



Standard Method of DROP TEST FOR FILLED BAGS¹

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1. Scope

1.1 This method covers drop tests on loaded bags for measuring the ability of the bag to withstand handling or for comparative evaluation of various bag constructions.

1.2 The procedure is suitable for testing all types of bags.

2. Applicable Documents

2.1 *ASTM Standards:*

D 585 Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, or Related Product²

D 685 Conditioning Paper and Paper Products for Testing²

3. Significance

3.1 In the life cycle of many bags, there is a point at which the bag is handled either manually or mechanically in a manner such that there is an increased probability that the bag will fall and possibly rupture. Since bags are most often used to contain products in the form of small particles (powders, granules, etc.) which are flowable to some extent, the rupture of a bag will result in the product spilling from the rupture. This not only results in an economic loss but may additionally be the source of a health hazard and a difficult clean-up. This method is used to indicate the ability of the bag to withstand the shock produced when it is dropped. This method also is an aid in the design and improvement of bags.

4. Apparatus

4.1 *Drop Test Apparatus*—Any suitable apparatus may be used that conforms to the following requirements:

4.1.1 Permits accurate repositioning of the

bag to assure a true fall and impact at the exact places and in the direction desired,

4.1.2 Permits accurate and convenient control of the height of drop,

4.1.3 Facilitates handling and elevation of the bags, particularly when weights are in higher brackets,

4.1.4 Utilizes lifting devices that will not damage the bags,

4.1.5 Permits an absolutely free, unobstructed fall,

4.1.6 Provides for variations in height of drops within limits of anticipated requirements,

4.1.7 Provides a solid surface of concrete, stone, or steel of sufficient mass to absorb all shock without deflection, and

4.1.8 Provides a 4 by 4-in (102 by 102-mm) timber (about 4 ft (1.2 m) in length) having the edges rounded to a radius of not more than ¼ in. (6.4 mm), firmly positioned on a drop surface.

4.2 *Conditioning Apparatus*—Adequate facilities for conditioning test specimens at proper humidity and temperature prior to test in accordance with the requirements of the specifications covering the bags to be tested.

4.3 *Miscellaneous Equipment*—Drying oven, scales, knife, etc., for use in determination of the moisture content or for making other supplementary tests of the materials from which the bags are made.

5. Sampling

5.1 Any convenient or specified sampling plan may be used. When the test is for the

¹ This method is under the jurisdiction of ASTM Committee D-10 on Packaging.

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² *Annual Book of ASTM Standards*, Part 20.