

SECTION 03390

CONCRETE CURING

This section includes procedures for curing horizontal and vertical concrete surfaces. Coordinate text of this section with sections 03300 and 03350.

Manufacturers listed in this section were identified as representative and not as an endorsement for meeting this specification. For additional product information, visit 4Specs at www.4specs.com, ARCAT at www.arcat.com, Reed Construction Data FirstSource at www.firstsourceonl.com, SpecSource at www.specsource.com, and Sweets at www.sweets.construction.com.

This section includes performance, proprietary, and descriptive type specifications. Edit to avoid conflicting requirements.

Contact the CSRF Support Center at supportcenter@csrf.org to submit comments or suggestions for improvements to this specification. Visit the SPECTEXT web site at www.spectext.com for current product announcements.

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes initial and final curing of horizontal and vertical concrete surfaces.
- B. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete.
 - 2. Section 03350 - Concrete Finishing.

1.2 REFERENCES

List reference standards included within text of this section. Edit the following for Project conditions.

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 302.1 - Guide for Concrete Floor and Slab Construction.
 - 3. ACI 308.1 - Standard Specification for Curing Concrete.
 - 4. ACI 318 - Building Code Requirements for Structural Concrete.
- B. ASTM International:
 - 1. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.
 - 2. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

3. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
4. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting.

1.3 SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

- A. Section 01330 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on [curing compounds,] [mats,] [paper,] [film,] compatibilities, and limitations.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with [ACI 301] [ACI 302.1] [ACI 318].
- B. Perform Work in accordance with [[State] [Municipality] of [_____]] [Highways] [Public Work's] standard.]

Include the following paragraph only when cost of acquiring specified standards is justified.

- C. Maintain [one copy] [[_____]] copies of [each] document on site.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.1 MATERIALS

In the following paragraph, select curing compound based on functional use of floor surface, compatibility with finish materials, and longevity of wear expected. Select one or more of the following materials; when more than one is required, schedule types and applications at end of section.

ASTM C309 Type and Class are as follows:

- Type 1 - Clear or transparent without dye.
- Type 1-D - Clear or transparent with fugitive dye.
- Type 2 - White pigmented.
- Class A - No restrictions on vehicle solids material.

- Class B - Vehicle solids restricted to all resin material.

- A. Membrane Curing Compound [Type [A] [_____]]; [ASTM C309 Type [1] [1-D] [2] Class [A] [B]] [acrylic] [chlorinated rubber] [styrene-acrylate] [dissipating resin] type, [clear] [translucent] [[with] [without] fugitive dye].
 - 1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

ASTM C1315 Type and Class are as follows:

- Type I - Clear or translucent.
- Type II - White pigmented.
- Class A - Non-yellowing.
- Class B - Moderate yellowing.
- Class C - Unrestricted color change permitted.

- B. Membrane Curing Compound: ASTM C1315 Type [_____], Class [_____].

***** [OR] *****

- C. Non-Membrane Forming Curing Compound [Type [B] [_____]]; Liquid, penetrating silicate based type; combination curing, hardening and dustproofing compound.
 - 1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

- D. Absorptive Mats [Type [C] [_____]]; [ASTM C171,] [cotton fabric] [burlap-polyethylene, minimum 8 oz/sq yd (270 grams/sq m) bonded to prevent separation during handling and placing] [_____].
 - 1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

Caution is required when one of the following two paragraphs are used; their use restricts ability of floor surface material to breathe and hydrate properly.

- E. Waterproof Paper [Type [D] [_____]]: [ASTM C171,] treated to prevent separation during handling and placing, [standard] [white color].
 - 1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

- F. Polyethylene Film [Type [E] [_____]]: [ASTM C171,] [ASTM D2103,] [4] [6] [_____] mil ([0.1] [0.15] [_____] mm) thick, [clear.] [white opaque color.]

Caution with the following paragraph, water is not used with all materials above.

- G. Water: Potable, not detrimental to concrete.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate surfaces are ready to be cured.

3.2 INSTALLATION - HORIZONTAL SURFACES

ACI 308.1 includes curing requirements for various methods.

- A. Cure concrete in accordance with ACI 308.1 using [_____] method.

Select and edit the following concrete curing methods to suit Project requirements.

- B. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for [4] [_____] days.

***** [OR] *****

- C. Spraying: Spray water over floor slab areas and maintain wet for [7] [_____] days.
***** [OR] *****
- D. Absorptive Mat: Spread [cotton fabric] [_____] over floor slab areas. Spray with water until mats are saturated, and maintain in saturated condition for [7] [_____] days.
***** [OR] *****
- E. Absorptive Mat: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place for [7] [_____] days.
***** [OR] *****
- F. Membrane Curing Compound: Apply curing compound in [one coat.] [two coats with second coat applied at right angles to first.]
***** [OR] *****
- G. Non-Membrane Forming Curing Compound: Apply curing compound in one coat [Scrub compound into surface.] Maintain surface wet with curing compound, without ponding for time recommended by manufacturer.
***** [OR] *****
- H. Polyethylene Film: Spread over floor slab areas, lap edges and sides, seal with pressure sensitive tape [and cover with plywood]; maintain in place for [7] [_____] days.

3.3 INSTALLATION - VERTICAL SURFACES

ACI 308.1 includes curing requirements for various methods.

- A. Cure concrete in accordance with ACI 308.1 using [_____] method.

Select and edit the following concrete curing methods to suit Project requirements.

- B. Spraying: Spray water over surfaces and maintain wet for [7] [_____] days.
***** [OR] *****
- C. Membrane Curing Compound: Apply compound in [one coat.] [two coats with second coat applied at right angles to first.]
***** [OR] *****

- D. Non-Membrane Forming Curing Compound: Apply curing compound in one coat [Scrub compound into surface.] Maintain surface wet with curing compound, without ponding for time recommended by manufacturer.

3.4 PROTECTION OF FINISHED WORK

- A. Section 01700 - Execution Requirement: Protecting finished Work.
- B. Do not permit traffic over unprotected floor surface.

3.5 SCHEDULES

Include schedule when differing concrete curing materials are required for the Project.
Consider the following examples when developing Project schedule.

- A. Storage Area Slabs: Absorptive mats, burlap-polyethylene type.
- B. Retaining Walls: Membrane curing compound, acrylic type, clear color.
- C. Concrete Pavement: Membrane curing compound, opaque color.
- D. Other Floor Areas: Membrane curing compound, acrylic type, translucent color.

END OF SECTION