



## Designation: D5458 – 95 (Reapproved 2020)

# Standard Test Method for Peel Cling of Stretch Wrap Film<sup>1</sup>

This standard is issued under the fixed designation D5458; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

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

1.2 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.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

[D996 Terminology of Packaging and Distribution Environments](#)

[D1898 Practice for Sampling of Plastics \(Withdrawn 1998\)](#)<sup>3</sup>

[D4332 Practice for Conditioning Containers, Packages, or Packaging Components for Testing](#)

[E122 Practice for Calculating Sample Size to Estimate, With Specified Precision, the Average for a Characteristic of a Lot or Process](#)

[E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method](#)

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D10 on Packaging and is the direct responsibility of Subcommittee D10.25 on Palletizing and Unitizing of Loads.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

## 3. Terminology

3.1 *Definitions*—General definitions for packaging and distribution environments are found in Terminology [D996](#).

### 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,  $1 \pm 0.001$  in. ( $25.4 \pm 0.03$  mm) width, with precision of  $1 \pm 0.001$  in. ( $25.4 \pm 0.03$  mm),<sup>4</sup>

6.1.8 Single-edged safety razor blade,

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

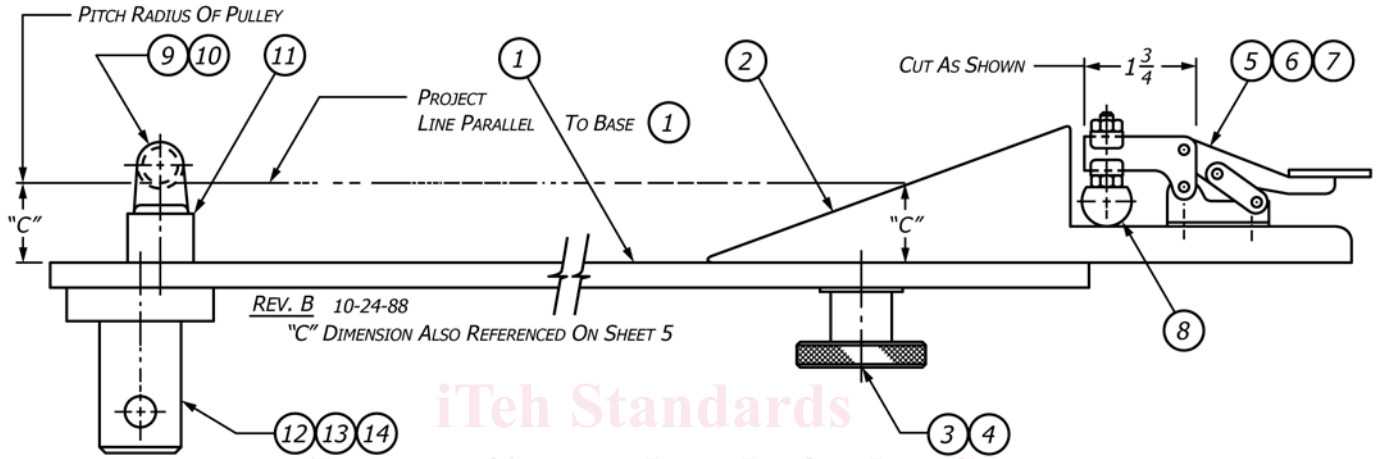
6.1.10 Ruler, 12 in. (approximately 300 mm),

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

<sup>4</sup> JDC-1-10 Cutter is available from Thwing-Albert Instrument Co., 10960 Dutton Rd., Philadelphia, PA 19154 or other manufacturers.

Legend for Figures 1-5:

Item	Quantity	Description	See Sheet No.	Item	Quantity	Description	See Sheet No.
1	1	Base Plate	2	10	2	#8-32 UNF × 1¼ Lg. Fl. Hd. Mach. Screw	
2	1	Incline	3 and 5	11	1	Pulley Spacer Block	4
3	1	9/16 I.D. × 1¼ O.D. × 1/16 Thick Flat Washer		12	1	Mounting Stud	4
4	1	Reid #KKT-4B Steel Knob		13	2	1/4-20 UNC × 1 Large Socket Head Cap Screw	
5	1	KNU-Vise #H-200 Toggle Clamp		14	2	1/4 Lock Washer	
6	4	#8-32 UNF × 3/8 Lg. Rd. Hd. Machine Screw		Finish: All aluminum parts to have fine sandblasted finish.			
7	4	#8 Lock Washers					
8	1	Clamp Bar	4				
9	1	McMaster-Carr #3101T2 Pulley					



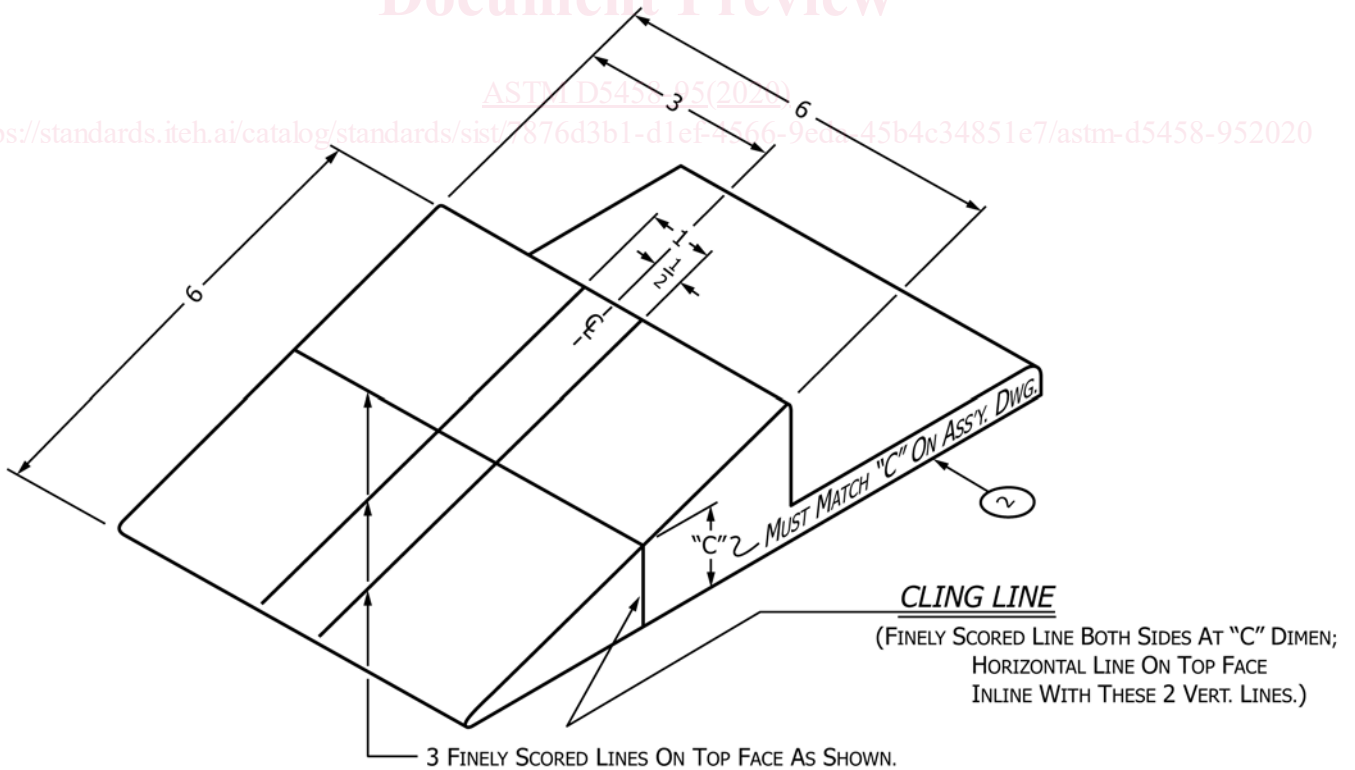
NOTE 1—1 in. = 25 mm.

FIG. 1 Overall Fixture

iTeh Standards  
<https://standards.iteh.ai/>  
 Document Preview

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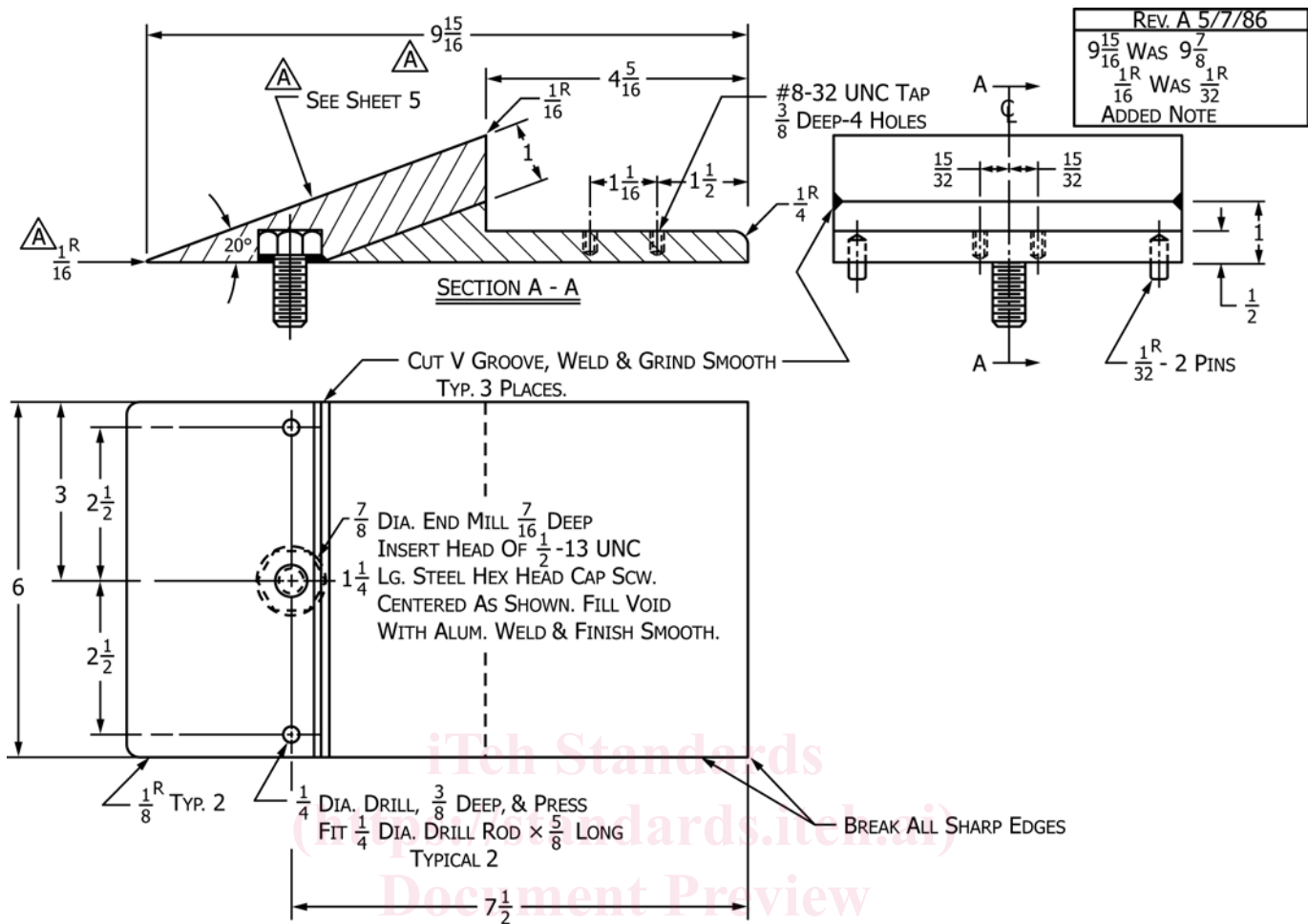
<https://standards.iteh.ai/catalog/standards/sist/876d3b1-d1ef-4566-9eda-45b4c34851e7/astm-d5458-952020>



NOTE 1—1 in. = 25 mm.

FIG. 2 Incline Surface





② INCLINE

WELDMENT 1" x 6", 6061 ALUM.

NOTE 1—1 in. = 25 mm.

FIG. 4 Incline

8.4 Align the paper sheets under and over the film in three locations equidistant across the film. Cut around the outside edges of the papers to form paper/film/paper sandwiches. Label the web location and side of the film that is to be on the outside of a wrapped load; this will be referred to as the “outside” surface and the other side the “inside” surface.

8.5 Using the precision sample cutter, cut a 1 in. (25.4mm) transverse direction (TD) by approximately 7 in. (180 mm) machine direction (MD) specimen from each paper/film/paper sandwich. These will be used with the corresponding 5 by 20 in. (125 by 500 mm) samples.

8.6 Using the sample template and razor blade, cut three 5 by 7 in. (125 by 180 mm) TD by MD samples corresponding to the TD locations of the 1 by 7 in. (25.4 by 180 mm) samples cut in 8.5.

8.7 Perform subsequent testing “outside” surface to “inside” surface. Conduct testing within 30 min of sample preparation.

8.8 In the case of single-side cling film, or differential cling film, it may be necessary to also test outside to outside surface or inside to inside surface.

9. Conditioning

9.1 *Sample Conditioning*—Condition the test specimens at standard atmospheric condition for not less than 24 h prior to testing in accordance with Practice D4332.

9.2 *Test Conditions*—Conduct the test in accordance with the condition specified in 9.1.

10. Procedure

10.1 Loosen the fixture knob and push the incline up from the fixture surface. Allow the pins to hold the incline up. See Fig. 7 for a picture of test equipment and specimen set up for test.

10.2 Place a 5 by 20 in. (127 by 508 mm) sample squarely on the incline face with its outside surface up.

10.3 Tuck the film under the leading edge of the inclined bottom edge and reset the locating pins in their holes allowing the film to be clamped. Remove any obvious wrinkles and tighten the incline locking knob.

10.4 Grasp the unclamped corners of the film sample and pull back over the incline face to create a tight, smooth surface