Designation: D685 – 12

An American National Standard
Technical Association of Pulp and
Paper Industry Standard Method T 402

Standard Practice for Conditioning Paper and Paper Products for Testing[1]

This standard is issued under the fixed designation D685; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice defines the standard atmospheres for normal preconditioning, conditioning, and testing of paper and paper products, paperboard, fiberboard, and containers made from them. It also specifies procedures for handling these materials in order that they may reach equilibrium with the respective atmosphere.

1.2 This practice does not include special conditioning and testing atmospheres, such as those that attempt to simulate tropical or arctic environments.

1.3 *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:*[2]

D585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, and Related Product (Withdrawn 2010)[3]

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

E171/E171M Practice for Conditioning and Testing Flexible Barrier Packaging

2.2 *ISO Standards:*[4]

ISO 187 Paper, board and pulps -- Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples

2.3 *TAPPI Standard:*[5]

TAPPI T402 sp-03 Standard Conditioning and Testing Atmosphere for Paper, Board, Pulp Handsheets and Related Products

3. Significance and Use

3.1 The preconditioning requirement is important because physical properties of a sample at 50 % relative humidity depend upon whether the sample is brought to 50 % from a higher or lower relative humidity. A detailed discussion of the importance of preconditioning may be found in Annex A1.

3.2 The conditioning and testing atmospheres are important because both temperature and relative humidity have significant effects on the physical properties of paper and board. A more detailed discussion of the importance may be found in Annex A2.

4. Standard Atmospheres

4.1 *Preconditioning Atmosphere*—10 to 35 % relative humidity and 22 to 40°C (see Annex A1 and Annex A2).

4.2 *Conditioning Atmosphere*—50.0 ± 2.0 % relative humidity and 23.0 ± 1.0°C.

4.3 *Testing Atmosphere*—Same as 4.2.

NOTE 1—It is important to distinguish between the overall limits of the temperatures within which conditioning and testing may be carried out and the limits within which the temperature must be maintained in order to maintain the specified relative humidity limits; that is, the close temperature tolerance of ±1°C required in 4.2 and 4.3 will not in itself ensure the close relative humidity requirement of ±2 % relative humidity, as a sudden change of 1°C when at 23°C and 50 % relative humidity will change the relative humidity about 5 to 6 %.

5. Apparatus

5.1 *Preconditioning Chamber*—A room or cabinet in which sample sheets or specimens may be individually exposed to circulating air at the preconditioning relative humidity and temperature.

[1] This practice 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] 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] The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

[5] Available from Technical Association of the Pulp and Paper Industry (TAPPI), 15 Technology Parkway South, Norcross, GA 30092, http://www.tappi.org.