



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

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## INTRODUCTION

This specification is proposed as a performance standard to be met for items that will be exported. 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, vibration and compression tests are performed to measure the ability of the shipping container to protect the product from shock, vibration and compressive forces encountered during normal export handling and shipping conditions. 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 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 and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- D 642 Test Method for Determining Compressive Resistance of Shipping Containers, Components, and Unit Loads<sup>2</sup>
- D 685 Practice for Conditioning Paper and Paper Products for Testing<sup>2</sup>
- D 999 Methods for Vibration Testing of Shipping Containers<sup>2</sup>
- D 1083 Test Methods for the Mechanical Handling of Utilized Loads and Large Shipping Cases and Crates<sup>2</sup>
- D 3951 Practice for Commercial Packaging<sup>2</sup>
- D 4169 Practice for Performance Testing of Shipping Containers and Systems<sup>2</sup>

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D 5276 Test Method for Drop Test of Loaded Containers by Free Fall<sup>2</sup>

### 3. Requirements

3.1 Three individual shipping containers, or one unit consisting of two or more overpackaged individual units 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 D 685. Standard conditions must be maintained throughout the test sequence.

3.3 The packaging shall comply with Practice D 3951 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 Determine the test levels in accordance with Practice D 4169.

4.2 For items less than 100 lb, perform drop test in accordance with Test Method D 5276.

4.2.1 Determine the drop test levels of the specimen from the following:

Gross Weight, lb (kg)	Drop Height, in. (mm)
0 to 20 lb (0 to 9.1 kg)	24 in. (610 mm)
20 to 40 lb (9.1 to 18.1 kg)	21 in. (533 mm)
40 to 60 lb (18.1 to 27.2 kg)	18 in. (457 mm)
60 to 80 lb (27.2 to 36.3 kg)	15 in. (381 mm)
80 to 100 lb (36.3 to 45.4 kg)	12 in. (305 mm)

4.2.2 Perform the following drop sequence: bottom at twice specified height; bottom long edge at specified height; bottom adjacent short edge at specified height; bottom corner at specified height; bottom diagonal opposite corner at specified height; and top at specified height.

4.3 For drop test items more than 100 lb, proceed with the following (Test Methods D 1083):

4.3.1 Determine the drop test levels in accordance with Practice D 4169:

Gross Weight	Drop Height
100 to 500 lb	2 in.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee E-41 on Laboratory Apparatus and is the direct responsibility of Subcommittee E41.01 on Glass Apparatus.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 15.09.