

SECTION 03 0559

PENETRATING WATER VAPOR BARRIER CONCRETE TREATMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Work of this Section consists of a concrete additive applied to the concrete mix water at the ready-mix plant, and a spray-applied, penetrating curing compound, colloidal concrete treatments and includes, but is not limited to, the following:
 - 1. INPERVIUS Admixture
 - 2. INPERVIUS CURE – Premium Concrete Protection
 - 3. Project Manager/Engineer Approved Equivalent
 - 4. Substrate preparation

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES

- A. AASHTO T-259 - Chloride Ion Penetration Test.
- B. DIN-1048 – Water permeability.
- C. ASTM C-1585 – Rate of absorption of water by hydraulic cement.
- D. ASTM C-96 - Standard Specification for moisture penetration

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color (if any), and finish.

1.5 QUALITY ASSURANCE

- A. Material Requirements: Concrete mixes shall be designed in accordance with ACI 211 Standard Recommended Practice for Selecting Proportions for Concrete.
- B. Structural Requirements: Concrete shall be "fit for use" per the applicable Guides, Manuals, Specifications, and/or Standards of the following ACI Manual of Concrete Practice series:
 - 1. ACI 300 Series (Design & Construction Practices)
 - 2. ACI 500 Series (Special Products & Processes)

- C. Qualifications: ISO 9001 Certified Manufacturer with a minimum 15 years experience and capable of providing field service representation; Applicator to have a minimum three (3) years successful experience and/or Concrete Earth confirmation of successful application training; and a Testing Agency per ISO/IEC Standard 17025 or ASTM E699 and ASTM E329.
 - D. Source Limitations: Obtain penetrating colloidal concrete treatment through one source from a single manufacturer.
 - E. Sustainability Standards and Certifications:
 - 1. VOC Limits: As tested using a Gas Chromatograph/Mass Spectroscopy as defined by South Coast Air Quality Management District Rules: In areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur.
 - 2. SCAQMD Rule 1113, Architectural Coatings
 - F. Mockups: Provide full-scale three-dimensional concrete slab, wall assembly, and/or other mockup(s) utilizing final specified materials, approved mix design, and final production techniques.
 - G. Fully test constructed mockup(s), either in the field or off-site, verifying that the product application meets the performance requirements of this Specification.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Delivery, storage, and handling shall be according to the manufacturer's written recommendations, industry guidelines, and/or DIVISION 01 requirements whichever is more stringent.
- 1.7 PROJECT CONDITIONS
- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- 1.8 WARRANTY
- A. Concrete Water Vapor Barrier Treatment (CWVBT):
 - 2. CWVBT must be installed according to, and in compliance with, the manufacturer's published data sheet to include, but not limited to:
 - a) Dosing instructions.
 - b) Onsite representation and application supervision requirements.
 - c) Use of an ASTM E 1745 vapor retarder installed following ASTM E 1643 and ASTM F710 guidelines; elevated slabs to receive flooring do not require a vapor retarder
 - d) The design and specifications for roof deck assemblies, to include but not limited to, the use of air barriers and/or vapor retarders is the sole responsibility of the design professional and is excluded from this warranty as are any costs incurred due to roofing overburden.

3. If no field moisture testing is required post installation of CWVBT ,if conducted , Manufacturer warrants up to 25 pounds of moisture per ASTM F 1869 or 100% RH per ASTM F 2170
4. Manufacturer's Warranty: To include:
 - a) Term: Useful Life of the concrete.
 - b) Repair and/or removal of failed floor covering or roofing material.
 - c) Placement of a topical moisture remediation system.
 - d) Replacement of flooring/roofing materials like original installed to include material and labor.
5. Adhesion Warranty: Manufacturer shall provide an adhesion warranty to match the term of the adhesive and/or primer manufacturer's material defect warranty upon manufacturer's acceptance of field bond test.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: CONCRETE EARTH, LLC located at: 601 N. 5th Avenue, Kankakee, IL 60901; Toll free tel. : (800) 441-6646; Office main tel. (630) 257-5060 Email: info@concreteearth.com Web: www.concreteearth.com
- B. Substitution Limitations: Manufacturers of equivalent products beyond those listed above shall be considered when submitted per DIVISION 01, using CSI Substitution Request Form 1.5C (During the Bidding Phase) or Form 13.1 (After the Bidding Phase). Project Engineer/Manager shall assess the equivalency of the submitted product(s).
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 CONCRETE ADDITIVES

- A. ADMIXTURE:
 1. Product: INPERVIUS™ Hydration Optimizer as manufactured by CONCRETE EARTH, LLC
 2. Recommended Dosage Rate: 10 fl oz. per 100 lbs. of Portland cement or 0.652 Lt. per 100 kg of Portland cement added directly to concrete mix water.
 3. Concrete Shrinkage Rate (ASTM C-157): Shrinkage rate of 0.015.
 4. Concrete Abrasion Resistance: Excellent.
 5. INPERVIUS is compatible with all admixtures.
 6. Product Characteristics:
 - a) Physical: Liquid.
 - b) Color: Cloudy-white
 - c) Odor: None.
 - d) pH: +/-12.

- e) Flash Point: None.
- f) Toxicity: None.
- g) Pollutants: None.
- h) Hazardous Vapors: None.
- i) Spill Cleanup: Dilute/Flush using water.
- j) Environmental Impact: None/neutral.
- k) User Status: Friendly.

B. CURE COMPOUND:

1. INPERVIUS™ CURE as manufactured by Concrete Earth, LLC as an alternate cure method (ASTM C309-91): Class A compound.
2. Chloride Ion Penetration Resistance (AASHTO T-259-80): Highly effective chloride barrier.
3. Recommended Application Rate for INPERVIUS™ Curing compound ; Apply at the rate of 150 square feet per gallon (3.7 to 4.9 sm/l) for broom finished concrete; 250 to 300 square feet per gallon (7.4 to 8.6 sm/l) on hard or steel troweled concrete.
4. Recommended application rate as a waterproofing integral sealer, apply to the point of saturation at the rate of 250 square feet per gallon (6.2 sm/l) with an overlapping spray pattern of approximately 10% to 15%. Re-apply at a rate of 350 SF per gallon, with a cross spray pattern to ensure complete surface coverage and saturation. Estimate volume needed at the rate of 150 square feet per gallon (3.7 sm/l). Do not puddle – low area accumulations are to be cleared with a soft bristle broom prior to the product drying.
5. Product Characteristics:
 - a) Physical: Liquid (Colloidal Silicate Subsurface Membrane).
 - b) Color: Water-Clear
 - c) Odor: None.
 - d) Specific Gravity: 1.10.
 - e) pH: +/-12.
 - f) Flammability: None.
 - g) Toxicity: None.
 - h) Paintability: Excellent.
 - i) Cleanup: Water.
 - j) Environmental Impact: None/Neutral.
 - k) R-Factor Increase: Demonstrated up to 15-20%.
 - l) Surface Bond Quality: Excellent.
 - m) Chloride Screen Ability: Excellent.
 - n) User Status: Friendly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. In hot climates, mist-wet the surface with water and remove any puddles prior to application.
- C. Concrete Additives Installation:
 - 1. Application of additive shall be accomplished at the concrete batch plant to match approved batch mix and testing and to achieve desired slump at designed water-cement ratios.
 - 2. There shall be at least 110 revolutions on the transit mixer before concrete is placed at pour site.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION