



Designation: F 1869 – 03

## Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride<sup>1</sup>

This standard is issued under the fixed designation F 1869; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the quantitative determination of the rate of moisture vapor emitted from below-grade, on-grade, and above-grade (suspended) concrete floors.

1.2 This quantity of moisture shall be expressed as the rate of moisture vapor emission, measured in pounds of moisture over a 1000 ft<sup>2</sup> area during a 24-h period.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 *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.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

C 670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

F 141 Terminology Relating to Resilient Floor Coverings

2.2 *Resilient Floor Covering Institute Standard:*

Recommended Work Practices<sup>3</sup>

2.3 *Military Standard:*

Mil Spec B-131H Type 1, Class III<sup>4</sup>

### 3. Terminology

3.1 *Definitions:* See Terminology F 141 for definitions of the terms, above-grade (suspended), below-grade, concrete, on-grade, and resilient flooring.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee F06 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.40 on Practices.

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

<sup>3</sup> Available from Resilient Floor Covering Institute, 966 Hungerford Drive, Suite 12-B, Rockville, MD 20850.

<sup>4</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *moisture vapor emission rate (MVER)*—amount of water vapor in pounds emitted from a 1000 ft<sup>2</sup> area of concrete flooring during a 24-h period (multiply by 56.51 to convert to  $\mu\text{g/s m}^2$ ).

### 4. Significance and Use

4.1 Use this test method to obtain a quantitative value indicating the rate of moisture vapor emission from a concrete floor and whether or not that floor is acceptable to receive resilient floor covering. The moisture vapor emission rate only reflects the condition of the concrete floor at the time of the test. All concrete subfloors emit some amount of moisture in vapor form. Concrete moisture emission is a natural process driven by environmental conditions. All floor coverings are susceptible to failure from excessive moisture vapor emissions. The moisture vapor emitted from a concrete slab is measured in pounds. This measurement is the equivalent weight of water evaporating from 1000 ft<sup>2</sup> of concrete surface in a 24-h period. The calcium chloride moisture test has been the industry standard for making this determination and is a practical, well-established and accepted test of dynamic moisture. It will produce quantified results directly applicable to flooring manufacturer's specifications. The results obtained reflect only the condition of the concrete floor at that time.

### 5. Apparatus

#### 5.1 Test Unit Contents:

5.1.1 *Cylindrical Plastic Dish Containing Anhydrous Calcium Chloride*, tape sealed against moisture, or heat sealed in a heat sealable bag meeting Mil Spec B-131H Type 1, Class III, or both, to protect from moisture intrusion.

5.1.1.1 The weight of the container, the anhydrous calcium chloride and the tape seal shall be 1.06 oz (30 g)  $\pm$  10 %.

5.1.2 *Pressure Sensitive Label*, to be used to identify the container of calcium chloride and to record the date, time, and container weight when the test is started and completed.

5.1.3 *Transparent Cover*, with 0.5 in. (12 mm) flanges around the perimeter, approximately 0.5 ft<sup>2</sup> (460  $\pm$  46 cm<sup>2</sup>), as measured between the inside of the flanges, is required to seal the test area of the floor. The plastic cover shall have a depth