

SECTION 03 XX XX
CONCRETE FINISHING

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Work includes labor, materials, appliances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing operations in connection with furnishing, delivery, and installation of the work of this Section, complete as shown on the drawings and/or specified herein.
- B. Zero VOC Curing Agent, Water-Cure Equivalent Type, used to cure freshly placed interior or exterior concrete. This Non-reactive, inorganic concrete curing agent that shall replace water-cure, blankets, membrane forming cure, dissipating cure and plastic sheeting.
- C. Zero VOC Penetrating Liquid Floor Treatment Clear, chemically reactive, waterborne solution of inorganic lithium silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces. Product must not require free calcium or other hydrates for reactivity. Product to be capable of installation within five days of concrete placement when properly cured and must not generate any waste or byproduct for disposal.
- D. Single source product selection for suspended, on or below-grade concrete floor slabs that are not to receive moisture sensitive floor covering. (For moisture sensitive flooring see **Curing Agent, Moisture Emission Reducing** specification)

1.2 RELATED SECTIONS

- A. Division 03: Cast-in-Place Concrete
- B. Division 03: Curing Agent, Moisture Emission Reducing
- C. Division 03: Polished Concrete Systems
- D. Division 07: Damp proofing/waterproofing
- E. Division 09: Sealer/Densifier/Dustproofing/Hardener

1.3 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. 301 – Structural Concrete for Buildings
 - 2. 302.1R-15 Guide for Concrete Floor Slab Construction
- B. Health Product Declaration Collaborative (HPD)

PROJECT HEADER

1. HPD v.2.2

C. USGBC LEED 4

1. EQ Credit 1.0, 4.1 and 4.3
2. EQ Credit 10, 3.1
3. MR Credit 5.1 and 5.2

D. ASTM International (ASTM)

1. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
2. ASTM C156 - Standard Test Method for Water Loss [from a Mortar Specimen] Through Liquid Membrane-Forming Curing Compounds for Concrete
3. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete (Section 6)
4. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
5. ASTM C805 - Standard Test Method for Rebound Number of Hardened Concrete
6. ASTM C944 - Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotating-Cutter Method.
7. ASTM C1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method
8. ASTM C1202-93 – Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
9. ASTM D3359 - Standard Test Method for Rating Adhesion by Tape Test
10. E1155 Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System (inch-Pound Units)

1.4 SYSTEM DESCRIPTION

A. Concrete Curing Agent Water-Cure Equivalent Type:

1. Shall be equal to or exceed the performance of 28-day water-cured quality concrete per ASTM C-39, ASTM C-1202.
2. Shall reduce or eliminate cure-related cracking.
3. Shall not to leave a film or coating on the concrete surface. Will not interfere with the bonding or performance line markings or paints.
4. Shall be compatible with all bond-breakers, patching compounds, leveling products, and joint sealants.
5. Shall be UL 2818 Gold - GREENGUARD Certified.

PROJECT HEADER

6. Shall be compatible with silicate hardeners, stains or dyes and polish systems.
- B. Penetrating Liquid Floor Treatment:
1. Shall contain zero (0) VOC's.
 2. Shall not to leave a film or coating on the concrete surface. Will not interfere with the bonding or performance line markings or paints.
 3. Shall be UL 2818 Gold - GREENGUARD Certified.
- C. Fire / Safety / Habitability Criteria:
1. Flammability: Provide water-based materials.
 2. Hazard Rating: Materials used shall comply with local and federal VOC criteria.
- D. Air Quality Compliance:
1. Shall be listed as Super-Compliant by the South Coast Air Quality Management District.
 2. Shall exceed SCAQMD Rule 1113
- E. Warranty:
1. Provide system warranty for a term of 20 years based on application.

1.5 SUBMITTALS

- A. Product Data:
1. Submit manufacturer's printed descriptions of materials, components and systems; performance criteria; use limitations; preparation instructions and recommendations; storage and handling requirements and recommendations; and installation methods.
 2. Submit all appropriate HPD or SDS sheets.
 3. Shall provide certified independent laboratory test reports verifying all claimed ASTM and related test results.
- B. Shop Drawings:
1. Submit shop drawings indicating system application schedule.
 2. (optional) Photo documentation of application.
- C. Quality Assurance Submittals: Submit the following:
1. Qualifications: Submit manufacturer and installer's qualifications specified herein.
 2. Manufacturer's Instructions: Manufacturer's installation procedure.

1.6 QUALITY ASSURANCE

- A. Single Source Control: Obtain concrete curing agents, finishing aids, sealers, waterproofing and hardeners from a single source.

PROJECT HEADER

- B. Manufacturer Qualifications: Manufacturer shall provide the following:
 - 1. Manufacturer shall furnish written proof of operations as a formulator of specialty concrete treatments for at least 20 years.
 - 2. Product/Specification basis of design shall be manufactured by SINAK Corporation and distributed exclusively through authorized agents to ensure product quality and consistency.
 - 3. Manufacturer shall provide field service representation or real time video support inclusive with no additional expense to the client
 - 4. Manufacturer shall provide documentation of completed successful projects performed during this period.
 - 5. EPA – US Environmental Protection Agency: Product as supplied must be certified contain no VOC's.
 - 6. Product manufacturer shall maintain product liability insurance of not less than 5 million dollars per occurrence.

- C. Contractor Licensing:
 - 1. Applicator shall provide upon request a valid contractor's license issued for either C-33 or C-8 in the State in which this work will be accomplished.

- E. General Contractor is to coordinate slab installation and finish to be compatible with the specified flooring products or finishes in Division 9 where applicable.

1.7 PRE-INSTALLATION MEETING

- A. A pre-installation meeting shall be held to verify project requirements, substrate conditions, manufacturer's installation instructions and subsequent flooring requirements are verified.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Ordering: Shall comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels attached.

- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 1. Store materials in a dry, secure area.
 - 2. Maintain minimum temperature of 40° F and maximum temperature of 85° F.

PROJECT HEADER

1.9 WARRANTY

- A. Provide a copy of the manufacturers' warranty and conditions.

PART 2 – PRODUCTS

2.1 CONCRETE FINISHES

- A. Contract documents are based on products manufactured by SINAK Corporation, San Diego, CA, (800-523-3147). Products by other manufacturers that meet or exceed the following requirements and are approved equivalent by the Architect and Structural Engineer, may be provided.
 1. Finishing Aid: Only SINAK Finishing Aid for use during placement and finishing operations is allowed. Addition of water on the surface for finishing is not allowed.
 2. LithiumCure 2000: for interior surfaces with a hard trowel finish or surfaces to be sealed/densified or polished concrete systems.
 3. LithoHard: for interior hard troweled surfaces to increase abrasion resistance, reduce dusting and harden and densify the concrete.

2.2 SOURCE QUALITY

- A. Source Quality: Obtain curing, finishing, sealing, dustproofing, and hardening products from a single source manufacturer.
- B. Product performance requirements shall conform to requirements specified herein. Certified independent laboratory test certificates are required to verify test data.

2.3 MATERIALS

- A. SINAK Finishing Aid is a universal friction reducer. It is a non-toxic, zero VOC product that will not negatively affect the paste layer or concrete cream.
- B. SINAK LithiumCure 2000 is a curing agent, water cure equivalent type, clear, penetrating water-based curing agent, Type 1 Class A, material intended for

PROJECT HEADER

use on interior hard troweled or burnished concrete. It is a non-toxic material containing zero VOC's providing properties and test results in full compliance with the following:

1. ASTM C39: results shall be equal to or exceeding 28-day continuous water soak cured concrete results.
 2. ASTM C1202 (Internal Permeability): shall be equal to a 28-day water cure.
 3. Initial Surface Absorption Tests BS 1881: Part 5 – Performance shall be equal to 28 day-water cured concrete samples.
 4. ASTM C156: Less than .38 km/m² in 72 hr.
- C. SINAK LithoHard is a permanent penetrating densifier that hardens and dustproofs new and existing concrete. LithoHard provides increased slip resistance and can be used on colored concrete. It is a non-toxic material containing zero VOC's. Product performance characteristics:
1. ASTM C944: 50 percent improvement in abrasion resistance.
 2. ASTM C1028: Improved static coefficient of friction of 22 percent dry and 35 percent wet.
 3. ASTM C805: Improved rebound number of 10 percent.
 4. ASTM D3359: No failure of adhesion.

PART 3 – EXECUTION

3.1 PROJECT CONDITIONS

- A. The concrete shall be placed in accordance with normally accepted standards and guidelines by American Concrete Institute (ACI) 302. Water/cement ratio is recommended to be .45 but must be no greater than 0.50.
- B. Site verification of conditions: Verify concrete substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
1. Prior to work in this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 2. Verify that work in this section may be installed in strict accordance with the original design, all pertinent codes and regulations and all pertinent portions of the referenced standards.
 3. Verify concrete finish is within material manufacturer's acceptable range.
 4. In the event of discrepancy, immediately notify the Architect. Do not proceed with application in area of discrepancy until all such discrepancies have been fully resolved.

3.2 EXAMINATION

- A. All finishing work must be complete and the surface firm enough to support foot traffic without leaving marks prior to the application of curing agent.
- B. Early entry saw cutting or Soff-Cut operation and subsequent clean up shall be completed prior to the application of the product for optimal performance.
- C. In hot weather or windy conditions, installation of the curing agent shall be done as soon as possible, however, all saw cuts and slab edges shall be treated once cleaned and or forms are removed.

3.3 INSTALLATION

- A. Curing Agent application shall comply with manufacturer's written instructions and recommendations.
 - a. Application of LithiumCure 2000 should begin after the saw cutting operations and clean up is complete or when the concrete surface is firm enough to tolerate foot traffic without damaging the substrate.
 - b. Installation should be continuous. If rain should occur at any time during process; see "Interrupted Applications" at the end of the Product Information Sheet.
 - c. Apply LithiumCure 2000 into the joints first then immediately apply to the surface of the concrete wetting the surface with an airless or low-pressure sprayer. DO NOT allow LithiumCure 2000 or LithiumCure1000 to puddle.
 - d. Coverage Rates:
 - i. Single coat coverage rate for LithiumCure 2000 is 400-450 square feet per gallon for smooth-troweled concrete.
 - ii. Rates may vary due to substrate and environmental conditions.
- B. LithoHard application shall comply with manufacturer's written instructions and recommendations.
 - a. SINAK LithoHard application may begin any time five days after concrete placement when cured with a SINAK curing agent.
 - b. Installation should be continuous. If rain should occur at any time during process; see "Interrupted Applications" at the end of the Product Information Sheet.

PROJECT HEADER

- c. On new concrete surfaces, apply LithoHard to the surface of the concrete wetting the surface with an airless or low-pressure sprayer. DO NOT allow material to puddle.
- d. On existing concrete, a mockup is recommended to ensure no contaminants are present and to ensure proper coverage.
 - i. Coverage Rates:
 - 1. Single coat coverage for LithoHard over SINAK cured substrate is 700-800 square feet per gallon.
 - 2. Single coat coverage over water cured concrete is 400-450 square feet per gallon.
 - 3. Tow coat coverage on older existing concrete surfaces is 200-250 square feet per gallon.
 - ii. Rates may vary due to substrate and environmental conditions.
 - iii. Coverage rates for existing concrete will vary. Consult the manufacture's data sheet for recommendations.

C. Clean all equipment by rinsing with water.

3.4 PROTECTION

- A. Be responsible for protection of work area until owner's acceptance. Owner shall be responsible for reasonable care and maintenance of the installed treatment upon completion.
- B. Provide safe storage of product before and during application. Product that freezes shall be discarded.
- C. Be responsible to protect adjacent construction materials, glass, and metals which may be stained by overspray.

END OF SECTION