



# Standard Practice for Abrasion and Scuff Resistance of Inkjet Media by the Sutherland Rub Tester<sup>1</sup>

This standard is issued under the fixed designation F2497; 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.

<sup>ε1</sup> NOTE—Revised the units presentation and added a units statement editorially in October 2011.

## 1. Scope

1.1 This practice covers a procedure for determining the abrasion resistance of printed and unprinted inkjet media 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 printed and unprinted inkjet media.

1.3 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.

1.4 *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:*<sup>2</sup>

**D5264 Practice for Abrasion Resistance of Printed Materials by the Sutherland Rub Tester**

## 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

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

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

3.1.3 *Ink jet media*—refer to recording elements used by ink jet printers to receive inks. The substrate may be paper, plastic,

canvas, fabric, or other ink receptive material. The substrate may, or may not, be coated with an ink receptive layer(s).

3.1.4 *Microporous ink jet media*—refer to ink media having ink absorbing microporous layer(s).

3.1.5 *receptor*—film, paper, or fabric of a specified abrasiveness onto which coatings (for example, ink or protective coating) removed from the specimen are deposited during the abrasion test. An example of a receptor is a fine grade crocus cloth or the backside of the inkjet media being evaluated.

3.1.6 *scuffing*—gloss change of ink jet media under applied pressure.

## 4. Summary of Practice

4.1 The inkjet media is mounted on top of the rubber pad on the Sutherland base and the receptor is cut to fit the 2-lb (0.91-kg) or the 4-lb (1.81-kg) weight (depending on which one is being used). The receptor is mounted to the weight. The specimen is rubbed for a total of approximately 10 cycles (20 strokes) at a rate of 43 cycle/min, where a cycle is one back-and-forth stroke. The number of cycles 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 cycles is completed.

4.2 The test specimen is removed from the Sutherland base and examined for degree of print degradation by measuring the change in gloss, density, or change in physical appearance. The receptor is analyzed for the amount of ink or coating transferred from the specimen. Results are compared to an untested specimen.

## 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.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.07 on Ink Jet Imaging Products.

Current edition approved Oct. 1, 2011. Published March 2012. Originally approved in 2005. Last previous edition approved in 2005 as F2497-05. DOI: 10.1520/F2497-05R11e1.

<sup>2</sup> 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.