

SECTION 093000 TILING

RECOMMENDED SPECIFICATION FOR ARDEX TILE & STONE INSTALLATION MATERIALS

PART 1 - GENERAL

1.0.1 SUMMARY

- A. Work performed under the requirements of this section shall be subject to all conditions set forth under PART 1 "GENERAL CONDITIONS" as applicable to this portion of the work.

1.0.2 REFERENCES

- A. AMERICAN NATIONAL STANDARDS INSTITUTE (A.N.S.I.)
 - 1. A-118.3 Chemical resistant, water cleanable tile setting and grouting epoxy
 - 2. A-118.4 Fast-setting latex thin-set mortar and latex Portland cement mortar
 - 3. A-118.7 Polymer Modified cement grouts
 - 4. A-118.9 Cementitious backer units (C.B.U.)
 - 5. A-118.10 Thin, load bearing waterproofing membrane
 - 6. A-118.11 EGP Latex Portland cement mortar
 - 7. A-136.1 Organic Adhesives for the installation of ceramic tile
 - 8. A-108.5 Installation of ceramic tile with latex thin-set mortar
 - 9. A-108.6 Installation of ceramic tile with chemical resistant, water cleanable tile setting and grouting epoxy
 - 10. A-108.10 Installation of grout in tile work
 - 11. A-108.11 Interior installation of cementitious backer units
- B. TILE COUNCIL OF AMERICA, INC.
 - 1. Handbook for Ceramic Tile Installation

1.0.3 SUBMITTALS

- A. Product data: submit manufacturer's technical information and installation instructions for all specified materials.
- B. SAMPLES - Prior to commencing the work, submit for approval four (4) representative tile samples of each type, finish and color mounted on a 1/2" (12mm) EXTERIOR grade plywood using the specified mortar and grouted with the specified grout. These samples shall be of current production, properly identified, clean and representative of the appearance of the finished work.

1.0.4 QUALITY ASSURANCE

- A. Provide all setting materials and grouts from one source. Additives, installation materials and grouts shall be from the same manufacturer.

1.0.5 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 materials 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 completely thawed.
- C. Provide heated and dry storage facilities on site.
- D. Deliver and store all materials on site at least 24 hours before work begins.

1.0.6. SITE CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer's printed instructions.
- 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. When necessary, build a temporary shelter and use indirect auxiliary heaters 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 emanations.
- E. Maintain temperature in tile areas at not less than 50°F (10°) or more than 95°F (35°C) during installation and for at least 7 days after completion, unless otherwise indicated in the product instructions and/or in ANSI A108 installation standards.

PART 2 - PRODUCTS (Select appropriate product or products, delete all others)

2.0.1 MATERIALS

- A. TILES or STONE: (Specify Size, Thickness, Pattern, Design, and Manufacturer as required).

2.0.2. MATERIALS (See Notes to Specifier 2,4,6,9,10 and 11)

A. SETTING MATERIALS

- 1. ARDEX X3 THIN-SET MORTAR
- 2. ARDEX X5 THIN-SET MORTAR
- 3. ARDEX X7G and X7W PLUS FLEX MORTAR
- 4. ARDEX X701 SUPERFLEX MORTAR
- 5. ARDEX S48 UNIVERSAL INTERIOR TILE ADHESIVE
- 6. ARDEX S16 FAST-SETTING THIN-SET MORTAR FOR MARBLE TILE
- 7. ARDEX S20 FAST-SETTING MEDIUM AND THICK-BED MORTAR FOR MOISTURE-SENSITIVE STONE
- 8. ARDEX FB 9 L POURABLE SUPER FLEX MORTAR
- 9. ARDEX WA EPOXY ADHESIVE AND GROUT
- 10. ARDEX D18

B. ACCESSORIES

- 1. ARDEX 8+9 WATERPROOFING COMPOUND
- 2. ARDEX S1-K ONE-COMPONENT WATERPROOFING COMPOUND
- 3. ARDEX S2-K HIGH-PERFORMANCE TWO COMPONENT WATERPROOFING COMPOUND
- 4. ARDEX P 82 ULTRA PRIME
- 5. ARDEX P 51 PRIMER

C. GROUTING MATERIALS

- 1. ARDEX BS FLEX SANDED FAST SETTING, WATER REPELLENT, FLEXIBLE GROUT
- 2. ARDEX FS FLEX UNSANDED STAIN-RESISTANT, WATER REPELLENT, UNSANDED GROUT

2.0.2 MIXING FOR SETTING AND GROUTING MATERIALS

- A. Mix setting and grouting materials in strict accordance with manufacturer's printed instructions.
- B. Use clean mixing containers.

- C. Use only potable water.
- D. For best results, mix with an ARDEX T-2 Ring Paddle and 1/2" heavy-duty drill.) NO SLAKE TIME IS REQUIRED!

2.0.3 SPECIAL CONDITIONS: (See Notes to Specifier 3,5,6,7,9,10 and 11)

- A. In areas that cannot be closed to traffic for any length of time, install tiles with a fast-setting material and grout with a fast-setting grout.
- B. When installing large size tiles, nominal size 16"x16" (400x400 mm) and larger, use a special medium-bed mortar trowel (3/4" x 9/16") (19mmx14mm) U-shaped) and install using a medium-bed mortar.

PART 3 – EXECUTION

3.0.1. EXAMINATION

- A. Before work commences, examine the areas 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 A108.5 and A108.6 specifications. For more details see "TCA HANDBOOK FOR CERAMIC TILE INSTALLATION."

3.0.2. 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. (See TCA HANDBOOK and ANSI Guidelines for details). They shall be 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, shot blast or scarify the substrate to completely remove all paint, loosely bonded topping, loose particles and construction debris. When sanding or scarifying surfaces that may contain silica sand, use an approved dust mask. Surfaces containing asbestos must be handled in accordance with current EPA regulations. Contact your local EPA office.
3. Neutralize any strong acid or alkali from the substrate prior to the application of the mortar.
4. All substrates shall be dry.
5. In all cases, the structural design of the floor shall not allow a deflection greater than 1/360 of the span under live and dead loads.
6. For indoor applications over substrates such as metal, glass, solidly bonded non-porous coatings, existing ceramic tiles and other similar substrates, prime with ARDEX P-82 Ultra Prime.

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. If no barrier exists, install ARDEX MC MOISTURE CONTROL.
3. New concrete surfaces shall be wood floated or broom finished.

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

1. When installed by others, the C.B.U. shall be from a reputable manufacturer and shall conform to the quality standard requirements of ANSI A118.9. It must be installed according to the C.B.U. manufacturer's instructions and in strict accordance with ANSI A108.11 standard for INTERIOR INSTALLATION OF CEMENTITIOUS BACKER UNITS.

D. EXTERIOR WALL SURFACES

1. Apply a coat of waterproof membrane or, when surface waterproofing is not required, a thin smoothing coat of the setting mortar approximately 1/16" (1.5mm) to 1/8" (3mm) thick to cover the entire concrete, masonry or C.B.U. substrate. Allow drying and curing for at least 24 hours prior to installing tiles. (See the respective data sheets for details)

E. GYPSUM WALL SURFACES (Interior dry areas only)

1. Prime all plaster and gypsum wall and floor surfaces with ARDEX P 51 Primer diluted 1:3 with water and let dry completely (minimum 3 hours) before applying the mortar.

F. RESURFACING OLD SURFACES (Interior installation only)

1. Old cement terrazzo, ceramic tile, paver, quarry tile, vinyl composition tile and vinyl floor covering other than cushion vinyl 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. (See the most recent TCA HANDBOOK DETAILS TR-712 and TR-713). Prime with ARDEX ULTRA PRIME and allow drying thoroughly (min. 3 hours, max. 24 hours).

G. PLYWOOD (Specify only for interior residential floors and countertops in dry areas)

(See Notes to Specifier 2,6,9, and 10)

1. Plywood substrate and underlayment shall be A.P.A. rated GROUP 1, EXTERIOR GRADE plywood – C.C. plugged or better, conforming to U.S. Product Standard PS 1-95 or COFI rated "SELECT" or (SEL TF) EXTERIOR GRADE Douglas fir plywood conforming to CSA 0121 standard. Presswood, particle board, chipboard, masonite, Lauan, gypsum floor patching and leveling compounds, asbestos board and ALL dimensionally unstable materials are not acceptable substrates.
2. Plywood surfaces shall be installed smooth face-up. Offset joints of subfloor and underlayment.
3. Use exclusively new plywood.
4. When on joists that are 16" (40cm) O.C., plywood subfloors shall consist of 2 layers each 5/8" (16mm) thick. Leave a 1/4" (6mm) gap around drainpipes, conduits, posts and columns and along wall and curb bases. Leave a 1/4" (6mm) spacing between panels. (See TCA HANDBOOK and ANSI Guidelines for details). The plywood shall be screwed 6" (15 cm) O.C. Around the perimeter and 8" (20 cm) in each direction throughout the field of the panel.
5. Over plank or board floors, install one layer of 3/4" (19mm) thick exterior grade plywood, fastening each panel with screws at every 8" (20cm) O.C. along edges and in all directions throughout the center of the panel. Leave 1/4" (6mm) spacing between each plywood panel and between all materials which they abut such as walls, drains and posts.
6. The adjacent edges of the plywood panels shall not be more than 1/32" (0.75mm) above or below each other.
7. All wood subfloors shall be well heated and vented from under.

3.0.3. INSTALLATION

- A. On interior wall installation, use a notched trowel with deep enough grooves to achieve an 80% minimum mortar contact with the backside of the tiles. (Edges and corners shall be fully backed with mortar when set).
- B. In all wet areas, exterior work and traffic 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.

- C. For Large Size Tile Installation, 16"x16" (40x40cm) and larger and when medium-bed mortar is required, use a specially designed medium-bed trowel with 3/4" (19mm) wide x 9/16" (14mm) deep notches to gauge the setting material.
- D. Install tiles in accordance with the mortar manufacturer's strict instructions and following the general office outline procedure set forth in ANSI A108.5 SPECIFICATIONS FOR THE INSTALLATION OF CERAMIC TILES.
- E. On walls, start installing at eye level when using Ardex non-sag thin set mortars. No tile supports, wedges, pegs, or ropes are required to prevent sagging.
- F. On interior floors and walls, install tiles leaving a regular even spacing between tiles of at least 1/8" (3mm) and a maximum of 5/8" (15mm) (specify joint width desired). NO BUTT JOINTS SHALL BE PERMITTED.
- F. On all the exterior portion of the work, install tiles leaving a regular even spacing between tiles of at least 3/16" (5mm) (specify joint width if wider joints are desired). NO BUTT JOINTS SHALL BE PERMITTED.
- H. In areas where tiles are specified to be grouted with a chemical resistant epoxy grout, install tiles with a regular even spacing between tiles of at least 3/16" (5mm) to a maximum of 3/8" (10mm). (Specify the desired joint width) NO BUTT JOINTS SHALL BE PERMITTED.

3.0.4. EXPANSION AND CONTROL JOINTS

- A. Carry existing joints in the concrete subfloors and walls through the covering surfaces.
- B. Install control joints where 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 in accordance with the Tile Council of America Detail #EJ-171 recommendations, as described in the latest edition of the TCA HANDBOOK FOR CERAMIC TILE INSTALLATION, CAUTION: CONTROL JOINTS: Under no circumstance shall control joints be cut in after the tiles have been installed. Install tiles up to the control joint and stop. If required, cut the tile and resume setting from the opposite side of the joint. Before continuing, rake the joint clean.
- D. Install an approved compressible bead and sealant to caulk expansion and control joints. Follow the sealant manufacturer's installation instructions.

3.0.5 GROUTING (See Notes To Specifier 4,5,7 and 8)

- A. Except where tiles are installed with a fast-setting material, grout wall tiles no sooner 8 hours and floor tiles no sooner than 24 hours after installation.
- B. Where tiles are installed with a fast-setting material, grout wall tiles no sooner than 1-3 hours, and floor tiles no sooner than 5 hours after installation.
- C. On floors and walls where joints are specified to be up to 3/16", use ARDEX FLEX UNSANDED STAIN-RESISTANT, WATER REPELLENT, UNSANDED GROUT.
- D. On floors and walls where joints are specified to be up to 1/2", use ARDEX FLEX SANDED FAST SETTING, WATER REPELLENT, FLEXIBLE GROUT.

3.0.6. CLEANING

- A. Excess grout should be removed from the face of the tile as work proceeds using the rubber float in "snow plow" fashion. Allow the grout to set firmly in the joints, and then dampen the entire area with a minimal amount of water.

- B. Allow dampened grout to stand for one minute, then wipe tile face repeatedly with clean sponge face.
- C. Any dry film remaining on the tile surface can easily be removed by finishing or polishing with a damp terry cloth or similar pad after the grout has hardened in the joints.

3.0.7. PROTECTION

- A. Protect finished work from weather, freezing and complete water immersion for at least 21 days after completion of the work.
- B. Floors: protect floors from foot traffic for at least 1 1/2 to 5 hours depending upon grout selected, and general traffic for at least 24 hours after installation. Prohibit heavy traffic on floors for at least 7 days after installation
- C. Walls: protect walls from impact, vibration and hammering on adjacent and opposite walls for at least 14 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%.

NOTES TO SPECIFIER

1. Specify tile or stone as suitable for interior or exterior, or for floor or wall use.
2. Specify ARDEX X701, ARDEX X7G PLUS, ARDEX S 48 CEMASTIC Highly Flexible Powdered Mastic, or ARDEX FB 9 L POURABLE SUPER FLEX MORTAR for installing porcelain tiles over most types of substrates including completely cured concrete, brick, masonry block, cementitious backer unit, gypsum wallboard (interior dry areas only) and for interior residential floors and countertops in dry areas, over a well-prepared A.P.A. rated GROUP 1, EXTERIOR GRADE plywood, C.C. plugged or better conforming to U.S. Product Standard PSI-95 or a COFI rated SELECT or (SEL TF) EXTERIOR GRADE Douglas Fir plywood, conforming to CSA 0121 standard.
3. Specify ARDEX S20 or FB9L (floors only) for installing LARGE SIZE TILES, 16"x16" (40 x 40 cm) and larger and for retiling floors and walls that have to be ready for use within a very short time such as hospitals, airports, shopping malls, commercial office complex, etc. In all other cases, specify only the ARDEX 701 PORCELAIN SHEARFLEX High Shear Thin-Set Mortar (see note 2 above).
4. When specifying ARDEX X7G PLUS, ARDEX FB9L (floor only), and ARDEX X701, specify that porcelain wall tiles may be grouted after 8 hours, floor tiles after 24 hours.
5. When specifying ARDEX S 48, ARDEX S 16, and ARDEX S 20, specify that wall tiles may be grouted after 1-3 hours and floor tiles can usually be grouted 5 hours after installation.
6. DO NOT SPECIFY any of these systems over pressed wood, particle board, chipboard, masonite, Lauan, asbestos board, gypsum based patching and leveling compounds, and ALL dimensionally unstable materials which are not suitable substrates to receive porcelain tiles.
7. Specify ARDEX FLEX SANDED Water Repellent, High Strength, Fast-Setting Grout for interior and exterior floor and wall joints up to 1/2". Specify ARDEX FLEX UNSANDED Water Repellent, High Strength, Fast-Setting Grout for interior and exterior floor and wall joints up to 3/16". DO NOT ALLOW BUTT JOINTS. For exterior installation, specify joints to be thoroughly compacted and tooled.
8. Contact the Ardex Technical Service Department for grout recommendations when interior floors are expected to withstand heavy-duty traffic and where stain, impact and chemical resistance is desired.
9. Structural requirements for porcelain tiles require that all floor and wall surfaces be rigid and conform to secure and good engineering practices. Maximum allowable deflection is L/360 when subjected to live and dead loads and should be uniform over the length of the span.
10. Porcelain tiles, and their setting mortars and grouts do not constitute a waterproof barrier and should not be considered as a replacement for a waterproof membrane. For information concerning ARDEX 8+9 Waterproofing Membrane for Ceramic Tile Installations contact your local Ardex representative.
11. This is a total system. Specify all materials by name and number as herein described to ensure that specifications do not differ from the manufacturer's instructions.
12. INSERT THE FOLLOWING SPECIFICATION IN THE CONCRETE SECTION OF THE SPECIFICATION:
 - 12.1 No sealer or curing compound shall be used on concrete to be covered with tiles.

Concrete shall be completely cured prior to the installation of the tiles. Concrete surfaces which are to receive a tile finish, shall have a light broom finish texture and shall be left level 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. Pitch floors to drains where required. Areas requiring filling, patching or leveling shall be prepared using Ardex Inc. self-leveling compounds and skim-coat, patching materials. No gypsum base levelers shall be permitted.

- 12.2 All surfaces to receive tiles shall be left clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any other deleterious substance and debris which may prevent or reduce adhesion.
- 12.3 The general contractor shall be responsible for the removal of any contaminant prior to the execution of the work.

END OF SECTION