



Designation: F2825 – 10

Standard Practice for Climatic Stressing of Packaging Systems for Single Parcel Delivery¹

This standard is issued under the fixed designation F2825; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice provides a uniform basis for evaluating, in a laboratory, the ability of a packaging system to withstand a range of climatic stresses that a packaging system may be exposed to during distribution throughout the world and still provide the product protection from damage or alteration.

1.2 This practice is designed as conditioning prior to testing for overnight or two-day delivery systems of a single parcel packaging system or as a standalone test for climatic stressing of packaging systems.

1.3 This practice does not cover refrigerated, frozen food storage, or cryogenic storage conditions. Only the climatic environments encountered in various regions of the world are covered by this practice.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

D996 Terminology of Packaging and Distribution Environments

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

E337 Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures)

F17 Terminology Relating to Flexible Barrier Packaging

2.2 ISO Standard:³

ISO 2233 Packaging—Complete, Filled Transport Packages: Conditioning for Testing

3. Terminology

3.1 *Definitions*—For definitions used in this practice, see Terminologies **D996** and **F17**.

3.1.1 *climatic stressing*—exposing packaging system test samples to conditions of temperature and humidity for a specified period of time which would simulate expected conditions seen in the defined storage and distribution system.

4. Summary of Practice

4.1 Products shipped through the distribution environment, regardless of mode of transportation, encounter various climatic and physical environments as they pass through different parts of the world at various times of the year. This practice is designed to provide guidance when establishing the climatic stresses imparted to packaging systems using expected climatic conditions and durations that they can encounter in distribution in order to evaluate its ability to provide protection to the package contents or devices.

5. Significance and Use

5.1 This practice provides a method for conditioning packaging systems using climatic conditions that occur in actual distribution. The recommended exposure levels are based on available information on shipping, handling and storage environments, current industry practices, and published studies. They are not absolute extremes, but recorded daily averages in cold and hot climates of the world.

6. Apparatus

6.1 *Room (or Cabinet)* of such size that sample containers or packages may be individually exposed to circulating air at the temperature and relative humidity chosen.

6.1.1 *Control Apparatus*, capable of maintaining the room at the required atmospheric conditions within the tolerance limits.

¹ This practice is under the jurisdiction of ASTM Committee F02 on Flexible Barrier Packaging and is the direct responsibility of Subcommittee F02.50 on Package Design and Development.

Current edition approved Dec. 1, 2010. Published December 2010. DOI: 10.1520/F2825-10.

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>.