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Standard Guide for Transport Packaging Design¹

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1. Scope

1.1 This guide covers an approach to design of packaging for distributing goods through the hazards of handling, storage, and transportation.

1.2 The principal content of this guide is the identification of the key steps involved in development of transport packages, including shipping containers, interior protective packaging, and unit loads. It is recognized that actual usage and application to individual design projects may vary appreciably without diminishing the value of the process. Consult with a packaging professional whenever needed.

1.3 This guide is not intended for design of primary packaging unless the primary package is planned for use as a shipping container.

1.4 The user of this guide must be aware of the carrier rules regarding packaging for shipment via each mode of transportation in which the transport package may move, such as the National Motor Freight Classification (less-than truckload) and the Uniform Freight Classification (railroad). For hazardous materials packaging, the packaging must perform to the requirements of the applicable modal regulations listed in Section 2.

1.5 *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.*

1.6 *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.*

¹ This guide is under the jurisdiction of ASTM Committee D10 on Packaging and is the direct responsibility of Subcommittee D10.21 on Shipping Containers and Systems - Application of Performance Test Methods.

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2. Referenced Documents

2.1 ASTM Standards:²

- D642 Test Method for Determining Compressive Resistance of Shipping Containers, Components, and Unit Loads
- D880 Test Method for Impact Testing for Shipping Containers and Systems
- D996 Terminology of Packaging and Distribution Environments
- D999 Test Methods for Vibration Testing of Shipping Containers
- D1974/D1974M Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
- D3332 Test Methods for Mechanical-Shock Fragility of Products, Using Shock Machines
- D3580 Test Methods for Vibration (Vertical Linear Motion) Test of Products
- D4003 Test Methods for Programmable Horizontal Impact Test for Shipping Containers and Systems
- D4169 Practice for Performance Testing of Shipping Containers and Systems
- D4728 Test Method for Random Vibration Testing of Shipping Containers
- D4919 Guide for Testing of Hazardous Materials (Dangerous Goods) Packagings
- D5276 Test Method for Drop Test of Loaded Containers by Free Fall
- D5487 Test Method for Simulated Drop of Loaded Containers by Shock Machines
- D5639/D5639M Practice for Selection of Corrugated Fiberboard Materials and Box Construction Based on Performance Requirements
- D6055 Test Methods for Mechanical Handling of Unitized Loads and Large Shipping Cases and Crates
- D6179 Test Methods for Rough Handling of Unitized Loads and Large Shipping Cases and Crates
- D6344 Test Method for Concentrated Impacts to Transport Packages
- D6537 Practice for Instrumented Package Shock Testing For Determination of Package Performance

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.