



EUCLID CHEMICAL
Guide Specification

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LEVEL TOP PC-AGG

LEVEL TOP PC-AGG is an easy-to-use, self-leveling re-surfacing compound with graded natural aggregate, designed for use on either new or worn concrete substrates. With advanced cement technology, high quality aggregates, and proven fiber technology, Level Top PC-AGG takes polishable overlays to the next level. It provides excellent adhesion, superior toughness and long term durability to either new or worn concrete substrates that need a new look. With the ability to be ground and polished in as little as 24 hours after placement, it is perfect for fast track applications. Unlike traditional concrete that does not have all of the aggregate suspended at the surface, Level Top PC-AGG can be ground and polished to achieve the appearance of polished concrete with very uniform aggregate distribution.

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format. The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings. In no case shall these Guide Specifications be considered to be Contract Documents or serve as installation instructions for the product being discussed. In any cases of discrepancy the manufacturer's most recently published data sheet shall take precedent. Delete all "Specifier Notes" when editing this section.

**** This Guide Specification contains language in hidden text. View and edit with hidden text showing.***

PART 1: GENERAL

1.1__ RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2__ SUMMARY

- A. This section covers the following operations to be performed.
 1. Surface preparation and cleaning
 2. Application of Polymer Modified Polishable Cementitious Overlay (PMPCO)
 3. Application of Liquid Densifier
 4. Polishing and grinding steps up to 1500 grit resin bonded tooling providing finish with specular gloss value of not less than 60 per ASTM E 430 when measured using a Horiba IG-320 Gloss Checker in accordance with ASTM D 523, at 10 feet on center across the entire polished floor surface
 5. Application of Protective Sealer

- B. The following specifications are provided as a guide to the minimum actions required to provide a grind and polished PMPCO. It is the contractor/installers' ultimate responsibility to provide a polished/ground floor meeting the specified criteria and that matches the approved mock up.

1.3__ SUBMITTALS

- A. Comply with Section <insert section> Submittal Procedures.
- B. Product Data: Submit manufacturer's product data including surface preparation and installation instructions for each type of product indicated.
- C. Floor Polishing Equipment Data: Including unit's head down pressure, minimum grinding width, max RPM, and verification of adjustable grinding pressure.
- D. Diamond Tooling Data: Indicating that only matched sets will be used throughout entire process.
- E. Approved applicator certificate for applicator of liquid densifier/sealer and polishing process.
- F. Polishing Installers Project References: Provide list of successfully completed polishing projects meeting specified criteria. Include the following information for each project reference;
 - 1. Project Name
 - 2. Project Location
 - 3. Type and Quantity of Grind and Polished Concrete Provided
 - 4. Project Architect and Contact Info

1.4__ QUALITY ASSURANCE

- A. Manufacturer Qualifications: All Bonding Agents, Polymer Modified Cementitious Overlay and Liquid Floor Treatments are to be manufactured by a single manufacturer.
 - 1. Manufacturer of all system components is to be ISO-9000 certified.
- B. Grind and Polishing Contractor Qualifications:
 - 1. All Grinding and Polishing operations and applications are to be performed by an approved applicator of Liquid Densifier Sealer manufacturer. General Contractor is to solicit and accept pricing only from those Applicators included in Manufacturer's list of approved applicators. In addition to Manufacturer Approval, successful completion of at least **[3]** projects of similar size and scope within the past five years is to be required of each potential bidder. Experienced mechanics from previous applications including lead mechanic, are to be on site at all times while work is being performed.
- C. Polymer Modified Polishable Cementitious Overlay (PMPCO) Mock-Up:

1. Prior to the Pre-Polish Conference, the polishing subcontractor is to provide a **<insert size>** mock up **[on] [in][said test slab] [designated mock-up area]**. Area is to have lighting similar in illumination, lumen output, color temperature, and both height and distance from surface as that of final areas to receive specified polished surfaces. Use the same personnel, equipment, tools and methods as will be used for the remaining interior floor slab. Mockup is to demonstrate each **<<color>>**, **<<pattern>>**, all joint treatments, inside wall edge treatments, and any protective sealers.
 - a. Notify Architect seven days in advance of dates and times when mockups will be completed.
 - b. Do not begin full scale product applications, floor polishing operations, or deliver major materials until Architect **[and Interior Designer]** have reviewed and accepted the mockup panels.
 - c. Once accepted by owner's representative, store mock-up on site as directed, and protect from dam-age.

- D. Pre-Floor Polish Conference: Prior to the start of the overlay application and floor polishing process the General Contractor is to conduct a meeting to inspect the specified mock-up and determine approval. The specified process, including required methods and procedures to achieve the specified polished floor finish are to be reviewed. The General Contractor is to send a Pre-Polish Conference agenda to all attendees **[20 days]** prior to scheduled date of the conference. Contractor is to require responsible representatives of every party concerned with PMPCO work to participate in the conference, including but not limited to the following:
 1. Contractor's Superintendent.
 2. PMPCO Manufacturer
 3. Bonding Agent Manufacturer
 3. Liquid Densifier Sealer Manufacturer
 4. Polishing Contractor
 5. Owner's Representative
 6. Minutes of the meeting shall be recorded, typed, and distributed by the contractor to all concerned parties, including but not limited to the Owner's representative and the architect within five days of the meeting.

PART 2: PRODUCT

2.01__ POLYMER MODIFIED POLISHABLE CEMENTITIOUS OVERLAY (PMPCO)

- A. **PMPCO:** Provide prepackaged, cement based, single component, self-leveling cementitious topping designed for interior application and containing aggregate suspension technology that keeps the graded natural aggregate suspended at the surface where it can be ground and exposed to resemble a polished concrete floor after grinding and polishing. Material is to be micro fiber enhanced with advanced cement technology to allow polishing and/or coating in 24 hours.
 1. Minimum Compressive Strength per ASTM C109:
 - a. 4,800 psi (33 MPa) at 24 hours
 - b. 7,000 psi (48 MPa) at 28 days

2. **Basis of Design Product: LEVEL TOP PC AGG by Euclid Chemical (www.euclidchemical.com)**
- B. **Epoxy Bonding Agent:** 100 percent solids epoxy as recommended by PMPCO manufacture.
 1. **Basis of Design Product: EUCOFLOOR EPOXY PRIMER by Euclid Chemical; (www.euclidchemical.com)**
- C. Silica Sand for Broadcast Into Epoxy Bonding Agent: Factory packaged in moisture proof bag, clean, dry, non-reactive silica sand, 16 mesh gradation. Contractor is to provide engineer with a letter of approval issued by sand supplier stating that proposed silica sand is non-reactive (ASR) with cement based products.

2.02__ LIQUID FLOOR SLAB TREATMENTS

- A. All liquid floor treatments are to be manufactured by same manufacturer as PMPCO and are to be fully compatible as specified herein.
- B. **Liquid Densifier Sealer:** High performance, deeply penetrating concrete densifier; odorless, colorless, VOC - compliant, non-yellowing silicate and silicate based solution designed to harden, dustproof and protect concrete floors and to resist black rubber tire marks.
 1. **Basis of Design Product: ULTRASIL LI+ by Euclid Chemical (www.euclidchemical.com)**
- C. **Protective Sealer:** Provide water based, penetrating sealer designed to protect polished cementitious surfaces against stain and dirt intrusion.
 1. **Basis of Design Product: ULTRAGUARD by Euclid Chemical (www.euclidchemical.com)**

2.03__ ACCESSORIES

- A. **Crack Repair Epoxy:** Two component, 100 percent solids, moisture insensitive, ASTM C881 compliant, high modulus epoxy resin.
 1. **Basis of Design Product: DURAL 452 LV by Euclid Chemical (www.euclidchemical.com)**

2.04__ GRINDING AND POLISHING EQUIPMENT

- A. Grinding and Polishing Machine: Diamond grinding machinery is to be specifically designed to grind, and polish concrete floors. Machinery is to provide minimum grinding pressure of 218 lbs (98 Kg), minimum grinding width of 20 inches (508 mm), and is to be equipped with adjustable grinding pressure to ensure even grinding.
 1. Basis of Design Equipment:

- a. "PDG 5000" by the SASE Company, www.Sasecompany.com John Abrahamson (800)522-2606; johna@sasecompany.com
 - b. Or architect approved equivalent.
- B. Diamond Tooling: Diamond tooling for grinding and polishing concrete is to be resin and/or metal bonded diamond tooling originating from a single manufacturer and capable of providing specified polished concrete finish.
 - 1. Basis of Design:
 - a. SASE Company, Inc: Contact: John Abrahamson (800)522-2606; johna@SASEcompany.com , www.SASECompany.com
 - b. Or architect approved equal.
- C. High Speed Propane Burnisher: For the final buffing operation using 800 grit and 1500 grit burnishing pads.

PART 3: EXECUTION

3.01__ SURFACE PREPARATION

- A. New concrete must be a minimum 28 days old prior to commencement of operations.
- B. Mechanically abrade the surface by shot-blast to achieve a surface profile equal to CSP 3-5 in accordance with ICRI Guideline 310.2
- C. Concrete surfaces must be structurally sound and free of loose or deteriorated concrete and free of dust, dirt, paint, efflorescence, oil and other contaminants.
- D. Perimeter Keyway: Cementitious Overlay is to be keyed into base slab at perimeter and all terminations by saw cutting a ¼ inch (6 mm) deep key way into the base slab.
- E. Cracks and Joints:
 - 1. Prepare, treat, rout, and fill all non-moving cracks over 1/16 inch (1.5 mm) in width, with specified Crack Repair Epoxy, according to manufacturer's written recommendations.
 - 2. All joints, and control joints are to be brought up through the over-lay and sealed with the specified polyurethane sealant approved by PMPCO manufacturer.
 - 3. Comply with recommendations in ASTM C 1193 for joint-sealant installation.

3.02__ EPOXY BONDING AGENT APPLICATION

- A. Condition the Epoxy Bonding Agent to proper temperature in accordance with manufacturer's recommendations prior to mixing. Mix and place epoxy primer to the prepared floor slab in accordance with manufacturer's written instructions at a coverage rate of 75 to 100 Sq.ft. per gallon (1.8 to 2.5 m² per liter).

- B. Evenly broadcast approved specified Silica Sand to refusal into wet Epoxy Bonding Agent. Continue broadcast until epoxy refuses to wet out aggregate. Entire surface is to be covered with dry loose excess aggregate.
- C. Allow epoxy to cure per manufacturer's published recommendations. Following cure of Epoxy Bonding Agent remove all loose aggregate from floor surface.

3.03__ POLYMER MODIFIED POLISHABLE CEMENTITIOUS OVERLAY APPLICATION (PMPCO)

- A. Mix PMPCO per manufacturer's published recommendations.
- B. Pour mixed PMPCO onto the surface and spread with gauge rake to minimum 3/8 inch (10 mm) thickness. Smooth with Magic Trowel as needed.

3.04__ LIQUID FLOOR TREATMENT APPLICATION

- A. Liquid Densifier Sealer Treatment: Once PMPCO has been ground to 150 grit metal bonded diamond tooling level or equivalent, apply and finish penetrating Liquid Densifier Sealer floor treatment according to manufacturer's written instructions.
 - 1. Thoroughly clean surface to remove any slurry, dust, or other surface debris.
 - 2. Apply Liquid Densifier Sealer in strict accordance with the directions of the manufacturer. Spray, squeegee or roll liquid on to clean surface at rate that results in uniformly wet surface without puddles. Keep floor wet with Liquid Densifier for 5 to 10 minutes. While densifier is still wet use a soft bristle broom or microfiber pad to redistribute the Liquid Densifier. Do not continue to brush or spread once product begins to dry. Remove all excess. Do not allow Liquid Densifier to puddle and dry on floor.
 - 3. Complete polishing and grinding steps and allow Liquid Densifier Sealer 12 hours of drying time before proceeding to application of Protective Sealer.
- B. Protective Sealer Application: Once PMPCO has been polished to final polishing level and allowed minimum 12 hours dry time, dilute protective sealer at a 1 to 1 ratio with water and apply at manufacturer's recommended coverage rate.

3.05__ PMPCO POLISHING AND GRINDING PROCESS

- A. Commence polishing and grinding process minimum 24 hours after placement of PMPCO.
- B. Polishing/Grinding Steps: The process described herein constitutes 1 complete Polishing/Grinding Step:
 - 1. Mount diamond tooling of appropriate grit and bond to all grinding heads on Polishing Machine so as to assure that machinery is operating at full and balanced grinding capacity.
 - 2. Polish/Grind floor at a rate to allow for an even scratch pattern.
 - 3. Each polishing/grinding pass must overlap 50 percent of previous polishing/grinding pass.

4. All polishing/grinding passes are to be made in the same direction, either longitudinal, or latitudinal, until the entire given area to be polished/ground has been covered.
- C. Basis of Design Polishing/Grinding Steps for Initial Grinding and Floor for Polishing Utilizing SASE Equipment as specified.
1. Grinding Step 1: 80 grit metal bonded diamond tooling.
 2. Grinding Step 2: 150 grit metal bonded diamond tooling cross cutting previous grinding pattern.
 3. Liquid Densifier Sealer Application
 4. Polishing Step 1: 100 grit resin bonded diamond tooling.
 5. Polishing Step 2: 200 grit resin bonded diamond tooling.
 6. Polishing Step 4: 400 grit resin bonded diamond tooling
 7. Polishing Step 5: 800 grit resin bonded diamond tooling
 8. Polishing Step 6: 1500 grit resin bonded diamond tooling
 9. Allow minimum 12 hours dry time prior to next step.
 10. Protective Sealer Application
 11. High Speed Burnish Step 1: 800 grit burnishing pad.
 12. High Speed Burnish Step 2: 1500 grit burnishing pad.

3.06 ACCEPTANCE

- A. Upon completion, the quality of the various special floor finishes are to meet and match the qualities, color renditions, sheens and types of finished surfaces specified and those of the mock ups, which were reviewed and approved as quality control guides.

3.07 PROTECTION

- A. Protect polished/ground floor from damage, dirt pick-up, staining etc... and wear during remainder of construction period.

END OF SECTION