

SECTION 03 35 00
CONCRETE FINISHING (INTERIOR)



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TIPS:

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PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Application of clear reactive, penetrating liquid hardener to interior concrete.
- B. Related Requirements
 - 1. Section 01 25 00- Substitution Procedures.
 - 2. Section 01 33 00- Submittal Procedures.
 - 3. Section 01 45 80- Testing Laboratory Services.
 - 4. Section 01 60 00- Product Requirements.
 - 5. Section 03 30 00- Cast-in-Place Concrete.

1.02 REFERENCES

- A. The date of the standard is that in effect as the date of receipt of bids for the project.
- B. Living Building Challenge (LBC).
- C. Scientific Certification System (SCS) Indoor Air Quality Gold Certification.
- D. NSF International/Nonfood Compound Registration.
- E. American National Standard Institute / National Floor Safety Institute:
 - 1. ANSI/NSFI B101.1-Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.
- F. ASTM International (ASTM):
 - 1. 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.
 - 2. C1353 – Standard Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform, Double-Head Abraser.

3. D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
4. E96/96M Method B (Water Method) - Standard Test Methods for Water Vapor Transmission of Materials.
5. G154 -Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meeting: Convene before the start of work on new concrete slabs, patching of existing concrete slabs and start of application of concrete finish system.
 1. Require attendance of parties directly affecting work of this Section, including the Owner's Representative, Contractor, Architect, concrete installer, and applicator. Meeting should only convene when required parties are present.
 2. Review the following:
 - a. Physical requirements of completed concrete slab and slab finish.
 - b. Locations and time of test areas.
 - c. Protection of surfaces not scheduled for finish application.
 - d. Surface preparation.
 - e. Application procedure.
 - f. Quality control.
 - g. Cleaning.
 - h. Protection of finish system.
 - i. Coordination with other work.

1.04 SUBMITTALS

- A. Product Data:
 1. Submit manufacturer's product data sheets and tested physical and performance properties on products to be used for the work.
- B. VOC Certification: Submit certification that products furnished comply with regulations controlling use of volatile organic compounds (VOC).
- C. Certificates:
 1. Certificates by manufacturer stating that installer is listed applicator of special concrete finishes, and has completed the necessary training programs.
- D. Floor Protection Plan.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications:
 1. Applicator to be familiar with the specified requirements and the methods needed for proper performance of work of this section. Applicator must have availability of proper equipment to perform work within scope of this project on a timely basis. Applicator should have successfully performed a minimum of 5 projects of similar scope and complexity.
- B. Mock-up: On site, prior to the first application of the densifier.
 1. Require attendance of parties directly affecting work of this Section, including the Contractor, Architect, applicator, and Owner's Representative.
 2. Notify the above parties one week in advance of date and time when mock-up will be completed.

3. Demonstrate the materials, equipment and application methods to be used for work specified herein in pre-approved location approximately 50 sq. ft. in area or as directed by [Architect][Owner's Representative].
4. Retain approved mock-up during construction as a standard for judging the completed Work. Areas may remain as part of the completed work.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original containers, with seals unbroken, bearing manufacturer labels indicating brand name and directions for storage.
- B. Store concrete hardener/densifier in environment recommended on published manufacturer's product data sheets.
 1. Store containers upright in a cool, dry, well-ventilated place, out of the sun with temperature between 40 and 100 degrees F (4 and 38 degrees C).
 2. Protect from freezing.
 3. Store away from other chemicals and potential sources of contamination.
 4. Keep lights, fire, sparks and heat away from containers.
 5. Do not drop containers or slide across sharp objects.
 6. Do not stack pallets more than three high.
 7. Keep containers tightly closed when not in use.

1.07 FIELD CONDITIONS

- A. Environmental limitations:
 1. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting performance and finishing requirements.
- B. Close areas to traffic during floor application and after application for time period recommended in writing by manufacturer.
- C. Protect the completed slab to prevent damage by the other trades during floor completion.
- D. Temperature Limitations:
 1. Apply when surface and air temperature are between 40 degrees F (4 degrees C) and above 95 degrees F (35 degrees C) unless otherwise indicated by manufacturer's written instructions.
 2. Apply when surface and air temperatures are expected to remain above 40 degrees F (4 degrees C) for a minimum of 8 hours after application, unless otherwise indicated by manufacturer's written instructions.
- E. Apply when air conditions are calm to minimize surface treatment contacting surface not intended to be finished.
- F. Do not apply to frozen substrate. Allow adequate time for substrate to thaw, if freezing conditions exist before application.
- G. Apply a minimum of 24 hours after rain event. Suspend application when rain is anticipated for a period of 8 hours after application, unless otherwise indicated by manufacturer's written instructions.
- H. Temporary Lighting: Minimum 200 W light source, placed 8 feet (2.5 meters) above horizontal concrete surface for each 425 square feet (40 square meters) of concrete being finished.
- I. Temporary Heat: Ambient temperature of 50 degrees F (10 degrees C) minimum.
- J. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Substitutions: [No Substitutions] [In accordance with Section 01 25 00 – Substitution Procedures].

2.02 MATERIALS

- A. Pre-Densifier Concrete Cleaner: Cleaner to remove dirt, oil, grease, and other stains from existing slab surface.
 - 1. Product: Consolideck Cleaner/Degreaser manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Penetrating Concrete Hardener/Densifier: Lithium silicate hardener/densifier.
 - 1. Product: Consolideck LS/CS, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
 - 2. Subject to compliance with the following minimum performance requirements:
 - a. Living Building Challenge 2.0/2.1 Red List Compliant.
 - b. Recipient of Scientific Certification System (SCS) Indoor Air Quality Gold Certification.
 - c. Comply with national, state and district AIM VOC regulations and contain 50 g/L or less.
 - d. Registered as an approved NSF International/Nonfood Compound Registration.
 - e. Abrasion Resistance: Greater than 50 percent improvement over untreated samples when tested in accordance with ASTM C1353.
 - f. Achieve 'High Traction Range' readings when tested in accordance with ANSI B101.1.
 - g. Coefficient of Friction: Greater than 0.60 dry, Greater than 0.60 wet when tested in accordance with ASTM C1028.
 - h. Adhesion: Greater than 10 percent increase in pull-off strength when compared to an untreated sample when tested in accordance with ASTM D4541.
 - i. Water Vapor Transmission: 100 percent retained when compared to untreated samples when tested in accordance with ASTM E96/96M Method B (Water Method).
 - j. UV Stability: No degradation or yellowing of material when tested in accordance with ASTM G154.

2.03 EQUIPMENT

- A. Auto Scrubber Machine: For cleaning operations.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrate with installer present for conditions affecting performance of finish. Correct conditions detrimental to timely and proper work. Notify the [Architect][Owner's Representative] in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.02 PREPARATION

- A. Clean dirt, dust, oil, grease and other contaminants that interfere with penetration or performance of specified product from surfaces.
- B. Remove remnants of curing compound, bond breaker, and construction laitance prior to application of densifier. Remove by cleaning and scrubbing in accordance with manufacturer's instructions.
- C. Repair, patch and fill cracks, voids, defects and damaged areas in surface as approved by the [Architect][Owner's Representative]. Allow repair materials to cure completely before application of product.
- D. Scrub floor with pre-densifier floor cleaner to remove latent salts.
- E. Do not proceed until unsatisfactory conditions have been corrected.

3.03 APPLICATION

- A. Freshly Placed, Uncured Steel Troweled Concrete: Concrete: Apply concrete hardener/densifier after final concrete finishing and final soft cut control joints. Apply according to manufacturer's written instructions and as follows:
 - 1. Clean concrete to remove dirt/residue of soft cut saw debris.
 - 2. Apply hardener/densifier per manufacturer's recommended application rate to designated finished floor area, with a low pressure sprayer fitted with a 0.5 gpm spray tip.
 - 3. Apply sufficient material to wet the surface without producing puddles. Use a clean soft-bristle push broom or microfiber pad to spread the hardener/densifier evenly to achieve uniform wetting. Avoid spreading once drying begins. Surface should remain wet for 5 to 10 minutes. Avoid over-application. (Scrubbing is not necessary.)
 - 4. Allow treated surfaces to dry.
 - 5. Immediately apply the specified curing compound or initiate the specified curing procedure.
- B. Cured Steel Troweled Concrete: Apply concrete hardener/densifier to cured steel troweled concrete. Apply according to manufacturer's written instructions and as follows:
 - 1. Remove remnants of bond breakers, curing agents, surface grease and oil and construction debris. Contact manufacturer for recommended cleaner and cleaning method.
 - 2. Apply hardener/densifier per manufacturer's recommended application rate to designated finished floor area, with a low pressure sprayer fitted with a 0.5 gpm spray tip.
 - 3. Apply sufficient material to wet the surface without producing puddles. Use a clean soft-bristle push broom or microfiber pad to spread the hardener/densifier evenly to achieve uniform wetting. Avoid spreading once drying begins. Surface should remain wet for 5 to 10 minutes. Avoid over-application. (Scrubbing is not necessary)Allow treated surface to dry.
 - 4. Once thoroughly dry, concrete may be auto-scrubbed, buffed or burnished. Buffing or burnishing should be performed with the appropriate pad.

3.04 PROTECTION

- A. Protect finished floors to prevent damage including staining, gouges and scratching by construction traffic and activities until possession.
- B. Do not drag or drop equipment or material across the slab which will scratch or chip it.
- C. Inspect tires for debris prior to use on slab. Remove embedded items which may cause damage to floor slab. .
- D. Clean up spills on slab immediately. Provide cleaning chemicals and absorptive materials.
- E. Develop a concrete protection procedure which addresses the following procedures:
 - 1. Communication of protection plan to subcontractors and vendors.
 - 2. Procedures for cleaning up slab spills, including use of and availability of cleaning chemicals and absorptive materials at Site.
- F. Provide a clean slab surface using concrete maintenance cleaner within an auto scrubber, equipped with soft nylon brushes, in accordance with manufacturer's recommendations.

END OF SECTION