

Specifications for Installation of Epoxy Coatings For Secondary Containment of Acids and Caustics - Tank Farms and other Light Traffic Areas

Part 1 : Scope

Product and Application

This specification describes the application of a two-part epoxy coating/quartz filled system applied at a minimum thickness of 60 mils on the floor and 20 mils on the walls.

1.1 Acceptable Manufacturers

ICO Hi Guard Coating as manufactured by International Coatings of Franklin Park, IL or approved equivalent epoxy resin flooring system.

1.2 Performance Criteria

1. Tensile Strength (ASTM D-638)
 - Minimum : 5000 psi
2. Tensile Elongation (ASTM D-638)
 - Minimum: 5 %
3. Flexural Strength (ASTM D-790)
 - Minimum: 3000 psi
4. Hardness, Shore D (ASTM D-2240)
 - Maximum: 80 Inch pound
5. Gardner Impact (ASTM D-2794)
 - Minimum: 80 inch-pounds
6. Bond Strength to Quarry Tile
 - Minimum: 1000 psi
7. Vapor Transmission Rate (ASTM E-96)
 - Maximum: .07 perms
8. Water Absorption (ASTM D-570)
 - Maximum : .02% in 24 hours
9. 60° Gloss
 - Minimum: 100.
10. Chemical Resistance: must withstand a minimum of 72 hour immersion in the following acids: 36% acetic, 37% hydrochloric, 88% lactic, 30% nitric, 85% phosphoric, and 98% sulfuric acid; and the following caustics: 50% sodium hydroxide, 50% ammonium hydroxide, and 50% potassium hydroxide.

1.3 Materials

1. Component "A" shall be a modified epoxy resin of the epichlorohydrin bisphenol F type containing special flexibilizers for enhanced resilience. No solvents are allowed.
2. Component "B" shall be a blend of cycloaliphatic amines. No solvents are allowed.

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. Walls should be sand blasted or ground to provide a clean, abraded finish. The prepared surface shall have a neutral pH of 7. CMU walls need only be pressure washed.
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 bug holes in wall must be prefilled with **ICO Gel**.
6. All straight line cracks shall be saw cut 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.

B. Protrusions Thru Coating Surfaces

Cut a keyway of at least 1" x 1" around the perimeter of all drains, trenches, steel posts, etc. Remove any rust, sealants or coating from the drain ring, steels posts and pump.

C. Expansion Joints

1. Cut back and/or remove any joint backing or filler strips to a minimum of 1 1/2" deep.
2. Insert disposable filler in the joints to prevent filling with the overlayment materials and to allow for accurate location of final saw cuts in the overlayment.

1.5 Material Application

A. Priming

1. Floors
 - Apply **ICO Primer LV or LVFC** with a brush or roller at an application rate of about 200-250 SF/gallon, depending on porosity of concrete. Allow to dry tack free. Re-prime any dry-appearing areas.

B. Patching

1. Any deep holes (> 1/2" deep) should be patched with 100% solids epoxy patching compound, **ICO Patch** and allowed to dry tack free.

C. Floors

1. Mix **Hi Guard Coating, Part A** with a low-speed (<750 rpm) jiffy-style mixer for about 30 seconds, or until uniform in color, then mix in **Hi Guard Coating, Part B** for another 30-60 seconds.
2. Dump contents onto floor in a ribbon pattern, squeegee, then back toll at a coverage rate of 80 SF/gallon.
3. Into the still wet liquid immediately broadcast in #35 grit clean, dry silica quartz to refusal. Allow to dry.
4. Sweep up excess sand, sand off jagged peaks and then apply a second coat of **Hi Guard Coating** at 80 SF/gallon. Total millage (DFT): 60 mils.

D. Walls

1. To concrete walls mix **Hi Guard Coating Parts A and B** as above and apply with a roller at approximately 160 SF/gallon. Allow to dry tack free. Apply second coat of **Hi Guard Coating** at the same coverage rate. Minimum wall thickness: 20 mils.
2. To CMU walls, apply **ICO Glaze Base Coat** at a coverage rate of 100 SF/gallon, and back roll to ensure block wall completely filled. Then apply a single coat of **Hi Guard Coating** at 160 SF/gallon.
3. When walls and floors poured separately, before applying finished coating apply 1"x1" cant cove out of **Hi Guard Liner**, then run 4" wide two ounce fiberglass mesh embedded in **ICO Primer LV** along wall and floor and allow to dry tack free.

E. Expansion Joints

1. Remove disposable joint filler from the expansion joints by saw cutting the overlayment above all expansion joints exposing the full width and length.
2. Insert closed cell joint backing, using a large enough diameter to provide a 30% compression. The joint backing should be forced down in the joint to a depth equal to one half the width.
3. Caulk with **ICO Caulk X** and tool the bead to insure full and complete contact with the concrete. Finish bead should be neatly aligned with the saw cut joint edge with no gaps, strings, or bubbles.

F. Trenches, Sumps

1. Apply **ICO Hi Guard Liner** to 1/8" thickness on walls and floors.

Note: **Hi Guard Coating** and **Hi Guard Liner** can only be applied at temperatures down to 50°F.

1.6 Protection of Finished Work

1. Prohibit foot traffic on floor for 24 hours after laying (at 70°F). At 50°F, this time should be extended to 48 hours.
2. Rinse off any chemicals that may come in contact within 7 days of installation with the freshly laid floor immediately.

1.7 Cleanup

1. Dispose of all unused and waste materials.
2. Tools can be washed in warm, soapy water when wet, but after drying, can only be cleaned by grinding or with a paint stripper.
3. Unused resin can be set off with proper amount of hardener and disposed of in regular trash bins.

1.8 Warranty

- Installer shall provide a one year warranty against delamination, chemical attack and normal wear and tear.