



Standard Test Method for Drop Impact Resistance of Blow-Molded Thermoplastic Containers¹

This standard is issued under the fixed designation D2463; 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 provides a means to assess the drop impact resistance of water-filled, blow-molded thermoplastic containers, which is a summation of the effects of material, manufacturing conditions, container design, and perhaps other factors.

1.2 Two procedures are provided as follows:

1.2.1 *Procedure A, Static Drop Height Method*—This procedure is particularly useful for quality control since it is quick.

1.2.2 *Procedure B, Bruceton Staircase Method*—This procedure is used to determine the mean failure height and the standard deviation of the distribution.

1.3 The values stated in SI units are to be regarded as standard. The inch-pound units given in parentheses are for information only.

NOTE 1—There is no known ISO equivalent to this standard.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

B177 Guide for Engineering Chromium Electroplating

D883 Terminology Relating to Plastics

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.19 on Film, Sheeting, and Molded Products.

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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.

2.2 *Society of Plastics Industry Standard:*

PBI-4 Test for Drop Impact Resistance of Plastic Bottles³

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms found in this test method refer to Terminology **D883**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *failure, n*—any rupture visible to an observer with the unaided eye and normal eyesight is considered a failure; this includes also any evidence of contained liquid on the outside of the container through any aperture other than the molded opening.

4. Summary of Test Method

4.1 The drop impact resistance is determined by dropping conditioned blow-molded containers filled with water from a platform onto a prescribed surface. Data developed with a water-filled container are not always representative of what might be expected with a carbonated liquid, an aerosol pack, a product of high specific gravity, or a powder of low bulk density.

4.1.1 *Procedure A* consists of dropping at least 20 containers from a fixed height and reporting the percent failures.

4.1.2 *Procedure B* consists of dropping at least 20 test containers from varying heights above and below the mean failure height of the set. A mean failure height and standard deviation are then calculated from the data.

5. Significance and Use

5.1 These procedures provide a means to assess the drop impact resistance of the group or lot of blown containers from which the test specimens were selected.

5.2 It is acceptable to use these procedures for routine inspection purposes.

5.3 These procedures will evaluate the combined effect of construction, materials, and processing conditions on the impact resistance of the blown containers.

³ Available from the Society of the Plastics Industry, Inc., 1295 K Street, N.W., Washington, DC 20005.

*A Summary of Changes section appears at the end of this standard