Section 03 35 43
Polished Concrete Finishing

Specifier Note: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-part format. This section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building codes. Coordinate this section with other specification sections and the drawings. Delete all "Specifier Notes" when editing this section.

Specifier Note: This suggested specification is designed for existing or new hardened concrete. Concrete for new construction should be specified under Section 03 30 00 (cast in place) for curing, mix design, compressive strength, finish troweling, and floor flatness tolerances. Vexcon can assist with modification of your existing 03 30 00 specification with emphasis on the sections above and other pertinent sections for designing a concrete floor for polishing.

Specifier Note: This guide specification is provided as a start point for the design professional. Any modifications to the specification are the responsibility of the design professional. Contact Vexcon Chemicals with any questions regarding this product.

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Penetrating Liquid Floor Treatment for Polished Concrete Finishes: Clear, chemically reactive, water borne solution of silicate material and proprietary components, odorless, that penetrates, hardens and is suitable for Polished Concrete surfaces leaving no surface film.

1.02 RELATED SECTIONS

A. Section 03 35 00 – Concrete Finishing

B. Section 09 61 00 – Flooring Treatments

1.03 REFERENCE STANDARDS

A. ASTM C-642-06 Standard Test Method for Density, Absorption, and Voids in Hardened Concrete

B. ASTM D-5178-98/08 Standard Test Method for Mar Resistance of Organic Coatings

C. ASTM D-4060-07 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abrasion: Modified

D. ASTM G-154-06 Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

E. ASTM D-2369-07 Standard Test Method for Volatile Content of Coatings

F. ASTM D-2047-04 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine

G. Reflectivity according to use of Horiba IG-320 Gloss Checker

H. ASTM C-1378-04 (2009) Standard Test Method for Determination of Resistance to Staining

I. ASTM E-84 (UL723) – Standard Test Method for Surface Burning Characteristics of Building Materials

J. ASTM E-648 – Standard Method of Test for Critical Radiant flux of Floor Covering Systems Using Radiant Heat Energy Source

K. ANSI Standard B-101.1-2009 – Manufacturer required to have letter certifying compliance.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Schedule and hold a pre-installation meeting prior to project start.

1. To attend: Architect, Owners Representative, General Contractor, Certified Installer.

B. Comply with manufacturers Project & Job Conference requirements.

1. Complete Vexcon's Project Conference and Job Survey form.

C. Schedule installation and review date for mock-up.

1.05 SUBMITTALS

A. Comply with section 01 33 00 Submittal Procedures

B. Comply with section 01 31 00 Project Management and Coordination

C. MSD Sheet indicating VOC content and safety precautions.

D. Manufacturer's Quality Assurance: Submit manufacturer's certification that floor treatment complies with specified requirements and is suitable for intended application.

E. Warranty: Submit manufacturer's standard warranty.

F. LEED: Submit manufacturer's LEED Certification.

G. Applicator Qualifications: Submit list of projects reference as documented in this Specification under Quality Assurance Section.

H. Quality Control Submittals:

1. Provide protection plan of surrounding areas and non-work surfaces.

I. Product Data: Provide data on all products, including information on compatibility of different products and limitation.

J. Indicate installation procedures and interface required with adjacent construction.

K. Provide Manufacturers Maintenance Instructions.

1.06 INFORMATIONAL SUBMITTALS

A. Quality Assurance*:*
   1. Certificates

      a. Product certificates signed by the manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

      b. Current contractor's certificate signed by the manufacturer declaring contractor as a certified and approved installer of the polishing system.

B. Qualifications:
   1. Installer certified by Vexcon Chemicals and experienced in performing work of this section who has specialized in installation of work similar to that required for this project.

   2. Installer trained and holding current certification for Certi-Shine Clear, Certi-Shine Clear FSR or Certi-Shine Micro-Stain installation.

C. Pre-installation Conference: Conduct a pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Complete manufacturer's Project & Job Conference form.

1.07 MOCK-UP

A. Installation: Provide an 8' x 10' test area of polished floor as specified in Section 3.03

B. Mock-up Size: [100 ft2 (9.3 m2)] [_____] sample panel at jobsite at location as directed under conditions similar to those which will exist during actual placement.

C. Mock-up will be used to evaluate concrete substrate preparation, material application, color selection, and shine.

D. When approved, Mock-up will demonstrate minimum standard of quality required for proceeding with this work.

E. Approved Mock-up shall remain for comparison as part of the finished work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store material in dry, enclosed area protected from exposure to moisture and temperatures below 50° F.

B. Keep containers closed and upright to prevent leakage.

C. Dispense special concrete finish material from factory numbered and sealed containers.

D. Maintain record of lot numbers.

1.09 PROJECT CONDITIONS

A. Protect concrete slabs from staining prior to application of concrete finish system.

B. Diaper hydraulic powered equipment.

C. Place drop cloths under parked vehicles.

D. Do not store structural steel or metal fabrications on slab.

E. Do not allow pipe-cutting machine on slab.

1.10 WARRANTY

[Certi-Shine Clear] [Certi-Shine Clear FSR] [Certi-Shine MicroStain]

A. **Certi-Shine Clear**: Provide 20 year manufacturer's material warranty commencing at date of building substantial completion. Manufacturer shall warrant to the owner that polished surface will remain water repellent, dustproof, hardened and abrasion resistant.

B. **Certi-Shine Clear FSR** (Food Stain Resistant): Provide 20 year manufacturer's material warranty commencing at date of building substantial completion. Manufacturer shall warrant to the owner that polished surface will remain water repellent, dustproof, hardened, abrasion resistant and food stain resistant.

C. **Certi-Shine MicroStain**: Provide 10 year manufacturer's material warranty commencing at date of building substantial completion. Manufacturer shall warrant to the owner that polished surface will remain water repellent, dustproof, hardened, abrasion and food stain resistant.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Subject to compliance with requirements provide Vexcon Chemicals system [Certi-Shine Clear] [Certi-Shine Clear FSR] [Certi-Shine MicroStain]

1. Vexcon Chemicals.

a. Contact Brand Manager 1-888-VEXCON-1
Fax 215-332-9997
7240 State Rd.
Phila., PA 19135

b. Local certified Certi-Shine installer.

B. Available Products: Subject to compliance with requirements, products that may be incorporated into the work must have 5 years of recognized polishing use on jobs of similar scope.

2.02 SYSTEM DESCRIPTION

A. Polished Concrete: Includes grinding installation of silicate sealer, (hardener, densifier), polishing, and a stain repellant.

B. Performance Criteria: Polishing systems shall have the following minimum performance properties:

1. ASTM C-642 Absorption: Reduction of 75% of Control
2. ASTM D-5178 Balance Beam Mar Tester: Greater than 50% harder
3. ASTM D-4060 Modified Taber Abrasion 600 Rev:0.37% treated vs. 0.68% untreated
4. ASTM G-154: 5000 HR QUV: No fade, change or erosion
5. ASTM D-2369 Solids: 18% Minimum
6. ASTM D-2047 Coefficient of Friction:
   a. Certi-Shine Clear - average - 0.54
   b. Certi-Shine Finish Coat Ultra - average - 0.63
7. Reflectivity: Change in gloss to 30 [Silver], 60 [Gold] or 80 [Platinum] depending on Certi-Shine system, as measured using a gloss meter in accordance with Horiba IG-320 Gloss Checker.
8. ASTM C-1378 Stain resistance: Food, Chemical, Oil and common stain resistance. See manufacturer's literature for list.
9. ASTM E-84 – Surface Burning of Building Materials
   a. Class A Flame Spread Index - <25 – Results: 0
   b. Smoked Developed Idex - <450 – Results: 0
10. ASTM E-648 – Critical Radiant Flux – Radiant Heat Energy Source – Class I – 0.98 avg.
11. ANSI B-101.1-2009 Non-slip properties – High Traction Rating

2.03 PRODUCTS/SYSTEM

Specifier Note: For Certi-Shine Clear select A. For Certi-Shine Clear FSR Select A-C. For Certi-Shine MicroStain Select A-D. E and F are optional.

A. Penetrating Liquid Floor Treatment for Polished Concrete Finishes: Clear, chemically reactive, water borne solution of silicate material and proprietary components, odorless, that penetrates, hardens and is suitable for Polished Concrete surfaces leaving no surface film.
   1. Acceptable Material: Vexcon Chemicals, [Certi-Shine Clear], [Certi-Shine Clear FSR], [Certi-Shine MicroStain].

B. Unreacted Silicate Rinse: Liquid rinse solution, increases stain resistance.
   1. Acceptable Material: Vexcon Chemicals, Certi-Shine Fixative.

C. Stain Repellent (non-film forming): Ready to use, food (oil and acid), hydraulic fluid and motor oil stain and water repellent, Silane and Silane polymer blend available in 3 formulations.

   1. Acceptable Material: Vexcon Chemicals, Certi-Shine Finish Coat Ultra.

      a. Note: Product choice will depend on VOC regulations or preference.

         i. [Certi-Shine Finish Coat CE]

         ii. [Certi-Shine Finish Coat Ultra WB]

         iii. [Certi-Shine Finish Coat Ultra AIM]

         iv. [Certi-Shine Finish Coat Ultra]

D. Concrete Stain: Vibrant colors, UV resistant, Zero VOC, Silicate Micro-Stain, chemically bonds with the concrete, formulated for use on polished concrete.

   1. Acceptable Material: Vexcon Chemicals, Certi-Shine MicroStain.

   2. Color [_____].

E. Silicate floor repair material: Liquid silicate material which fills and repairs concrete surface imperfections.

   1. Acceptable Material: Vexcon Chemical, Certi-Shine Fusion.

F. Cleaning Solution: Eco-friendly degreaser and cleaner, concentrate pH must be slightly alkaline.

   1. Acceptable Material: Vexcon Chemicals, StarSeal EF Degreaser and Cleaner.

G. Finishing Gloss Level Standard:

   1. High shine [Platinum], equivalent to 60° film gloss of 80 when viewed at an angle.

2. Medium shine [Gold], equivalent to 60° film gloss of 60 when viewed at an angle

3. Satin shine [Silver], equivalent to 60° film gloss of 30 when viewed at an angle

PART 3 - EXECUTION

3.01 EXAMINATION

Specifier Note: If more than one concrete finish is required for the project, copy and edit the following articles as required and identify finishes and other variables in a schedule at the end of Part 3 of this section.

Specifier Note: Certi-Shine MicroStain is UV resistant and can be installed on interior and exterior concrete. Certi-Shine MicroStain is the only stain that offers a ten year warranty. Vexcon's Certi-Shine MicroStain Colors can be custom-matched. For color selection, refer to Vexcon's Certi-Shine Stain color chart at www.vexcon.com

A. Site Verification of Concrete Conditions

1. Installer and manufacturer's representative will examine surfaces receiving concrete finish and polishing system.

a. Verify that surfaces conform to product manufacturer's requirements for substrate conditions.

b. Verify floor is free of curing membrane, bond-breaker, concrete laitance, and will absorb water per water absorbency test.

B. Concrete slab performance requirements

1. Verify that all the concrete complies with finishing requirements as specified in Cast In Place Section 03 30 00.

3.02 CONCRETE PREPARATION

A. Complete surface preparation per manufacturers written instructions.

B. Power sweep floor area, blow out corners and column footings.

C. Initial grind should clean the concrete surface, removing all coatings, dirt, oil and laitance.

D. If grinding does not remove oil spots, treat oil spots with emulsifier and oil absorber materials. Detail scrub with high pH detergent.

1. Acceptable Material: Vexcon Chemicals, StarSeal EF Stripper

E. Double scrub floor with automatic scrubber capable minimum of 80 to 120 pounds of head pressure, equipped with black stripping pads. Use proper dilution of high pH detergent. Scrub floor once without squeegee or vacuum. On second pass, remove water solution.

F. Power rinse surface removing all traces of soap residue.

G. Inspect the concrete surface.

H. Complete surface preparation per manufacturers written instructions.

I. Perform water absorbency test.

1. Repeat any steps as necessary to prepare for polishing.

3.03 CONCRETE FINISH APPLICATION AND POLISHING

A. Immediately following cleaning operation, install concrete polishing material(s) per manufacturer's instructions.

B. Perform polishing operation to the specified polish level.

1. Polishing Levels for Certi-Shine products
   a. [Platinum] – High Shine - Equivalent to 60° film gloss of 80 when viewed on an angle.
   b. [Gold] - Medium Shine - Equivalent to 60° film gloss of 60 when viewed on an angle.
   c. [Silver] - Satin shine - Equivalent to 60° film gloss of 30 when viewed on an angle.

3.04 JOINT FILLER

A. Prime and fill with manufacturer's approved epoxy joint sealant those joints that require the application of joint sealant after the application of the finishing system or as directed by the manufacturer.

1. Powercoat Primer

2. Powercoat Flexible Epoxy Joint Sealant

3.05 PROTECTION

A. Protect finished surfaces from damage and soiling and other construction activities.

B. Without damaging completed work, provide protective cover.

END OF SECTION