



Designation: F 767 – 98 (Reapproved 2002)

Standard Test Method for Image Stability of Chemical Carbonless Paper to Light¹

This standard is issued under the fixed designation F 767; 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 the determination of the image stability of chemical carbonless paper by exposure to fluorescent light for a controlled time period. Stability to light is determined by visual comparison between exposed and unexposed samples.

1.2 *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 585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, and Related Products²
- F 221 Terminology Relating to Carbon Paper and Inked Ribbon Products and Images Made Therefrom²
- F 497 Practice for Use of the Electric and Electronic Typewriter as a Test Instrument²
- F 549 Terminology Relating to Carbonless Copy Products²

3. Summary of Test Method

3.1 Carbonless paper to be tested and previously tested control paper are selected and prepared for imaging. The test samples and control shall be imaged during the same time period with the same imaging device and pressure settings. Images are produced either on the coated front (CF) surface of CF paper or on the CF surface of the coated front and back (CFB) paper. A portion of the image area for each test sample and control is exposed to fluorescent light for a controlled period of time. Image stability to light is determined by visual comparison of exposed and unexposed imaged areas of the same sample to exposed and unexposed imaged areas of a control paper. Comparisons are made by establishing an image-stability ranking order.

¹ This test method is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.06 on Carbonless and Thermal Imaging Products.

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

4. Significance and Use

4.1 This test method is a comparative test for determining the relative image stability of chemical carbonless paper samples.

4.2 The light source used simulates that of an office environment, while accelerating image fade.

5. Interferences

5.1 Test results will depend upon image intensity and the imaging method. The greater the pressure of the imaging device, the greater the amount of reactive material transferred, and the greater the intensity of the image. Fade resistance is generally increased when the intensity is high. Also, all carbonless papers do not exhibit the same reactive material transfer efficiency with different imaging devices. Therefore, the imaging device used should ideally be the same as that on which the paper that is used in the final application. If this is not possible, a commercial office electric typewriter set in accordance with Practice F 497 (maximum impact pressure without embossing) should be used.

5.2 The image produced on carbonless paper is a result of the interaction of the coated back (CB) and coated front (CF) surfaces. The light stability of the image is thus a function of both coatings. Although the images on the CF surface are exposed to light with this method, what is actually being tested is the light stability of the CB-CF combination. Therefore a CB paper is tested in combination with a CF paper, and vice versa; a coated front and back (CFB) paper is tested separately with a CB paper and a CF paper to evaluate both surfaces.

5.3 Only the images from the same combinations of coated papers should be compared (CB-CF; CB-CFB; CFB-CF; CFB-CFB) since one side of most chemical carbonless papers is affected by light more than the other.

5.4 Any variation in light intensity or in the ambient conditions of temperature or humidity, or both, could affect the results. Observe the manufacturer's recommendations for lamp life.

5.5 Testing differences between test facilities using replacement lamps may result in ranking differences due to differences in spectral output.



6. Apparatus

6.1 *Commercial Office Typewriter*, set in accordance with Practice F 497, or other imaging device as explained in 5.1.

6.2 *Light-Exposure Cabinet*, constructed as follows (see Fig. 1):

6.2.1 *Cabinet*, built from ½-in. (13-mm) plywood. It should have exterior dimensions of 21-in. (533 mm) width by 11¾-in. (298-mm) height by 13-in. (330-mm) depth. The front panel should be hinged to provide a door for inserting and removing test specimens. A 21-in. (533-mm) width by 3½-in. (89-mm) height by 11¾-in. (298-mm) depth cabinet base is recommended to provide easy door movement on a flat table. The interior of the cabinet should be painted with a flat white paint.

6.2.2 *Unshielded Fluorescent Light Fixtures*, three 120-V, 60-Hz, with rapid start ballasts should be installed in the top of the cabinet interior. The fixtures should be equipped with F15T12 cool white fluorescent tubes. Mount the fixtures and tubes parallel to and across the 21-in. (533-mm) dimension of the cabinet, and center 3¾ in. (95 mm) apart. The rear fixture should be ¾ in. (19 mm) from the rear of the cabinet, and the front fixture 1 in. (25 mm) from the front of the cabinet.

6.2.3 *Single-Pole Single-Throw Switch*, 10-A, 120-V, installed outside the right side of the cabinet and wired to the lamp fixtures.

6.2.4 *Blower*, 120-V, 60-Hz, rated at 15 c ft³/min (free air) minimum mounted outside the left side of the cabinet to

provide cooling to prevent heat buildup from the lamps. Cut a hole the size of the blower outlet through the cabinet panel to allow air into the cabinet interior. Mount the blower at the center of the panel.

6.2.5 *Single-Pole Single-Throw Switch*, 10-A, 120-V, mounted directly under the blower.

6.2.6 *Exhaust Vent*, 6 by 10-in. (152 by 254-mm), constructed on the left side of the rear panel.

6.2.7 All electrical accessories should be wired to a 120-V a-c service cord with ground. A 15-A, 120-V slow-blow fuse should be installed in line with the service cord.

7. Materials

7.1 *Sheets of Paperboard*, 8½ by 11-in. (216 by 279-mm), made from recycled paper stock and commonly referred to as “chipboard.” Plain 20 point chipboard with an approximate basis weight of (376 g/m²) is recommended. Sheets of other completely opaque materials that are poor heat conductors and do not interact with the CF and CB coatings may be substituted for chipboard.

7.2 Previously tested carbonless papers to serve as controls and test references.

8. Sampling

8.1 Sample the carbonless paper to be tested in accordance with Practice D 585.

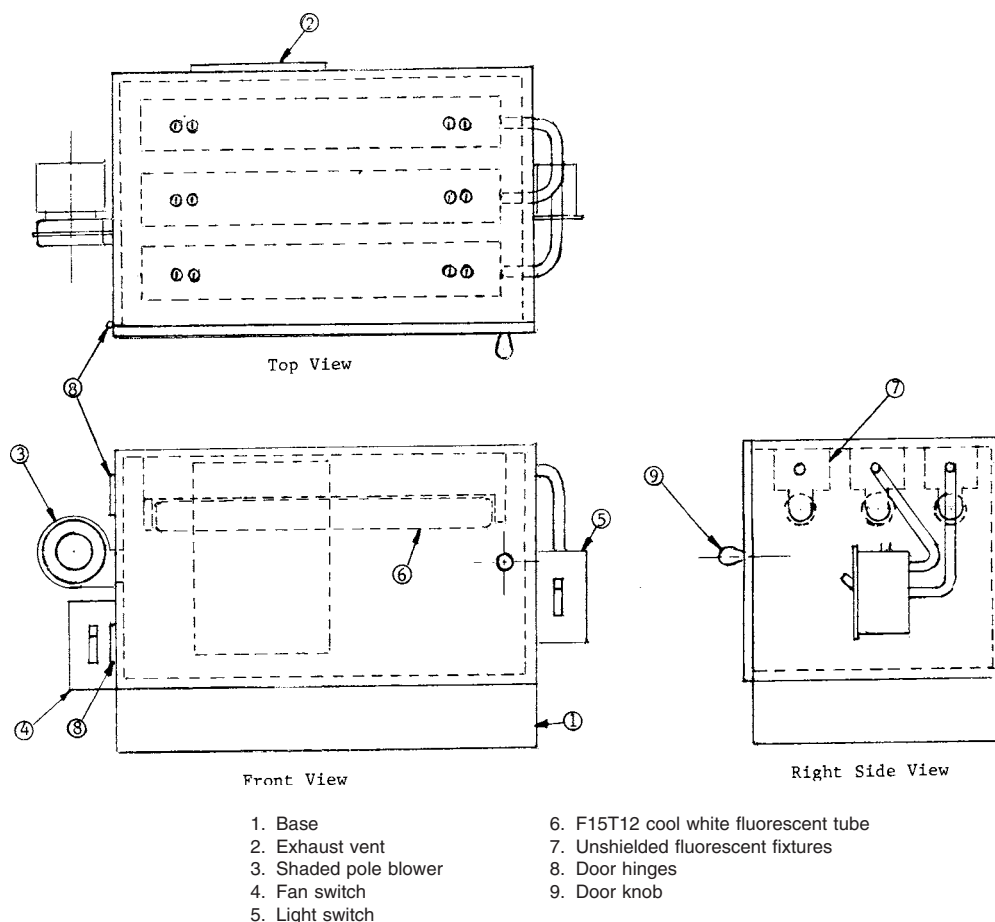


FIG. 1 Light Exposure Cabinet