



## Standard Specification for Sheet Materials for Curing Concrete<sup>1</sup>

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*This specification has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This specification covers materials in sheet form used for covering the surfaces of hydraulic cement concrete to inhibit moisture loss during the curing period and, in the case of the white reflective type materials, to also reduce temperature rise in concrete exposed to radiation from the sun. The following types are included:

#### 1.1.1 Curing Paper:

##### 1.1.1.1 Regular.

##### 1.1.1.2 White.

#### 1.1.2 Polyethylene Film:

##### 1.1.2.1 Clear.

##### 1.1.2.2 White Opaque.

#### 1.1.3 White-Burlap-Polyethylene Sheet.

1.2 The values stated in inch-pound units are to be regarded as the standard.

NOTE 1—This specification does not cover materials such as burlap, cotton mats, or rugs used with additional applications of water to maintain a water-saturated environment on such surfaces. Procedures employing these materials are discussed in ACI 308.

1.3 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes shall not be considered as requirements of the standard.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

C 156 Test Method for Water Retention by Concrete Curing Materials<sup>2</sup>

D 829 Test Methods for Wet Tensile Breaking Strength of Paper and Paper Products<sup>3</sup>

D 882 Test Methods for Tensile Properties of Thin Plastic Sheeting<sup>4</sup>

D 2103 Specification for Polyethylene Film and Sheeting<sup>4</sup>

E 1347 Test Method for Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry<sup>5</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.22 on Curing Materials.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 04.02.

<sup>3</sup> Annual Book of ASTM Standards, Vol 15.09.

<sup>4</sup> Annual Book of ASTM Standards, Vol 08.01.

<sup>5</sup> Annual Book of ASTM Standards, Vol 06.01.

#### 2.2 ACI Standard:

ACI 308 Standard Practice for Curing Concrete<sup>6</sup>

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *curing paper, n*—a composite consisting of two layers of kraft paper bonded together with a bituminous material and reinforced with fiber, used for covering the surface of fresh concrete to inhibit moisture loss during the curing period.

### 4. Ordering Information

4.1 The purchaser shall specify the type of curing material to be furnished under this specification.

4.2 Lengths and widths of the rolls or mats of the sheet materials furnished shall be as agreed upon between the purchaser and seller.

### 5. Performance Requirements

5.1 The sheet materials furnished under this specification shall be tough, strong, resilient, and capable of withstanding normal job use without puncturing or tearing.

5.2 The sheet material shall allow moisture loss of no more than 0.55 kg/m<sup>2</sup> in 72 h when testing according to Test Method C 156.

5.3 The daylight reflectance of the white side of white curing paper shall be at least 50 % when measured by Test Method E 1347. The daylight reflectance of white polyethylene film and the polyethylene side of white burlap-polyethylene sheet shall be at least 70 % when measured according to Test Method E 1347.

NOTE 2—Daylight reflectance is total luminous reflectance factor, CIE tristimulus value Y for the CIE 1931 (2°) standard observer and CIE standard illuminant C or D65.

### 6. Physical Requirements

6.1 *Curing Paper* shall consist of two sheets of kraft paper cemented together with a bituminous material in which are embedded cords or strands of fiber running in both directions and not more than 1¼ in. (32 mm) apart. The paper shall be light in color, shall be free of visible defects, and shall have a

<sup>6</sup> Available from the American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333.

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uniform appearance. White paper shall have a white surface on at least one side.

6.1.1 The tensile strength of curing paper shall be no less than 30 lbf/in. of width (5.25 kN/m of width) in the machine direction and 15 lbf/in. of width (2.26 kN/m of width) in the cross direction when measured according to Test Methods D 829.

6.2 *Polyethylene Film* shall consist of a single sheet manufactured from polyethylene resins. It shall be free of visible defects and shall have a uniform appearance. The clear type shall be essentially transparent. The opaque film shall contain white pigment.

6.2.1 The tensile strength of polyethylene film shall be no less than 1700 psi (11.7 MPa) in the longitudinal direction and 1200 psi (8.3 MPa) in the transverse direction when measured according to Test Methods D 882.

6.2.2 The nominal thickness of polyethylene film shall be no less than 0.0040 in. (0.10 mm) when measured according to Specification D 2103. Thickness at any point shall be no less than 0.0030 in. (0.075 mm).

6.2.3 The minimum elongation of polyethylene film shall be 225 % in the longitudinal direction and 350 % in the transverse direction when measured according to Test Methods D 882.

6.3 *White Burlap-Polyethylene Sheeting* shall consist of burlap weighing not less than 10 oz/linear yd, 40 in. wide (305 g/m<sup>2</sup>) extrusion coated on one side with white opaque polyethylene 0.004 in. (0.10 mm) thick as specified in 6.2. The polyethylene material shall be securely bonded to the burlap so that there will be no separation of the materials during handling and curing of the concrete.

## **7. Sampling**

7.1 Samples of film or sheeting sufficient to determine conformance with this specification shall be taken at random.

## **8. Keywords**

8.1 concrete curing materials; polyethylene film; sheet material for curing concrete; curing paper; white burlap-polyethylene sheet

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