Designation: F 854 – 83 (Reapproved 2003)

Standard Test Method for Cleanliness of Carbon Paper[1]

This standard is issued under the fixed designation F 854; 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 describes a typewriter test that compares the cleanliness properties of carbon papers (one-time or multiple use) and is based on resistance to feed roll marking the smear of carbon images.

1.2 This test method also describes how to compare the cleanliness properties of the backs of carbon papers.

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

2. Referenced Documents

2.1 *ASTM Standards:*

F 221 Terminology Relating to Carbon Paper and Inked Ribbon Products and Images Made Therefrom[2]

3. Terminology

3.1 *Definitions:*

3.1.1 *back cleanliness*—the freedom of ink on the back of the carbon sheet.

3.1.2 *feed roll cleanliness*—the resistance to transfer of ink to the copy sheet from the pressure of feed rolls.

3.1.3 *smear freedom*—the freedom from tailing of the copy image when the carbon is pulled from forms.

3.1.4 *tailing*—the streak-type marks appearing on carbon images on the copy papers.

3.1.4.1 *Discussion*—Less tailing would be noted with cleaner carbons.

4. Summary of Test Method

4.1 The comparative typewriter test involves using the carbon papers in a prescribed set of forms and observing the results.

4.2 The cleanliness of the backs of carbon papers involves rubbing them with clean sheets of bond-type papers and observing and comparing the amount of ink transfer.

5. Significance and Use

5.1 This test method can be used in new applications evaluations, product development, and specification acceptance procedures.

6. Interferences

6.1 Variation in platen roll durometer.

6.2 Variation in feed roll durometer.

6.3 Variation in feed roll pressure.

6.4 Different operators.

6.5 Different typewriters.

6.6 Different pressures or touch by the same or different operators.

7. Apparatus

7.1 *Typewriter,* on which the carbon paper being evaluated would be normally used.

8. Sampling

8.1 Carbon paper representing homogeneous lots or batches should have samples taken from at least two different areas. Do not use the top or bottom sheet from any stock of carbon paper as a sample.

9. Procedure

9.1 *Typewriter Test*:

9.1.1 Assemble a five-part form using papers measuring 8.50 by 11.00 in. (215.9 by 279.4 mm). Use a 15-lb (17 by 22-in.; 500 sheets) (56.4 g/m^2) as the top part. Below the top part, use four parts of 12-lb (17 by 22-in.; 500 sheets) (45.1 g/m^2). Staple the left and right corners approximately ½in. from the top.

9.1.2 Interleave four sheets of the test carbons measuring 8.5 by 11.00 in. (215.9 by 279.4 mm) into the five-part form so that the carbon papers extend below the bottom of the set by ½ in.

NOTE 1—Always handle form and carbon paper at the edge with care to avoid unintentional coating transfer.

[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.

Current edition approved Dec. 30, 1983. Published February 1984.

[2] *Annual Book of ASTM Standards,* Vol 15.09.

9.1.3 Center the bail rolls of a clean and serviced typewriter between the front feed rolls and completely release the feed and bail rolls.

9.1.4 Carefully insert the assembled set into the typewriter so that it is properly centered and registered.

9.1.5 Carefully close the feed rolls and place the bail rolls against the form.

9.1.6 Type the date and carbon identification 1 in. from the top followed by a four-line paragraph maintaining 1-in. margins on both sides.

9.1.7 Turn the cylinder knob rolling the form back until the top with the staples is under the bail rolls. Grasp the top of the form and pull through and out of the typewriter at a steady rate.

9.1.8 Place the form on a smooth, flat surface. Remove staples. Carefully remove carbon papers to avoid unintentional coating transfer.

9.1.9 Retain the deleaved form for examination, numbering each part.

9.2 *Back Cleanliness Test*:

9.2.1 Staple a sheet of the test carbon paper, with uncoated side up, to a sheet of similarly sized 15-lb bond (17 by 22-in.; 500 sheets) (56.4 g/m^2) and place on a smooth, flat surface with the bond paper down. The uncoated side of the stapled test carbon paper will be up.

9.2.2 With one hand, hold the test carbon sheet at the top edge.

9.2.3 With other hand, grasp a piece of bond-type paper measuring approximately 5 by 5 in. (127 by 127 mm) and place on top of the test carbon sheet adjacent to the other hand. Spread the fingers apart maintaining approximately ½-in. spaces between the fingers. Then draw the bond sheet down the length of the test carbon sheet forming the letter *S*.

9.2.4 Date the bond paper and identify the carbon sheet being tested.

9.3 Repeat 9.1 through 9.2.4 for each carbon paper being tested.

10. Interpretation of Results

10.1 *Feed Roll Cleanliness*:

10.1.1 Examine and compare the first carbon copy, sheet number *2* from all carbon sheet test forms from 9.1.9. Rate for intensity of the roll marks. Assign a value of *5* for least intense roll marks and *1* for most intense roll marks.

10.1.2 Examine and compare the bottom edges of carbon images for degree of tailing. Assign a value of *5* for no tailing and *1* for most tailing.

10.2 *Back Cleanliness*:

10.2.1 Examine and compare the bond papers for each carbon sheet from 9.2.4 for ink accumulation. Assign a value of *5* for the least amount of ink accumulation and *1* for the most ink accumulation.

11. Report

11.1 Rank the various carbon papers in the various categories based on assigned values. Higher values indicate a cleaner carbon paper.

11.2 Rank the various carbon papers based on the cumulative assigned values. Higher values indicate a cleaner carbon paper.

11.3 If a reference control carbon paper is used, test carbon papers can be ranked accordingly.

12. Precision and Bias

12.1 The test method will provide repeatable ranking order results or repeatable relationship to a control within a laboratory using the same typewriter and operator.

12.2 Rank order and comparative results may not necessarily be reproduced between laboratories, because of differences in operator, typewriter, typewriter components, typewriter actions, and ambient conditions.

13. Keywords

13.1 carbon paper; copy cleanliness; ink cleanliness; smear; smudge; tailing