



Designation: D5264 – 98 (Reapproved 2019)

Standard Practice for Abrasion Resistance of Printed Materials by the Sutherland Rub Tester¹

This standard is issued under the fixed designation D5264; 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 covers a procedure for determining the abrasion resistance of printed materials using the Sutherland Rub Tester, or its equivalent, equipped with full-width rubber pads and using standardized receptors.

1.2 This practice is applicable to labels, folding cartons, corrugated boxes, inserts, circulars, and other packaging materials having applied graphics on a flat substrate.

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:²

D996 Terminology of Packaging and Distribution Environments

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

3. Terminology

3.1 General definitions for packaging and distribution are found in Terminology D996.

¹ This practice 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 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.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *abrasion resistance*—ability of a printed surface to resist mechanical destruction.

3.2.2 *abrasiveness*—the degree to which another material can abrade the surface of the test specimen.

3.2.3 *receptor*—film or paper of a specified abrasiveness onto which coatings (for example, ink or protective coating) removed from the specimen are deposited during the abrasion test.

4. Summary of Practice

4.1 The test specimen is mounted on top of the rubber pad on the Sutherland base and the receptor is cut to fit the 0.91-kg (2-lb) or the 1.81-kg (4-lb) weight (depending on which one is being used). The receptor is mounted to the weight. The test duration is determined by the number of strokes (a stroke is one back-and-forth cycle) the sample is rubbed. The number of strokes desired is preset on the Sutherland Timer. The weight is mounted on the Sutherland and the machine is turned on. The Sutherland will shut off automatically when the desired number of strokes is completed.

4.2 The test specimen is removed from the Sutherland base and examined for degree of print degradation. The receptor is analyzed for the amount of ink transferred from the specimen. Results are compared to an agreed upon standard sample tested in the identical fashion.

5. Significance and Use

5.1 Abrasion resistance is a desirable and sometimes critical property of printed materials. Abrasion damage can occur during shipment, storage, handling, and end use. The result is a significant decrease in product appearance and legibility of product information. The amount of abrasion damage to a printed substrate is dependent on shipping conditions, possibly temperature and humidity, time, and many other variables. This practice provides a way of comparing abrasion resistance of printed materials under laboratory conditions.

5.2 This practice also can be used to evaluate the relative abrasion resistance of printed inks, coatings, laminates, and substrates.