



Designation: F509 – 86(Reapproved 2009)

Standard Practice for Testing One-Time Carbonizing Tissue for Pinholes¹

This standard is issued under the fixed designation F509; 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 the determination of the existence of pinholes in one-time carbonizing tissues.

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 whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, and Related Product (Withdrawn 2010)³

F221 Terminology Relating to Carbon Paper and Inked Ribbon Products and Images Made Therefrom

3. Terminology

3.1 *Definitions*—For other definitions relating to carbon paper and inked ribbon products, see Terminology **F221**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *carbonizing bond*—a white opaque paper that is used for one-time carbon ink coatings.

3.2.2 *control one-time carbon tissue*—a tissue that is of known quality and performance for one-time carbon ink coatings.

3.2.3 *one-time carbonizing tissue*—a tissue that is used for one-time carbon ink coatings.

3.2.4 *pinhole*—an opening in the carbon tissue that permits the coating to penetrate through to the uncoated side.

4. Summary of Practice

4.1 Across-the-web samples are taken from the outside wraps of a roll of tissue and 4.25 by 11.00-in. (107.9 by 279.4-mm) test specimens are cut from these samples so that their length is parallel to the cross direction. The specimens are identified and checked for ink penetration using special test ink, a draw-down rod instrument and special receptor paper on which a lined rectangular pattern is drawn. The same check is repeated with an acceptable control tissue and the test results from the specimens and the control are compared visually, using the rectangular area.

5. Significance and Use

5.1 This practice is to be used to provide a visual means of determining the existence of pinholes by penetration of a dye solution through the pinhole into a white receptor paper.

5.2 The practice is suitable for manufacturing control and will give close correlation with the end product.

5.3 This practice is suitable for comparative service evaluation and development.

5.4 The initial appearance will change with time due to continued migration of dye solution into the receptor paper and the size of the colored areas will not represent the actual size of the pinholes through which the solution was exuded.

6. Apparatus

6.1 *Weight*, 2-lb (907-g).

6.2 *Draw-Down Rod Instrument* (see **Fig. 1**).

6.3 *Paper Cutter*, 18 by 18-in. (457.2 by 457.2-mm), that has an attachment for ensuring parallelism of opposite edges.

7. Reagents and Materials

7.1 *Test Ink*—The test ink is a solution of 33 % methylviolet base “B” in Oleic Acid.

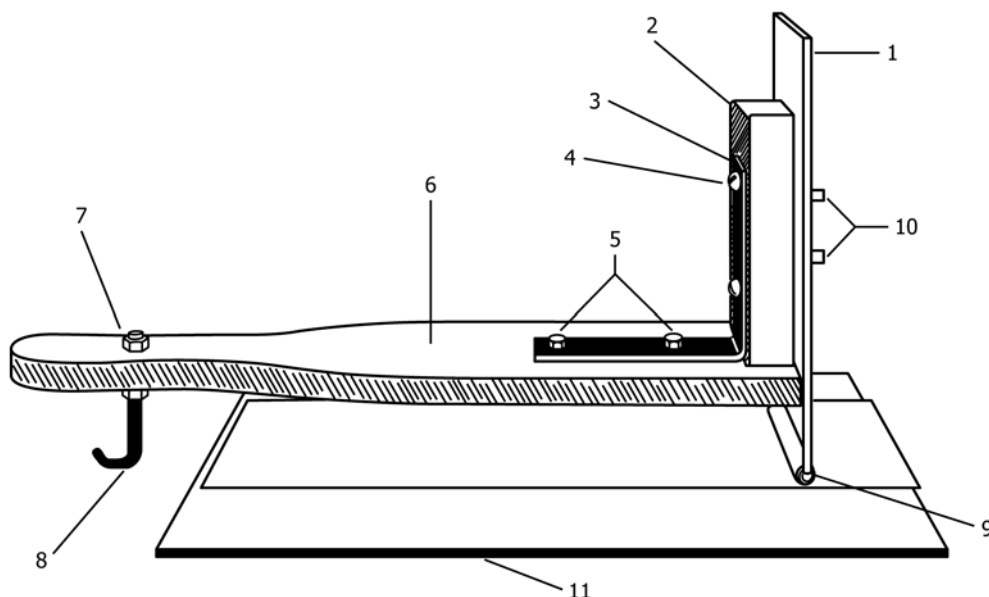
7.2 *Pad*—A minimum of ten sheets of white forms bond paper.

¹ This practice 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.

Current edition approved Oct. 1, 2009. Published October 2009. Originally approved in 1977. Last previous edition approved in 2004 as F509 – 86(2004). DOI: 10.1520/F0509-86R09.

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 The last approved version of this historical standard is referenced on www.astm.org.



NOTE 1—The overall weight of the instrument should be 4.00 ± 0.25 lb (1.81 ± 0.11 kg), and the hook bolt should be long enough to adjust the handle level with the surface.

- 1) Sheet Metal Plate—Brass, 3.0 by 6.5 by 3.2 in. (76.2 by 165.1 by 3.2 mm)
- 2) Weight—3-lb (1.36-kg) steel block, 2.75 by 4.00 by 0.88 in. (69.9 by 101.6 by 22.2 mm), drilled and tapped to accommodate socket-head and round-head machine screws.
- 3) Right-Angle Bracket, 3.0 by 0.5 in. (76.2 by 6.4 mm) wide.
- 4) Round-Head Machine Screws, 2
- 5) Round-Head Wood Screws, 4.
- 6) Wooden Handle, 3.00 by 12.25 by 0.50 in. (76.2 by 311.2 by 12.7 mm), shaped as shown.
- 7) Nuts, 2.
- 8) Hook Bolt.
- 9) Stainless Steel Rod, $\frac{3}{16}$ in. (4.8 mm) in diameter, by 3.0 in. (76.2 mm) long. Cut to length and silver-solder to brass plate above.
- 10) Socket-Head Machine Screws, 2.
- 11) Pad of Paper—Forms bond.

FIG. 1 Draw-Down Rod Instrument

7.3 *Control Carbon Tissue* (3.2), 4.25 by 11.00-in. (107.9 by 279.4-mm) sheets, of the same type, grade, and basis weight as the test specimens.

7.4 *Special Receptor Paper* (3.1), 8.5 by 11.0-in. (215.9 by 279.4-mm), 12 lb (17 x 22 – 500 or 45.1 g/m²) white, coated, pigmented carbonizing bond for receiving dye solution transferred through tissue. A rectangular-lined area 2.5 by 8 in. (63.5 by 203.2 mm) is ruled in the center of the sheet.

7.5 *Tissue Specimens* (See 7.3), 4.25 by 11-in. (107.9 by 279.4-mm).

8. Sampling

8.1 The material shall be sampled in accordance with Practice D585.

9. Test Specimens

9.1 Representative samples, 4.25 by 11.00-in. (107.9 by 279.4-mm) with the 11.0-in. (279.4-mm) side parallel to the

cross direction, shall be cut from an across-the-web sampling so that they are representative of the full width of the roll of tissue (Fig. 2). The number of specimens taken shall be determined by the width of the roll. Avoid folds, creases, or punctures that would permit the dye solution to penetrate through the tissue.

10. Calibration

10.1 No calibration is required.

11. Conditioning

11.1 It is not necessary to condition the paper or perform the test at standard humidity and temperature.

12. Procedure

12.1 Obtain the specimens as described in 8.1 and 9.1, and identify them in the position across the web.

