Designation: D 895 – 94

AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Test Method for Water Vapor Permeability of Packages[1]

This standard is issued under the fixed designation D 895; 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 test method covers the determination of the water vapor permeability of finished packages when closed and sealed in the conventional manner. This test method is intended for "shelf-size packages" which are shipped in outside containers.

1.2 This test method may be applied to the package as packed, after one or more performance tests such as drop (Test Method D 5276), drum (Method D 782), vibration (Method D 999), after a series of tests simulating the shipping environment (Practice D 4169), or after shipping tests have been completed, as required.

1.3 Packages with body walls having the property of absorbing water are not suitable for testing under this test method.

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.*

1.5 The values stated in SI units are to be regarded as the standard. The values in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*

D 782 Test Method for Shipping Containers in Revolving Hexagonal Drum[2]

D 996 Terminology of Packaging and Distribution Environments[2]

D 999 Methods for Vibration Testing of Shipping Containers[2]

D 1251 Test Method for Water Vapor Permeability of Packages by Cycle Method[2]

D 4169 Practice for Performance Testing of Shipping Containers and Systems[2]

D 5276 Test Method for Drop Test of Loaded Containers by Free Fall[2]

3. Terminology

3.1 *Definitions*—General terms for packaging and distribution environments are found in Terminology D 996.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *water vapor permeability—of a package*, the rate at which water is transmitted into the package from the test atmosphere surrounding it while a desiccant is sealed within.

4. Significance and Use

4.1 This test method is normally used to:

4.1.1 Evaluate materials and constructions for a specific type of package,

4.1.2 Compare performance of different types of packages,

4.1.3 Determine adequacy of protection for a specific product or application, and

4.1.4 Maintain quality control.

4.2 When this test method is conducted to determine the water vapor permeability of the packages for research, development, manufacturing control, specification acceptance, etc., a desiccant is used as the water-absorbing medium.

4.3 When this test method is used to determine the suitability of the package with respect to water vapor resistance for a particular product, the product is used instead of the desiccant.

5. Apparatus

5.1 *Weighing Balance*—A suitable laboratory balance sensitive to 1 mg or one ten-thousandth of the mass of the package, whichever is larger.

5.2 *Test Chamber*—A test room or cabinet provided with conditioned air which is continuously circulated around the specimens under test. The conditions in the chamber shall be 38± 2°C (100 ± 4°F) and 90 ± 2 % relative humidity or as otherwise specified. The conditions in the chamber shall be such that no condensation occurs on the specimens.

6. Materials

6.1 *Desiccant*—A desiccant shall be used that has a high affinity for water vapor and a high drying efficiency; that is, having a low water vapor pressure even after absorbing a large amount of water.

NOTE 1—A suitable desiccant is anhydrous calcium chloride ($CaCl_2$) in the form of small lumps that will pass a No. 8 (2.36-mm) sieve, and free of fines that will pass a No. 30 (600-µm) sieve.

6.2 *Product*—When the test is made to determine the suitability of a specific package 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.

[1] This test method is under the jurisdiction of ASTM Committee D-10 on Packaging and is the direct responsibility of Subcommittee D10.23 on Natural Environment Test Methods.

Current edition approved May 15, 1994. Published July 1994. Originally published as D 895 – 47 T. Last previous edition D 895 – 79 (1984).

[2] *Annual Book of ASTM Standards*, Vol 15.09.