

SECTION 03 39 00
CONCRETE CURING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Initial and final curing of horizontal and vertical concrete surfaces.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-In-Place Concrete.
- B. Section 03 35 00 - Concrete Finishing.

1.3 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 302 - Recommended Practice for Concrete Floor and Slab Construction.
- C. ACI 308 - Standard Practice for Curing Concrete.
- D. ASTM C171 - Sheet Materials for Curing Concrete.
- E. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
- F. ASTM D2103 - Polyethylene Film and Sheeting.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 23.
- B. Product Data: Provide data on curing compounds, product characteristics, performance, compatibility with Architectural finishes and limitations.
- C. Manufacturer's Installation Instructions: Indicate criteria for preparation and application.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301, and ACI 308.
- B. Maintain one copy of both documents on site.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Membrane Curing Compound Type A: ASTM C309, Type 1, Class B, 18 to 22 percent solids.
 - 1. W.R. Meadows – “Vocomp 20” or “1100-Clear”
 - 2. L & M Construction Chemicals, "Dress & Seal WB”.
 - 3. Sonneborn, "Kure-N-Seal W”.
 - 4. Curecrete Chemical Company "Ashford Formula".
 - 5. Approved Equal.
- B. Absorptive Mats Type B: ASTM C171, cotton fabric or burlap-polyethylene, minimum 8-oz/sq.yd. bonded to prevent separation during handling and placing; The Burke Company, "Burlene" or approved equal.
- C. Waterproof Paper Type C: ASTM C171, treated to prevent separation during handling and placing, standard color; Type I-SK-30. Do not use where floor surface material is required to breathe.
 - 1. The Burke company, "Orange Label".
 - 2. St. Regis, "Orange Label".
 - 3. Approved Equal.
- D. Polyethylene Film Type D: ASTM C171, 6-mil thick, opaque color. Do not use where floor surface material is required to breathe.
- E. Water: Potable and not detrimental to concrete.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify substrate conditions.
- B. Verify that substrate surfaces are ready to be cured.

3.2 EXECUTION - HORIZONTAL SURFACES

- A. Cure floor surfaces in accordance with ACI 308. Use either of the water curing, or applied sealing material procedures listed below.
- B. Maintain curing procedure for a minimum of 7-days after concrete placement, or until the concrete has attained 75-percent of its specified compressive strength, whichever is shorter.
- C. Cure all mass concrete; mat foundations, vaults, special foundations, etc., with a water curing method only.
- D. Water Curing Procedures:
 - 1. Ponding: Maintain 100-percent coverage of water over floor slab areas continuously for 4-days. Allow water to dissipate or evaporate naturally after that period. Do not allow water to freeze.
 - 2. Spraying: Spray water over floor slab areas and maintain wet for 7-days. Use an approved spray device which will not damage the new concrete. Maintain spray system to be functional throughout the curing period.
 - 3. Absorptive Cotton Fabric Mat: Spread cotton fabric over floor slab areas. Spray with water until mats are saturated and maintain in saturated condition for 7-days. Do not allow mats to freeze.
 - 4. Absorptive Burlap Polyethylene Mat: Saturate burlap-polyethylene mat and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place for 7-days. Maintain above freezing temperature throughout curing period.
- E. Applied Sealing Material Procedures:
 - 1. Concrete surfaces shall be protected against frost and rapid drying and kept moist for at least 7-days after placing. During this period, concrete shall be maintained above 70 degrees F for at least 3-days or above 50 degrees F for at least 5-days.

2. Concrete slabs, except those to receive waterproofing, liquid hardener or toppings, shall be cured with curing compound. Begin curing concrete as soon as concrete surfaces begin to take initial set after finishing. Spray compound on surfaces using two coats, applying second at right angles to first, at rate of 400 sq. ft. per gallon. Restrict traffic on surfaces during cure to prevent "tracking off" of protective film.
 3. The compound shall be applied in accordance with the recommendations of the manufacturer immediately after any water sheen which may develop after finishing has disappeared from the concrete surface. It shall not be used on any surface against which additional concrete or other material is to be bonded unless it is proven that the curing compound will not prevent bond, or unless positive measures are taken to remove it completely from areas to receive bonded applications.
 4. During the curing period, the concrete shall be protected from damaging mechanical disturbances, such as load stresses, heavy shock and excessive vibration. All finished concrete surfaces shall be protected from damage by construction equipment, materials, or methods, by application of curing procedures and by rain or running water.
- F. Liquid Hardener: Exposed concrete slabs to receive a liquid hardener shall be sealed by applying one coat of liquid hardener and an additional coat of liquid hardener compound near completion of project. Apply compound to surfaces in accordance to manufacturer's recommendations.
- G. Curing Paper Method: Slabs to receive waterproofing or toppings shall be cured with curing paper only. Begin curing concrete as soon as concrete surfaces begin to take initial set after finishing. Spread curing paper over surfaces, lapping ends and sides a minimum of 4 inches, and maintain in place by use of suitable weights for at least 7-days, then remove.

3.3 EXECUTION - VERTICAL SURFACES

- A. Cure surfaces in accordance with ACI 308. Use one of the curing methods listed below.
- B. Loosen vertical formwork as soon as concrete has hardened sufficiently to do so. Apply water between new concrete and the loosened forms, saturating the forming materials. Maintain loosened forms in place for a minimum of 48-hours, and resume curing as specified below for a total curing duration of 7-days or until the concrete has attained 70-percent of its specified compressive strength, whichever is shorter.
- C. Spraying: Spray water over surfaces and maintain wet for 7-days.
- D. Membrane Curing Compound: Apply curing compound in accordance with

manufacturer's instructions in one coat.

3.4 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of other sections.
- B. Do not permit traffic over unprotected floor surface.

END OF SECTION

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