



Standard Practice for Determining the Waterfastness of Images Produced by Ink Jet Printers Utilizing Four Different Test Methods—Drip, Spray, Submersion and Rub¹

This standard is issued under the fixed designation F 2292; 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 methods that can be used to determine the waterfastness of an image produced by an inkjet printer. Waterfastness is determined by the presence of ink transferred from a specific printed area to a non-printed area, or to neighboring printed areas of a different color.

1.2 This practice can be used to evaluate the waterfastness of the primary print colors (cyan, magenta, yellow and black), the secondary colors (red, blue and green) and composite black (cyan plus magenta plus yellow).

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:

D 2244 Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates²

F 909 Terminology Relating to Printers³

F 1125 Terminology of Image Quality in Impact Printing Systems³

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

F 1623 Terminology Relating to Thermal Imaging Products³

F 1857 Terminology Relating to Ink Jet Printers and Images Made Therefrom³

2.2 ANSI Standards:⁴

ANSI/NAPM IT9.9-1990 Stability of Color Photographic Images—Methods for Measuring

3. Terminology

3.1 For definitions of terms, refer to Terminologies F 909, F 1125, F 1623, and F 1857.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *ink jet media, n*—recording elements used by ink jet printers to receive inks. The substrate may be paper, plastic, canvas, fabric, or other ink receptive material. The substrate may, or may not be, coated with one or more ink receptive layers.

4. Significance and Use

4.1 This procedure may be used to determine how water will affect solid-fill color images produced by ink jet printers.

4.2 Four different test methods are outlined to simulate the most common ways that materials are exposed to water.

4.3 The method of water application may greatly affect the outcome of the test. While one or more of the test methods may be performed, to best qualify a product all four test methods should be used.

4.4 The drip and spray test are evaluated visually, while the submersion and rub tests can be evaluated visually and instrumentally.

4.5 Test results are useful for specification acceptance between producer and user, for quality control, and for research and product development.

5. Interferences

5.1 Ink jet media and ink sets may be purchased from a variety of sources and may affect the waterfast characteristics produced by a given printing system. A variety of media types and ink sets may be used depending on the purpose of the test. The side of the media that should be used for imaging is the one recommended by the manufacturer/supplier.

5.2 Interpretation of results should be made by one evaluator.

5.3 Fluctuations in temperature and humidity may affect the media being tested.

5.4 Prints should be dry prior to testing since inadequate drying time may affect the results. Twenty-four hours should be sufficient for most inks and media.

¹ This practice is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.07 on Ink Jet Imaging Products.

Current edition approved June 10, 2003. Published August 2003.

² *Annual Book of ASTM Standards*, Vol 06.01.

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

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