



Standard Test Methods for Downward Force Required to Open or Activate Child- Resistant Snap-Engagement Packages¹

This standard is issued under the fixed designation D 3480; 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 These test methods cover the measurement of the downward force required to open or activate child-resistant snap-engagement packages.

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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Terminology

2.1 *Description of Term Specific to This Standard:*

2.1.1 *downward force to open*—the amount of pressure applied at a constant rate to the appropriate location on the closure with the objective to achieve activation of the opening mechanism.

3. Summary of Test Methods

3.1 Either of the two following test methods can be used:

3.1.1 *Test Method A*—Downward pressure is applied to the proper location on the closure, and the force required to open or activate is measured.

3.1.2 *Test Method B*—Predetermined lower and upper limit force values are applied. The closures should not open or activate below the predetermined minimum force; they should open or activate at or between the lower and the higher predetermined values.

4. Significance and Use

4.1 These test methods may be used in establishing and confirming quality control standards.

4.2 These test methods may be used to establish performance standards.

5. Apparatus

5.1 *Testing Machine*,² consisting of a force gage with a

suitable pressor foot, and a supporting stand with provision for either manual or motorized operation. To ensure maximum accuracy, a calibrated gage with the most appropriate range available should be used.

5.1.1 The pressor foot transmits the force to the proper location on the closure. This action should follow the closure design concept (for example, a small 1/2-in. (13-mm) diameter disk to simulate thumb pressure, or a narrow blade (contact area approximately 3/64 by 1/4 in. (1.2 by 6.4 mm)) to simulate fingernail pressure). In some cases, a special foot might be required.

6. Sampling

6.1 The sample size will depend upon the particular objective of the test. The number of specimens to be used, and their actual selection, should both be consistent with established statistical considerations.

7. Preparation of Apparatus

7.1 Attach the appropriate pressor foot to the force gage, and position a trial specimen on the tester stage.

7.2 Carefully apply force at the proper closure location and observe the gage needle until opening or activation occurs. This can be detected by observation (with or without attendant sound), and a distinct interruption in the climb of the needle.

7.3 Select an appropriate rate of loading by observing trial units. Three inches (76 mm)/min has been found generally satisfactory. The rate should be defined as the distance traveled per minute regardless of whether the operation is motorized or manual, not merely by reference to the motor setting number. The rate should reflect end use, but it should also permit good control at the end point to avoid override.

8. Calibration

8.1 Check the calibration of the force gage by using certified dead weights that will include the full scale range of the gage.

9. Conditioning

9.1 Force values may be influenced by:

9.1.1 Precise method of closure application, including ambient conditions and nature of contents,

9.1.2 Length of time the closure has been in place,

Included with the force gages described above are several pressor feet; the flat-disk style is appropriate for simulating thumb pressure, the chisel-point for simulating fingernail pressure.

¹ These test methods are under the jurisdiction of ASTM Committee D-10 on Packaging and is the direct responsibility of Subcommittee D10.31 on Child Resistant Packaging.

Current edition approved Dec. 30, 1988. Published February 1989. Originally published as D 3480 – 76. Last previous edition D 3480 – 81.

² Chatillon Universal Test Stands LTC and LTCM, with series DPP force gages of appropriate range, and standard pressor feet, available from John Chatillon and Sons, Kew Gardens, NY 11415, have been found satisfactory for these test methods.

Similar equipment (Series CTM Universal Testing Machines, and Series L force gages) is also available from Hunter Spring, a Division of Ametek, Inc., Hatfield, PA.