



Standard Practice for Determining the Relative Lightfastness of Ink Jet Prints Exposed to Window Filtered Daylight Using a Xenon Arc Light Apparatus¹

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1. Scope

1.1 This practice covers specific procedures and test conditions that are applicable for xenon-arc exposure of ink jet media prints conducted in accordance with Practices **G151** and **G155**. The laboratory accelerated procedure is intended to determine the relative lightfastness of ink jet prints in office environments where window filtered daylight is used for illumination.

1.2 The two criteria used to determine relative lightfastness are instrumental color change and change in optical density.

1.3 This practice is useful in determining the relative lightfastness of a series of prints or the relation of the lightfastness of the print of interest to the performance of controls with known lightfastness exposed simultaneously.

1.4 *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.* Specific precautionary statements are given in section 8.

1.5 There is no equivalent ISO standard.

2. Referenced Documents

2.1 ASTM Standards:²

- D1729** Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials
- D2244** Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
- D3424** Practice for Evaluating the Relative Lightfastness

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.

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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.

and Weatherability of Printed Matter

E1347 Test Method for Color and Color-Difference Measurement by Tristimulus Colorimetry

E1348 Test Method for Transmittance and Color by Spectrophotometry Using Hemispherical Geometry

E1349 Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional (45°:0° or 0°:45°) Geometry

G113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials

G151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

G155 Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

2.2 ANSI Standard:

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

IT2.17-1995 ANNEX A1 Density Measurements-Part 4: Geometric Conditions for Reflection Density, Backing Material

3. Terminology

3.1 Definitions:

3.1.1 The definitions given in **G113** are applicable to this Practice.

3.1.2 Ink jet media substrates 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. Summary of Practice

4.1 Printed ink jet media are exposed to radiant energy from a xenon arc light source equipped with a Window-Glass Filter.

4.2 The duration of the exposure may vary widely depending on the lightfastness of the ink/media.

4.3 During the course of the exposure, changes in color and optical density in the printed samples are periodically evaluated. Color changes are determined either visually by comparison with the unexposed file specimens or instrumentally by comparison with the color of the same specimen prior to