



Standard Practice for Determination of the Color Response of an Electrostatic Copying System, Black and White Output¹

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1. Scope

1.1 This practice covers the determination of the color response of an electrostatic copy system, black and white output.

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 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:

E 97 Test Method for Directional Reflectance Factor, 45-deg 0-deg, of Opaque Specimens by Broad-Band Filter Reflectometry²

F 335 Terminology Relating to Electrostatic Copying³

F 360 Practice for Image Evaluation of Electrostatic Business Copies³

3. Significance and Use

3.1 This practice is for determining the color response of an electrostatic copy system by examining the black and white copies obtained from an electrostatic copier. This practice covers the capability of a copy system to reproduce various solid colors in varying shades of grey or black and white.

4. Interferences

4.1 This practice can be used to measure the color response for different copy system conditions (machine adjustments, machine configuration, supplies, environment, and so forth). These conditions should be noted so that comparison tests can be made.

4.2 In liquid developed copiers, the system color response is strongly dependent on the condition (that is, age, concentration, and so forth) of the toner bath. As a liquid toner is cycled through depletion and replenishment, color response may show

wide fluctuations even though fluctuations in other copy quality criteria (for example, background, edge effect, resolution, and density) may not be altered.

4.3 In dry toned copiers, the system color response is strongly dependent on the age and condition of the photoconductor and developer and may also show wide fluctuations in color response even though some of the copy quality criteria listed in 4.2 may not be altered.

4.4 Copy systems that circulate the original to be copied through the copier may not be capable of handling a consumer prepared test target.

5. Apparatus

5.1 *Reflectometer*, operated and standardized according to the manufacturer's instructions and in accordance with Test Method E 97. Spectral response shall be for measuring the daylight luminous reflectance factor, as described under the Terminology section of Test Method E 97.

6. Materials

6.1 Copy paper, toning supplies, photoreceptor, and so forth should be approved materials currently used by the evaluator. Any change of supplies from one manufacturer to those of another may alter the test results.

7. Procedure

7.1 Prepare a test target in accordance with the Test Original section described in Practice F 360. Select Munsell Color Chips⁴ appropriate to their copying needs and adhere by any suitable method those selected chips on a suitable paper substrate (starting in the center of the substrate) allowing spatial intervals between the chips of at least 3.8 cm (1½ in.).

7.1.1 Alternate commercially available color composite targets can be selected and used as a target.⁵

¹ This practice is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.04 on Electrostatic Imaging Products.

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² Discontinued; see 1992 *Annual Book of ASTM Standards*, Vol 06.01.

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

⁴ Available from Munsell Color, 2441 North Calvert Street, Baltimore, MD 21218

⁵ Suggested sources are the Kodak Color Separation Guide Number Q-13 (nine color control patches) available from Kodak, 343 State Street, Rochester, NY 14650; Du Pont Color Guide Number E-05339 (nine color control patches) available from E.I. Du Pont de Nemours & Company, Photo Products Department, Communications Group GATS Lab 1, Wilmington, DE 19898; or any other suitable alternate. Commercially available Pantone color chips may be used by those users interested in comparing Pantone colors; copier test pattern AR4 available from DATAQUEST, 19055 Pruneridge Ave. Cupertino, CA 95014.