



Standard Guide for Reflected-Light Photomicrography¹

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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:

E 3 Methods of Preparation of Metallographic Specimens²

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 *Annual Book of ASTM Standards*, Vol 03.01.

E 7 Terminology Relating to Metallography²

E 175 Terminology of Microscopy³

E 768 Practice for Preparing and Evaluating Specimens for Automatic Inclusion Assessment of Steel²

E 1951 Guide for Calibrating Reticles and Light Microscope Magnifications²

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, see Terminologies E 7 and E 175.

4. Significance and Use

4.1 This guide is useful for the photomicrography and photomicrography 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 E 1951 should be followed.

6. Reproduction of Photomicrographs

6.1 Photomicrographs should be at one of the preferred magnifications. A milli- or micrometre marker shall be superimposed on the photomicrograph to indicate magnification, in a contrasting tone. The published magnification, if known, should be stated in the caption.

6.2 Photomicrograph captions should include basic background information (for example, material identification, etchant, mechanical or thermal treatment details) and should briefly describe what is illustrated so that the photomicrograph can stand independent of the text.

6.3 Arrows or other markings, in a contrasting tone, shall be used to designate specific features in a photomicrograph. Any marking used shall be referenced in the caption.

³ *Annual Book of ASTM Standards*, Vol 14.02.