



Standard Test Method for Adherence to Linerboard of Pressure-Sensitive Tape at Low Temperature¹

This standard is issued under the fixed designation D 3889/D 3889M; 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 test method provides one procedure for determining the adherence of pressure-sensitive tapes to a standard linerboard or other similar surface.

1.2 This test method provides for an attribute response (pass or fail) and does not yield numerical data on a variable or continuous scale.

1.3 The values stated in either SI or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system must be used independently without combining values in any way.

1.4 *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 996 Terminology of Packaging and Distribution Environments²

D 3715/D 3715M Practice for Quality Assurance of Pressure-Sensitive Tapes²

D 4332 Practice for Conditioning Containers, Packages, or Packaging Components for Testing²

E 122 Practice for Calculating Sample Size to Estimate, With a Specified Tolerable Error, the Average for a Characteristic of a Lot or Process³

3. Terminology

3.1 *Definitions*—General terms in this test method are defined in Terminology D 996.

4. Summary of Test Method

4.1 The pressure-sensitive tape to be tested is adhered to the

standard linerboard or other material of interest. Following a dwell period at an elevated temperature, the specimen assembly is cooled to a specific temperature. After a specified time at the low temperature the specimen assembly is flexed around a small mandrel and observed for indications of bond failure.

5. Significance and Use

5.1 Satisfactory tape performance at the test temperature implies satisfactory cold-temperature performance at or above the test temperature.

5.2 This procedure would be applicable for questions of adherence to 100 % kraft fiberboards similar to the standard linerboard surface without substitution but for direct information on any board or surface, the actual surface in question should be substituted.

6. Apparatus

6.1 *Standard Reference Material 1810A*,⁴ length approximately 280 mm [11 in.], width approximately 13 mm [$\frac{1}{2}$ in.] wider than the specimen width. See Section 8.

NOTE 1—When agreed upon between the parties involved or when called for by the material specification, other flexible material may be substituted for the 1810 linerboard.

6.2 *Rubber-Covered Steel Roller*,⁵ 82.5 ± 1.3 mm [3.25 ± 0.1 in.] in diameter and 44.5 ± 1.3 mm [1.75 ± 0.05 in.] wide, covered with rubber approximately 6 mm [0.25 in.] thick having a Shore A durometer hardness of 80 ± 5 . The surface of the rubber shall form a true cylinder devoid of any convex or concave deviations. The mass of the roller shall be 2040 ± 45 g [4.5 ± 0.1 lb]. The mass of the handle shall not add to the mass of the roller during use.

6.3 *Oven*, air circulating, maintained at $66 \pm 1^\circ\text{C}$ [$150 \pm 2^\circ\text{F}$].

6.4 *Cold Chamber*, maintained at a specified temperature $-54 \pm 1^\circ\text{C}$ [$-65 \pm 2^\circ\text{F}$] if no other temperature is specified.

6.5 *Nonrotating, Smooth Surface, Metal Cylinder*, having a

¹ This test method is under the jurisdiction of ASTM Committee D10 on Packaging and is the direct responsibility of Subcommittee D10.14 on Tape and Labels.

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² *Annual Book of ASTM Standards*, Vol 15.09.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Standard Reference Material 1810A is available from the Office of Standard Reference Materials, National Institute of Standards and Technology, Washington, DC 20234.

⁵ Available from Chemsultants International, 9349 Hamilton Dr., Mentor, OH 44061-1118.