



Designation: D4335 – 18

Standard Practice for Determination of Component Retention of a Mechanical Pump Dispenser¹

This standard is issued under the fixed designation D4335; 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 evaluation of the force required to remove the hood and the actuator from a mechanical dispensing pump.

1.2 *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 determine the applicability of regulatory limitations prior to use.*

1.3 *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
D618 [Practice for Conditioning Plastics for Testing](#)

3. Significance and Use

3.1 This practice may be used to establish performance specifications.

3.2 This practice may be used to establish quality control assessment.

4. Apparatus

4.1 *Test Stand*—The test apparatus shall be capable of applying a smoothly increasing load to the test specimen until the component is separated from the pump assembly.

NOTE 1—The condition of 4.1 is fulfilled by most motor driven tensile strength testers including constant rate of elongation testers.

¹ This practice is under the jurisdiction of ASTM Committee F02 on Primary Barrier Packaging and is the direct responsibility of Subcommittee F02.30 on Mechanical Dispensers.

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² 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.

NOTE 2—The test standard should be equipped with a maximum-force indicator.

4.2 *Fixtures*, to hold the mechanical pump dispenser.

4.2.1 The fixtures must allow no slippage between the test specimen and the fixture, so that distortion is avoided.

4.2.2 The fixtures for the test apparatus may be custom-made for this test.

5. Sampling

5.1 Select an appropriate number of dry, unused pump dispensers at random for precision and accuracy desired. Use of 10 test specimens is recommended, but a minimum of three is acceptable.

6. Test Specimen

6.1 Test specimens shall be clean, dry, and previously unused mechanical pump dispensers assembled in the same manner as in production.

7. Conditioning

7.1 If possible, condition the test specimens at $23 \pm 3^\circ\text{C}$ ($73 \pm 5.4^\circ\text{F}$) for not less than 4 h. If the test specimens are not conditioned at the recommended temperature, this should be noted in the test report (see 9.1).

8. Procedure

8.1 Attach fixtures to the test stand in accordance with the manufacturer's instructions or in a manner consistent with the pump's geometry.

8.2 Adjust the test stand so that there is no force acting on the specimen.

NOTE 3—At this time, there should be a zero reading on the force gage.

8.3 *Manual Method*:

8.3.1 Place the pump assembly into the fixture.

8.3.2 Grasp the component to be separated in the hand.

8.3.3 Pull the component as slowly as possible, avoiding quick, jerking actions.

8.3.4 Continue to pull the component until it separates from the assembly.

8.3.5 Observe and record the maximum force, N (lb), required to separate the component from the assembly.