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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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# Standard Test Method for Measurement of Removal Lug Strippage of Type IIA Child-Resistant Closures[1]

This standard is issued under the fixed designation D 3470; 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 force required to cause a downward-force-while-turning lug-finish closure to be rotated across the container finish lugs (strippage) without downward force being applied to the closure (Type IIA closures).

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. Referenced Documents

2.1 *ASTM Standards:*

D 3474 Practice for The Calibration and Use of Torque Meters Used in Packaging Applications[2]

D 3475 Classification of Child-Resistant Packages[2]

## 3. Terminology

3.1 *Definitions:*

3.1.1 *type IIA child-resistant closure*—a lug finish closure requiring a random push down while turning. (See Classification D 3475.)

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *strippage torque*—the moment of force which is required to produce rotation of the closure over the container lugs while exerting no downward force.

## 4. Summary of Test Method

4.1 This test method consists of securing a capped container (after suitable preconditioning) in a torque-measuring device and rotating the closure, using mechanical or nonmechanical aid, to determine the torque needed to rotate the closure across the container lugs. No downward force is applied.

4.2 Using sufficient sampling, the average strippage force and the range are determined for a given lot of samples. Torque measurements are in units of pound-force-inch or newton-metre.

## 5. Significance and Use

5.1 This test method may be used as a standard test in the comparison of a given size and design lug-style child-resistant closure to manufacturer specifications, and in the comparison of similar closures of differing materials for determining strippage.

5.2 This test method may be used as a standard test to evaluate the continued effectiveness of the closure for child resistance and adult opening and reclosing throughout the expected use and shelf life of the package.

## 6. Apparatus

6.1 *Torque-Measuring Device*, [3,4] having a measurement range consistent with the torque values to be measured, that will securely hold the capped container.

6.2 *Gripping Device (Optional)*, that will effectively grip the closure perpendicular to the vertical axis of the container without the use of vertical or radial forces, and that will not contact any portion of the container (Fig. 1).

## 7. Sampling

7.1 Randomly select sufficient samples to ensure reproducibility of results from the lot being inspected.

## 8. Test Specimens

8.1 Examine closure samples and containers, to be vehicles for this test, to determine compliance with the manufacturer's dimensional and material specifications.

8.2 Prepare test specimens by assembling the closure to the appropriate container by pressing downward and turning the closure so as to reduce or eliminate initial closure lug wear.

## 9. Calibration

9.1 Calibrate the torque meter in accordance with Practice D 3474.

## 10. Conditioning

10.1 If special conditions are not required, store the unas-



[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.

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

[3] Owens-Illinois torque meter, or its equivalent, has been found satisfactory for this test method. Owens-Illinois torque testers are available from Secure-Pak, Inc., 4009 Beechway Blvd., Toledo, OH 43614.

[4] 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 printout formats.