

SECTION 03 54 16
RECOMMENDED SPECIFICATION FOR CMP SPECIALTY PRODUCTS LIQUICEM
SUPER FLUID CEMENT BASED SELF-LEVELING UNDERLAYMENT AND TOPPING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them.

1.02 SUMMARY

- A. This is the recommended specification for CMP SPECIALTY PRODUCTS LIQUICEM Super Fluid cement based interior, self-leveling underlayment and topping.

1.03 SECTION INCLUDES

- A. CMP SPECIALTY PRODUCTS LIQUICEM Super Fluid cement based self-leveling underlayment and topping formulated to be up to 40 percent more fluid than conventional self leveling products. CMP SPECIALTY PRODUCTS LIQUICEM is used to level and smooth interior concrete, terrazzo, ceramic & quarry tile, metal, wooden substrates, and non-soluble adhesive residue on concrete prior to the installation of finished flooring on all grade levels.
 - 1. CMP SPECIALTY PRODUCTS LIQUICEM super fluid cement based self-leveling underlayment and topping
 - 2. CMP SPECIALTY PRODUCTS AS-100 primer
 - 3. CMP SPECIALTY PRODUCTS LOCKDOWN vapor mitigation product
 - 4. CMP SPECIALTY PRODUCTS POLYBOND latex additive
 - 5. CMP SPECIALTY PRODUCTS PREPSTAR finishing underlayment compound
- B. Related Sections include the following:
 - 1. Section 03 30 00, Cast-In-Place Concrete
 - 2. Section 07 26 19, Topical Moisture Vapor Mitigation
 - 3. Division 09 Flooring Sections

1.04 REFERENCE STANDARDS

- A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
- B. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.
- C. All materials, installation and workmanship shall comply with all applicable requirements and standards.
- D. ASTM C109M, Compressive Strength Air-Cure Only

- E. ASTM C1583, Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension
- F. ASTM C4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- G. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ Probes
- H. ASTM F1869, Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
- I. ASTM 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- J. Resilient Floor Covering Institute booklet "Recommended Work Practices for the Removal of Resilient Floor Coverings"

1.05 QUALITY ASSURANCE

- A. Provide CMP SPECIALTY PRODUCTS LIQUICEM from as manufactured by CMP SPECIALTY PRODUCTS, 1445 Ford Road, Bensalem, PA 19020.
- B. Installation of CMP SPECIALTY PRODUCTS LIQUICEM must be by a trained applicator regularly engaged and properly equipped for application of concrete floor underlayments. Please contact your local CMP SPECIALTY PRODUCTS distributor for a list of Installers.
- C. CMP SPECIALTY PRODUCTS LIQUICEM shall be able to be installed from 1/16 inch to ½ inch thickness.
- D. CMP SPECIALTY PRODUCTS LIQUICEM shall be formulated with a Calcium Aluminate/Portland cement matrix, which develops a compressive strength of 5000 psi when tested in accordance with ASTM C109/modified for air-cured conditions.
- E. CMP SPECIALTY PRODUCTS LIQUICEM shall be able to be covered by thinset ceramic tile and stone in 4 hours, water based sealers and adhesives for carpet and VCT coverings in 12 hours, vinyl, rubber, wood, epoxy or urethane adhesives and moisture sensitive coverings in 16 hours. Epoxy coatings up to 20 mils can be applied in 24 hours and high build epoxy coatings over 20 mils in 3 to 5 days.
- F. CMP SPECIALTY PRODUCTS LIQUICEM shall be able to be a decorative topping when sealed with a suitable coating with or without a topical stain or surface treatment.

1.06 SUBMITTALS

- A. Product Data: Product data in the form of CMP SPECIALTY PRODUCTS technical data, specifications, and installation instructions.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver CMP SPECIALTY PRODUCTS materials in manufacturer's original undamaged packages or acceptable bulk containers.
- B. Store packaged CMP SPECIALTY PRODUCTS materials to protect them from elements or physical damage.
- C. Do not use CMP SPECIALTY PRODUCTS which shows indications of moisture damage, caking, or other signs of deterioration.

1.08 PROJECT CONDITIONS

- A. Do not place CMP SPECIALTY PRODUCTS LIQUICEM when ambient temperature is below 50 degrees F (10 degrees C) or above 95 degrees F (35 degrees C).

PART 2 – PRODUCTS

2.01 GENERAL

- A. All CMP SPECIALTY PRODUCTS materials shall meet or exceed all applicable referenced standards, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.

2.02 MATERIALS

- A. Self Leveling Underlayment and Topping: Free-flowing, self-leveling, pumpable, cement based compound for applications from 1/16 inch to 1/2 inch.
 - 1. CMP SPECIALTY PRODUCTS “LIQUICEM”
 - a. Flow Working Time: 20 minutes
 - b. Final Set: Approximately 60 minutes, ASTM C191
 - c. Compressive Strength:
 - i. 1000 psi at 4 hours, ASTM C109M
 - ii. 2500 psi at 7 days, ASTM C109M
 - ii. 5000 psi at 28 days, ASTM C109M
 - d. VOC: 0g/L, calculated SCAQMD 1168
- B. Underlayment/Topping Primer: Premium primer designed for use with CMP SPECIALTY PRODUCTS’ line of underlayments and toppings.
 - 1. CMP SPECIALTY PRODUCTS “AS-100”
 - 2. CMP SPECIALTY PRODUCTS “LOCKDOWN” with sand broadcast Note: CMP SPECIALTY PRODUCTS LOCK DOWN with sand broadcast is highly recommended for decorative / topping applications to help minimize cracking. CMP SPECIALTY PRODUCTS LOCK DOWN with sand broadcast is required for applications subject to dynamic rolling loads.
- C. Vapor Mitigation and Remediation Product: 100% solids, two component, resin based, membrane forming, moisture mitigation system.
 - 1. CMP SPECIALTY PRODUCTS “LOCKDOWN”
- D. Acrylic additive: Water based, high solids, acrylic bonding agent and additive for CMP SPECIALTY PRODUCTS leveling and repair materials.
 - 1. CMP SPECIALTY PRODUCTS “POLYBOND”
- E. Finishing Underlayment Compound: Trowelable, cement-based smoothing compound for applications from feather edge to ½ inch thick.
 - 1. CMP SPECIALTY PRODUCTS “PREPSTAR”

2.03 MIXING EQUIPMENT

- A. Provide suitable batch type mechanical mixer for mixing topping material at the Project Site. Equip batch mixer with a suitable charging hopper, water storage tank, and a water-measuring device. Use only mixers which are capable of mixing aggregates, cement, and water into a uniform mix within specified time, and of discharging mix without segregation.
- B. Provide suitable mixing-pump such as m-tec, Duo 2000 which includes dual mixing action and wet material probe for consistent mix water monitoring.
- C. Provide a suitable barrel, such as a CMP SPECIALTY PRODUCTS mixing drum, to mix 2-bag batches of CMP SPECIALTY PRODUCTS LIQUICEM. Provide a suitable dispensing container for measuring a maximum 6.5 quarts of clean cold water for each bag of CMP SPECIALTY PRODUCTS LIQUICEM. Provide a heavy duty ½ inch drill (min. 850 rpm) with CMP SPECIALTY PRODUCTS mixing wand to mix CMP SPECIALTY PRODUCTS LIQUICEM to a lump free consistency without entraining excess air.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Concrete subfloors: Prepare substrate in accordance with CMP SPECIALTY PRODUCTS' instructions.
 - 1. Refer to ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring before proceeding.
 - 2. Concrete subfloors must be sound, clean and free of all dirt, oil, grease, laitance, curing compounds and any substance that may act as a bond breaker. If necessary, mechanically clean and remove contaminants by chipping, shot-blasting, grinding or scarifying. Removal with solvents, strippers and acid etching are not acceptable.
 - 3. All cracks in the subfloor must be repaired or treated to minimize crack telegraphing through the underlayment/topping. Moving cracks, working cracks, expansion joints and isolation joints must be honored through the applied CMP SPECIALTY PRODUCTS LIQUICEM.
 - 4. Substrates shall be inspected and tested for moisture in accordance with ASTM F1869 and/or ASTM 2170. Substrates must be corrected for moisture or any other conditions that could affect the underlayment/topping performance or finished floor covering. Utilize CMP SPECIALTY PRODUCTS LOCKDOWN topical moisture vapor mitigation system where moisture and vapor emissions exceed the floor covering manufacturer's required limits.
- B. Wooden subfloors: Requires the use of CMP SPECIALTY PRODUCTS POLYBOND acrylic additive.
 - 1. Must be a minimum of ¾ inch, untreated, APA Rated, Type-1, exterior grade plywood, OSB or equal. The subfloor must be free of deflection (L/360 maximum) considering both live and dead loads. Subfloor must be clean, sound and free of all foreign matter that will inhibit bond.
 - 2. Prepare by sanding down to bare wood. Secure loose boards with deck screws and fill open seams with CMP SPECIALTY PRODUCTS PREPSTAR. Replace any weak or water damaged wood.
 - 3. Use an approved anti-fracture membrane over CMP SPECIALTY PRODUCTS LIQUICEM in areas where Ceramic Tile or Stone are being installed.
- C. Non-Porous floors: Epoxy, Terrazzo, and ceramic and quarry tile must be abraded to a dull finish. Vacuum or wet vacuum the surface to remove dust and laitance.

- D. Adhesive residue: Thin, translucent adhesive residue must be non-water soluble, free of tack and well bonded to the substrate. The adhesive Cutback must be prepared using the wet scrape method as outlined in the Resilient Floor Covering Institute booklet "Recommended Work Practices for the Removal of Resilient Floor Coverings". Remove all patching materials below the adhesive and avoid applications where heat or excessive moisture will soften or degrade the adhesive.

3.02 INSTALLATION

- A. Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.
- B. All installation shall be in accordance with CMP SPECIALTY PRODUCTS published recommendations.
- C. Concrete subfloors: Apply one coat of CMP SPECIALTY PRODUCTS AS-100 diluted 50/50 (1 part water: 1 part CMP SPECIALTY PRODUCTS AS-100) using a split tip broom. Pour out and work into surface leaving no puddles or bare spots. Apply CMP SPECIALTY PRODUCTS LIQUICEM once CMP SPECIALTY PRODUCTS AS-100 is dry (Minimum 1 hour) and up to 24 hours. If primer has dried longer than 24 hours a second coat of CMP SPECIALTY PRODUCTS AS-100 may be required.
 - 1. Highly absorptive / porous concrete: Requires two coats of CMP SPECIALTY PRODUCTS AS-100.
 - a. Apply one coat of CMP SPECIALTY PRODUCTS AS-100 diluted 3 parts water to 1 part CMP SPECIALTY PRODUCTS AS-100 using a split tip broom. Spray liberally or pour out and work into surface leaving no puddles or bare spots. Allow to dry a minimum of 2 hours.
 - b. Apply a second coat of CMP SPECIALTY PRODUCTS AS-100 diluted 50/50 (1 part water to 1 part CMP SPECIALTY PRODUCTS AS-100) using a split tip broom. Spray liberally or pour out and work into surface leaving no puddles or bare spots. Allow to dry a minimum of 2 hours.
 - c. Apply CMP SPECIALTY PRODUCTS LIQUICEM once CMP SPECIALTY PRODUCTS AS-100 is dry (Minimum 2 hours) and up to 24 hours. If primer has dried longer than 24 hours another coat of CMP SPECIALTY PRODUCTS AS-100 may be required.
- D. Wooden subfloors: Requires the use of CMP SPECIALTY PRODUCTS POLYBOND acrylic additive.
 - 1. Apply one thin coat of CMP SPECIALTY PRODUCTS AS-100 (Undiluted) using a 3/8 inch nap roller. Apply CMP SPECIALTY PRODUCTS LIQUICEM once CMP SPECIALTY PRODUCTS AS-100 is dry (Minimum 2 hours) and up to 24 hours. If CMP SPECIALTY PRODUCTS AS-100 has dried longer than 24 hours a second coat of CMP SPECIALTY PRODUCTS AS-100 may be required.
- E. Non-Porous floors: Apply one thin coat of CMP SPECIALTY PRODUCTS AS-100 (Undiluted) using a 1/4 inch nap roller. Apply CMP SPECIALTY PRODUCTS LIQUICEM once CMP SPECIALTY PRODUCTS AS-100 is dry (Minimum 2 hours) and up to 24 hours. If CMP SPECIALTY PRODUCTS AS-100 has dried longer than 24 hours a second coat of CMP SPECIALTY PRODUCTS AS-100 may be required.
- F. Adhesive residue: Apply one thin coat of CMP SPECIALTY PRODUCTS AS-100 (Undiluted) using a 3/8 inch nap roller. Apply CMP SPECIALTY PRODUCTS LIQUICEM once CMP SPECIALTY PRODUCTS AS-100 is dry (Minimum 2 hours) and up to 24 hours. If CMP SPECIALTY PRODUCTS AS-100 has dried longer than 24 hours a second coat of CMP SPECIALTY PRODUCTS AS-100 may be required.

3.03 MIXING

- A. Concrete, Non-Porous, Adhesive Residue: Standard Applications.

1. Use CMP SPECIALTY PRODUCTS mixing drum, to mix 2-bag batches of CMP SPECIALTY PRODUCTS LIQUICEM. Add a maximum 6.5 quarts of clean cold water for each bag of CMP SPECIALTY PRODUCTS LIQUICEM to the mixing drum or barrel. Then, add bags of CMP SPECIALTY PRODUCTS LIQUICEM while mixing at full speed with a CMP SPECIALTY PRODUCTS mixing wand attached to a heavy duty 1/2 inch drill (min. 850 rpm). Mix for 2 minutes or until lump free. Add no additional water and keep the mixing wand immersed in the material to avoid entraining excess air.
 2. For pump installations, please contact CMP SPECIALTY PRODUCTS for instructions, recommended pumping procedures and approved equipment.
- B. Wooden Subfloors: Resilient Applications requires the use of CMP SPECIALTY PRODUCTS POLYBOND acrylic additive.
1. Use CMP SPECIALTY PRODUCTS mixing drum, to mix 2-bag batches of CMP SPECIALTY PRODUCTS LIQUICEM. Dilute 2 quarts of CMP SPECIALTY PRODUCTS POLYBOND with 4.5 quarts of clean cold water for each bag of CMP SPECIALTY PRODUCTS LIQUICEM and add to the mixing drum or barrel. Then, add bags of CMP SPECIALTY PRODUCTS LIQUICEM while mixing at full speed with a CMP SPECIALTY PRODUCTS mixing wand attached to a heavy duty 1/2 inch drill (min. 850 rpm). Mix for 2 minutes or until lump free. Add no additional water and keep the mixing wand immersed in the material to avoid entraining excess air.

3.04 PLACING

- A. Place underlayment in accordance with CMP SPECIALTY PRODUCTS' instructions, using equipment and procedures to facilitate continuous placement, avoid segregation of mix and prevent excessive air content. Pour or pump, gauge rake with a CMP SPECIALTY PRODUCTS gauge rake and smooth with a CMP SPECIALTY PRODUCTS smoother in a continuous operation until an entire panel or section of floor area are completed. Do not work mix except for raking or smoothing.

3.05 CURING AND PROTECTION

- A. Cure and protect CMP SPECIALTY PRODUCTS LIQUICEM underlayment/topping applications and finishes as specified CMP SPECIALTY PRODUCTS. CMP SPECIALTY PRODUCTS LIQUICEM is self-curing. Do not use cure & seals or any other curing methods.
- B. During application and for the first 24 hours, prevent excessive air movement but maintain adequate ventilation and protect material from direct sunlight to prevent uneven curing patterns, false set and cracking.

3.06 PERFORMANCES

- A. Failure of CMP SPECIALTY PRODUCTS LIQUICEM to bond to substrate, or disintegration or other failure of topping to perform as a floor underlayment or topping compound will be considered failure of materials and/or workmanship. Repair or replace CMP SPECIALTY PRODUCTS LIQUICEM in areas of such failures, as directed by CMP SPECIALTY PRODUCTS.

END OF SECTION 03 54 16