

Specifications for Bedding and Jointing Tile with Epoxy Grout

Part 1 Scope

Product and Application

This specification describes the application of quarry tile to a substrate by the thin set method using a three-part, flexibilized epoxy grout for bedding and jointing the tile.

1.1 Acceptable Manufacturers

ICO Grout as manufactured by International Coatings of Franklin Park, IL or approved equivalent epoxy resin grouting and jointing system.

1.2 Performance Criteria

1. Compressive Strength (ASTM C-307) : Maximum - 5170 psi
2. Tensile Strength (ASTM D-638) : Minimum - 1560 psi
3. Tensile Elongation, resin only(ASTM D-638): Minimum - 9% elong
4. Flexural Strength (ASTM C-580) : Minimum - 2530 psi
5. Hardness, Shore D (ASTM D-2240) : Maximum - 75
6. Bond Strength to Quarry Tile : >1000 psi (Tile fails)
7. Gardner Impact (ASTM D-2794) : >160 inch pounds
8. Water Absorption (ASTM D570) : Maximum - 0.3% in 24 hrs
9. Loading Ratio, Aggregate to liquid
 - By Volume : Maximum 2:1
 - By Weight : Maximum 3:1
10. Chemical Resistance: must be able to withstand at least 72 hour immersion in the following chemicals: 20% acetic acid, 37% hydrochloric acid, 50% hydrogen peroxide, 85% phosphoric acid, 80% sulfuric acid, 50% sodium hydroxide and 15% sodium hypochlorite.

1.3 Materials

1. Component "A" shall be an epoxy resin of the epichlorohydrin A type containing special flexibilizers for enhanced thermal shock resistance.
2. Component "B" shall be a blend of cyclo-aliphatic amines with non blushing characteristics.
3. The filler shall be 1.) For the bedding material (ICO Grout BL), an 80 mesh cleaned silica sand; and 2.)For the jointing material (ICO Grout TS) a 35 mesh silica sand.
4. The compatible waterproofing membrane shall be ICO Lastic, as manufactured by International Coatings of Franklin Park, IL, a 100% solids epoxy - modified urethane liquid material.
5. The compatible expansion joint material is ICO Lastic Gun Grade as manufactured by International Coatings of Franklin Park, IL - a 100% solids epoxy - modified urethane liquid with special thickeners for trowellability.

1.4 Surface Preparation

All new concrete surfaces that will be covered with the systems specified herein should have received a steel trowel, light broom finish and shall be free of all form release agents, curing agents or sealer

applications. Concrete shall have cured a minimum of 28 days. If this is not practical, then consult manufacturer for recommended procedures.

A. General

1. The moisture vapor transmission rate of any slab-on grade shall be checked using a calcium chloride test kit. The measured vapor transmission rate shall not exceed 5 pounds. Consult manufacturer for further directions.
2. Remove any oil or grease spots with appropriate degreaser, followed by pressure washing.
3. All new concrete should be shot blasted, scarified, or ground to remove any contaminants and to obtain a minimum profile of 40 grit. The prepared surface shall have a neutral PH of 7.
4. All open cracks 1/8" and greater should be v-notched to a 1/2" width by 1/2" depth and cleaned of any debris. Such cracks should be filled with ICO Gel and struck off flush with the surrounding surface.
5. All straight line cracks shall be sawcut to a minimum 3/4" width and 1-1/4" depth centered over the original crack. Remove all dust and debris and fill as specified for expansion joint application.

1.5 Material Application

A. Priming

Prime floor with ICO Primer LV at a coverage rate of 250 - 300 SF/gallon. Allow to dry tack free.

B. Waterproof Membrane (Optional)

Apply ICO Lastic at a coverage rate of 25 SF/ gallon by roller or squeegee, to obtain a minimum thickness of 60 mils.

C. Setting Bed Mixing and Application

1. Mix ICO Grout BL epoxy liquid resin and hardener first, then add silica aggregate mix in accordance with manufacturer's printed instructions.
2. Trowel mortar (ICO Grout BL) onto floor with a quarter inch notched trowel at 45° to obtain a final 1/8" minimum bed in "V" groove after tile is in place. Do not trowel material more than seven feet ahead of the tilesetter.
3. Mix only enough material that can be trowelled on floor and covered with tile within 45 minutes (at 75°F). All spread material which has been trowelled onto floor and not yet covered beyond this time shall be removed from the floor and site.
4. Keep tools clean with soapy luke-warm water.
5. All floor tile shall be dry, free of dirt and dust and at a temperature of at least 60°F when laid. Tiles shall be free from cracks, scum, warpage, and chips. Final culling and selection of the tile to comply with these requirements during installation shall be the responsibility of the contractor.
6. The tile shall be placed in the setting bed by exerting pressure on the top of the tile at the same time positioning the tile horizontally. In positioning tile, care

shall be taken to avoid forcing the setting bed material up into the vertical joint.

7. Set tile level with plane of slope, and with previously laid tiles. Take special precautions to avoid projecting or sagging corners of tiles.
8. Joints alongside tiles shall be a minimum thickness of 1/4" wide, and shall be made uniform and continuous.
9. At high points and valleys, install tiles continuously over these points to form uniform rounded surfaces. High points and valleys shall be in the form of a rounded surface so that tiles will not form a sharp edge. (See Drawing Detail # 1.) All high points, except at expansion joints, shall have a continuous tile course directly over the joint and 6" width tunning parallel to direction of high points.
10. Expansion joints extending across the room shall be placed over concrete joints below. (Detail Drawing #2.)
11. Expansion joints shall have two tiles on each side of a 3/8" joint. (See Detail Drawing #2.)
12. Where tiles about drains, curbs, walls, pipes, sleeves and columns, tiles shall be cut with a masonry power saw to form a neat fit. Large triangular areas filled with mortar will not be permitted.
13. Allow to set hard (at least 12-18 hrs at 75°F).

D. Jointing of Quarry tile

1. Mix ICO Grout TS Parts A and B for at least 30-60 seconds with a paddle - style mixer, followed by addition of filler and tint.
2. Spread the joint mortar onto the joints using a squeegee, steel trowel, or a rubber backed trowel. To ensure complete compaction and to eliminate any air bubbles from forming, use a steel trowel or pointing tool will also aid in achieving a well compacted joint.
3. Remove any excess grout from the surface of the file as work progresses as this will aid in the final clean-up.
4. After approximately 30 minutes set time, scrub the surface with a small amount of water and abrasive pads or nylon pad on a rotary scrubber.
5. If waxed tile is used, the clean-up can be done the next day or preferably, after all other trades are finished. The clean-up is then done using a high pressure (1200-1500 psi) washer and 150°F - 180°F water.
6. After the floor has been installed, allow it to set 24 hours before subjecting it to foot traffic and 48 hours for wheel traffic.

E. Perimeter Coving

1. Install Cove Base at all perimeter walls. Where no expansion joints exist at the walls, install a standard tile cove, using ICO-Grout TS.

F. Perimeter Joints

1. Where there are existing expansion joints at the walls, install perimeter expansion joints (Drawing Detail # 3) at all perimeter walls.
2. Install perimeter joints using ICO Lastic Gun Grade around all the periphery of the rooms, against walls, around columns and drains, and around raised portions of the floor or pads. (Detail Drawings # 6,7,8,9)

3. Joints shall be 1/2" wide and shall extend the depth of the tile. Over-fill the joint to 1/8" above the top of the tile. Excess mortar shall extrude out of joint and be smoothed with a pointing trowel or masonry pointing tool to insure a smooth flush joint. Discard cut-off extruded joint material.

G. Cleaning and Protection

1. Tiles shall be allowed to remain undisturbed until resinous cement is hard. Protect from foot traffic 24 hours and wheel traffic for 48 hours (at 75°F)
2. No equipment shall be moved into or through the tile area without protecting floor surface with plywood and planking, and not before the 48-hour period elapsed time.
3. Skidding of equipment or overhead mechanical work will not be permitted without protective cover over tile surface.
4. Plug or place strainers in floor drains to prevent was from entering the sanitary system.
5. As soon as the joint material is completely set and hard, and not before the 48 hour elapsed time, the surface of the floor shall be cleaned of excess mortar on the face of the tiles using 1200 to 1500 psi power sprayers with hot water above 165°F but not exceeding 180°F. Note that the longer the excess mortar material remains on the tile beyond the minimum curing time, it becomes increasingly harder to clean the cured mortar from the surface of the tile. It shall be the Contractor's responsibility to properly clean the surface and determine when this cleaning shall be done.
6. Any remaining excess mortar shall be removed by the use of a stiff bristle brush, using clean, sharp sand and water.
7. The use of high pressure steam, acids, caustics, strong detergents or other chemicals will not be permitted for cleaning tile surfaces.