



Standard Test Method for Monitoring of Rotational Torque of Type IIIA Child-Resistant Closures¹

This standard is issued under the fixed designation D 3968; 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 measurement of rotational torques of Type IIIA child-resistant closures as a means of monitoring normal functioning of the child-resistant package.

1.2 This test method is not intended to supplant preexisting closure or package specifications or preexisting incoming material test procedures.

1.3 *This standard does not purport to address 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:

D 3474 Practice for The Calibration and Use of Torque Meters Used in Packaging Applications²

D 3475 Classification of Child-Resistant Packages²

E 105 Practice for Probability Sampling of Materials³

E 122 Practice for Choice of Sample Size to Estimate a Measure of Quality for a Lot or Process³

3. Terminology

3.1 Definition:

3.1.1 *rotational torque*—the moment of force or system of forces tending to cause rotation of a Type IIIA closure on the finish of its container.

3.2 Description of Term Specific to This Standard:

3.2.1 *Type III child-resistant closure*⁴—a reclosable snap closure requiring an alignment of two points on closure and container followed by a pushing off of the closure top or lip to remove the closure (taken from Classification D 3475).

4. Summary of Test Method

4.1 Representative samples of packages with Type IIIA child-resistant closures are evaluated for closure rotational

torques by using an appropriate torque meter.

5. Significance and Use

5.1 The application of this test method provides a means for evaluating one of the variables affecting the ability of the closure-container system to function as specified.

5.2 Variability in rotational torque measurements is probably due to the use of the torque meter to measure relatively small torque values, differences in critical package dimensions, and the aging of components.

6. Apparatus

6.1 *Torque Meter*^{5,6}—Select a torque meter with a scale having the smallest range that will span the torque range expected to be measured (for example, use a 0 to 10-lbf-in. torque meter for readings under 10 lbf-in., not a 0 to 25 lbf-in. torque meter).

7. Sampling, Test Specimens, and Test Units

7.1 Sampling of package specimens for this test method shall be in accordance with statistically valid procedures. Refer to Practices E 105 and E 122 for more specific information.

7.2 Use package specimens whose component containers and closures are within their respective specifications.

7.3 Use package specimens with a known number of closure applications.

7.4 Use a sufficient number of package specimens for the desired statistical correlation.

8. Calibration

8.1 Calibrate the torque meter in accordance with Practice D 3474.⁷

9. Conditioning

9.1 Conduct the testing of assembled packages at standard conditions of $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.4^\circ\text{F}$) and $50 \pm 5\%$ relative humidity after their conditioning under these same standards or

¹ This test method is 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 Sept. 10, 1997. Published February 1998. Originally published as D 3968 – 80. Last previous edition D 3968 – 91.

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

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Examples are the Bristol-Myers, Brockway (Celluloplastics), Calmar, Plastic Research, and Stull Closures.

⁵ Owens-Illinois Torque Meters, available from Secure-Pak, Inc., 4009 Beachway Blvd., Toledo, OH 43614, or their equivalent, have been found satisfactory for this purpose.

⁶ A digital or automated torque instrument, if used, will have an appropriate design and scale capacity for the container/closure system to be evaluated. Torque results will be available in either electronic display or print out formats.

⁷ Follow calibration procedure of manufacturer if a digital or automated torque instrument is to be used.