



Standard Test Method for Peel Cling of Stretch Wrap Film¹

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1. Scope

1.1 This test method measures cling between two layers of film, in both a stretched and unstretched condition.

1.2 *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 Relating to Packaging and Distribution Environments²

D 1898 Practice for Sampling of Plastics³

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

E 122 Practice for Choice of Sample Size to Estimate the Average Quality of a Lot or Process⁴

E 691 Practices for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁴

3. Terminology

3.1 *Definitions*—General definitions for packaging and distribution environments are found in Terminology D 996.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *cling*—the property of a material's ability to adhere to itself.

3.2.2 *stretch wrap material*—a material used for overwrapping which, when applied under tension, elongates, and through elastic recovery, conforms to the item(s) packaged.

4. Summary of Test Method

4.1 This test method is a peel cling procedure. A 1 in. (25 mm) wide film strip is adhered to a flat film attached to an inclined surface. The force required to remove the film strip from the flat film is measured.

5. Significance and Use

5.1 Cling is of critical importance in maintaining a tight

wrap after a load is stretch wrapped.

6. Equipment and Preparation

6.1 *Apparatus*—A universal testing machine with a constant rate of grip separation equipped, as follows:

6.1.1 One lightweight jaw equipped with 1 by 1.5 in. (25 by 38 mm) flat rubber-faced grips,

6.1.2 Cling attachment (see Figs. 1-5),

6.1.3 Cling clamp (see Fig. 6),

6.1.4 Load cell, 500-g load capacity,

6.1.5 If using pneumatic grips, air supply, 60 to 70 psi with appropriate filter,

6.1.6 Sample template, picture-frame style with inside dimensions of 5 by 20 in. (125 by 500 mm),

6.1.7 Precision sample cutter, 1 ± 0.001 in. (25.4 mm $\pm$ 0.03 mm) width, with precision of 1 ± 0.001 in. (25.4 $\pm$ 0.03 mm),⁵

6.1.8 Single-edged safety razor blade,

6.1.9 Synthetic bristle paint brush, 2 in. (50 mm) wide,

6.1.10 Ruler, 12 in. (approximately 300 mm),

6.1.11 Separation paper, 8.5 by 12 in. (approximately 125 by 280 mm) bond,

6.1.12 String, 24 in. (approximately 610 mm) nonelastic, such as dental floss or fishing line,

6.1.13 Steel rod, approximately 0.25 in. (6 mm) in diameter and 10 in. (255 mm) long.

6.1.14 Cutting surface, approximately 36 by 36 in. (approximately 900 by 900 mm) plate glass, 0.25 in. (6 mm) thick.

6.2 Preparation of Apparatus:

6.2.1 Install the load cell on the upper set frame and allow 15-min warm-up period.

6.2.2 Install the upper lightweight jaw.

6.2.3 Remove the lower jaw and install the cling attachment, using the locking pin to secure.

6.2.4 Feed the end of the string not fastened to the clamp through the pulley on the cling attachment and place in the center of the upper jaw.

6.2.5 With the clamp resting at the base of the incline (which is in position on the base plate), adjust the crosshead, or the amount of string pulled through the grips, or both in combination, to achieve a distance of 5 by 7 in. (125 by 180 mm) between the top of the pulley and the bottom of the grips.

¹ This test method is under the jurisdiction of ASTM Committee D-10 on Packaging and is the direct responsibility of Subcommittee D10.25 on Palletizing and Unitizing of Loads.

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² Annual Book of ASTM Standards, Vol 15.09.

³ Annual Book of ASTM Standards, Vol 08.02.

⁴ Annual Book of ASTM Standards, Vol 14.02.

⁵ JDC-1-10 Cutter is available from Thwing-Albert Instrument Co., 10960 Dutton Rd., Philadelphia, PA 19154 or other manufacturers.