



Designation: E920 – 97 (Reapproved 2019)

## Standard Specification for Commercially Packaged Laboratory Apparatus<sup>1</sup>

This standard is issued under the fixed designation E920; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### INTRODUCTION

This specification is proposed as a package performance standard to be met for items shipped domestically. The standard would apply only when requested by the buyer.

#### 1. Scope

1.1 This specification covers the procedures for testing loaded shipping containers. Drop and vibration tests are performed to measure the ability of the shipping container to protect the product from the shock and vibration the container receives during normal handling and transporting. This specification is not intended to supplant material specifications or existing preshipment test procedures. *This specification is not intended for use with hazardous materials.*

1.2 These procedures are suitable for all types of laboratory apparatus, including reusable and disposable macro and micro products.

1.3 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.

1.4 The following precautionary caveat pertains only to the test method portion, Section 4, of this specification: *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

#### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**D685** Practice for Conditioning Paper and Paper Products for Testing

**D999** Test Methods for Vibration Testing of Shipping Containers

**D3951** Practice for Commercial Packaging

**D5276** Test Method for Drop Test of Loaded Containers by Free Fall

#### 3. Requirements

3.1 Three test specimens are required. Each specimen shall be run through the sequence of tests in the order given.

3.2 Condition test specimens in accordance with Practice **D685**. Standard conditions must be maintained throughout the test sequence.

3.3 The packaging shall comply with Practice **D3951** except cleanliness of laboratory apparatus shall be as required by the Product Standard, the Quality Assurance Standard, or as agreed upon between the manufacturer and the purchaser.

#### 4. Procedure

4.1 *Vibration Test*—Perform the vibration test in accordance with Method A of Methods **D999**.

4.1.1 Proceed with the following test duration and sequence: bottom for 30 min; side for 15 min; and end for 15 min. Total vibration time will be 60 min.

4.2 *Drop Test*—Perform the drop test in accordance with Method **D775**.

4.2.1 Determine the drop height of the specimen from the following:

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

Gross Weight, lb (kg)	Drop Height, in. (mm)
0 to 20 lb (0 to 9.1 kg)	16 in. (406 mm)
20 to 30 lb (9.1 to 13.6 kg)	14 in. (356 mm)
30 lb (13.6 kg) and over	12 in. (305 mm)

4.2.2 Refer to Fig. A1.1 of Test Method **D5276** and perform the following drop sequence: one flatwise drop onto the top (Face 1); one flatwise drop onto the bottom (Face 3); one drop onto each of the top edges (edges 1-2, 1-5, 1-4, and 1-6), and one drop onto each of the bottom edges (edges 3-2, 3-5, 3-4, and 3-6). Complete one drop sequence (10 drops).

## 5. Acceptance Criteria

5.1 *Disposable Glass*—Completion of testing without breakage occurring in any of the three units tested. In the case of bulk packed items (more than 50 in a shipping container), less than 3 % total breakage in each of the three units tested.

5.2 *All Other*—Completion of testing without breakage occurring in any of the three units tested.

5.3 Outer package must contain product and provide a degree of protection to contents. One complete retest consisting of three new packages is permitted.

## 6. Report

6.1 Report results of test as specified in Method D775.

6.2 Each supplier shall maintain on file laboratory test reports verifying successful testing as outlined in this specification, and if required, issue a written certification stating that packaging complies with this specification.

## 7. Keywords

7.1 apparatus; commercial; laboratory; packaging

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