



Standard Test Method for Mechanical Seal Strength Testing for Round Cups and Bowl Containers with Flexible Peelable Lids¹

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1. Scope

1.1 This test method describes a method for the measurement of mechanical seal strength while separating the entire lid (cover/membrane) from a rigid or semi-rigid round container.

1.2 This test method differs from Test Method F88. Test Method F88 tests a portion of the seal where as this test method tests the force required to separate the entire lid (cover/membrane) from the container.

1.3 This test method is used to determine the continuous and maximum forces required to separate the lid (cover/membrane) from the container.

1.4 This test method uses an angle of pull of 45°, however other angles of pull may be used provided results are documented noting the used angle of pull and said procedure is validated.

1.5 Typical examples of container shapes that could be tested using this or a similar method include oval, rectangular, and circular with single or multiple cavities having a sealed lid (cover/membrane). Examples of products packaged in these types of containers are: ready meals, creamers, coffee, yogurts, household fresheners, chemical and pharmaceutical products, and numerous others not mentioned. However, this test method, described within, is specifically for round containers.

1.6 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.7 *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

D4332 Practice for Conditioning Containers, Packages, or Packaging Components for Testing

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

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

F17 Terminology Relating to Flexible Barrier Packaging

F88 Test Method for Seal Strength of Flexible Barrier Materials

2.2 Other Standard:

ANSI/AAMI/ISO 11607-1 Packaging for Terminally Sterilized Medical Devices—Part 1: Requirements for Materials, Sterile Barrier Systems, and Packaging Systems³

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *average seal strength*—the sum of the individual forces recorded divided by the total number of those measurements. The calculation can be expressed as the average between the peaks or within the peaks (see Fig. 1).

3.1.2 *flexible*—See Terminology F17.

3.1.3 *grip separation rate*—a function of the test equipment design and angle of peel to achieve the correct peel rate. It is the actual peel rate of separating the lid (cover/membrane) from the container. For this test method, the actual separation rate is 12 in./min (300 mm/min).

3.1.4 *maximum seal strength*—the maximum force measured when separating progressively, under the conditions of the test.

3.1.5 *peel angle*—the angle of the lid (cover/membrane) relative to the container seal surface at all points of removal of

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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.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.