

SECTION 03 54 16
RECOMMENDED SPECIFICATION FOR CMP SPECIALTY PRODUCTS 210
CALCIUM ALUMINATE/PORTLAND 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 210 Calcium Aluminate/Portland cement based interior, self-leveling underlayment and topping.

1.03 SECTION INCLUDES

- A. CMP SPECIALTY PRODUCTS 210 Calcium Aluminate/Portland cement based self-leveling underlayment and topping formulated with a special blend of polymers 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 210 calcium aluminate/Portland 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 MEDIMAT fiber reinforcement material
 - 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 C348, Flexural Strength of Hydraulic Cement Mortars

- F. ASTM C190, Method of Test for Tensile Strength of Hydraulic Cement Mortars
- G. 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
- H. ASTM C4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- I. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ Probes
- J. ASTM F1869, Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
- K. ASTM 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- L. Resilient Floor Covering Institute booklet "Recommended Work Practices for the Removal of Resilient Floor Coverings"

1.05 QUALITY ASSURANCE

- A. Provide CMP SPECIALTY PRODUCTS 210 from as manufactured by CMP SPECIALTY PRODUCTS, 1445 Ford Road, Bensalem, PA 19020.
- B. Installation of CMP SPECIALTY PRODUCTS 210 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 210 shall be able to be installed from ¼" to 2" thickness neat and up to 5-inches properly extended with aggregate over well-defined areas.
- D. CMP SPECIALTY PRODUCTS 210 shall be formulated with a Calcium Aluminate/Portland cement matrix, which develops a compressive strength of 5500 psi when tested in accordance with ASTM C109/modified for air-cured conditions.
- E. CMP SPECIALTY PRODUCTS 210 shall be able to be covered by thinset ceramic tile in 4 hours, water based sealers and adhesives for standard coverings in 12 hours, epoxy or urethane adhesives and moisture sensitive coverings in 16 hours. For application of epoxy coatings < 20 mils: 24 hours and high build epoxy coatings > 20 mils: 3-5 Days.
- F. CMP SPECIALTY PRODUCTS 210 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 210 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, calcium aluminate/Portland cement based compound for applications from 1/4 inch to 2 inches. Applications up to 5 inches in thickness properly extended with aggregate.

- 1. CMP SPECIALTY PRODUCTS “210”

- a. Flow Working Time: 25 minutes
- b. Final Set: Approximately 60 minutes, ASTM C191
- c. Compressive Strength:
 - i. 2000 psi at 4 hours, ASTM C109M
 - ii. 5500 psi at 28 days, ASTM C109M
- d. Flexural Strength: 1100 psi at 28 days, ASTM 348
- e. Tensile Strength: 570 psi at 28 days, ASTM C190
- f. Bond Strength:
 - i. 400 psi at 28 days, ASTM C1583
 - ii. 375 psi at 28 days, ASTM C4541
- g. VOC: 0g/L, calculated SCAQMD 1168

- B. Underlayment/Topping Primer: Premium primer designed for use with CMP’s 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 and when CMP SPECIALTY PRODUCTS 210 is used as a prefill for CMP SPECIALTY PRODUCTS DIAMOND CAP installations.

- C. Vapor Mitigation and Remediation Product: 100% solids, two component, resin based, membrane forming, moisture mitigation system.

- 1. CMP SPECIALTY PRODUCTS “LOCKDOWN”

- D. Redispersible Fiber Mat: Fiber reinforcement mat for use with wood, unstable and distressed subfloors.
 - 1. CMP SPECIALTY PRODUCTS "MEDIMAT"
- E. Finishing Underlayment Compound: Trowelable, cement-based smoothing compound for applications from feather edge to ½ inch thick.
 - 1. CMP SPECIALTY PRODUCTS "PREPSTAR"
- F. Polished, Self Leveling Topping: Calcium Aluminate/Portland cement based self-leveling topping for applications from 1/4 inch to 2 inches thickness and suitable to receive a mechanical concrete polish process.
 - 1. CMP SPECIALTY PRODUCTS DIAMOND CAP
- G. Self Leveling Topping: Premium free-flowing, self-leveling, pumpable, calcium aluminate/ Portland cement based compound for applications from 1/8 inch to 1/2 inch thickness.
 - 1. CMP SPECIALTY PRODUCTS H2O
- H. Aggregate: For extension on CMP SPECIALTY PRODUCTS 210 in 2 inch to 5 inch thick applications.

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 210. Provide a suitable dispensing container for measuring a maximum 5.5 quarts of clean cold water for each bag of CMP SPECIALTY PRODUCTS 210. Provide a heavy duty 1/2" drill (min. 850 rpm) with CMP SPECIALTY PRODUCTS mixing wand to mix CMP SPECIALTY PRODUCTS 210 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 210.

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 MEDIMAT™ redispersible fiber reinforcement mat.
 1. Must be a minimum of ¾", untreated, APA Rated, Type-1, exterior grade plywood, OSB or equal. The subfloor must be free of deflection (L/270 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.
 - 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. If unsure about the suitability, deflection or if heavy loads are expected, use the VERY DISTRESSED SUBFLOORS Application Method below.
 - E. Very distressed subfloors: Requires the use of CMP SPECIALTY PRODUCTS MEDIMAT™ redispersible fiber reinforcement mat for use with wood, unstable and distressed subfloors.
 1. ALL substrates must be clean, dry, between 50° and 95°F (10° and 30°C) and free of oil, loose (floorcovering, patching compounds or surface material). Remaining materials must be unaffected by the moisture incurred from the placement of self-leveling. Never use Acid or Mastic Removers on any surface to which a CMP product will be applied.
 - F. Gypsum substrates: Requires the use of CMP SPECIALTY PRODUCTS MEDIMAT™ redispersible fiber reinforcement mat.
 1. Remove all loose debris from subfloor. Sweep and vacuum the substrate.

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 210 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.
- D. Wooden subfloors: Requires the use of CMP SPECIALTY PRODUCTS MEDIMAT™ redispersible fiber reinforcement mat.

1. Apply one thin coat of CMP SPECIALTY PRODUCTS AS-100 (Undiluted) using a 3/8" nap roller. Apply CMP SPECIALTY PRODUCTS 210 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.
 2. Roll out CMP SPECIALTY PRODUCTS MEDIMAT over the properly prepared and primed surface. Overlap all seams a minimum of 1" and cut to fit using scissors. A single layer of CMP SPECIALTY PRODUCTS MEDIMAT can be used to reinforce CMP SPECIALTY PRODUCTS 210 applications up to 1" thick. Place an additional layer of mat for thicknesses up to 2". Mat installation does not need to be "Wrinkle Free" as the product breaks down into individual fibers after the CMP SPECIALTY PRODUCTS 210 is placed.
 3. Place a minimum of 1/4" of CMP SPECIALTY PRODUCTS 210 over CMP SPECIALTY PRODUCTS MEDIMAT.
 4. Once the mat is covered, gauge rake. Working the underlayment in a crosshatch pattern with a CMP SPECIALTY PRODUCTS Porcupine or Agitating Roller may be required to properly disperse the fiber; fibers should be visible in the CMP SPECIALTY PRODUCTS 210. Pouring or pumping the self-leveling back into already placed material will help in dispersing the fibers.
 5. Finish with a CMP SPECIALTY PRODUCTS smoother.
 6. Depending on the sensitivity of finished covering, sanding or skim coating using CMP SPECIALTY PRODUCTS PREPSTAR trowelable underlayment or capping with CMP SPECIALTY PRODUCTS 210 or CMP SPECIALTY PRODUCTS H2O may be required to suppress any residual fiber texture remaining in the CMP SPECIALTY PRODUCTS 210.
- E. Non-Porous floors: Apply one thin coat of CMP SPECIALTY PRODUCTS AS-100 (Undiluted) using a 1/4" nap roller. Apply CMP SPECIALTY PRODUCTS 210 once CMP SPECIALTY PRODUCTS AS-100 is dry (Minimum 1 hour) 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" nap roller. Apply CMP SPECIALTY PRODUCTS 210 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.
- G. Very distressed subfloors: Requires the use of CMP SPECIALTY PRODUCTS MEDIMAT™ redispersible fiber reinforcement mat.
1. Apply one thin coat of CMP SPECIALTY PRODUCTS AS-100 (Undiluted) using a 3/8" nap roller. Apply CMP SPECIALTY PRODUCTS 210 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.
 2. Roll out CMP SPECIALTY PRODUCTS MEDIMAT™ over the properly prepared and primed surface. Overlap all seams a minimum of 1" and cut to fit using scissors. A single layer of CMP SPECIALTY PRODUCTS MEDIMAT™ can be used to reinforce CMP SPECIALTY PRODUCTS 210 applications up to 1" thick. Place an additional layer of mat for thicknesses up to 2". Mat installation does not need to be "Wrinkle Free" as the product breaks down into individual fibers after the CMP SPECIALTY PRODUCTS 210 is placed.
 3. Place a minimum of 1/4" of CMP SPECIALTY PRODUCTS 210 over CMP SPECIALTY PRODUCTS MEDIMAT.

4. Once the mat is covered, gauge rake. Working the underlayment in a crosshatch pattern with a CMP SPECIALTY PRODUCTS Porcupine or Agitating Roller may be required to properly disperse the fiber; fibers should be visible in the CMP SPECIALTY PRODUCTS 210. Pouring or pumping the self-leveling back into already placed material will help in dispersing the fibers.
 5. Finish with a CMP SPECIALTY PRODUCTS smoother.
 6. Depending on the sensitivity of finished covering, sanding or skim coating using CMP SPECIALTY PRODUCTS PREPSTAR trowelable underlayment or capping with CMP SPECIALTY PRODUCTS 210 or CMP SPECIALTY PRODUCTS H2O may be required to suppress any residual fiber texture remaining in the CMP SPECIALTY PRODUCTS 210.
- H. Gypsum substrates: Requires the use of CMP SPECIALTY PRODUCTS MEDIMAT redispersible fiber reinforcement mat.
1. The first primer coat should be diluted and applied at 1 part CMP SPECIALTY PRODUCTS AS-100: 3 parts water using a split tip Broom. Pour out and work into surface leaving no puddles or bare spots.
 2. After initial coat is dry (Minimum 1 hour) apply the second 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.
 3. Install CMP SPECIALTY PRODUCTS MEDIMAT™ as per TDS once CMP SPECIALTY PRODUCTS AS-100 is completely dry (Minimum 2 hours) and up to 24 hours. If Primer has dried longer than 24 hours, an additional coat of CMP SPECIALTY PRODUCTS AS-100 may be required.
 4. Roll out CMP SPECIALTY PRODUCTS MEDIMAT™ over the properly prepared and primed surface. Overlap all seams a minimum of 1" and cut to fit using scissors. A single layer of CMP SPECIALTY PRODUCTS MEDIMAT™ can be used to reinforce CMP SPECIALTY PRODUCTS 210 applications up to 1" thick. Place an additional layer of mat for thicknesses up to 2". Mat installation does not need to be "Wrinkle Free" as the product breaks down into individual fibers after the CMP SPECIALTY PRODUCTS 210 is placed.
 5. Place a minimum of 1/4" of CMP SPECIALTY PRODUCTS 210 over CMP SPECIALTY PRODUCTS MEDIMAT.
 6. Once the mat is covered, gauge rake. Working the underlayment in a crosshatch pattern with a CMP SPECIALTY PRODUCTS Porcupine or Agitating Roller may be required to properly disperse the fiber; fibers should be visible in the CMP SPECIALTY PRODUCTS 210. Pouring or pumping the self-leveling back into already placed material will help in dispersing the fibers.
 7. Finish with a CMP SPECIALTY PRODUCTS smoother.
 8. Depending on the sensitivity of finished covering, sanding or skim coating using CMP SPECIALTY PRODUCTS PREPSTAR trowelable underlayment or capping with CMP SPECIALTY PRODUCTS 210 or CMP SPECIALTY PRODUCTS H2O may be required to suppress any residual fiber texture remaining in the CMP SPECIALTY PRODUCTS 210.

3.03 MIXING

- A. Use CMP SPECIALTY PRODUCTS mixing drum, to mix 2-bag batches of CMP SPECIALTY PRODUCTS 210. Add a maximum 5.5 quarts of clean cold water for each bag of CMP SPECIALTY PRODUCTS 210 to the mixing drum or barrel. Then, add bags of CMP SPECIALTY PRODUCTS 210 while mixing at full speed with a CMP SPECIALTY PRODUCTS mixing wand attached to a heavy duty 1/2" 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.

- B. Aggregate mix: For installation areas over 2 inches (5 cm) in thickness, up to 1 part by volume of well graded, washed pea gravel must be added. Aggregates should be hard, high density and non-absorbent. Before attempting to use any aggregate, conduct testing to determine suitability. All aggregate should be clean and dry. Do not use sand or exceed 1 part aggregate by volume. Combine aggregate once material is lump free and mix until aggregate is completely coated. Aggregate addition will diminish workability and may make it necessary to install a finish layer. Allow the first installation to dry 12 to 16 hours before topping.
- C. For pump installations, please contact CMP SPECIALTY PRODUCTS for instructions, recommended pumping procedures and approved equipment.

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 210 underlayment/topping applications and finishes as specified CMP SPECIALTY PRODUCTS. CMP SPECIALTY PRODUCTS 210 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 210 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 210 in areas of such failures, as directed by CMP SPECIALTY PRODUCTS.

END OF SECTION 03 54 16