



Designation: F 1571 – 95 (Reapproved 2002)

Standard Test Method for Determination of Abrasion and Smudge Resistance of Images Produced from Business Copy Products (Sutherland Method)¹

This standard is issued under the fixed designation F 1571; 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 test method covers a procedure for determining the amount of image transferred from one site and redeposited at another site (smudge) on a document. The Sutherland Ink Rub Tester² with 4-lb (1.82-kg) test block is the test instrument for producing the transfer and either a reflectometer or densitometer is employed for measuring the change in images. Alternatively, a visual rating order can be employed to establish a ranking order. The degree to which the original image is unaltered upon rubbing is considered to be the abrasion resistance.

1.2 This test method can be employed to evaluate the smudge resistance of business imaging products produced by typewriters, and impact printers.

1.3 This test method can also be employed to measure performance characteristics for a product. The user should select test equipment that is appropriate for measuring the degree of abrasion to the samples. Samples are tested before and after rubbing and comparisons of results made. In this test method product performance evaluations are optional.

1.4 Other test methods employing the Crockmeter, Taber Abrader, and Gavarti GA-C.A.T. can be employed to evaluate the smudge and abrasion characteristics. Results by these units are not necessarily equivalent to those obtained with the Sutherland.

1.5 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.6 *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 5264 Test Method for Abrasion Resistance of Printed Materials by the Sutherland Rub Tester³

F 149 Terminology Relating to Optical Character Recognition³

F 221 Terminology Relating to Carbon Paper and Inked Ribbon Products and Images Made Therefrom³

F 497 Practice for the Use of the Electric and Electronic Typewriter as a Test Instrument³

F 909 Terminology Relating to Printers³

F 1125 Terminology of Image Quality in Impact Printing Systems³

F 1174 Practice for Using a Personal Computer as a Test Instrument³

F 1175 Practice for Using the Computer Impact Print-Out Unit as a Test Instrument for Manifold Comparison³

F 1319 Test Method for Determination of Abrasion and Smudge Resistance of Images Produced from Business Copy Products³

F 1443 Practice for Using 0.008 in. (0.203 mm) Aperture Reflectometers as Test Instruments for Measuring Visual Image Quality of Business Copy Images³

2.2 ANSI Standard:

CGATS.4 Graphic Technology —Graphic Arts Reflection Densitometry Measurements—Terminology, Equations, Image Elements and Procedures⁴

3. Terminology

3.1 Definitions:

3.1.1 *abrasion resistance*—the ability of an image to withstand the frictional force attempting to remove the surface material.

3.1.2 *smudge*—the tendency of an image to smear or streak onto an adjacent area when rubbed. Smudge involves the redeposition of abraded material.

¹ This test method is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.02 on Inked Transfer Imaging Products.

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² Available from James River Corp., Mechanical Services Dept., 243 E. Paterson Street, Kalamazoo, MI 49007.

³ *Annual Book of ASTM Standards*, Vol 15.09.

⁴ Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.