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## Standard Test Methods for WATER VAPOR TRANSMISSION OF SHIPPING CONTAINERS<sup>1</sup>

This standard is issued under the fixed designation D 1008; 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 The following two methods cover the determination of water vapor transmission rates for bulk shipping containers, as follows:

1.1.1 *Method A*—Reclosable Containers, and

1.1.2 *Method B*—Containers Not Designed for Reclosing.

1.2 The test may be applied to the container as packed, or after one or more performance tests such as drum, vibration, drop, or actual shipping tests, as required.

1.3 For small shipping containers requiring greater accuracy in weighing, the water vapor transmission may be determined in accordance with ASTM Method D 895, Test for Water Vapor Permeability of Packages.<sup>2</sup>

### 2. Significance

2.1 These methods are normally used for the following purposes:

2.1.1 To evaluate materials and constructions for a specific type of container.

2.1.2 To compare performance of different types of containers.

2.1.3 To determine adequacy of protection for a specific product of application, and

2.1.4 To maintain quality control.

### 3. Definition

3.1 *water vapor transmission of a shipping container*—for the purposes of this method, the rate at which water is transmitted into the container from the test atmosphere (normally of  $90 \pm 2\%$  relative humidity and a tempera-

ture of  $100 \pm 2^\circ\text{F}$  ( $37.7 \pm 1.1^\circ\text{C}$ )) surrounding it while a desiccant is sealed within.

### METHOD A—RECLOSABLE CONTAINERS

#### 4. Apparatus

4.1 *Desiccant*—A desiccant shall be used that has a powerful affinity for water and a high drying efficiency, that is, a low vapor pressure after absorbing a large amount of water. The desiccant shall be in the form of small lumps that will pass a No. 8 (2.36-mm) sieve and be free from fines that will pass a No. 30 (600- $\mu\text{m}$ ) sieve. Anhydrous calcium chloride and anhydrous magnesium perchlorate have been found suitable. When the test is made to determine the suitability of a specific container for a particular product, that product may be used inside the test specimen instead of the desiccant, in which case the specimen shall be filled to normal capacity.

4.2 *Weighing Balance*—A weighing balance accurate to within 1 g shall be used. When the required amount of desiccant is greater than can be weighed on a balance of this sensitivity, two or more receptacles shall be used and weighed individually. When product tests are made, a regular laboratory balance and drying oven or other appropriate equipment are re-

<sup>1</sup> These methods are under the jurisdiction of ASTM Committee D-10 on Packaging.  
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<sup>2</sup> 1983 Annual Book of ASTM Standards, Vol 15.09.

