood sub-floors shall be well heated and vented from under.

3.03 INSTALLATION

- A. Before setting, use a damp towel and wipe the back side of the tile to remove any dust or other residue that may be left over from the manufacturing process. When Kerapoxy 410 or Planicrete W are used for the installation, let the tiles dry before installation.
- B. On interior wall installation, use a notched trowel with deep enough grooves to achieve an 80% minimum mortar contact with the back side of the tiles (edges and corners must be fully backed with mortar when set).
- C. In all wet areas and commercial floors, back butter each tile with a sufficient mortar layer, using the flat edge of the trowel immediately prior to laying, to achieve a 100% mortar contact and a void-free solid support. Simultaneously apply the mortar to the substrate surface with a notched trowel with deep enough grooves to achieve a continuous bed without voids or unsupported areas. Lay tiles while both mortar surfaces are wet. Do not allow mortar to dry or skin over on either surfaces before laying the tiles.
- D. When Kerapoxy 410 or Planicrete W is used for the installation, back buttering of tiles is not necessary. However, a sufficient layer must be applied to the substrate to provide a good support under the tiles.
- E. Where medium-bed mortar installation is specified, use a specially designed medium-bed trowel with 3/4" (19 mm) wide x 9/16" (14 mm) deep notches to install Granirapid System or flexible mortar.

- F. On walls, start installing at the lowest portion of the wall. Support the tiles with wedges, pegs or ropes to prevent sagging. Where ¾" (19 mm) or thicker material is specified without anchors on walls, do not install more than two courses per day, allowing the mortar to reach and initial cure strong enough to hold the weight of the additional courses. Reference local building codes.
- G. On floors and walls where tiles are specified to be grouted with non-sanded grout, install tiles leaving a regular even spacing between tiles of at least 1/16" (1.5 mm) and a maximum of 1/8" (3 mm). No butt joints shall be permitted.
- H. On floors and walls where tiles are specified to be grouted with sanded grouts, install tiles leaving a regular even spacing between tiles of at least 1/8" (3 mm) to a maximum of 5/8" (15 mm) (specify joint width desired). No butt joints shall be permitted.

3.04 EXPANSION AND CONTROL JOINTS

- A. Carry existing joints in the concrete sub-floors and walls through the covering surfaces.
- B. Install control joints where the tiles abut restraining surfaces, around the perimeter of the work and at the base of columns and curbs.
- C. Install and space expansion and control joints in all directions according to the strict instructions of the Tile Council of North America's Detail #EJ-171 as described in the latest edition of their Handbook for Ceramic Tile Installation.
- D. CAUTION: It must be clearly pointed out that under no circumstance should the control joint be cut in after the tile has been installed as this defeats the object of the exercise. The installer should install up to the control joint and stop. If required, cut the tile and commence setting from the opposite side. Before continuing, rake the joint clean.
- E. Install an approved compressible bead and sealant to caulk expansion and control joints following the sealant manufacturer's strict instructions.

3.05 GROUTING

- A. See Notes To Specifier 7, 8 and 9)
- B. Where marble tiles are installed with Keralastic/Kerabond, Kerapoxy 410 or Planicrete W mortar system, grout no sooner than 24 hours after installation.
- C. Where marble tiles are installed with Granirapid System flexible fast-setting latex hydraulic mortar, grout no sooner than 3 to 4 hours after installation.
- D. Use caution when grouting to prevent scratching or damaging of the tile surface. Always do a test area and obtain the architect's written approval before proceeding with the grouting of the entire work.
- E. On walls where joints widths are specified to be 1/16" (1.5mm) to a maximum of 1/8" (3mm), install Keracolor U, non-sanded polymer-modified grout as specified.
- F. On floors and where joint widths are specified to be 1/8" (3mm) to 5/8" (15mm), install Ultracolor or Keracolor S, sanded grout as specified.
- G. Install grouts in strict accordance with the grout manufacturer's instructions and following the general outline procedure of ANSI A-108.10 - for latex Portland cement grouts.

3.06 CLEANING

- A. Remove all grout and mortar residue immediately while work progresses and before the materials harden on the tile surface.
- B. Clean tiles completely leaving no apparent cement latencies of film on the surface of the tile. Do no acid wash, especially where colored grouts are specified.

3.07 PROTECTION

- A. Flexible acrylic latex Portland cement mortar installation:
 1. Protect finished work against weather, freezing and complete water immersion for at least 21 days after completion of the work.
 2. Floors: protect floors from foot traffic for at least 24 hours and general traffic for at least 72 hours after installation. Prohibit heavy traffic on floors for at least 7 days after installation.
 3. Walls: protect walls from impact, vibration and hammering of adjacent and opposite walls for at least 14 days after installation.

B. Flexible fast-setting latex hydraulic mortar installation:

1. Protect finished work against weather, freezing and complete water immersion for at least 72 hours after completion of the work.
2. Floors: protect floors from general traffic for at least 3 to 4 hours after installation. Prohibit heavy traffic on floors for at least 24 hours after installation.
3. Walls: protect walls from impact, vibration and hammering on adjacent and opposite walls for at least 24 hours after installation.

C. Flexible fast-setting latex hydraulic mortar installation:

1. Protect finished work against weather, freezing and complete water immersion for at least 21 hours after completion of the work.
2. Floors: protect floors from general traffic for at least 48 hours and general traffic for at least 72 hours after installation. Prohibit heavy traffic on floors for at least 7 days after installation.

D. Since temperature and humidity during and after installation affect the final curing time of all cement based and epoxy materials, allow for extended periods of cure and protection when temperatures drop below 60°F (15°C) and/or when the relative humidity is higher than 70%.

END OF SECTION