

SECTION 03 39 00 CONCRETE CURING

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Concrete Institute (ACI): 308.1, Specification for Curing Concrete.
 - 2. ASTM International (ASTM):
 - a. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - b. C1315, Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

1.02 SUBMITTALS

- A. Action Submittals:
 - 1. Manufacturers' data indicating compliance with the requirements specified herein for the following products:
 - a. Evaporation retardant.
 - b. Curing compound.
 - c. Penetrating water repellent sealer.
 - 2. Curing methods proposed for each type of element such as slab, walls, beams, and columns in each facility.
- B. Informational Submittals:
 - 1. Manufacturer's Certificate of Compliance, in accordance with Section 01 67 00, Product Requirements, for the following:
 - a. Curing compound showing moisture retention requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Curing Compound: Water-based, high-solids content, nonyellowing, curing compound meeting requirements of ASTM C1315 Type I, Class A.

B. Evaporation Retardant:

1. Manufacturers and Products:
 - a. BASF Construction Chemicals, Shakopee, MN; MasterKure ER 50.
 - b. Or equal.
2. Physical Characteristics: None.
3. Functional Characteristics: None.
4. Performance Characteristics: Reduces surface moisture evaporation from freshly placed concrete.

C. Clear Sealer (One-Component Penetrating Silane Sealer):

1. Manufacturers and Products:
 - a. Euclid Chemical Co.; Baracade WB 244.
 - b. Or equal.
2. Physical Characteristics:
 - a. Water-based siloxane/silane penetrating water repellent sealer.
 - b. VOC content: Less than 50 g/L.
3. Functional Characteristics: None.
4. Performance Characteristics:
 - a. Reduction in Chloride Ion Content: 89 percent in 21 days.
 - b. Reduction in Water Absorption: 85 percent in 21 days.

D. Water: Clean and potable, containing less than 500 ppm of chlorides.

PART 3 EXECUTION

3.01 CONCRETE CURING

A. General:

1. Cure all concrete in accordance with Project Specifications and ACI 308.1.
2. Where surfaces are to receive coatings, painting, cementitious material, or other similar finishes, use only water curing procedures. Refer to Interior Finish Schedule for surfaces to receive coatings.
3. Use only water curing on potable water structures.
4. Where curing compound cannot be used, water curing as described below or special methods using moisture shall be agreed upon by Contracting Officer prior to placing concrete.
5. As required in Section 03 30 00, Cast-in-Place Concrete, if result of 7-day concrete strength test is less than 50 percent of specified 28-day strength, extend period of moist curing specified below, by 7 additional days.

B. Use one of the following methods as approved by Contracting Officer:

1. Vertical Surfaces:

- a. Method 1: Leave concrete forms in place and keep surfaces of forms and concrete wet for 7 days.
- b. Method 2: Continuously sprinkle with water 100 percent of exposed surfaces for 7 days starting immediately after removal of forms.
- c. Method 3: Apply curing compound, where allowed, immediately after removal of forms.

2. Horizontal Surfaces:

- a. Method 1: Protect surface by water ponding for 7 days.
- b. Method 2: Cover with burlap or cotton mats and keep continuously wet for 7 days.
- c. Method 3: Cover with 1-inch layer of wet sand, earth, or sawdust, and keep continuously wet for 7 days.
- d. Method 4: Continuously sprinkle exposed surface for 7 days.
- e. Method 5: Apply curing compound, where allowed, immediately after final finishing when surface will no longer be damaged by traffic.

3.02 EVAPORATION RETARDANT APPLICATION

- A. Use on flatwork when environmental conditions are anticipated to cause rapid drying of the concrete surface. Do not use evaporation retardant on potable water structures, unless product is NSF 61 approved.
- B. Spray onto surface of fresh flatwork concrete immediately after screeding to react with surface moisture.
- C. Reapply as needed to ensure a continuous moist surface until final finishing is completed.

3.03 CLEAR SEALER APPLICATION

- A. Apply where indicated on Interior Finish Schedule.
- B. Before application and with Work above completed, water cure concrete walls and floors for a minimum of 28 days to receive sealer, keep clean, unpainted, and free from membrane curing compounds.
- C. Concrete to receive penetrating sealer shall be dry for a minimum 24 hours immediately prior to application.

- D. Apply per manufacturer's recommendations utilizing low pressure airless spray equipment.
 - 1. Actual coverage and number of coats to be determined by field test sample application and water absorption testing. Final approval by Contracting Officer is required.
- E. Apply at a coverage rate of 125 square feet per gallon to 200 square feet per gallon. Cure penetrating sealer on slabs for the minimum time recommended by manufacturer prior to allowing foot or vehicular traffic.

3.04 MANUFACTURER'S SERVICES

- A. Provide manufacturer's representative at Site for installation assistance, inspection, and certification of proper installation for products specified.
- B. Provide curing compound manufacturer's representative to demonstrate proper application of curing compound to show coverage in one coat.

END OF SECTION