



Designation: F3513 – 24

Standard Practice for Single Component, Fluid-Applied Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings¹

This standard is issued under the fixed designation F3513; 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 reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the properties, application, and performance of a single component, fluid-applied membrane-forming moisture mitigation system to high moisture concrete substrates prior to the installation of resilient flooring.

1.2 This practice includes recommendations for the preparation of the concrete surface to receive a single component, fluid-applied membrane-forming moisture mitigation system.

1.3 This practice does not supersede written instructions of the single component, fluid-applied membrane-forming moisture mitigation system manufacturer, the resilient flooring manufacturer, underlayment manufacturer, the adhesive manufacturer, or other components of the finish flooring system, or combinations thereof. Users of this practice should review manufacturer's technical data sheets and installation instructions for compatibility of system components.

1.4 The following are not included in the scope of this practice:

1.4.1 Moisture mitigation systems that chemically react with any constituent of the concrete to form a gel or crystalline substance within, or on the surface of, the concrete.

1.4.2 Penetrating, water- or solvent-based compounds that do not form a continuous membrane on the concrete surface.

1.4.3 Loose-laid sheet moisture mitigation systems.

1.4.4 Peel-and-stick moisture mitigation systems.

1.5 *Units*—The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

1.6 *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, health, and environmental practices and deter-*

mine the applicability of regulatory limitations prior to use. Some specific hazards statements are given in Section 8 on Hazards.

1.7 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 *ASTM Standards:*²

C39/C39M Test Method for Compressive Strength of Cylindrical Concrete Specimens

C109/C109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens)

C1583 Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)

D7234 Test Method for Pull-Off Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers

E96 Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials

F141 Terminology Relating to Resilient Floor Coverings

F710 Practice for Preparing Concrete Floors to Receive Resilient Flooring

F970 Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading

F1869 Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

F2170 Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

F2659 Guide for Preliminary Evaluation of Comparative

¹ This practice is under the jurisdiction of ASTM Committee F06 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.40 on Practices.

Current edition approved Sept. 1, 2024. Published September 2024. Originally approved in 2024. DOI: 10.1520/F3513-24.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

Moisture Condition of Concrete, Gypsum Cement and Other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter

F3191 Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring

F3441 Guide for Measurement of pH Involving Resilient Flooring Installations

2.2 *ACI Standards*:³

ACI CT 18 Concrete Terminology

ACI 301 Specifications for Structural Concrete for Buildings

ACI 302.1 Guide to Concrete Floor and Slab Construction

ACI 302.2 Guide for Concrete Slabs that Receive Moisture Sensitive Flooring Materials

ACI 311 Guide to Inspection of Concrete

ACI 546 Repair of Concrete

2.3 *International Concrete Repair Institute (ICRI) Technical Guidelines*:⁴

NO. 310.2R-2013 Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

3. Terminology

3.1 *Definitions*:

3.1.1 See ACI CT 18 for definition of the term laitance and from which the following are quoted:

3.1.2 *fin, n*—a narrow, linear projection on a formed-concrete surface, resulting from mortar flowing into spaces in the formwork.

3.1.3 *honeycomb, n*—voids left in concrete between coarse aggregates due to inadequate consolidation.

3.1.4 *structural lightweight concrete, n*—structural concrete made with lightweight aggregate and having an air-dry density of not more than 115 lb/ft³ (1850 kg/m³).

3.1.5 *surface air void, n*—small regular or irregular cavities, usually not exceeding $\frac{5}{8}$ in. (15 mm) in diameter, resulting from entrapment of air bubbles in the surface of formed concrete during placement and consolidation.

3.2 See ACI 302.1 from which the following is quoted:

3.2.1 *dusting, n*—development of a fine, powdery material on the surface of hardened concrete; most often the result of working excess water on the concrete surface back into the cement paste during concrete finishing operations.

3.3 See Terminology **F141** for definitions of terms used in this practice.

3.4 *Definitions of Terms Specific to This Standard*:

3.4.1 *surface dry, n*—absence of any visible dampness or water on the substrate surface, and, with ambient conditions at least 10 °F (5 °C) above dew point with the temperature rising.

4. Significance and Use

4.1 Moisture emitting from concrete substrates can detrimentally affect the performance of resilient floor covering systems. Most resilient flooring and adhesive manufacturers publish a maximum acceptable level of moisture in which their products can perform satisfactorily. Requirements for single component, fluid-applied membrane-forming moisture mitigation systems to be used, and other related details, are generally included as part of the project plans or specifications and may vary from the minimum recommendations set forth in this practice.

4.2 This practice is intended for use by project design teams who have, in advance of bidding and construction, made a decision to include moisture mitigation within the project specifications and bid documents without any requirement for moisture testing of the concrete slabs after they are placed.

4.2.1 This practice is intended for use after it has been determined that a concrete slab moisture condition exceeds the resilient floor covering or adhesive manufacturer's requirements, or both, as tested according to Test Methods **F1869**, **F2170**, or Guide **F2659**.

4.2.2 This practice is intended for use on normal weight or structural lightweight concrete slab substrate surfaces.

4.3 Single component, fluid-applied membrane-forming moisture mitigation systems are not intended for use over gypsum-based substrates.

5. Product Requirements

5.1 To be qualified under this standard, the product shall be a single component, fluid-applied, membrane-forming, moisture mitigation system installed either in direct contact with a concrete slab surface, or, if used, the surface of a moisture-insensitive reprofiling material. The surface of either substrate surface is to be prepared in strict accordance with the written instructions of the single component, fluid-applied membrane-forming mitigation system manufacturer.

5.2 Single component, fluid-applied membrane-forming moisture mitigation systems to be qualified under this practice shall have a vapor permeance no greater than 0.10 grains/h/ft²/in. Hg, (perm) when tested in accordance with Test Method **E96** Procedure B (water method at 73.4 °F (23 °C)) when applied at the recommended thickness designated by its manufacturer. The relative humidity of the test chamber used to perform the Test Method **E96** Procedure B test shall be 50 % $\pm$ 2 %.

5.3 *Residual Indentation: Static Load*—The single component, fluid-applied membrane-forming moisture mitigation systems to be qualified under this practice shall not contribute to unacceptable indentation, when properly installed under resilient flooring. Refer to the single component, fluid-applied membrane-forming moisture mitigation systems manufacturer's recommendations and floor covering manufacturer's specifications.

5.3.1 Static load resistance shall be determined in accordance with Test Method **F970**. The one-part moisture mitigation system shall be applied on to a hard nonporous substrate (concrete, metal, etc.) at recommended application rate, then

³ Available from American Concrete Institute (ACI), 38800 Country Club Dr., Farmington Hills, MI 48331-3439, <http://www.concrete.org>.

⁴ Available from International Concrete Repair Institute, Inc. (ICRI), 1601 Utica Avenue South, Suite 213, Minneapolis, Minnesota 55416, www.icri.org.