

GUIDE SPECIFICATION FOR MEADOW-CRETE® GPS: ONE-COMPONENT, POLYMER-MODIFIED, VERSATILE REPAIR MORTAR

SECTION 03 01 30

MAINTENANCE OF CAST-IN-PLACE CONCRETE

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) format. The section must be carefully reviewed and edited by the architect or engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Specifier Notes: W. R. MEADOWS® MEADOW-CRETE GPS is a one-component, trowel-applied or pneumatically applied (wet process), corrosion-inhibitor enhanced, polymer-modified, shrinkage-compensated, fiber reinforced, micro-silica enhanced, cementitious repair mortar for horizontal, vertical, and overhead applications.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of one-component, polymer-modified repair mortar to horizontal, vertical, or overhead surfaces by trowel application or spray application.

1.02 RELATED SECTIONS

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 03 40 00 - Precast Concrete.

1.03 REFERENCES

- A. International Concrete Restoration Institute (ICRI) Technical Guidelines No. 03730.
- B. American Society for Testing and Materials (ASTM)
 - 1. ASTM C191-01a - Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle.
 - 2. ASTM C928-00 - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs.
 - 3. ASTM C109/C109M-02 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2" or [50 mm] Cube Specimens).
 - 4. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.
 - 5. ASTM C469 - Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression.
 - 6. ASTM C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete.
 - 7. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars.
 - 8. ASTM C666 Procedure A – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.

- C. American Concrete Institute (ACI)

1. ACI 305-R89 - Standard on Hot Weather Concreting.
2. ACI 306-R88 - Standard on Cold Weather Concreting.
3. ACI 308 - Standard Specification for Curing Concrete.
4. ACI 347-88 - Guide to Formwork for Concrete.

1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean, dry area in accordance with manufacturer's instructions.
- C. Protect materials during handling and application to prevent damage or contamination.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply below 40° F (4° C) or above 90° F (32° C) or when rain is imminent.
- B. Protect from conditions that may cause early water loss: high winds, low humidity, high temperature, direct sunlight.
- C. Protect from freezing for a minimum of 24 hours.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. W. R. MEADOWS, INC., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Web Site www.wrmeadows.com.

2.02 MATERIALS

- A. Performance-Based Specification:
 1. Cementitious Repair Mortar: shall be a single-component cementitious, fiber-reinforced, micro-silica enhanced, polymer-modified mortar and shall have the following properties as determined by laboratory testing:
 - a. Compressive Strength, ASTM C109

17 MPa (2500 psi) @ 1 day
41 MPa (6000 psi) @ 7 days
46.5 MPa (6750 psi) @ 28 days
 - b. Flow, ASTM C928

56%

 - c. Bond Strength, ASTM C882 (Modified)

5 MPa (700 psi) @ 1 day
17.5 MPa (2550 psi) @ 28 days
 - d. Modulus of Elasticity, ASTM C469

16.8 GPa (2.44 x 10 ⁶ psi)

 - e. Drying Shrinkage, ASTM C157

-0.083 % (830 μ strain)

 - f. Flexural Strength, ASTM C348

4.5 MPa (675 psi) @ 1 day
10 MPa (1450 psi) @ 28 days
 - g. Freeze-Thaw Resistance, ASTM C666

112 % RDM @ 300 cycles (Procedure A)

- B. Proprietary-Based Specification:
 - 1. MEADOW-CRETE GPS structural repair mortar by W. R. MEADOWS.

2.03 ACCESSORIES

- A. Concrete Curing Compound: 1100-CLEAR CURING COMPOUND, 1220-WHITE PIGMENTED CURING COMPOUND or VOCOMP®-20 CURING AND SEALING COMPOUND by W. R. MEADOWS.
- B. Acrylic Latex Bonding Agent: ACRY-LOK™ by W. R. MEADOWS.
- C. Epoxy Bonding Agent: REZI-WELD™ 1000 medium-viscosity epoxy bonding agent by W. R. MEADOWS.
- D. Evaporation Retarder: EVAPRE™ by W. R. MEADOWS.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive repair mortar. Notify engineer if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Reinforcing Steel:
 - 1. Perform reinforcing steel preparation in accordance with ICRI Technical Guideline No. 03730.
 - 2. Completely expose all reinforcing steel, ensuring a minimum clearance of ¾" (19 mm) behind reinforcing steel.
 - 3. Remove loose scale and corrosion deposits and clean steel to white metal by abrasive blasting.
- B. Primer:
 - 1. Apply the first coat to the cleaned steel promptly after cleaning. Let first coat dry for approximately 10-15 minutes and then apply second coat.
 - 2. Allow primer coat to dry and stiffen for 1 to 2 hours before application of mortar.
- C. Concrete Substrate:
 - 1. Perform surface preparation in accordance with ICRI Technical Guidelines No. 03730.
 - 2. Mechanically abrade existing substrate to remove all unsound concrete, but do not use excessive force, which may cause micro-fracturing.
 - 3. Ensure substrate is structurally sound and free of any contaminants that will adversely affect bond of mortar.
 - 4. Prepared surface must be dust-free and have a sufficient profile to ensure adequate mechanical lock.
 - 5. Saw cut perimeter of repair zone to a depth of ¼" (6.4 mm) to avoid feather-edging.
 - 6. Ensure entire repair zone has a minimum thickness of ¼" (6.4 mm).
 - 7. Pre-soak repair zone prior to application of mortar to a saturated, surface dry (SSD) condition and free of standing water.

3.03 APPLICATION

- A. Mixing
 - 1. Mix complete bags using a mortar-type mixer.
 - 2. Pour 3.5-3.75 U.S. quarts (3.30-3.54 L) of water per 50 lb. (22.7 kg) bag of material into mixer and slowly add the mortar.

3. Mix for 3-5 minutes or until homogeneous and lump-free. Ensure not to over mix.
- B. Machine Placement
1. Using low-pressure, wet spray equipment, follow industry standard nozzle procedures for removal of rebound, spray angle, compaction behind reinforcing steel and appropriate reinforcing steel cover.
 2. Cut surface face to desired configuration.
 3. Finish with a wood, steel, or sponge float.
 4. Do not re-temper or over-work.
 5. Follow ACI 305-R89 "Standard on Hot Weathering" or ACI 306-R88 "Standard on Cold Weather Concreting" when applicable.
- C. Hand Placement
1. Compact mortar into properly prepared substrate prior to bulk placement.
 2. Apply mortar up to 3" (76.2 mm) horizontally and vertically and 2" (50.8 mm) overhead, dependent on patch size and configuration.
 3. Finish surface with a wood or steel trowel, or a sponge float.
 4. Do not re-temper or over-work.
 5. Follow ACI 305-R89 "Standard on Hot Weathering" or ACI 306-R88 "Standard on Cold Weather Concreting" when applicable.
- D. Curing
1. Cure mortar immediately following application in accordance with ACI 308.
 2. Apply a water-based curing compound at the specified rate based on manufacturer's recommendation.

END OF SECTION