



Designation: C 309 – 03

## Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete<sup>1</sup>

This standard is issued under the fixed designation C 309; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last approval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

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

### 1. Scope

1.1 This specification covers liquid membrane-forming compounds suitable for application to concrete surfaces to reduce the loss of water during the early-hardening period. White-pigmented membrane-forming compounds serve the additional purpose of reducing the temperature rise in concrete exposed to radiation from the sun. The membrane-forming compounds covered by this specification are suitable for use as curing media for fresh concrete, and may also be used for further curing of concrete after removal of forms or after initial moist curing.

NOTE 1—Solutions of silicate salts are chemically reactive in concrete rather than membrane-forming; therefore, they do not meet the intent of this specification.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for informational purposes only.

1.3 The following precautionary caveat pertains only to the test methods portion, Section 10, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.4 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 56 Test Method for Flash Point by Tag Closed Tester<sup>3</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C09 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 05.01.

D 869 Test Method for Evaluating Degree of Settling of Paint<sup>4</sup>

D 883 Terminology Relating to Plastics<sup>5</sup>

D 1309 Test Method for Settling Properties of Traffic Paints During Storage<sup>4</sup>

D 2369 Test Method for Volatile Content of Coatings<sup>6</sup>

D 3960 Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings<sup>6</sup>

E 1347 Test Method for Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry<sup>6</sup>

### 3. Classification

3.1 The following types of liquid membrane-forming compounds are included:

3.1.1 *Type 1*—Clear or translucent without dye,

3.1.2 *Type 1-D*—Clear or translucent with fugitive dye, and

3.1.3 *Type 2*—White pigmented.

3.2 The solids dissolved in the vehicle shall be one of the following classes:

3.2.1 *Class A*—No restrictions,

3.2.2 *Class B*—Must be a resin as defined in Terminology D 883.

NOTE 2—Permanent colors other than white, or other special attributes, are beyond the scope of this specification and are subject to negotiation between the purchaser and the supplier.

### 4. Ordering Information

4.1 The purchaser shall include the following information in the purchase order when applicable:

4.1.1 Type of liquid membrane-forming compound and class of solids to be furnished, and

4.1.2 Rate of application to be used to determine conformance to this specification. If not specified, the liquid membrane-forming material shall be applied at a rate of 5.0 m<sup>2</sup>/L (200 ft<sup>2</sup>/gal) for testing purposes.

NOTE 3—The application rate used for testing may, or may not, be the same as the rate to be used for field application. Many agencies use the same rate for field application on relatively smooth surfaces as the rate

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 06.02.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 08.01.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 06.01.