

CSI Master Format does not currently include a specific section number for Cementitious Microtopping Flooring systems. Specification writer shall choose the most appropriate section that applies to the specific intent and scope of work for the considered project, including but not limited to, the following listed sections.

**SECTION 03 53 00
CONCRETE TOPPING
or
SECTION 09 94 00
DECORATIVE FINISHING
or
SECTION 09 97 26
CEMENTITIOUS COATINGS**

PART 1 – GENERAL

1.1 SUMMARY

- A. Provide all labor, materials, equipment and supervision as necessary to install an architectural, decorative, two-component, polymer-modified, cementitious microtopping system over (**new and/or existing**) horizontal, interior or exterior concrete slab surfaces, as shown on the project drawings and as outlined in this specification.
- B. Following all applicable manufacturer's guidelines and application instructions shall be considered a requirement of this specification.
- C. Related Sections: (**Specification writer shall add, delete or amend, as deemed necessary**)
 - 1. Section 03 30 00 – Cast-in-Place Concrete
 - 2. Section 03 35 00 – Resurfacing of Cast-in-Place Concrete
 - 3. Section 03 39 00 – Concrete Finishing

1.2 REFERENCES (Specification writer shall add, delete or amend, as deemed necessary)

- A. ASTM C109: Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
- B. ASTM C190: Method of Test for Tensile Strength of Hydraulic Cement Mortars.
- C. ASTM C580: Standard Test Method for Flexural and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- D. ASTM F1869-04: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Sub-floor Using Anhydrous Calcium Chloride.
- E. ASTM F2170-11: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.
- F. ICRI Technical Guideline No. 310.2 – 1997 (formerly 03732): Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.
- G. ICRI Technical Guideline No. 210.3 – 2004 (formerly 03739): Guide to Using In-Situ Tensile Pull-Off Tests to Evaluate Bond of Concrete Surface Materials.

1.3 SUBMITTALS (Specification writer shall add, delete or amend, as deemed necessary)

- A. General: Submit (X) number of copies each of the following items in accordance with the requirements of the Conditions of Contract and in Division 1 Specification Sections.
- B. Product Data: Submit manufacturer's technical data sheets, available shop drawings, applicable installation guidelines or recommendations, and material safety data sheets for each product and/or composite system included in this specification.
- C. Samples: For **initial selection**, submit manufacturer's standard color charts for review by the specification authority and owner's representative. For **final selection**, submit sample boards (**specification writer shall specify sample size as deemed necessary**) to exhibit pattern, texture, color and finish of the architectural, decorative, cementitious microtopping system. If a clear coat sealer finish is desired, submitted sample boards shall also include same.
- D. Material certificates signed by the manufacturer certifying that the architectural, decorative, two-component, polymer-modified, cementitious microtopping system complies with all requirements of the material specified herein.
- E. Warranties: Submit a sample of the manufacturer's standard material warranty and the contractor's standard labor warranty.
- F. Project Reference List: Contractor shall submit a minimum of 5 recently completed projects that entailed a similar scope of work and include total contract value.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: The manufacturer of the products specified in this section shall have a minimum of 5 years experience in the production of these types of products.
- B. Contractor Qualifications: The contractor installing the products specified in this section shall have a minimum of 3 years experience and have successfully completed no less than 5 projects similar in scope and complexity, and is acceptable to and has been trained by the manufacturer.
- C. Substitutions: Requests for the approval of any product other than those specified in this section must be submitted to the specifying authority two weeks prior to the bid, and shall include complete application specifications and physical characteristics. Any request after this date will not be accepted. Failure of performance requires immediate removal and replacement of unapproved substituted material with those originally specified at no cost to the owner, Architect, construction manager, or general contractor.
- D. Single Source System: All components of the completed microtopping flooring system shall be, without exception, from a single manufacturer for the assurance of a seamless material warranty.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name, batch or lot numbers, and directions for storage and mixing with other components.
- B. Store materials to comply with manufacturer's directions to prevent from damage and/or deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Comply with all the manufacturer's directions for maintenance of ambient and substrate temperature, moisture, humidity, ventilation, and other conditions required to execute and protect completed work. In hot and cold weather conditions or when high evaporation rates or adverse conditions may be expected, the contractor will be responsible for the quality of the completed installation. Follow all recommendations and guidelines of the American Concrete Institute, as published in ACI Committee 305 for

Hot-Weather Concreting and ACI Committee 306 for Cold-Weather Concreting.

- B. Lighting: Permanent lighting will be in place and working before installing the proposed cementitious microtopping system.
- C. Protection: Protect newly installed cementitious microtopping system from rain or other potentially harmful climatic conditions for a minimum of 24 hours, from potential damage due foot or vehicular traffic and/or from the work of other trades.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Approved Manufacturer: Miracote Division of Crossfield Products Corp., 3000 E. Harcourt Street, Rancho Dominguez, CA 90221, (310) 886-9100; also 140 Valley Road, Roselle Park, NJ 07204, (908) 245-2800, www.miracote.com.

2.2 MATERIALS

- A. Miracote MPC - MT (cementitious architectural microtopping system) is a pre-packaged, two-component, polymer-modified, resurfacing system that is applied in a nominal thickness from 1/16” to 3/32” on to properly prepared, new or existing, concrete substrates.
- B. System Components:
 - 1. Miracote MPC Liquid Catalyst – Polymer component used to mix with cementitious powder blends.
 - 2. Miracote MPC Regular Powder – Cementitious powder component for base and intermediate coats.
 - 3. Miracote MPC Smooth Powder – Cementitious powder component for grout and texture coats.
- C. Accessory Components:
 - 1. Miracote Colorpax-LIP – Liquid integral colorant for pigmentation of the microtopping system.
 - 2. Miracote Mirastain – Optional water-based architectural stain pigmented with Colorpax-LIP.
 - 3. Miracote Sealers and Coatings – Optional clear protective sealers and finish coatings.
 - a) MiraGard HDWB Sealer: Water-based, clear self-crosslinking acrylic in gloss, satin and matte.
 - b) MiraGard HD 100 Sealer: Solvent-based, clear acrylic, <100 VOC, in high and low gloss.
 - c) MiraGard HD 400 Sealer: Solvent-based, clear acrylic, >300 VOC, in high and low gloss.
 - d) MiraGard Drylook Sealer: Solvent-based, clear siloxane, penetrating sealer, <100 VOC.
 - e) MiraGard Enriching Sealer: Solvent-based, clear siloxane, penetrating sealer, 1 g/l VOC.
 - f) MiraFlor Glazetop: 95% solids, clear polyaspartic coating, 38 g/l VOC, in gloss and satin.
 - g) MiraFlor GlazeTop FC: 100% solids, clear polyurea coating, 38 g/l VOC, in gloss only.
 - h) MiraFlor CQ Clear Epoxy: 100% solids, clear epoxy coating, 1 g/l VOC, in gloss only.
 - i) MiraFlor WB: Water-based, 50% solids, clear epoxy coating, 11 g/l VOC, in gloss only.
 - j) MiraThane WB: Water-based, 48% solids, clear polyurethane, <100 VOC in gloss, satin & matte.

2.3 PROPERTIES

- A. Physical Properties of Cementitious Microtopping Material:
Provide a two-component only, polymer-modified, cementitious microtopping system that meets or exceeds the listed minimum physical property requirements when tested in accordance with the referenced standard test method.

Two Component System	Liquid Polymer and Bagged Powder
Compressive Strength (ASTM C 109):	2,440 psi
Tensile Strength (ASTM C 190):	450 psi

Flexural Strength (ASTM C 580)	2,415 psi
Adhesion (MIL-D-3134, Para.4.7.14):	515 psi
Water Absorption (ASTM C 642)	1.61% volume of permeable voids 5.07%
Water Vapor Permeability (ASTM E 96)	1.96 perms/inch
Impact Resistance: (MIL-3134) Para. 4.7.3 (2# steel ball dropped from 8' height onto coated steel plate)	No cracking or detachment
Flammable Properties (ASTM E 84):	Flame spread – 4 Smoke Density – 0
Fire Resistance (UL 790):	Complies as Class A

3.1 EXAMINATION

- A. Examine all construction substrates and conditions where the proposed cementitious microtopping system is to be installed. Notify the Specifying Authority of any unsatisfactory conditions that may be detrimental to the proper and timely completion of the work.
- B. Do not proceed with the work until all such deficiencies have been corrected by the Contractor in an acceptable manner, and as approved by the Specifying Authority.

3.2 PREPARATION

- A. Protect all surrounding areas, walls, window glass, landscaping and other adjacent surfaces from the execution of each item of work including, but not limited to, surface preparation and all application steps involved in the installation of the proposed cementitious microtopping system.
- B. Perform surface and crack repairs as necessary to re-profile, re-level or to restore the integrity of the concrete substrate or other surfaces in general, as directed by the specifying authority. Concrete surface repair products shall be from the same manufacturer, or as approved by the manufacturer of the mechanical equipment room flooring system specified herein. Provide letter from the manufacturer of the surface repair materials verifying compatibility with the specified cementitious microtopping system.
- C. Cementitious microtopping system must be applied to a clean, sound and mechanically prepared concrete substrate to a minimum (**Specification writer shall choose between CSP-3 or CSP-4**) surface profile, in accordance with the International Concrete Repair Institutes (ICRI) Technical Guideline No. 310.2 - 1997 (formerly 03732), **Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays.**
- D. (As an optional requirement for this project document the specification writer can include the following when deemed necessary) Contractor shall perform tensile bond tests, as directed by the Specification Authority, in accordance with International Concrete Repair Institutes (ICRI) Technical Guideline No. 210.3 - 2004 (formerly 03739), **Guide to Using In-Situ Tensile Pull-Off Tests to Evaluate Bond of Concrete Surface Materials.**

3.3 APPLICATION

- A. General: Follow all manufacturers' directions, as published in their product technical data sheets and/or available installation guidelines regarding the application of the cementitious microtopping system, as specified herein.

- B. **Joint Sealants:** At the direction of the specifying authority and as shown on plans, install backer rod and polyurethane sealant at joints, transitions, and penetrations. Detail all existing concrete slab cracks in accordance with manufacturer's installation guidelines.
- C. **Substrate Conditioning:** Mist and dampen properly prepared and clean substrate with potable water, and maintain at a saturated surface dry (SSD) condition throughout placement of the base coat. Remove any puddles or standing water that may form on the substrate, and let dry before applying base coat.
- D. **Priming Coat:** Priming the concrete substrate is not normally necessary unless there is a potential for outgassing or pin-holing due to conflicting substrate and ambient conditions. If deemed necessary or desired, prime mechanically prepared concrete substrate with MPC Liquid Catalyst diluted 50/50 and thoroughly mixed with potable water using a drill and "Jiffy-type" paddle. Apply primer to the concrete substrate by pump sprayer at a rate of 400 SF per gallon.
- E. **Microtopping Base Coat:** Apply Miracote MPC – MT base coat in strict compliance with manufacturers published installation guidelines using the regular powder blend and liquid catalyst components. After mixing, spread the base coat evenly at approximately 30 mils or 500 SF per unit of material with magic trowels or other suitable hand tools. Always maintain a wed edge while placing the microtopping base coat. Allow the base coat to dry thoroughly for approximately 2 hours depending on existing temperature and evaporation conditions.
- F. **Microtopping Intermediate Coat:** Apply Miracote MPC – MT in the same manner as the base coat.
- G. **Sanding:** Sand and vacuum the intermediate microtopping in strict compliance with manufacturers published installation guidelines.
- H. **Grout/Texture Coat:** Apply Miracote MPC – MT in strict compliance with manufacturers published installation guidelines using the smooth powder blend and liquid catalyst components. After mixing, apply the grout/texture coat with magic trowels or other suitable hand tools to replicate and match the mock up samples approved by the specifying authority. Always maintain a wed edge while placing the microtopping grout/texture coat. Allow the base to dry thoroughly for 12 to 24 hours, depending on existing temperature and evaporation conditions, prior to the application of the sealer or topcoat.
- I. **Protective Sealer or Coating:** Apply specified sealer and/or coating as per manufacturers instructions.
- J. Allow completed cementitious microtopping system to cure for 24 hours before subjecting to foot traffic and work of other trades.

3.4 CLEANING

- A. Clean work area and remove/discard all debris resulting from the application of the cementitious microtopping system to the acceptance of the specifying authority or the owner.

3.5 PROTECTION

- A. Protect all completed work of the application during the specified cure time of the material from vehicular or pedestrian traffic, or any exposure to solid or liquid spillage or any other form of contamination.

END OF SECTION

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