



Standard Guide for Reflected-Light Photomicrography¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This guide outlines various methods which may be followed in the photography of metals and materials with the reflected-light microscope. Methods are included for preparation of prints and transparencies in black-and-white and in color, using both direct rapid and wet processes.

1.2 Guidelines are suggested to yield photomicrographs of typical subjects and, to the extent possible, of atypical subjects as well. Information is included concerning techniques for the enhanced display of specific material features. Descriptive material is provided where necessary to clarify procedures. References are cited where detailed descriptions may be helpful.

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 requirements prior to use.* Specific precautionary statements are given in **X1.7**.

1.4 The sections appear in the following order:

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2. Referenced Documents

2.1 *ASTM Standards:*²

E7 Terminology Relating to Metallography

E175 Terminology of Microscopy

E768 Guide for Preparing and Evaluating Specimens for Automatic Inclusion Assessment of Steel

E1951 Guide for Calibrating Reticles and Light Microscope Magnifications

2.2 *Other Standard:*³

MSDS Mercury-Material Safety Data Sheet

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, see Terminologies **E7** and **E175**.

4. Significance and Use

4.1 This guide is useful for the photomicrography and photomacrography of metals and other materials.

4.2 The subsequent processing of the photographic materials is also treated.

5. Magnification

5.1 Photomicrographs shall be made at preferred magnifications, except in those special cases where details of the microstructure are best revealed by unique magnifications.

5.2 The preferred magnifications for photomicrographs, are: 25×, 50×, 75×, 100×, 200×, 250×, 400×, 500×, 750×, 800×, and 1000×.

5.3 Magnifications are normally calibrated using a stage micrometer. Calibration procedures in Guide **E1951** should be followed.

¹ This guide is under the jurisdiction of ASTM Committee **E04** on Metallography and is the direct responsibility of Subcommittee **E04.03** on Light Microscopy.

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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.

³ Available from United States Environmental Protection Agency (EPA), Ariel Rios Bldg., 1200 Pennsylvania Ave., NW, Washington, DC 20004, <http://www.epa.gov>.