

Performance Specifications for Highly Corrosive Environments, eg, Chemical Processing Areas, Pulp Mills and Bleach Areas, and CIP Chemical Storage Areas

Part 1 : Scope

This specification describes the application of a three-part, quarter inch seamless epoxy floor by the trowelled or slurry/broadcast method.

1.1 Acceptable Manufacturers

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

1.2 Performance Criteria

1. Tensile Strength (ASTM C-307)
 - Minimum 1200psi
2. Tensile Elongation (ASTM C-307)
 - Minimum 5%
3. Compressive Strength (ASTM C-579)
 - Maximum 7000psi
4. Hardness, Shore D(ASTM-2240)
 - Maximum 80
5. Bond Strength to Quarry Tile
 - >1000psi
6. Gardner Impact (ASTM D-2794)
 - >160 inch pounds
7. Water Absorption (ASTM D-5790)
 - < 0.1% in 24 hours
8. Vapor Transmission Rate (ASTM E-96)
 - `- not to exceed .07 perms
9. Chemical Resistance
 - Must withstand 7 day immersion in following acids: 20% acetic, citric, conc. , 37% hydrochloric, 88% lactic, 30% nitric, 85% phosphoric, 98% sulfuric.
10. VOC Content
 - Must be 0%

1.3 Materials

1. Component A shall be an epoxy resin of the epichlorohydrin bisphenol F type containing special flexibilizers for enhanced impact and thermal shock resistance.
2. Component B shall be a blend of cycloaliphatic amines with non-blushing characteristics.

3. The filler shall be a blend of four types of silica quartz. The **maximum** filling ratio of aggregate to liquid, by weight, shall be 5:1.
4. Material shall be able to be applied in one step without need of a top or "sealer" coat.

1.4 Installer Qualifications

The applicator must be certified by the manufacturer and have a minimum of five years experience installing similar systems.

1.5 Surface Preparation

A. Concrete

1. All new concrete surfaces that will be covered with the above specified system should have received a steel trowel finish and shall be free of all form release agents, cure and seals and cured for 28 days (note that if this time not practical, consult manufacturer for options)

B. 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 10 pounds.
2. For new concrete, mechanically shot blast or diamond grind to obtain a clean, abraded surface (minimum 40 grit size profile).
3. For old concrete, chemically remove any grease, oil, or other impurities. Remove any old, poorly bonded coatings by mechanical means, followed by abrading existing concrete. Prepped surface must be clean and abraded prior to application.
4. All open cracks, 1/8" width and greater shall be routed out and prefilled with **ICO Gel**.
5. Any deep holes > 1/2" in depth should be pre-filled with **ICO Patch**.
6. Any straight line cracks shall be saw cut to a minimum 1/2-3/4" width by 1-1/2" deep centered over the original crack. Fill as specified for expansion joint.
7. Do not apply materials below 50F.

C. Protrusions Thru Coating Surface

1. 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, steel posts and pump.

D. Coating System Boundaries

Cut a keyway into the concrete at all termination points, e.g., doorways. The inside edge of the saw cut should be chipped away at a 45deg angle to form an undercut for the edge of the application. Do not feather edge.

E. Expansion Joints

1. Cut back and remove any old joint backing to a depth of 1-1/2".
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.

1.6 Material Application

A. Priming (optional)

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

B. Trowelled System

1. Mix **ICO Hi Guard Parts A and B** for 30-60 seconds, followed by adding **ICO Fill** and tint and mixing with a low speed paddle-type mixer for another 30-60 seconds, or until mix is uniform in color.
2. Dump contents out onto floor and screed out to desired thickness with a screed rake, box or bar.
3. Power trowel or hand trowel to level and close the surface followed by back-rolling with an isopropyl alcohol-moistened roller to bring the liquid resin up and remove light trowel marks.
4. Into the still wet resin, broadcast in suitable grit to achieve desired texture.

C. Slurry/ Broadcast System

1. Mix one gallon of liquid resin and hardener with one gallon of uniform, graded sand (typically 30-40 mesh) and dry pigment.
2. Dump onto floor and spread the two gallon mix over approximately 17 SF with a notched squeegee, followed by a spiked roller to level the floor. Immediately broadcast into the still-wet floor same sand as in #1 above. Allow to dry.

Note: For more uniform floors, apply this slurry in two applications at about 35SF/two gallon kit.

3. Sweep off excess sand, screen surface, then apply **ICO Hi Guard Coating** at about 75-80SF/gallon with squeegee, then back roll.

D. Expansion Joints

1. Remove disposable joint filler from expansion joints by saw cutting the overlayment above all expansion joints exposing the full width and length.
2. Insert closed cell backer rod, using a large enough diameter to allow for 30% compression. The backer rod should be forced down so that the depth equals half the width.
3. Caulk with **ICO Caulk X** and tool the bead to insure full and complete contact with the concrete.

E. Trenches

1. All concrete trenches should be ground to roughen the surface and remove any old coatings.
2. Prefill any deep (>1/4") holes with **ICO Gel** and allow to dry.
3. Trowel apply **ICO Hi Guard Liner** over vertical and horizontal surfaces to 1/8" thickness.

1.7 Protection of Finished Work

1. Prohibit foot traffic for 24 hours after laying(48 hours if 50F temperatures).
2. For the first seven days of use, rinse off any spilled acids immediately.

1.8 Cleanup

1. Dispose of all unused and wasted materials. See MSDS for proper disposal.
2. Tools can be cleaned with mineral spirits, toluene or xylene. Once dried, it must be removed with a paint stripper.
3. Unused resins can be set off by combining with hardener in proper ratio disposed of in regular trash bins.

1.9 Warranty

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